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The Relationship between Bullying and Emotional State among Undergraduate Nursing Students: A Cross-Sectional Correlation Study

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Introduction. Bullying behavior by nursing students is a serious problem that has contributed to the drop in numbers in the nursing profession. *Aim*. The study investigated the relationship between bullying and the emotional state of undergraduate nursing students. *Methods*. The study used a cross-sectional correlation design with a sample of 286 undergraduate nursing students from multiple nursing colleges located in the western region of Saudi Arabia. The 21-item depression, anxiety, and stress scale (DASS-21) was used to measure the study outcomes. A revised version of the Bullying Assessment Questionnaire was used to assess bullying experiences. Statistical analyses, including a *t*-test, Pearson correlation coefficient, and a one-way between-subjects ANOVA, determined the significance of the relationship between study variables. *Results*. There was a high prevalence of depression, anxiety, and stress symptoms among Saudi nursing students. Most of the respondents reported mild to extremely severe symptoms of depression (58.7%), anxiety (58%), and stress (44.8%). Around 90.1% of the nursing students reported exposure to a form of bullying over the previous 12 months. The most common items reported as part of this behavior included continually being assigned tasks beyond their capacity. Family members were the most frequently reported source of bullying (29.8%), followed by nursing faculties (20.9%). Bullying behavior was positively correlated with students' scores for depression, r (284) = 0.49, n = 286, $p < 0.01$; anxiety, r (284) = 0.54, $p < 0.01$; and stress, r (284) = 0.56, $p < 0.01$. *Conclusion*. The study's findings raise concerns and highlight the importance of decreasing the risk of depression, anxiety, and stress among undergraduate nursing students. Nurse educators must ensure that students receive psychological support to decrease these psychological outcomes. Regularly monitoring bullying behavior is essential to maintain students' psychological stability, which could eventually reduce professional dropout rates.

1. Introduction

Bullying is intentional and persistent violence by a perpetrator towards a peer. It may involve exploiting a physical, psychological, or social power imbalance, and a student may become a habitual victim [1]. It is a severe problem affecting nursing students and has contributed to the falling number of individuals in the nursing profession [1]. Bullying is a serious problem in nursing education, both in person and online. In nursing colleges, many cases are underreported because most students believe it is a normal part of their nursing education and are unaware of the school policies to address this issue [2]. Year-on-year, there is an increasing rate of bullying of online users in the form of videos, images, and words that may threaten, mock, or insult others. This often occurs among students who use social networking sites, chat rooms, and instant messaging applications. Students are often unaware that using social media can lead to cyberbullying [1, 3].

Bullying has short-term and long-term negative impacts on a student's well-being, academic performance, social life, and mental health [4, 5]. The negative impacts of bullying include emotional stress, dissatisfaction, fewer interests, self-doubt, decreased commitment, and confusion. These often lead to students believing that higher education institutions offer little or no support in solving the problem [4], causing high levels of anxiety and depression [6]. In a study by Ahmed et al. [7], females had 2.9 times more negative emotional reactions to bullying than males. Victims with social support experienced lower levels of emotional stress. In addition, poor quality of life significantly contributed to bullies' mindsets. Compliance with the academic requirements and hospital duties combined with the stress of studying for classroom examinations add further stress that may reduce students' tolerance to unpleasant environments [5].

Bullying covers four possible dimensions, including physical bullying (e.g., kicking, hitting, pushing, grabbing, and destroying objects), verbal bullying (e.g., name-calling, teasing, abusing, and mocking), relationship bullying (e.g., excluding from social situations and spreading rumours), and cyberbullying [8]. A study conducted by Bambi et al. (2018) revealed that bullying is a predictive factor for burnout ($\beta = 0.37$ $p < 0.001$) and shows a negative correlation with job efficiency ($r = -0.322$, $p < 0.01$). Victims are twice increased in comparison to nonvictims (95% CI: 1.3–1.7). 78.5% of bullied nurses with 5 years less of service leave their jobs [9].

1.1. Bullying in the Nursing Field. Nurses are exposed to bullying through many channels, including their patients, patients' relatives, classmates, doctors, and other medical staff. Some students view themselves as participants who cause student-faculty bullying [10]. Bullying can be a self-perpetuating cycle in the nursing profession. students who are bullied often go on to bully a colleague they believe to be powerless. This leads to the pervasiveness of bullying in nursing culture [11]. Studies have revealed that the most notorious source of bullying is not students' classmates but faculty members [12–14].

Although the nature of bullying differs across contexts, it undoubtedly occurs in the nursing profession. In the clinical setting, nurses work in a toxic environment and perceive students as added workload [15]. Student nurses encounter this behavior, often have inadequate knowledge, and feel pressured by the new environment [16]. Existing literature has mainly explored bullying among students in clinical training; only a small number of studies have investigated bullying in nursing students outside of this setting [2, 17–21]. However, bullying has become a global concern, affecting more than 60 million workers in the United States. There has been a lack of information about the impact of academic harassment on conflict management in higher educational institutions [1].

A review on the impact of transition programs (TPs) on workplace bullying, violence, stress, and resilience for students and new graduate nurses (NGN) reveals that there is a need to improve nursing student's transition to clinical practice plus their resilience to overcome bullying [22].

Among the total of 779 studies, after rigorous filtering, 19 were found to fit the inclusion criteria. Most are female (80%–100%), and their ages ranged between 21 and 54 years old predominantly Associate Degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) Degree. The stress score for NGNs who participated in the TP approach had a significant difference ($p = 0.050$); 90% of the NGNs ($n = 61$) reported that resilience sessions within the TPs were helpful and that their stress scores decreased [22].

Studies on nursing students' bullying-related experiences in Saudi Arabia have been limited [23–25]. According to Ullah et al. [26], surveys should be conducted in Saudi Arabia to provide insights into the educational experience. This could help identify bullying at an early stage. Therefore, this study aimed to investigate the relationship between bullying and the emotional state of undergraduate nursing students at universities in the western region of Saudi Arabia. The study also seeks to identify sources of bullying among nursing students and students' actions towards bullying. The findings will increase awareness of bullying among administrators, educators, clinical leaders, and instructors.

This research seeks to answer the following questions:

(1) How frequently do nursing students experience bullying behavior?

(2) How frequently do nursing students experience depression, anxiety, and stress symptoms?

(3) Is there a significant relationship between bullying and nursing students' anxiety, depression, and stress?

(4) Is there a significant difference between year levels in the nurses' characteristics, the bullying behavior they have experienced, and their emotional state?

(5) What are the predictors of students' anxiety, depression, and stress?

(6) What are the sources of bullying and actions taken by nursing students towards bullying?

2. Methodology

2.1. Study Design. The study used a cross-sectional correlational design to facilitate data collection from the target population at a single point in time without influencing the collected variables [27].

2.2. Sample. This study sampled 286 students enrolled in undergraduate nursing programs in universities in the western region of Saudi Arabia. An electronic invitation was sent to all students in these nursing colleges. All eligible participants who completed the questionnaire were included in the study. The study inclusion criteria were full-time undergraduate nursing students enrolled in the 2020/2021 academic year. The sample size was calculated using G-Power. The parameters used to estimate the sample size included effect size ($f2$) = 0.20; alpha = 0.05; power = 0.95. The total sample size based on this approach was 262 participants.

2.3. Data Collection Tool. The researchers used a self-reported electronic version questionnaire as a data collection tool. The questionnaire comprised four parts. The first part covered the respondents' demographic data, including their gender, nationality, age, and marital status. The second part used the Bullying Assessment Questionnaire. The researchers developed this tool after a thorough literature review [24, 28]. It is a 30-item questionnaire that assesses the bullying experiences of nursing students. Five possible responses (never, seldom, sometimes, frequently, and always) are represented by scores 0, 1, 2, 3, and 4. The subcategories were computed by summing the items to calculate the total score. The total possible score was 120. To establish face validity, the researchers asked five experts in nursing education and psychiatric nursing to ensure the statements' clarity and relevance to the questionnaire's goal. The researchers then revised the questionnaire. They conducted a pilot study with 30 students to examine the questionnaire's reliability, which had a Cronbach alpha of 0.88.

The third part used the Arabic version of the 21-item depression, anxiety, and stress scale (DASS-21), a self-reported measure of DAS experience based on a dimensional measurement of psychological disorders [29]. The DASS-21 consists of four possible responses (never, sometimes, often, and almost always) represented by scores of 0, 1, 2, and 3. It includes 7 items for each category. According to Coker et al. [30], the DASS-21 has excellent reliability and produces Cronbach's alpha values of 0.81, 0.89, and 0.78 for the categories of depression, anxiety, and stress, respectively [28]. Summing the items computes the categories and calculates a total score. The researchers obtained a letter of permission from the original author. The fourth part was an open-ended questionnaire about how students perceived the consequences of bullying in their everyday life.

2.4. Data Collection. The researchers distributed the questionnaire electronically to the participating nursing students. When they agreed to participate, the site immediately opened the questionnaire page. Data collection took two months, and the researchers followed up on the nurses' responses as necessary. The questionnaire was distributed via e-mail and social media (WhatsApp). There was no time limit for students to complete the questionnaire. However, during the pilot testing of the questionnaire, it was clear that a minimum of 15 minutes was sufficient to complete the questions.

2.5. Data Analysis. The researchers coded and entered the data using the Statistical Package for Sciences (SPSS 25). They used descriptive statistics, including the mean, standard deviation, and frequency, to analyze the demographic data. Statistical analyses, including a *t*-test, Pearson correlation coefficient, multipl linear regression, and a one-way between-subjects ANOVA, determined the significance of the relationship between study variables.

3. Results

3.1. Demographic Characteristics. The study involved 286 nursing students who agreed to participate and completed the online questionnaire (Table 1). The mean age of the nursing students was 21, and the majority were female (82.5%), single (95.8%), and from Saudi Arabia (99%). Nearly half of the nursing students (43%) were in their fourth academic year, and 32.9% were in their third academic year. Almost half of the nursing students reported not reading the student rights manual (46.5%). Most nursing students (57%) stated that bullying did not negatively affect their appreciation of the nursing profession. However, 19.2% responded with yes, and 23.8% responded with unsure.

3.2. Prevalence of Bullying among Nursing Students. Nursing students' bullying experiences were assessed using the 30-item bullying questionnaire, adapted, and modified based on previous research. The 30-item bullying questionnaire showed excellent reliability with a Cronbach alpha of 0.95. The highest possible score for the 30-item bullying questionnaire was 120. The prevalence of bullying reported in the sample was relatively low ($M = 22.9$, SD $= 19.6$). Table 2 describes the frequency of bullying behaviors that nursing students reported for each of the 30 items on the questionnaire. The most common bullying behaviors that students reported included experiences of continually being assigned tasks beyond their capacity ($M = 1.44$, SD $= 1.40$), receiving unfair evaluations of their work ($M = 1.40$, SD $= 1.20$), and other people underestimating the value of their academic work ($M = 1.22$, SD $= 1.18$). The least common bullying items that nursing students reported were being physically assaulted ($M = 0.11$, SD $= 0.39$), being treated badly or unfairly because of their race ($M = 0.67$, SD $= 0.23$), and being treated badly or unfairly because of incapacities or weaknesses ($M = 0.72$, SD $= 0.34$).

3.3. Prevalence of Depression, Anxiety, and Stress among Nursing Students. The prevalence of depression, anxiety, and stress among nursing students was measured using the DASS-21 (Table 3). The average total DASS-21 score in the sample was $M = 20.9$ (SD $= 15.7$) out of possible 84. In addition, the average scores on the three subscales of depression ($M = 7.34$, SD $= 5.91$), anxiety ($M = 5.94$, SD $= 5.19$), and stress ($M = 7.62$, SD $= 5.67$) were within the normal range. However, almost one-third of study participants reported abnormal scores on all three subscales, as shown in Table 3.

3.4. The Relationship between Bullying Behavior and DASS-21. The Pearson correlation coefficient was used to assess the relationship between bullying behavior and DASS-21 scores (Table 4). The results showed a significant positive

TABLE 1: Demographic characteristics of the sample.

Measure	N	M	SD
Age (years)	286	21	2.07
Measure	N	%	
Gender			
Male	50	17.5	
Female	236	82.5	
Marital status			
Single	274	95.8	
Married	10	3.5	
Divorced	2	0.7	
Nationality			
Saudi	283	99.0	
Non-Saudi	3	1.0	
Students' academic year			
First year	35	12.2	
Second year	34	11.9	
Third year	94	32.9	
Fourth year	123	43.0	
Have you read student rights manual?			
Yes	84	29.4	
No	133	46.5	
Unsure	69	24.1	
Bullying behaviors have negatively affected my appreciation of the nursing profession			
Yes	55	19.2	
No	163	57.0	
Not sure	68	23.8	

association between bullying behavior and DASS-21 scores, r (284) = 0.57, $p < 0.01$. Bullying behavior was also positively correlated with students' scores for depression, r (284) = 0.49, $n = 286$, $p < 0.01$; anxiety, r (284) = 0.54, $p < 0.01$; and stress, r (284) = 0.56, $p < 0.01$.

Multiple regression analysis examined the relationship between students' DASS-21, bullying behavior, and other demographic variables (gender, age, marital status, and current academic year). Specifically, the analysis examined whether bullying behavior and other demographic variables can predict students' stress using the DASS-21 score. The model was significant F (5, 280) = 24.91, $p < 0.001$. The model explained 30% ($R^2 = 0.301$) of variance in the outcome variables. Students bullying behavior ($B = 0.13$, $t = 10.9$, $p < 0.001$), age ($B = -0.30$, $t = -1.99$, $p = 0.04$), and marital status ($B = 2.56$, $t = 2.14$, $p = 0.03$) contributed significantly to the model.

Furthermore, the multiple regression analysis examined whether bullying behavior and other demographic variables can predict students' anxiety using the DASS-21 score. The model was significant (F (5, 280) = 22.92, $p < 0.001$) and explained 29% ($R^2 = 0.290$) of variance in the outcome variables. Students bullying behavior ($B = 0.13$, $t = 10.3$, $p < 0.001$), age ($B = -0.33$, $t = -2.08$, $p = 0.04$), and marital status ($B = 2.71$, $t = 2.08$, $p = 0.03$) contributed significantly to the model.

Finally, multiple regression analysis examined whether bullying behavior and other demographic variables can predict students' depression using their DASS-21 scores. The model was significant (F (5,280) = 21.0, $p < 0.001$).

The model explained 27% ($R^2 = 0.273$) of variance in the outcome variables. Students bullying behavior ($B = 0.15$, $t = 9.68$, $p < 0.001$), age ($B = -0.50$, $t = -1.77$, $p = 0.008$), and marital status ($B = 3.33$, $t = 2.23$, $p = 0.02$) contributed significantly to the model.

3.5. Nursing Students' Academic Year and Bullying Behavior. A one-way between-subjects ANOVA was conducted on bullying behavior and DASS-21 scores across students in four academic years (first, second, third, and fourth years) (Table 5). The results showed that bullying significantly impacted students' total DASS-21 scores (F (3, 282) = 5.38, $p = 0.014$). Post-hoc comparisons indicated that the mean score for bullying behaviors in students enrolled in their third academic year ($M = 27.57$, SD = 19.6) was significantly different compared to students in other academic years ($p = 0.014$). Furthermore, students' total DASS-21 scores were statistically significant across the academic years (F (3, 282) = 4.71, $p = 0.003$). Post-hoc results showed that students in the third academic year reported higher DASS-21 scores ($M = 25.57$, SD = 14.5). Differences in students' depression ($p = 0.001$), anxiety ($p = 0.031$), and stress ($p = 0.003$) scores were statistically significant across the four academic years. Specifically, third academic year students' scores for depression ($M = 9.06$, SD = 5.60), anxiety ($M = 7.12$, SD = 5.01), and stress ($M = 7.89$, SD = 4.53) were higher compared with students in other academic years (Table 5).

3.6. Sources of Bullying and Action Taken by Students. Nursing students were asked about the source of bullying they had experienced (Figure 1). Most students indicated that family members were the most significant source of bullying (29.8%), followed by nursing faculty members (20.9%), nurses at the hospital (15.3%), and university friends (12.7%).

Students were also asked about their actions towards bullying (Figure 2). One-quarter of nursing students reported that they pretend not to be upset and hide their discomfort when facing bullying (25.3%). Around 24.3% of students said they become more serious and talk to the person bullying them (24.3%). Other students indicated that they do not care about bullying (22.6%), act according to the student rights manual (10.1%), or complain to their superior (9.7%)

4. Discussion

The culture of bullying in nursing is prevalent internationally. Nursing students are vulnerable and often experience or observe bullying, leading them to question their future in nursing's "caring" profession. This study aimed to investigate the frequency of bullying and its relationship to the emotional state of 286 undergraduate nursing students in selected universities in the western region of Saudi Arabia.

The study revealed that most undergraduate nursing students (90.1%) reported exposure to bullying over the past 12 months; however, they had a relatively low frequency of

Table 2: Distribution of items on the bullying questionnaire ($N = 286$).

Items	Never		Other response		Mean score (0–4)	
	n	%	n	%	M	SD
(1) Angry yelling or shouting	100	35.0	186	65.0	1.08	0.99
(2) Using offensive language or inappropriate nonverbal signs in front of others	154	53.9	132	46.1	0.67	0.84
(3) Using teasing against you	111	38.8	175	61.2	1.09	1.07
(4) Using inappropriate nonverbal signals towards you and others	165	57.7	121	42.3	0.58	0.78
(5) Using belittling or undermining behavior for your work or efforts	110	38.5	176	61.5	1.22	1.17
(6) Underestimating the value of your academic efforts or work	110	38.5	176	61.5	1.22	1.18
(7) Spreading malicious rumours or allegations against you	206	72.0	80	28.0	0.44	0.85
(8) Threatening to give you a poor rating	168	58.7	118	41.3	0.66	0.93
(9) Denial of your academic achievement	165	57.7	121	42.3	0.83	1.20
(10) Threat of disciplinary action against you	199	69.6	87	30.4	0.50	0.90
(11) Unfair evaluation of your work or effort	88	30.8	198	69.2	1.40	1.20
(12) Excessive monitoring or constant criticism of your work	136	47.5	150	52.5	0.91	1.10
(13) Ironically making inappropriate jokes against you	178	62.2	108	37.7	0.68	1.02
(14) Assigning you tasks beyond your capacity continuously	105	36.7	181	63.3	1.44	1.40
(15) Setting expectations or impossible requirements for you	141	49.3	145	50.7	0.92	1.14
(16) Feeling ignored, marginalized, or physically isolated	175	61.2	111	38.8	0.67	1.00
(17) Changing your duties or tasks without being told	191	66.8	95	33.2	0.55	0.93
(18) Removing you from responsibilities without prior notice	251	75.2	71	24.8	0.35	0.71
(19) I was physically assaulted	259	90.6	27	9.4	0.11	0.39
(20) Deliberately humiliating you in front of others	194	67.8	92	32.2	0.46	0.79
(21) Putting you under undue pressure to produce	119	41.6	167	58.4	1.21	1.31
(22) Limiting your self-expression	162	56.6	124	43.4	0.76	1.09
(23) Trying to demoralize you	125	43.7	161	56.3	1.07	1.20
(24) Repeatedly reminding you of your mistakes	143	50.0	143	50.0	0.91	1.12
(25) Constant disregard for your opinions and points of view	138	48.3	148	51.7	0.88	1.10
(26) Hostile behavior	191	66.8	95	33.2	0.47	0.80
(27) Denial of learning opportunities	193	67.5	90	32.5	0.50	0.85
(28) I was treated badly or unfairly because of my race	245	85.7	41	14.3	0.23	0.67
(29) I was treated badly or unfairly because of my gender (i.e., being male or female)	195	68.2	91	31.8	0.64	1.09
(30) I have been treated badly or unfairly because of my incapacity or weakness	221	77.3	65	22.7	0.34	0.72

Table 3: Distribution of depression, anxiety, and stress scores ($N = 286$).

Variables	M	SD
DASS total (21 items, Cronbach's $\alpha = 0.95$)	20.9	15.7

DASS subscales	Total score		Normal		Mild		Moderate		Severe		Extremely severe	
	M	SD	n	%	n	%	n	%	n	%	n	%
Depression (7 items, Cronbach's $\alpha = 0.90$)	7.34	5.91	118	41.3	32	11.2	53	18.5	29	10.1	54	18.9
Anxiety (7 items, Cronbach's $\alpha = 0.86$)	5.94	5.19	120	42.0	41	14.3	30	10.5	27	9.4	68	23.8
Stress (7 items, Cronbach's $\alpha = 0.90$)	7.62	5.67	158	55.2	29	10.1	32	11.2	43	15.0	24	8.4

Table 4: Pearson correlation coefficient ($N = 286$).

Measures	1	2	3	4	5
(1) Bullying behavior	—				
(2) DASS total score	0.573**	—			
(3) DASS depression	0.499**	0.941**	—		
(4) DASS anxiety	0.543**	0.906**	0.768**	—	
(5) DASS stress	0.572**	0.961**	0.871**	0.823**	—
M	22.9	20.91	7.34	5.94	7.62
SD	19.6	15.7	5.91	5.19	5.67

exposure ($M = 22.9$, SD $= 19.6$ out of a total of 120). Reflecting these findings, a previous study in Saudi Arabia reported that most female students experienced bullying in their nursing education [24]. Existing literature indicates a large discrepancy in bullying prevalence. A recent literature review of 30 articles on bullying among nursing

TABLE 5: Analysis of variance of nursing students' academic year and the dependent variables ($N = 286$).

Measures	Nursing students' academic year								$F (3, 282)$	p
	First year ($n = 35$)		Second year ($n = 34$)		Third year ($n = 94$)		Fourth year ($n = 123$)			
	M	SD	M	SD	M	SD	M	SD		
(1) Bullying behavior	16.6	19.2	18.8	22.9	27.57	19.6	22.2	19.6	3.58	0.014
(2) DASS total	18.8	17.2	21.8	20.6	25.4	14.5	17.7	13.7	4.71	0.003
(3) DASS depression	6.97	6.74	7.97	7.30	9.06	5.60	5.96	5.12	5.27	0.001
(4) DASS anxiety	5.54	5.51	6.32	6.67	7.12	5.01	5.05	4.63	3.01	0.031
(5) DASS stress	6.28	5.74	7.55	7.22	9.28	5.21	6.74	5.26	4.47	0.004
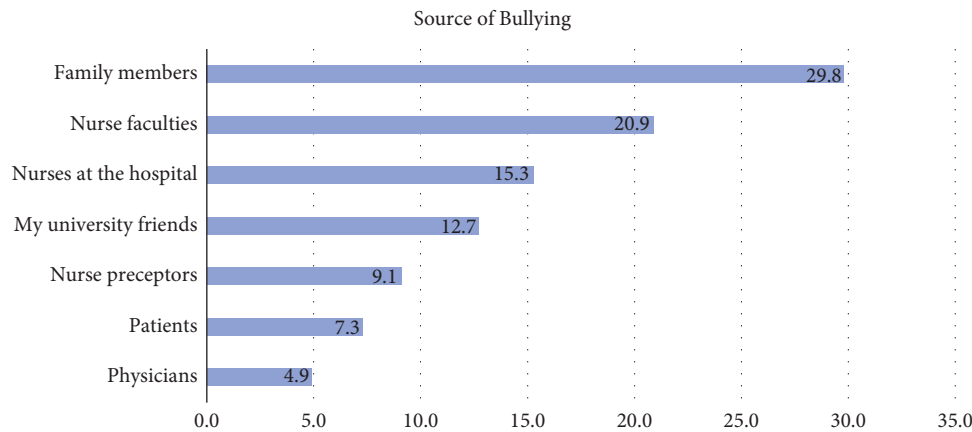
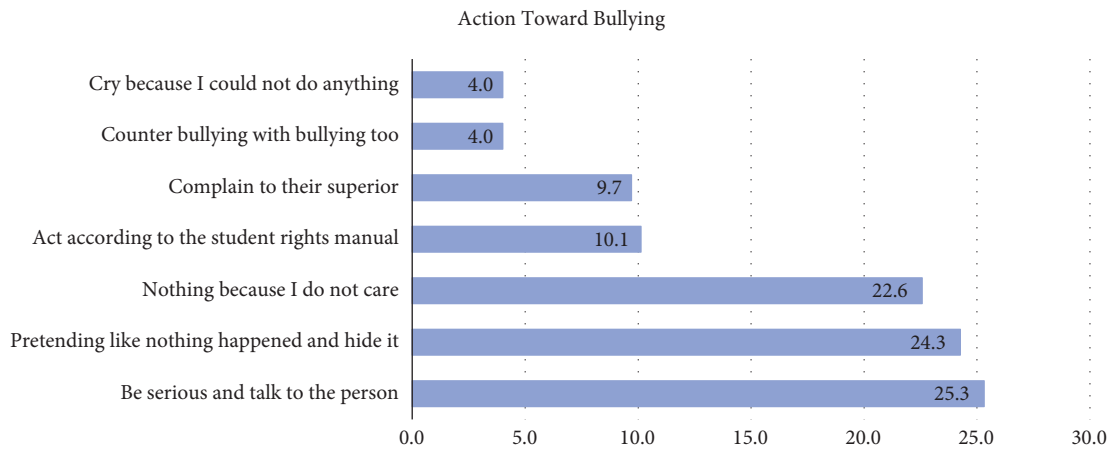FIGURE 1: Student identified source of bullying.

FIGURE 2: Students' action towards bullying.

students reported that the prevalence varied from 9 to 96% [31]. In a Turkish study, 60% of nursing students reported that they had experienced at least one of 13 bullying behaviors at daily and weekly frequencies during the last six months [32]. A study conducted in eastern Saudi Arabia reported an almost 50% rate of exposure to bullying among medical and nonmedical university students [6]. International studies have reported a 50.1% prevalence of bullying among Australian undergraduate nursing students and a 35.5% prevalence among UK students [33]. In a Canadian study, Clarke et al. [28] reported that 88.7% of nursing students had experienced at least one act of bullying. The prevalence of bullying in these studies appears to be less than in this study. This may be due to the ratio of males to females in medical, nonmedical, and nursing studies. Most of this study's participants were female; generally, females experience more bullying than males [6]. The difference in bullying prevalence may also be due to the variation of questionnaires used in each study, which may only examine exposure to bullying in clinical settings.

This study found a high prevalence of depression, anxiety, and stress symptoms among Saudi nursing students.

Most of the participants reported mild to extremely severe symptoms of depression (58.7%), anxiety (58%), and stress (44.8%). It is challenging to directly compare depression, anxiety, and stress levels in this study's sample with non-university Saudi populations due to a lack of published studies in this area. Furthermore, any recent comparison of depression, anxiety, and stress levels in students must consider the psychological toll of the COVID-19 pandemic. This is relevant for this study as the data collection period was around 2020. For example, a study examining the prevalence of depression, anxiety, and stress among the general Saudi population revealed that the prevalence was 35.6%, 20.4%, and 23.0%, respectively, among people under 35 during the Covid-19 pandemic [34]. Another recent Saudi study using the DASS-21 tool revealed that nursing students showed lower rates of depression (43.3%), anxiety (37.2%), and stress (30.9%) compared to this study [35]. A recent Saudi study revealed relatively similar levels of depression, anxiety, and stress among medical students (55.8%, 45.8%, and 37.6%) and nonmedical students (52.1%, 60.2%, and 38.3%) compared to this study results [36]. An Australian study on nursing students in a public university in Sri Lanka identified a high prevalence of depression, anxiety, and stress symptoms. Most of the respondents reported mild to extremely severe symptoms of depression (51.1%), anxiety (59.8%), and stress (82.6) [37].

Regarding marital status, in accordance with our study, Sravani et al. [38] reported that married students showed significantly higher score of DAS than unmarried among undergraduate dental students. Interestingly in contrast to that, several studies conducted in Saudi Arabia found no significant relationship between undergraduates' marital status and their DAS [7, 22, 39]. More research is needed to clarify the effect of marital status on undergraduate students' emotions status in Saudi Arabia.

DASS-21 is a symptom-based scale in which the participants may exaggerate or underestimate their symptoms. This might lead to biased responses to these questionnaires, which may justify the differences between studies. Therefore, future research should be conducted to detect the prevalence of depression or anxiety disorders among nursing students. A recent study that used a different tool revealed that compared to their Australian and South African counterparts, Saudi Arabian nursing students suffered from more anxiety and depression and scored lower on the Mental Health Inventory [40]. This alarming finding highlights the increased risk of psychiatric morbidity among Saudi Arabian nursing students.

Nursing students face stressful events during their education that could negatively impact their psychological well-being. This is corroborated by Rathnayake and Ekanayaka [37], who stated that nursing students' stress is associated with a lack of professional knowledge and skills and lower clinical performance. Similarly, Shamsuddin et al. [41] stated that high academic expectations are stressful and can harm students' physical and mental health.

The findings of this study highlight the need for depression, anxiety, and stress management interventions and increased counseling facilities for nursing students.

Furthermore, universities in Saudi Arabia should consider developing and implementing strategies to promote the emotional well-being of nursing students. As nurses constitute a large proportion of the health professional workforce, it is crucial to preserve their emotional well-being and prevent the long-term effects of negative emotions on nursing students.

Unexpectedly, the findings of this study revealed that third-year nursing students were more depressed, stressed, and anxious than other students. This contradicts the findings of Aboelyzeed [42] and Timmins et al. [43], who found that nursing students' stress and anxiety increased over the nursing program and were highest in the final year of study. More than half of their study subjects in their fourth and final years had the highest level of anxiety. They explained this finding by suggesting that increased stress in the last year of nursing education was responsible for elevating students' anxiety. This study's results are also contradicted by Wedgeworth [44], who studied the difference between prenursing, early nursing, and late nursing students and revealed that late nursing students had the lowest state and trait anxiety levels compared to prenursing and early nursing students. The prenursing and early nursing sample groups had the highest state and trait anxiety levels. Additional studies are needed on this topic to determine stress levels during academic semesters. Furthermore, nursing colleges should consider balancing the curriculum load across semesters.

The bullying experiences of nursing students were assessed using the 30-item bullying questionnaire. The most common items reported as part of bullying behavior included students' experiences of continually being assigned tasks beyond their capacity. This was followed by receiving unfair evaluations of their work and others underestimating the value of their academic work. Mohamed [24] stated that the most frequent bullying behaviors reported by Saudi female nursing students were verbal. These students were often threatened with poor evaluations and had their work belittled. Their significant clinical or academic achievements often went unacknowledged. AlMulhim et al. [6] noted a similar phenomenon among medical students. They found that the most common forms of bullying among this group were verbal abuse and unnecessary pressure to produce work.

In this study, the least common bullying behaviors reported by nursing students were being physically assaulted and unfairly treated because of race, incapacities, or weaknesses. Similarly, Mohamed [24] found that the least reported bullying behaviors were being treated poorly based on disability, racially motivated bullying, and physical abuse.

Unexpectedly, most students indicated that family members were the most significant source of bullying, followed by nursing faculty members (20.9%). In Mohamed's [24] study, around half of the respondents reported that a classmate was the most likely source of bullying, followed by faculty members and clinical instructors. After this, the most likely source of bullying was patients or patients' families. In addition, previous studies have reported that nursing students experienced and witnessed bullying

behaviors at various frequencies, most notably by clinical instructors and staff nurses [28]. The discrepancy between this study and previous research could be due to the nature of the question that students were asked. In this study, they were asked an open-ended question, "what is the source of the bullying?" This allowed participants to discuss factors unrelated to nursing. Previous studies have restricted answers to this question by asking students to choose from specific categories, such as clinical settings and educational settings.

The link between family members and bullying suggests that interventions must start at home. Health professionals should ask about family bullying and intervene to prevent and reduce the health burden associated with this form of bullying. Furthermore, future research should examine the relationship between nursing students and nursing faculty members. Several initiatives have been introduced at Saudi Arabian universities to prevent this bullying. However, this study revealed that most nursing students did not read the list of students' rights or were unsure of its content.

Bullying victimization has recently emerged as a serious health concern for students. Bullying is often expected among students; however, its prevalence and effects may vary between ages or countries. Furthermore, although several studies have considered it a significant cause of stress and physical and emotional problems, its exact relevance to health and well-being is uncertain. This study showed that bullying behavior was positively correlated with students' scores for depression, anxiety, and stress. Bullying behavior was positively correlated with students' scores for depression, anxiety, and stress. Bullying behavior also predicted students' depression, anxiety, and stress. In accordance with our study, bullying behavior predicts the onset of emotional problems in adolescents [45], depressive symptomatology and suicidal ideation [46], anxiety [47, 48] and stress [49].

Setiadi et al. [50] analyzed the relationship between bullying and depression among undergraduate health students and found an association between bullying and the incidence of depression. Another study by Martínez-Monteagudo et al. [51] reported that being a cyberbullying victim increases the probability of suicidal thinking and leads to high levels of depression, anxiety, and stress. A previous study by Kowalski and Limber [52] indicated that depression, anxiety, self-esteem, and self-reported health problems are significantly related to bullying. Jadambaa et al. [53] stated that there is convincing evidence for a causal relationship between bullying victimization and mental disorders. They also found that bullying victimization significantly contributes to anxiety and depressive disorders. The results of a previous study indicated that university learning causes high anxiety levels in former and current victims of peer bullying. Unlike students who had never experienced bullying, victims reported more frequent anxiety and higher levels of context-specific social anxiety across various university learning environments.

A history of victimization and poor social relationships predicts the onset of emotional problems in adolescents [45]. A Ghanaian study found that bullying decreased confidence and caused stress and anxiety in nursing students [54].

Investing and implementing evidence-based intervention programs to reduce bullying victimization in Saudi Arabian nursing schools could reduce negative psychological symptoms and improve the mental health of Saudi Arabian nursing students.

4.1. Relevance for Clinical Practice. An in-depth understanding of different sources of bullying and their impact on emotional state allows clinical practitioners to reduce depression, anxiety, and stress in their respective areas. This information benefits all allied health practitioners by enabling administrators to develop awareness programs, preventive policies and procedures, training, and supportive measures. These measures can help to reduce emotional stress, which can lead to lower turnover rates and healthcare costs.

4.2. Recommendations. Nursing educators, academic advisors, and families should be educated to identify possible emotional signs of bullying, such as depression, anxiety, and stress. These groups should also increase their awareness of students' bullying behavior. Nursing schools need to educate students about the problem of bullying, and how to identify and respond to it, to prevent bullying from happening in the first place. Further research should include other universities in Saudi Arabia to collect relevant information and data on similar situations. This will further increase the understanding of bullying behavior and its impact on the emotional state of nursing students.

5. Conclusion

This study found a high prevalence of depression, anxiety, and stress symptoms among Saudi Arabian nursing students. Most of the respondents reported mild to extremely severe symptoms of depression (58.7%), anxiety (58%), and stress (44.8%). Around 90.1% of the nursing students reported exposure to bullying over the past 12 months with a relatively low frequency of exposure ($M = 22.9$, SD $= 19.6$ out of 120). The most common items reported as part of bullying were students' experiences of continually being assigned tasks beyond their capacity, followed by unfair evaluations of their work and other people underestimating the value of their academic work. Unexpectedly, most students indicated that family members were the most significant source of bullying, followed by nursing faculty members (20.9%).

Data Availability

The data that support the findings of this study are available upon request.

Ethical Approval

This research was approved by the Ethics Committee of College of Nursing at Taibah University in Saudi Arabia: reference (TUCN-REC)-08042020.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

All authors have contributed to this research. Nada A AbuAlula developed research proposal and research conceptualization. Abdulaziz Mofdy Almarwani developed the research methodology and performed the formal analysis. Daniel Mon Mamanao and Naif Salem Altarawneh participated in data collection and data arrangement. Mohammed R. Alharbi participated in developing the research methodology and assisted researchers in data collection. Inas A Ebeid participated in the process of research conceptualization and assisted Nada A AbuAlula in writing research proposal. Nada A AbuAlula and Abdulaziz Mofdy Almarwani wrote the initial manuscript of this study. Abdulaziz Mofdy Almarwani and Mohammed R. Alharbi performed the analysis and wrote the results section. Daniel Mon Mamanao and Naif Salem Altarawneh wrote the discussion section, and the manuscript was reviewed multiple times by Nada A AbuAlula and Inas A Ebeid.

Acknowledgments

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Hindawi

Research Article

Work Engagement among Acute Care Nurses: A Qualitative Study

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Aims. To understand how Omani nurses conceptualize work engagement, explore factors influencing engagement, and identify strategies to improve work engagement. *Design*. A qualitative study design. *Methods*. Semistructured interviews were conducted with twenty-one Omani nurses from four acute-care hospitals. Interview transcripts were examined using directed content analysis. *Results*. Participants defined work engagement as a positive state where nurses are engaged physically, emotionally, and mentally with work. Mentally engaged nurses' minds are occupied with patients even when they are off duty. Organizational factors affecting work engagement were leadership, teamwork, autonomy, pay, and job demand. Individual factors affecting engagement included considering nursing a rewarding profession. A social factor was family commitments. Strategies suggested to improve engagement included improved pay and monetary incentives, working system flexibility, open-door policy, performance feedback, recognition, and resources. *Conclusion*. Mentally engaged nurses are attached to work even when they are off duty. Nurses' gait and facial expressions can indicate high or low work engagement. Nurses with family obligations felt drained of energy, affecting their vigor and enthusiasm at work. *Implications*. Management skills and practices impact work engagement. Nurse's feedback can be used to improve practice and design interventions that promote nurses' engagement.

1. Introduction

Having disengaged nurses in any healthcare organization is very costly; a Press Ganey Associates study found that having one disengaged nurse can cost the organization $22,200 in lost productivity [1]. Generally, disengaged employees are more likely to have a low level of organizational commitment, low morale and productivity, and high turnover [2]. Highly engaged nurses are essential for any healthcare organization so organizations can enjoy a wide range of favorable organizational outcomes, maintain effectiveness, and reduce the cost of disengagement.

Work engagement supports productivity and retention, making it of great interest to scholars and practitioners in various disciplines ranging from business to healthcare [3, 4]. Nursing work engagement has captured the attention of nursing scholars and practitioners looking to resolve healthcare challenges such as high medical costs, worldwide shortage of healthcare workers, rising medical error rates,

and increasing pressure to provide high-quality care [3]. Adding to those concerns, the nature of the nursing profession leads nurses to experience stress, burnout, high absenteeism, high turnover, and a low level of satisfaction, which negatively affects the nurses' work engagement [5]. To face these challenges, many organizations have asked their leaders to initiate and maintain a work engagement culture among their workforce [6].

2. Background

Work engagement is "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" [7]. *Vigor* is characterized by having high levels of energy and persistence while working and facing difficulties. *Dedication* refers to strong involvement in one's work along with experiencing feelings of enthusiasm, pride, and challenge. *Absorption* denotes full concentration and difficulties with detaching oneself from work.

The link between nursing work engagement and favorable organizational outcomes is well established. Compared to nurses who do not feel engaged, nurses who feel engaged seem to be more satisfied with their job [8, 9] and have less intention to leave their job [10]. Nurses who are more engaged in their work also demonstrate innovative behaviors [11] and affective organizational commitment [8].

Despite nursing scholars' and practitioners' increasing interest in work engagement, most work engagement studies were conducted in Western and European countries, and little is known about work engagement in other countries. As a result, our knowledge about factors influencing nurses' work engagement and strategies to improve nursing work engagement in Oman or similar contexts is limited. In particular, 96 articles in work engagement were reviewed by the principal investigator (PI), who determined that most of the nursing studies were conducted in European and Western countries. Some of the main geographical sources of European nursing work engagement literature were from Spain (e.g., [8, 12]), Belgium (e.g., [9, 13]), and Ireland (e.g., [14]). In regards to Western countries, many studies were conducted in the US (e.g., [15–17]) and some studies were conducted in Australia (e.g., [15]). The main geographical source of Eastern nursing work engagement literature was from China (e.g., [18]). There were also limited studies from Japan (e.g., [19]) and Malaysia (e.g., [20]).

Western and European countries have different economic systems, educational systems, and cultural values than eastern countries [4, 21]. Cultural variations and features could affect work engagement [4, 22]. In particular, factors, antecedents, and/or predictors of work engagement might be meaningful in one culture and not meaningful to another one [4].

No previous peer-reviewed studies were conducted in Oman; however, one study, conducted in Saudi Arabia, has a cultural context similar to Oman. This cross-sectional study examined work engagement among nurses and the relationship between work engagement and personal characteristics [23]. Investigators did not explore factors influencing work engagement or recommend strategies to improve nursing work engagement, preventing others in a similar cultural context from effectively utilizing the findings.

In addition, most work engagement studies have used quantitative methods [3]. Quantitative research provides valuable insight into nursing work engagement; however, these studies relied on self-report questionnaires and used standardized close-ended questionnaires in which respondents were unable to express their opinions and views. Qualitative studies allow researchers to explore in-depth factors influencing work engagement from the participants' points of view; participants might have their own views, thoughts, and experiences that could not be explained through standardized surveys and questionnaires. Participants might also explain aspects in work engagement that might be important in one nation and not important to another nation because of cultural variations. Qualitative research methods are used to describe life experiences from the perspective of the participants, not the perspective of the researchers [24], and are useful to understand meanings or knowledge constructed by people involved in the study [25]. Furthermore, using qualitative approaches might yield discoveries of "unexpected knowledge" that would be difficult to obtain through close-ended questions [26]. Qualitative studies are needed to provide in-depth knowledge on work engagement because individuals may ascribe different meanings to work engagement, and factors influencing an individual's work engagement may vary greatly.

The problem addressed by this study is culture, nursing, personal lives, and the healthcare system in Oman which are different than in other countries, and therefore, existing literature is inadequate to understand nursing work engagement in Oman. A qualitative study was needed to explore the phenomena of work engagement from the Omani nurses' perspective.

3. The Study

3.1. Aims.
The aim of the study was to understand work engagement among Omani nurses working in acute-care hospitals. The research questions were as follows:

(1) How do Omani nurses working in acute-care hospitals conceptualize work engagement?

(2) What organizational, individual, and social factors affect the work engagement of Omani nurses working in acute-care hospitals?

(3) What strategies do Omani nurses working in acute-care hospitals suggest to improve work engagement?

4. Methods

4.1. Theoretical Framework.
The job demands-resources (JD-R) model was used to guide this study. The model directed the approach to understanding work engagement in Omani hospitals via both the research questions and the specific interview questions used to elicit data collection. The JD-R model consists of two specific sets of working conditions that predict employees' well-being regardless of the occupational setting: job demands and job resources [27]. *Job demands* refer to the physical, psychological, social, or organizational job features requiring continuous physical or psychological effort. *Job resources* refer to the job features that help reduce job demands, achieve work-related goals, and improve personal growth.

4.2. Design.
This study used a qualitative design, which allows the researcher to make sense of the participants' world and their experiences in their natural settings; the researcher stays close to the data and produces a description of the participant's experience in language similar to the participant's own language [28, 29].

4.3. Study Setting and Sample.
The study population was Omani nurses representing four acute-care hospitals in Oman. These hospitals are in different regions and provinces throughout Oman and provide various specialty services to

the population such as general medicine, cardiology, general surgery, obstetrics and gynecology, pediatrics, ambulatory, and inpatient services. The Royal Hospital has a population of 668 Omani nurses, Sultan Qaboos Hospital has 304 Omani nurses, Sohar Hospital employs 502 Omani nurses, and Al Rustaq Hospital has a population of 380 Omani nurses [30]. Eligibility criteria included the following: (a) Omani nurses working in acute-care hospitals and (b) two or more years of experience in nursing. Generally, the sample size of qualitative studies ranges between 20 and 30 interviews [31]. Prior qualitative studies on work engagement among nurses reported a sample size of 20 [14]. PI thus aimed to recruit between 20 and 25 participants.

PI received authorization from the directors of nursing in the selected hospitals as well as Institutional Review Board approval in Oman and at the University of Iowa. After obtaining approval, PI distributed a recruitment flyer in Arabic and English languages. A four-week recruitment period following posting of the recruitment message in the selected hospitals was allowed. After the interview, participants were also asked to point out the flyer to other potential participants if they felt comfortable doing so. PI reviewed the exempt information sheet with potential participants over the phone and then sent it via an email link. The link to the exempt information sheet was sent using Qualtrics, an online survey application. The participants were instructed to read the exempt information sheet thoroughly by themselves and were given a week to think and make their decision about participation in the study and to ask the investigator if they have additional questions. Clicking in the link "I consent to participate, begin the study" after reviewing the exempt information sheet indicated that the participants were willing and agreeing to participate. The exempt information sheet was available in Arabic and English languages.

To avoid job repercussions, directors of nursing in the selected hospitals did not know who participated. Not only did the researcher call the participants directly to arrange for the interviews, but also the participants were assured that their immediate supervisor would not know their responses to the questionnaires and that their feelings towards the topic and their names would be kept confidential, and any information they provided would be anonymous.

4.4. Data Sources/Collection. Prior to data collection, a semistructured interview guide was developed and piloted with three nurses. The questions were developed using existing work engagement literature (e.g., [5, 14, 27]) and by consulting qualitative experts. PI conducted study interviews using the guide via a secure Skype for Business application; the interviews lasted for 60 minutes and were audio-recorded. The interviews were conducted in the participants' native Arabic language, allowing free expression of thoughts. Basic demographic and work-related information were collected via an online survey. The participants were identified by using numbers (e.g., P01) to preserve privacy and confidentiality. Recruitment and data collection were stopped when data reached saturation, that is, when no new ideas were suggested by participants.

4.5. Data Analysis. Directed content analysis as described by Hsieh and Shannon [32] was used to analyze the interview data. The steps were as follows: (1) transcription, (2) identification of key concepts or variables and determination of operational definitions/description, (3) reading transcripts and highlighting text, (4) coding, (5) examination of data, and (6) selection of quotes. Microsoft Word was used for manual coding.

4.6. Ethical Considerations. Ethical considerations of human subjects were maintained through Institutional Review Board (IRB) review, consent, and protection of the identifiable information. To ensure human subjects' protections, ethics committee's approval was obtained from the University of Iowa and the Ministry of Health in Oman. Consent was obtained from each participant before participation in the study, and the participants were informed that their participation was completely voluntary.

4.7. Rigor. Four typologies of validity were used in this study as follows: descriptive validity, interpretive validity, theoretical validity, and generalizability [33]. Strategies implemented to establish descriptive validity included recording interviews and ensuring accurate transcription and translation, not omitting information, regardless of understanding and/or perceived relevancy, and providing "simple counts" to support claims about the prevalence of ideas among participants. To establish the interpretive validity, PI employed strategies such as trying to understand the perspectives of the participants and the meanings participants attached to their words and phrases and providing verbatim quotes to accurately describe the participants' subjective viewpoints and meanings. For theoretical validity, PI avoided artificially interpreting data to fit a specific theory. To establish generalizability, thorough descriptions about the context of the research and the study participants and rich, thick descriptions addressing the aims are presented so readers can determine the applicability of these findings to their context.

5. Findings

5.1. Participants. Twenty-one Omani nurses working in four acute-care hospitals participated. Table 1 displays participant demographics.

5.2. Data Analysis. Although some variations existed within participants' stories, analysis of the data revealed 11 categories and eight subcategories, which are summarized in Table 2.

5.2.1. RQ1: How Do Omani Nurses Working in Acute-Care Hospitals Conceptualize Work Engagement?. Three categories were identified in answer to RQ1: definition of work engagement, signs of a nurse with high work engagement, and signs of a nurse with low work engagement.

TABLE 1: Participant demographics.

Variables	n	%
Sex		
Female	17	81
Male	4	19
Age		
25–34 years	13	62
35–44 years	8	38
Marital status		
Married	15	71
Single	6	29
Having children		
Yes	14	67
No	7	33
Highest nursing educational degree		
Bachelor of science in nursing	10	48
Nursing diploma	11	52
Postbasic diploma or specialized training certificate		
Yes	10	48
No	11	52
Type of shift		
Three shifts	11	52
Morning shift only	10	48
	Mean (range)	SD
Years of nursing experience	12.7 (4–22)	5.1
Years of experience in current department	8.8 (6 months–20 years)	5.6

(1) Category One. Definition of Work Engagement. Omani nurses working in acute-care hospitals conceptualized *work engagement* as a positive state where nurses are "engaged physically and mentally with work" (Participant no.16 [P16]). Work engagement is more likely to occur when nurses experience a sense of loving one's job, pride, satisfaction, achievement, importance, interest, belonging with their organization, and enthusiasm in their job.

Physically engaged nurses mean nurses exert more effort and energy than expected to accomplish work goals and perform extra job responsibilities. A physically engaged nurse was described by participants as a "hard worker" (P02), "energetic" (P13), "have enough energy to use it wisely" (P11), "accomplish his work and perform extra roles... my contributions to the workplace mean engagement" (P18), and "I can give as much as I can" (P09).

To the participants, *mentally engaged* meant nurses who are focused, immersed, and attached to work even when off duty, as this participant explained, "If I travel outside my country, I feel engaged with my work. It comes to my mind the patient in bed number one, what happened to him? Is he extubated or not?" (P01). Another participant gave the example, "if I see the unit is busy, I stay with them even if my duty is finished... My evening shift ends at 9:00 pm but sometimes you see my nursing documentation is until 11 pm or 10:45 pm... I do not mind" (P15).

(2) Categories Two and Three. Signs of High and Low Work Engagement. Participants explained high- and low-engaged nurses can be recognized by how they show interest and enthusiasm, perform tasks and responsibilities, and express attitude while coming to work.

First, nurses who have high work engagement are recognized by how they demonstrate interest and enthusiasm at work. The participants explained that highly engaged nurses are responsible, hard workers, committed, innovative, and interested in improving their units. One participant described highly engaged nurses as those who "contribute and give up to their best, they keep the work's interest above other interests, and it is the main priority when at work" (P19). Another participant gave the example: "They are focused on work and do not bring their personal life issues to work. You see highly engaged staff separate their personal life from work when they come to duty" (P13). Participants frequently discussed how highly engaged nurses are cooperative and willing to help, especially when the unit had an unexpected staff shortage or a disaster. Participants gave the examples that a highly engaged nurse would "agree to cover any sick leaves" (P10), "come to the unplanned duty if called even if he has a strong excuse not to come" (P04), and "say if you need any help in the unit, just call me... I am ready to come" (P21). However, many participants discussed that poorly engaged nurses were not interested in performing extra tasks or improving their areas; those nurses just attended their duty by completing mandatory working hours and go home. One participant described "I always hear them saying we work according to the amount of salary we earn" (P04).

Second, nurses with high work engagement were recognized by how they performed tasks and responsibilities. One study participant pointed out a highly engaged nurse "looks to his assignment and he is satisfied" (P14). Participants frequently discussed how highly engaged nurses will work with conscientiousness; for example, "highly engaged staff are providing care from their heart, it is not the matter that I have to finish my duty and go home" (P16). On the other hand, nurses with low work engagement are viewed as careless and irresponsible, as this participant explained, "the low-engaged nurse has no sense of responsibility at all... when I receive a patient from the previous shift, I find a lot of nursing care is not carried out, a lot of pending requests" (P21).

Finally, nurses with high work engagement are recognized by their attitude while coming to work. One participant described how they could detect high work engagement from another's "gait when coming to duty... he comes and you can tell, he will spend a lot of effort and give more" (P07), and someone being "active and energetic when they come to duty regardless of their personal issues at home" (P13). Another participant discussed the facial expression of nurses, saying "it is obvious that if I love the work, you will find me coming to duty smiling, talking with others and greeting others" (P04). In contrast, "low work engagement staff distribute negativity among others" (P08) and frequently complain. Two participants described how they could detect low work engagement staff: "not energetic... forced to come to duty" (P13) and "looks upset... comes to operation theater and puts his head down, walks slowly. Even if you try to make him laugh, it is difficult to see his teeth and his smile" (P03).

TABLE 2: Research questions, categories, and subcategories for work engagement conceptualization, factors, and strategies.

Research questions	Category	Subcategory
RQ1: How do Omani nurses working in acute-care hospitals conceptualize work engagement?	(i) Definition	
	(ii) Signs of a nurse with high work engagement	
	(iii) Signs of a nurse with low work engagement	
RQ2: What organizational, social, and individual factors affect the work engagement of Omani nurses working in acute-care hospitals?	(i) Organizational	(i) Leadership
		(ii) Teamwork and interprofessional relationships
		(iii) Autonomy
		(iv) Pay and monetary incentives
		(v) Job demand
	(ii) Social	(i) Family commitments
	(iii) Individual	(i) Rewarding profession
		(ii) Personal traits
RQ3: What strategies do Omani nurses working in acute-care hospitals suggest to improve work engagement?	(i) Pay and monetary incentives	
	(ii) Hospital policies	
	(iii) Management practices and skills	
	(iv) Recognition	
	(v) Resources	

5.2.2. RQ2: What Organizational, Social, and Individual Factors Affect the Work Engagement of Omani Nurses Working in Acute-Care Hospitals?. Three categories and eight subcategories emerged to answer RQ2 about factors that affected the work engagement of Omani nurses, as seen in Table 3.

(1) Category One. Organizational Factors. Five subcategories of organizational factors were identified as follows: leadership, teamwork and interprofessional relationship, autonomy, pay and monetary incentives, and job demand. Table 3 displays subcategories of organizational factors that affected nurses' engagement and representative data from the interviews.

(i) Leadership. All participants discussed the attitudes, characteristics, and skills of charge nurses ($n = 21$). Examples of characteristics that enhanced work engagement were effective communication, effective human resource management, caring, flexibility, involvement, effective performance appraisal skills, fairness, and appreciation. Participants explained that charge nurse's positive attitudes not only boosted their work engagement but also impacted their intention to stay as this nurse participant pointed out: "she (charge nurse) is very helpful, supportive, has a sense of humor... she is one of us...Maybe because of her I am still there for 11 years and I did not ask for a transfer out" (P15).

Thirteen study participants discussed the importance of the charge nurse for their engagement, and eight participants described how poor charge nurse leadership lessened their level of work engagement as this participant explained:

"... my energy for work is lower than before. My passion for work became low. There are some days when I do not want to go to work never...never...never...because I know there will be someone [charge nurse] at work who will make me upset (P16)."

In addition, 14 participants discussed nursing administration's poor leadership practices. Ineffective human resource management practices were most discussed, including nursing shortage, maldistribution of staffing, ineffective staff transfer mechanism between acute-care hospitals and primary healthcare institutions, favoritism, and lack of nursing administration meetings with nurses. One participant explained how poor nursing administration attitudes and management practices impacted her work engagement: "these affect my work engagement because I will not give the best quality care to the patients if I have workload and high patient census and there is not enough support" (P02).

(ii) Teamwork and Interprofessional Relationships. All study participants described how their work engagement level increased when they were able to work in teams and had good relationships with other healthcare professionals. One participant explained how teamwork impacts her work engagement: "I was excited to go to work because I have the best team ever ...the good thing that makes me continue in the unit until now is the teamwork" (P02).

(iii) Autonomy. Autonomy refers to how much freedom the participants had while carrying out nursing assignments. Likewise, all study participants explained job autonomy increased their level of work engagement as this participant described: "I feel when you are going to work and you have the autonomy to do the work, your engagement to work increases, you love your work, and you feel you are proud of what you are doing" (P15).

(iv) Pay and Monetary Incentives. Twenty study participants indicated that their salary was not fair and acceptable compensation for their years of experience, nature of work, place of work, type of shift, and certificates. All participants who pursued higher education ($n = 10$) and/or worked in specialized/critical areas criticized making the same salary as general nurses who worked in primary healthcare institutions or nonspecialized areas. Many participants explained how unfair pay affected their enthusiasm for their job, such as this participant: "We have a lot of nurses who are burned out and asked for a transfer out of the hospital...you are working in ICU and there is no risk allowance" (P20).

(v) Job Demands. Participants described job demands in their organizations that lessened their work engagement level. Job demands included workload ($n = 21$), shift ($n = 11$), and patient harassment and demands ($n = 7$). The factors contributing to workload discussed by participants were high number of patients ($n = 21$), shortage of nurses and healthcare professionals ($n = 20$), shortage of equipment and supplies ($n = 13$), performing nonnursing tasks ($n = 6$), ineffective human resource management ($n = 5$), and performing additional responsibilities ($n = 2$). All study participants expressed that their high workload and time pressure affected patient safety because they did not have time to perform safe and effective nursing care. One study participant discussed how workload affects his enthusiasm, "I have enthusiasm when I go to work. I go and I am not hassled or upset. This enthusiasm does not last for the whole shift, because of the workload I feel my enthusiasm becomes gradually low" (P17).

In a notable overlap with the social factors' category described next, all 10 married participants who worked rotating shifts described how their spouses preferred them not to work weekends, holidays, and night shifts, leading to conflict. Some married female participants expressed that their husbands were not happy about their work, particularly after having children, and pressured them to request changing their duty or unit to one with no night shifts. One participant described, "sometimes, he (husband) pressures me and tells me the kids are the main priority if they are sick or my kids have something. I have to request time off, ask my colleagues to exchange the duty...it affects my work...my thinking" (P20).

Many participants discussed how working in the night shift for a long time (i.e., more than ten or fifteen years) made them feel tired, exhausted, and sleepless and affected their engagement, as this participant explained with her experience with the night shift and on-call duty, "I will be stressed and sometimes not prepared to go to work...It is the most difficult time for my psychological and physical

TABLE 3: Subcategories about organizational factors affected the work engagement of Omani nurses working in acute-care hospitals.

Category	Subcategory	Description	Examples
	(i) Leadership	Negative and positive comments about charge nurses' and nursing administrations' decisions, management, and communication	"Our charge nurse is very supportive" "She is not good at distributing staff" "She shouts at us" "Nursing administration is only there for punishment"
	(ii) Teamwork and interprofessional relationship	Participants described the team in the unit, friends at work, and relationships with other healthcare workers	"I have the best team ever and the staff are excellent"
	(iii) Autonomy	Comments about how much freedom the participants had while carrying out nursing assignments	"I feel I have the full autonomy to do my work and I am not restrained"
Organizational	(iv) Pay and monetary incentives	Comments about low pay and unfair or absence of incentives	"There is unfairness, the salary is the same for those nurses with BSN and those with a nursing diploma"
	(v) Job demand	Comments about nursing practice environment's stressors that required participants to perform extra efforts to perform duties and achieve work goals	
	(vi) Workload	Comments about having more work than the participants can perform and should be accomplished in a specific time	"We are short of 13 staff nurses to do what we supposed to do"
	(vii) Shift	Comments about the rotating shifts	"The difficult thing is the night shift"
	(viii) Patient harassment and demands	Comments about behaviors and attitudes expressed by patients or their relatives to nurse participants at work	"Some patients come for fighting and disturb your mood especially if the shouting was in front of everybody"

health, and the issue after the night shift was being in many road traffic accidents" (P10).

(2) Category Two. Social Factors

(i) Family Commitments. Only one substantial subcategory of social factors emerged: family commitments ($n = 14$) to address RQ2. Family commitments refer to participants' responsibilities at home and their dedication to meet the needs of their children and other family members. Nurses with family commitments may occupy their thoughts at work with home responsibilities waiting for them when they finish their duty or have less enthusiasm for work in general. As this participant voiced:

> "We have a lot of workload (at work) and at the same time, I am thinking of my other responsibilities that are waiting for me after I finish my duty, especially if I need to clean my home or look after my small child if he is sick (P11)."

(3) Category Three. Individual Factors. Two subcategories of individual factors were identified: rewarding profession and personal characteristics. Table 4 lists subcategories for individual factors.

(i) Rewarding Profession. All participants found nursing to be a rewarding profession, meaning participants had positive perceptions and feelings towards the nursing profession. The most rewarding aspects of the participants' nursing job were caring for patients, acquiring knowledge and skills, noticing an improvement in patients' condition, gaining rewards from God, hearing prayers from patients and their relatives, and being known by people for their excellent nursing care. The participants felt emotionally engaged and described feeling "proud," "satisfied," and "loved," despite the challenges of their profession. This participant explained the rewards impacting their work engagement: "I am very effective in the community...I feel I made a fingerprint in my work that is known by everybody at work. This makes me very proud of myself as a nurse" (P12).

(ii) Personal Characteristics. Many participants discussed personal characteristics that affected their level of work engagement ($n = 17$). The most common positive personal characteristics discussed by nurse participants were being energetic, hardworking, and competent. These characteristics impact participants' level of work engagement; acquisition of skills made them good advocates for patients and improved confidence level, vigor, and enthusiasm at work as this participant describes, "I go with enthusiasm for my work...I am trying to do something new..." (P12).

5.2.3. RQ3: What Strategies Do Omani Nurses Working in Acute-Care Hospitals Suggest to Improve Work Engagement?. The top suggestions from participants were related to pay and monetary incentives ($n = 20$, 95%), hospital policies ($n = 18$, 86%), management practices and skills ($n = 18$, 86%), recognition ($n = 14$, 67%), and resources ($n = 10$, 48%).

Table 5 lists the categories for RQ3 and representative data from the interviews.

Improving pay and providing monetary incentives for nurses with specialization and higher education were the most common suggestions from participants to improve work engagement ($n = 20$). Most participants also suggested policy changes ($n = 18$), including (1) increasing staff of general nurses, physicians, other healthcare professionals, and support staff, (2) ensuring flexible working hours for working mothers with children by which experienced married nurses are exempted from or have limited night shift during shift rotations, and (3) in the absence of fair salary compensation for specialization, implementing a rotation system between specialized areas and hospital outpatient clinics or primary healthcare institutions.

Other strategies suggested by most participants were improving nursing and hospital administration's practices and skills ($n = 18$). The participants recommended regular hospital and nursing management rounds, an open-door policy, and effective performance feedback. More than half of the participants suggested improving recognition as a strategy ($n = 14$) and suggested this could simply be verbal: "no need for gifts, saying thank you verbally has a positive impact on staff and improves their work engagement" (P04). Other suggestions were written praise such as certificates and public awarding of appreciation. One participant working in ER explained the importance of simple appreciation: "for instance, if we faced a disaster in a day and everyone knows that, they should appreciate staff even with a simple certificate...Our nursing and hospital administration should pay attention to us" (P15).

Many participants suggested improving resources to improve their work engagement ($n = 10$), including (1) introducing a workplace wellness program for employees to increase productivity, improve health behaviors, and reduce stress; (2) providing a workplace nursery; and (3) providing enough equipment and consumable supplies.

6. Discussion

Omani nurses who work in acute-care hospitals have a conceptualization of work engagement consistent with early and contemporary models of work engagement that suggest work engagement has three different facets: cognitive engagement, emotional engagement, and behavioral engagement [34, 35]. However, having a sense of loving one's job, achievement, and belonging/affiliation with an organization are concepts that were not mentioned in the literature regarding emotional engagement conceptualization.

Two other findings notably differed from extant literature. Surprisingly, the participants described how mentally engaged nurses think about their patients even when off duty. Work engagement in the literature was defined as a positive state of mind that happens mostly at work. This suggests that researchers should not limit examination of work engagement to certain times and places. One possible explanation is a culture in nursing towards prioritizing patients and improving nursing care quality, which consequently leads to nurses thinking about work after working hours.

TABLE 4: Subcategories about individual factors affected the work engagement of Omani nurses working in acute-care hospitals.

Category	Subcategory	Description	Examples
Individual factor	Rewarding profession	Nurse participants' perceptions about what nursing means to them and the most rewarding aspects of the job	"The best thing in my work is serving patients and the community" "I am very proud to be a nurse. Although, it is not my dream to be a nurse…" "I am active…"
	Personal traits	Comments about quality and characteristics of participants	"I am a knowledgeable and skillful nurse in this place, and they trust me"

TABLE 5: Categories for suggestions to improve work engagement among Omani nurses working in acute-care hospitals.

Category	Description	Examples
Pay and monetary incentives	Suggestions to improve pay and provide monetary incentives	"They need to consider my post basic diploma and pay me more" "MOH has to give risk allowance for nurses working in critical areas"
Hospital policies	Suggestions to develop new policies or review and implement current policies	"Rotation between primary healthcare nurses and ER nurses and other nurses in the hospital"
Management practices and skills	Suggestions to improve nursing management practices	"The administration should open doors for discussion and listen to us"
Recognition	Suggestions to provide verbal and written praise for nurses' valuable efforts and contributions	"A word of appreciation can affect you positively. We need verbal rewarding"
Resources	Suggestions to improve hospital resources	"Nursery near the hospital" "Provide enough equipment"

Second, nurse participants discussed how high- and low-engaged nurses can be recognized at work from how they express attitudes while coming to work. Participants explained that they judge the level of work engagement via nonverbal cues such as nurses' gait and facial expressions. This aspect of recognizing low and high work engagement in nurses was not found in current work engagement literature.

Organizational factors affecting Omani nurse work engagement were largely consistent with current literature, including leadership (e.g., [16]), teamwork (e.g., [15]), autonomy (e.g., [13]), pay (e.g., [14]), and workload (e.g., [36]). Many participants expressed that rotating shifts, particularly night shift, are difficult, with their energy and enthusiasm adversely being affected by these shifts. This finding is consistent with that of a study conducted by Rivera et al. [17], who indicated nurses who worked day shift were more engaged than nurses who worked evening and night shifts. The nurse participants discussed how unfair pay and monetary incentives negatively impacted their work engagement; previous studies have produced mixed findings on this aspect. One possible explanation is the Omani nursing system which is different from that of other countries (e.g., the United States); nurses employed by the Ministry of Health are all paid the same salary regardless of their specialization, education, work assignment, and workload.

Family commitment was the only substantial subcategory that emerged under social factors; this may be related to Omani culture. In this study, some nurses with family obligations were not focused at work and were mentally occupied with responsibilities waiting for them at home. Other nurses with obligations such as taking care of home and children felt drained in energy, which consequently affected their level of vigor and enthusiasm when they were at work. The Ministry of Health lacks family friendly policies that enable nurses to balance their families and work; most nurses work full-time, fixed rotating shifts with no available part-time work for mothers. Research about the impact of family commitments, home-work interference, and family-work life balance on work engagement is scarce in nursing literature and across other disciplines [37]. Only one nursing study was identified, finding that family-work conflict was positively related to absorption among Polish nurses [38]; this is inconsistent with the findings from the current study. However, the negative impact of the participant's family life on work was inversely associated with vigor, dedication, and absorption among Dutch medical residents [37].

In terms of individual factors, all participants found nursing to be a rewarding profession; this is consistent with a study conducted by Freeney and Tiernan [14], who explained nurses consider patients recovering as a personal reward that makes them feel motivated and dedicated to their work. Participants also discussed how personality characteristics such as being active, energetic, hardworking, and competent positively affected their level of work engagement. These factors are in line with the study by Pérez-

Fuentes et al. [12], who found that consciousness and extraversion were positively related to work engagement among nurses.

This study made an important contribution to the literature; published studies exploring the strategies to improve work engagement from the participants' perspectives are very limited. Only one recent study aimed to examine factors hindering the appearance of burnout syndrome and inducing nurses to present work engagement [39]. Suggestions offered by Omani nurses working in acute-care hospitals consistent with suggestions mentioned in Sanclemente-Vinue et al.'s study were improving financial rewards, resources, and recognition. Additional suggestions offered by Omani nurses included the following: improving pay, wellness programs, job rotation, flexible work arrangements, and several hospital and nursing management skills and practices.

6.1. Strengths and Limitations of the Work. The qualitative methodological option was appropriate for this study because little is known about work engagement in Oman's health context. Using this approach allowed sensemaking by the participants of their world and their experiences in their natural settings and understanding of work engagement from the participants' point of view. However, despite the richness of data, generalizability of the findings is limited to Omani nurses from four acute-care hospitals. PI transcribed and translated the interviews, relying on her experience and fluency in English. However, PI provided verbatim translations to an experienced qualitative researcher when questions arose. In addition, it is possible that other investigators may have interpreted the qualitative data differently. These limitations were offset by the procedures used to ensure trustworthiness, as previously described.

6.2. Recommendations for Further Research. While this qualitative study provided insight into work engagement among Omani nurses working in acute-care hospitals, future studies are needed. First, experimental or nonexperimental intervention studies are needed to examine the effectiveness of strategies that could improve work engagement among Omani nurses. Examples of strategies and interventions that need to study its effectiveness on work engagement are financial and nonfinancial incentives, leadership training, job rotation, and flexible work arrangements. Second, replications of the study with Omani nurses working in primary healthcare institutions should be conducted to explore any differences in their perceptions regarding factors affecting work engagement and strategies to improve work engagement. Third, comparative studies might be needed to explore the impact of pay and incentives on work engagement in healthcare settings similar or different to Oman. Finally, longitudinal studies that allow monitoring nurses' over time might produce greater insight into the development and promotion of work engagement at the individual and team level. Further studies are needed to investigate the impact of family commitment and job rotation on work engagement as these two variables are rarely studied in nursing literature.

7. Conclusion

This qualitative study is the first study designed to explore work engagement among Omani nurses. This study provides foundational knowledge about how Omani nurses working in acute-care hospitals conceptualize work engagement and what organizational, social, and individual factors affect nursing work engagement in Oman. In addition, strategies suggested by the participants to improve work engagement provide a foundation for developing and implementing work engagement interventions in Omani hospitals. These findings thus support creation of a work environment that supports and encourages work engagement, consistent with the Oman Health Vision 2050 to improve the quality of healthcare services and create a positive work environment among healthcare professionals [40].

Data Availability

The data used to support the findings of this study are included within the manuscript.

Ethical Approval

The study was approved by the Institutional Review Boards (IRBs), University of Iowa IRB ID no. 201907791, and Research and Ethical Review and Approve Committee, Ministry of Health, Oman, Proposal ID no. MoH/CSR/19/10505.

Disclosure

The manuscript was written as part of successfully meeting the requirements of Ph.D.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Hindawi

Research Article

The Relationship between Moral Sensitivity and Professional Behaviour and Its Comparison in First- and Last-Year Undergraduate Nursing Students

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Background. Nursing students should be equipped with ethical sensitivity and professional behaviour because they will face challenging ethical issues in their future work environment. This study aimed to determine the relationship between moral sensitivity and professional behaviour and compare it in first- and last-year undergraduate nursing students. *Methods.* This study was a cross-sectional, correlational study that was conducted at Isfahan University of Medical Sciences in 2019. The sample size of this study was 238 nursing students. The tools used in this study were the Persian versions of the moral sensitivity questionnaire and the professional behaviour questionnaire. The data were analyzed using SPSS 18 software. *Results.* Linear regression showed that the total score of moral sensitivity of nursing students had a significant relationship with their professional behaviour ($p < 0.05$). The result of the univariate analysis showed that the mean total score of moral sensitivity and professional behaviour was significantly higher in the last year than in first-year students ($p < 0.05$). *Conclusion.* Considering the relationship between moral sensitivity and the professional behaviour of nursing students, the promotion of moral sensitivity can become the basis for the development of the professional behaviour of nursing students. Therefore, it is suggested to focus on teaching the principles of nursing ethics to develop the moral sensitivity of undergraduate nursing students.

1. Introduction

Nurses have an essential role in upgrading the care and health of patients which depends on the quality of performance and professional behaviour of nurses [1]. In this regard, promoting the quality of the nursing services provided to patients requires nurses to employ scientific care and moral principles in their professional practice [2, 3]. Ethics is a pillar in nursing practice, and a critical part of the nursing profession is to achieve moral competency in

parallel with clinical competency [4]. Nurses are responsible for making the best professional and ethical care decisions, which necessitates moral sensitivity and professional behaviour [3, 5, 6].

Moral sensitivity is a crucial component of ethical decision-making, which refers to the ability that involves recognizing the ethical dilemmas and their effects, the vulnerability of patients, and comprehending the implications of ethical decision-making [7, 8]. The lack of moral sensitivity makes it impossible for a person to recognize

nursing ethical problems [9]. Nursing students, as future healthcare providers, should be equipped with advanced degrees of moral sensitivity because they will face challenging ethical issues in their future work environment [10, 11]. Nonetheless, most studies show that nursing students possess different levels of moral sensitivity [12–14]. In a study by Akca et al. [14], it was specified that nursing students had moderate levels of moral sensitivity [14]. Nevertheless, a study by Ozcetin and Hicdurmaz showed that the moral sensitivity score decreased with increasing age and educational level, and the students who passed ethics courses obtained lower scores in some subscales of moral sensitivity, as well as regarding the total score [15]. In addition to paying attention to ethical issues in the structure of nursing education curricula, attention should be paid to the development of innovative content and educational methods at the undergraduate level [11, 13]. However, the effectiveness of ethics courses and proper educational strategies in nursing is controversial [16–19].

Professional behaviour is among the fundamental concepts of the nursing profession; so, inappropriate professional performance can lead to job burnout, reduction or loss of motivation, and demotion of job satisfaction among nurses [20]. Similarly, nursing students' professional values are determined by their professional behaviours and performance [21]. However, there has been debate regarding professionalism and the acquisition of skills in nursing, so that in some studies asserting that newly graduated nurses lack the readiness required for fulfilling complex and professional nursing practices, including clinical skills, logical thinking, time management, communication skills, and teamwork skills [22, 23]. In a study by Nabavi et al. [24], it was reported that although nursing students attained desirable levels of professionalism during their first years of academic education, they not only failed to progress in this area but also experienced a downturn during the final years of education [24].

Higher levels of moral sensitivity in nursing students can be related to their greater professional commitments [25]. Chen et al. [8] showed that there was a positive correlation between moral sensitivity and professional values, and professional values played a mediating role in the relationship between moral sensitivity and ethical decision-making [8]. Baykara et al. [26] study found that moral sensitivity has a positive effect on professionalism; therefore, it can be said that while moral sensitivity is a prerequisite for the development of professionalism, professionalism also accelerates the development of moral sensitivity [26].

Undergraduate nursing educational program in Iran for teaching ethical principles includes a course called "nursing ethics and professional communication" (1.5 credits and a total of 34 hours) [27].

Even though nursing students should recognize ethical challenges and overcome them by showing professional behaviour and making ethical decisions, very limited studies have been conducted in the field of evaluating the relationship between ethical sensitivity and the professional behaviour of nursing students. Also, there are inconsistencies and uncertainties regarding the effectiveness of ethics education in terms of moral sensitivity and

professional behaviour during the undergraduate nursing course. In this regard, the investigation of moral sensitivity and professional behaviour, as essential components of the development of professional ethics, can elucidate the effectiveness of ethics education during the undergraduate nursing course. Therefore, the present study aimed to determine the relationship between moral sensitivity and professional behaviour and compare them between first- and last-year nursing students.

2. Materials and Methods

2.1. Study Design. This was a *cross-sectional, correlational study* to investigate the relationship between ethical sensitivity and professional behaviour, and also, this study compares moral sensitivity and professional behaviour between the first- and last-year nursing students of Isfahan University of Medical Sciences in 2019.

2.2. Participants and Sampling. In the second semester of 2019, 289 students were registered in the first year and the last year. The inclusion criteria for this study included being first-year and last-year nursing students, not having a critical incident in the last 6 months, and not suffering from mental disorders. The exclusion criteria from this study included unwillingness to continue participating in the study and incomplete questionnaires. Sampling was conducted by census method. Of 289 students who were registered in the semester, 238 nursing students, including 158 first-year students and 80 final-year students, completed questionnaires.

2.3. Instruments. A three-part questionnaire was used to collect the data. The first part of the questionnaire addressed demographic characteristics. The second part of the questionnaire included the Persian version of Lutzen's moral sensitivity (1994) scale in determining the subjects' moral sensitivity, whose validity and reliability were confirmed by Hasanpoor et al. [28]. The original version of this questionnaire was made by Lutzen and Nordin [29]. This questionnaire contained 25 queries organized into six subdomains, including respecting the patient's autonomy, knowing how to communicate with the patient, professional knowledge, ethical conflicts experienced, applying moral concepts during ethical decision-making, and honesty and benevolence. These queries were scored on a 5-point Likert scale from totally disagree to totally agree. The minimum and maximum of the total score were 0 and 100, respectively. Hasanpoor et al. assessed the reliability of the questionnaire using Cronbach's alpha method, reporting a coefficient of 81% [28].

The third part of the data collection tool included the Persian version of the Goz professional behaviour (2010) questionnaire, which is in the study by Nabavi et al. [24]; The original version of this questionnaire was made by Goz and Geckil [30]. The validity of this questionnaire was approved by experts in the field, and its reliability using Cronbach's alpha method was reported as above 0.70 [24]. This scale includes 27 items that were scored between 1 and 5, delivering a total score ranging from 27 to 135 [24].

2.4. Data Collection. All the data were collected by only one of the researchers during 1 month (15 May to 15 June) in the second semester of 2019. Data collection was carried out from first-year students in the nursing faculty and last-year students in the hospital in the morning (the questionnaires were completed during students' break). After stating the objectives of the research and obtaining informed consent from the students, the questionnaires were given to the students and the students completed them in a self-report form. The duration of completing the questionnaires by the participants was between 15 and 20 minutes.

2.5. Ethical Considerations. This study was approved by the Ethics Committee of Isfahan University of Medical Sciences (the code of IR.MUI.RESEARCH.REC.1398.200). Sample recruitment was started after the study approval, getting the scientific code, and necessary coordination was made with the research deputy of the university after elaborating the objectives and procedures of the study. Eligible students have explained the objectives of the study and the instructions for completing the questionnaire. Written informed consent was obtained from all participants. Participation in the study was completely voluntary, and the individuals' data remained entirely confidential.

2.6. Analytical Methods. The data were analyzed using SPSS 18 software. The results of qualitative variables were reported as numbers (percentage), and quantitative variables were reported as mean ± standard deviation. To compare the subscales of moral sensitivity based on demographic variables, multivariate analysis was used, and to compare the total score of moral sensitivity and professional behaviour, independent univariate analyses and one-way analysis of variance were used. To investigate the effect of subscales of moral sensitivity (on the feeling of standard score) and its total score taking into account the side variables on students' professional behaviour, multiple and simple regressions were used. The results were reported at a significance level of 0.05.

3. Results

The results showed that out of the participants, 158 were first-year students. The mean age was 20.34 ± 3.01 years, and the mean GPA was 16.93 ± 2.11. Most of the participants were single and lived with their families. There were 80 last-year students. Their mean age was 23.31 ± 1.87 years, and their mean GPA was 16.30 ± 1.06. Most of the last-year students were single and lived in the dormitory (Table 1).

The results of univariate and multivariate analyses showed that there was no significant difference between the total score of moral sensitivity and the score of its subscales and the score of students' professional behaviour based on marital status, housing, apprenticeship, working, and having another degree ($p > 0.05$).

The results of multivariate analysis showed that there was not a significant difference between the mean score of the moral sensitivity subscales of men and women ($p = 0.357$),

but the mean total score of moral sensitivity and professional behaviour of women was significantly higher than men ($p < 0.05$).

The significance of the results of multivariate analysis showed that there was a significant difference in at least one of the subscales of moral sensitivity in first- and last-year nursing students ($p = 0.002$) so, based on univariate analysis, it was found that the mean of all subscales of moral sensitivity and professional behaviour in last-year students was significantly higher than first-year students ($p < 0.05$).

Pearson's linear correlation between grade point average and age of students with professional behaviour scores was equal to ($r = -0.03$, $p = 0.718$) and ($r = 0.02$, $p = 0.815$), respectively, and with moral sensitivity score was equal to ($r = -0.11$, $p = 0.167$) and ($r = 0.20$, $p = 0.003$), respectively, which indicated a weak positive linear correlation between age and the total score of moral sensitivity that was significant. In other cases, this correlation was not significant, and the correlation between professional behaviour and the total score of moral sensitivity was $p < 0.001$, $r = 0.39$, which indicated a positive (moderate) and significant correlation between the two variables (Table 2).

To investigate the effect of moral sensitivity subscales on students' professional behaviour scores by using multiple regression and observing their standardized coefficients, it was determined that the "Professional Knowledge" subscale had the most significant positive effect on the mean score of students' professional behaviour ($p < 0.001$). The subscale of "Honesty and Benevolence" also had an insignificant effect but considerable ($p = 0.055$). The effect of other subscales on professional behaviour was not significant. A similar result was obtained after adjusting for the group effect (Table 3).

For assessing the effect of students' moral sensitivity on their professional behaviour with regard to students' academic year, first, a separate simple linear regression was fitted in the group of first-year and last-year students. The results showed that in the first-year students, this relationship was not significant, and in the last-year students, this relationship was significant, which indicated the interaction effect between academic year and moral sensitivity. For this purpose, the scatter plot of the score of moral sensitivity against the professional behaviour of students was drawn simultaneously for first- and last-year students, which is shown in Figure 1. As it can be seen, this point of intersection occurred almost at the score of 75 moral sensitivity, which showed that the score of moral sensitivity can be divided into two intervals (<75 and ≥75) (it showed the same pattern in the score below 75), and this is the cut point indicates high moral sensitivity [28, 29] (Figure 1).

The regression model of the effect of the academic year (first- and last-year) and moral sensitivity score (<75 and ≥75) and their simultaneous effect were fitted once in a simple way and once by adjusting the effect of gender on the professional behaviour score of students (Table 4). The results showed that in both models, the interaction effect of the academic year on moral sensitivity was significant. Assuming that the effect of gender is constant, the results of the modified model showed that the professional behaviour

TABLE 1: Frequency distribution of demographic variables of nursing students.

Variables	Level	n (%)
Gender	Female	101 (42.4)
	Male	127 (53.4)
Marital status	Married	31 (13.6)
	Single	197 (86.4)
Housing	Dormitory	105 (45.9)
	Living with family	116 (50.7)
	Students house	8 (3.4)
Interest in the field	Yes	166 (69.7)
	No	56 (23.5)
Apprenticeship at the same time	Yes	31 (13.8)
	No	194 (86.1)
Working at the same time	Yes	25 (11.1)
	No	200 (88.91)
Another degree	Yes	19 (8.5)
	No	204 (91.5)

TABLE 2: Comparison of the total and subscale scores of moral sensitivity and professional behaviour in nursing students based on demographic variables.

Variables	Respect for autonomy	Professional knowledge	How to communicate	Ethical conflicts	Applying moral concepts	Honesty and benevolence	Total moral sensitivity	Professional behaviour
Gender								
Female	11.69 ± 4.14	15.15 ± 3.84	8.44 ± 2.4	12.61 ± 3.42	12.09 ± 4.2	5.06 ± 1.73	65.06 ± 15.36	111 ± 12.9
Male	11 ± 3.87	14.11 ± 4.2	7.82 ± 2.55	11.57 ± 3.61	11.25 ± 4.07	4.9 ± 1.81	60.68 ± 16.11	107 ± 16.69
p value			$P_{\text{multivariate}} = 0.357$				0.04	0.042
Marital status								
Married	11.25 ± 3.61	13.42 ± 4.61	8.55 ± 2.07	11.76 ± 3.19	11.39 ± 3.79	5.3 ± 1.31	61.69 ± 14.5	106.32 ± 17.87
Single	11.32 ± 4.05	14.75 ± 3.97	8 ± 2.55	12.05 ± 3.6	11.65 ± 4.19	4.94 ± 1.81	62.74 ± 16	109.86 ± 14.71
p value			$P_{\text{multivariate}} = 0.122$				0.736	0.229
Housing								
Dormitory	11.32 ± 3.72	14.15 ± 3.94	8.04 ± 2.5	12.25 ± 3.37	11.71 ± 3.82	4.81 ± 1.84	62.3 ± 14.94	108.06 ± 15.81
With family	11.35 ± 4.03	14.85 ± 4.23	8.17 ± 2.46	11.76 ± 3.69	11.44 ± 4.33	5.04 ± 1.69	62.64 ± 16.39	110.41 ± 14.49
Students house	10.43 ± 6.39	15.75 ± 3.15	7 ± 2.82	12.12 ± 3.75	13.18 ± 5.16	6.12 ± 1.8	64.6 ± 20.48	109.43 ± 17.75
p value			$P_{\text{multivariate}} = 0.053$				0.921	0.52
Apprenticeship								
Yes	11.3 ± 3.35	15 ± 3	7.85 ± 1.9	12.36 ± 2.73	12.04 ± 3.59	5.12 ± 1.7	63.7 ± 11.33	111.21 ± 17
No	11.28 ± 4.1	14.46 ± 4.23	8.07 ± 2.58	11.95 ± 3.68	11.56 ± 4.22	4.93 ± 1.78	62.29 ± 16.56	108.89 ± 15.04
p value			$P_{\text{multivariate}} = 0.894$				0.647	0.434
Working								
Yes	11.85 ± 3.67	13.91 ± 4.51	7.76 ± 2.14	12.66 ± 3.03	12.62 ± 3.43	5.48 ± 1.44	64.28 ± 14.44	105.16 ± 21.01
No	11.19 ± 4	14.58 ± 4.02	8.06 ± 2.52	11.88 ± 3.58	11.58 ± 4.09	4.9 ± 1.8	62.08 ± 15.89	109.56 ± 14.3
p value			$P_{\text{multivariate}} = 0.182$				0.512	0.317
Another degree								
Yes	11.65 ± 4.88	15.48 ± 4.16	8.76 ± 2.25	13.15 ± 3.45	12.76 ± 4.43	5.89 ± 1.28	67.72 ± 15.23	109.17 ± 15.18
No	11.19 ± 3.86	14.43 ± 4.09	8 ± 2.49	11.84 ± 3.51	11.49 ± 4.06	4.87 ± 1.8	61.84 ± 15.76	109.15 ± 15.29
p value			$P_{\text{multivariate}} = 0.223$				0.120	0.995
Academic year								
First year	10.7 ± 4.27	13.96 ± 4.48	7.8 ± 2.63	11.54 ± 3.84	11.18 ± 4.32	4.71 ± 1.81	59.91 ± 17.2	108.44 ± 16.68
Last year	12.71 ± 2.92	15.8 ± 2.64	8.62 ± 2.05	13.02 ± 2.51	12.55 ± 3.5	5.5 ± 1.54	68.23 ± 10.25	112.37 ± 11.35
p value	<0.001	0.001	0.017	0.002	0.016	0.001	<0.001	0.034

score of last-year students with a moral sensitivity score above 75 was 5.91 points lower on average compared to first-year students. Also, the score of professional behaviour in last-year students with a sensitivity score of 75> was higher by 6.94 points on average compared to first-year students.

4. Discussion

The study aimed to investigate the relationship between moral sensitivity and professional behaviour of nursing students and compare them between first-year and last-year students. The

TABLE 3: Regression model of the effect of moral sensitivity subscales on the professional behaviour score of nursing students.

	Respect for autonomy	Professional knowledge	How to communicate	Ethical conflicts	Applying moral concepts	Honesty and benevolence
	Standardized coefficient (p value)					
Model I*	0.065 (0.483)	0.352 (<0.001)	0.078 (0.308)	−0.059 (0.482)	−0.027 (0.773)	0.139 (0.055)
Model II**	0.058 (0.532)	0.346 (<0.001)	0.079 (0.307)	−0.061 (0.470)	−0.02 (0.816)	0.13 (0.067)

*Multiple regression model. **Model I + group.
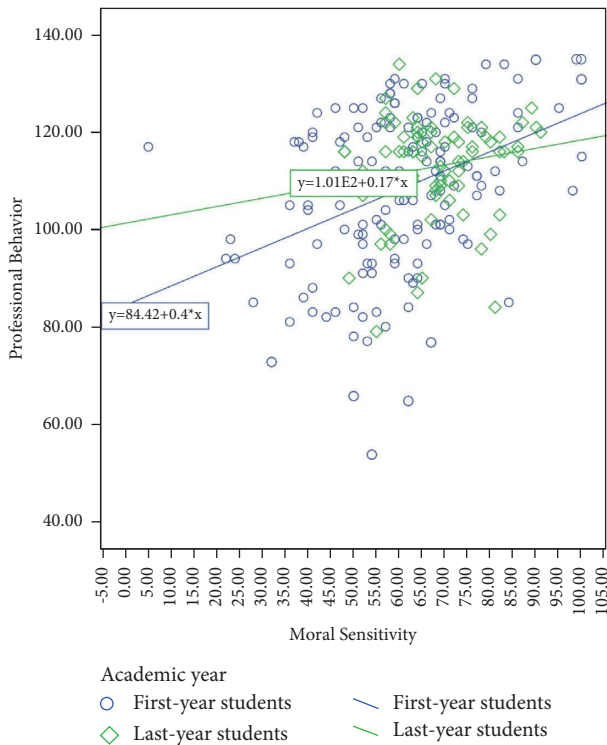
FIGURE 1: The scatter plot of the moral sensitivity score against professional behaviour for first- and last-year nursing students.

TABLE 4: Regression model of the effect of academic year and moral sensitivity on professional behaviour of nursing students with adjustment of gender effect.

	B coefficient (SE)	p value
Academic year (last year/first year)	6.94 (2.26)	0.002
Moral sensitivity (≥75/<75)	−12.5 (5.05)	0.014
Academic year × moral sensitivity	14.17 (3.2)	<0.001
Gender (male/female)	2.93 (1.95)	0.134

important role in clarifying the impact of ethics education on becoming professional and acquiring moral qualifications in the course of students' studies [8, 26, 32]. In this regard, education can be an important element in acquiring professional attitudes and developing the moral sensitivity of nursing students [26].

The results of the present study showed that women students attained significantly higher total scores of moral sensitivity and professional behaviour compared to men. In previous studies, different results were presented on the effect of gender on the level of moral sensitivity [14, 15, 33–35]. In some other studies, the level of moral sensitivity of female nursing students was higher than that of males [33, 34]. In contrast with the present study, some studies have found no significant relationship between the moral sensitivity score and nursing students' gender [14, 15, 35].

According to several studies, age can also affect moral sensitivity, and some studies have noted a positive correlation between age and the moral sensitivity score [36, 37]. However, in other studies such as the study of Borhani et al. [33], no significant relationship between age and moral sensitivity was reported among nurses [33]. In the present study, since last-year students had significantly higher mean age and mean score of moral sensitivity compared to their first-year counterparts, it can be argued that increasing age and, therefore, achieving more mental maturity can gradually improve students' moral sensitivity [36].

The results indicated that last-year nursing students had significantly higher levels of moral sensitivity compared to first-year students. Considering that undergraduate nursing students pass a theory course on nursing ethics and attend longer times in clinical environments in their last educational year, last-year students are expected to have higher moral sensitivity than first-year students. In addition, during the last year, nursing students integrate their clinical reasoning skills with ethics at the highest level, and they have maximum maturity [11]. Kohansal et al. [38] reported that the mean score of moral sensitivity was higher in students studying in the eighth academic semester compared to those in the third semester, indicating a significant link between moral sensitivity and the academic semester [38] which is aligned with the results of our study regarding the effect of the academic year on moral sensitivity. However, Baykara et al. [26] declared that students' moral sensitivity decreased with elevating educational years [15, 26]. In another study, Tuvesson et al. [34] also identified no evidence indicating the improvement of moral sensitivity by passing academic years [34]. The inconsistency between these results may be related to the factors affecting training, such as the classroom environment, educational traits, level of preparedness, and the research tools used in studies [6].

results of our study indicated the existence of a positive and direct relationship between the level of moral sensitivity and professional behaviour of nursing students. Some studies showed that promoting moral sensitivity in nursing students may lead to their professional values or attitudes development [8, 25, 26]. Compliance with ethical principles is one of the criteria required for professionalism in nursing [31]. The results of Chen et al. [8] also indicated the existence of a positive correlation between moral sensitivity, professional values, and moral decision-making of nursing students [8]. According to previous studies, professional behaviour is a fundamental concept in the nursing profession [20] that can play an

Consequently, it is necessary to pay attention to the significant role of education and the use of effective ethical teaching strategies to upgrade students' moral sensitivity [38].

In the present study, both groups of students attained the highest score in the domain of "professional knowledge" and the lowest score in the domain of "honesty & benevolence." In contrast with this study, Mostafavian et al. [35] described that the highest score obtained by students was related to the domain of "knowing how to communicate with the patient" [35]. In the study of Kohansal et al. [38], the highest mean score was related to the domain of "honesty & benevolence" while the lowest scores were obtained in the domains of "professional knowledge" and "applying moral principles when making ethical decisions" [38], which opposed the findings of the present study. This inconsistency could be related to the different student populations, so that, in the present study, last-year students were compared with first-year students who had limited clinical experience. Likewise, in the study of Borhani et al. [36], who enrolled undergraduate nursing students, the domains of "expressing benevolence" attained the highest mean scores, this domain refers to concepts such as honesty, trust between the nurse and the patient, considering patients' reactions to care, and patients' perception and knowledge about their disease [36]. Establishing a suitable and sympathetic relationship with the patient along with honesty and benevolence can lay the ground for winning patients' trust [36, 38]. The fact that both groups of first-year and last-year students obtained the lowest scores in the "honesty and benevolence" dimension might reflect the weakness of students in dealing with ethical dilemmas and applying the theoretical ethical concepts learned in the clinical setting. This issue highlights the need for nursing students to receive more training during their education on how to apply professional ethics principles, beneficence, and nonmaleficence. Moral sensitivity is created through education, but it is established through professional competency and showing ethically acceptable professional behaviours [14].

In the present study, both groups of students enrolled had the desired levels of professional behaviour. Some studies have indicated that students possess desirable levels of professional behaviour [32, 39], and others, such as Taylan et al. [21], have reported moderate-level professional behaviour among nursing students [21]. The differences observed in students' levels of professional behaviour in various studies may be related to features such as the place of studying, as well as value and cultural differences among communities [39]. In addition, some demographic characteristics of students can influence their professional behaviour. In this regard, Nemati et al. [32] noticed that students' age and GPA were positively associated with their professional behaviour scores [32]. However, in the present study, the student's professional behaviour scores had no significant relationship with their GPA. The mean score of professional behaviour was significantly higher among last-year students compared to first-year students. Nevertheless, Nemati et al. stated that none of the professional skills of students were related to their academic semester [32].

In this study, by adjusting for gender, it was found that the professional behaviour score of last-year's students with high moral sensitivity was lower compared to first-year students. Because of some organizational and professional factors, nursing students may face problems in developing professional behaviours [21, 40]. Factors such as the existence of an inappropriate pattern in the clinical environment, conflict with other members of the healthcare team, nonstandard performance of nurses, and the influence of nurses and students on each other can be effective for this issue [21, 37]. The professional socialization process of last-year students may be destroyed during the process of transition to the clinical setting and becoming independent due to the gap between theory and practice [41]. Therefore, nursing students may be influenced by nurses' behavioural patterns or suppressive behaviours which lead to inappropriate professional behaviour, despite having high moral sensitivity.

5. Conclusions

Our study showed that there is a positive relationship between the moral sensitivity of nursing students and their professional behaviour. In addition, the results indicated that last-year nursing students had significantly higher levels of moral sensitivity and professional behaviour compared to their first-year students. This finding may denote that the educational content of nursing undergraduate courses and the more encounter of students with ethical conflicts in the clinical environment can influence their perception of ethical challenges and how to handle them. Nursing students are believed to struggle to learn professional behaviours during educational courses [21]. Therefore, it may be beneficial to use novel educational methods that acquaint students with real clinical situations, which may lead to achieving a correct understanding of the application of ethical concepts and conundrums in ethical decisions. The relationship between the moral sensitivity of nursing students and their professional behaviour can suggest an important role in explaining the effect of ethics education on professionalization and the acquisition of moral qualifications in the course.

Data Availability

To maintain the confidentiality of the participants' information, the data of this research are not available.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Research Article

Professional Values of Undergraduate Students at a Nursing School in South Africa

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Background. Nursing schools play an important role in instilling nursing professional values in undergraduate nursing students and ensuring that they produce professional nurse graduates. Several studies in various countries have been conducted to describe the professional values held by nursing students, but this has not been explored in detail in South Africa. *Aim*. The purpose of this study was to describe the professional values held by undergraduate degree students at a nursing school in South Africa. *Methods*. A cross-sectional survey using a self-administered questionnaire was conducted. With a population of 1,233 undergraduate nursing students across four years in the degree programme at the nursing school, a sample of 294 was calculated as the representative (95% CI, 5% error, and 50% response distribution). The 26-item nurses professional values scale revision (NPVS-R) with five value dimensions was used to collect the data. Means, frequencies, and confidence intervals were used to describe the values and Mann–Whitney U tests and Kruskal–Wallis independent sample tests were used to compare the findings with the demographic characteristics. *Results*. A total number of 245 respondents completed the questionnaire (response rate of 83.3%). Overall, the nurse professional value score was high (113.1 ± 13.1). The values of trust (4.46 ± 0.61), justice (4.39 ± 0.57), and caring (4.38 ± 0.55) were rated significantly higher than those of professionalism (4.23 ± 0.64) and activism (4.22 ± 0.57). First- and final-year students had significantly higher professional value scores. *Conclusion*. The study results describe the professional values of undergraduate nursing students in the school and confirmed the importance of trust, justice, and caring as the key professional values in the South African setting. *Clinical Relevance*. Nursing education should embed and monitor nursing professional values in the curriculum. Instilling nursing professional values in undergraduate nurses during formal training programmes improves quality patient care and service delivery for clinical practice.

1. Introduction

Professional nursing values are the foundation of daily nursing care practice [1] and a corner stone in the selection and training of future nurses [2, 3]. To ensure quality ethical nursing care [4, 5], these values serve as a guideline for their professional behavior [6]. These values reflect the integrity and professional identity of the nurse and reinforce performance in practice [6]. As a new nursing student, it is important for students to start the process of professional values on entry as there is a relationship between the level of nurses' education and professional values [3, 7]. This was also supported by Arries [8], Bijani et al. [2], and Green [9],

who suggest that the level of maturity of, i.e., junior and senior students, plays a role in the formation of professional values and was recommended for consideration for curriculum development [10, 11]. For new nursing students, professional values are rooted in personal values derived from their own culture and society [6] and are influenced by many other factors such as education, attitude, religion, ethnicity, and culture [6, 12].

The responsibility of professional nursing programmes therefore is to embed and integrate professional values throughout the nursing curriculum and monitor the process of acquisition and practice of core values that occurs throughout the nurse's lifetime [7, 13–15]. The paradigm of

nursing and nursing education emphasises the need for professional values such as trust and caring [12] and the importance of nurse graduates to be able to demonstrate these values in practice [9].

Embedding professional values in the curriculum requires the need to monitor professional values as an educational objective in nursing education. Research scholars have developed valid and reliable quantitative scales to measure nurses' professional values with the most utilized instrument being the nurses professional values scale-revised (NPVS-R), developed by Weis & Schank [16] and based on the 2001 American Nurses Association's Code of Ethics for Nurses. The aim of this cross-sectional study was to describe the values held by undergraduate learner nurses in a school of nursing in South Africa, by using the nurses professional values scale which was developed by Weis and Schank [16].

2. Participants and Methods

2.1. Aim. The purpose of this study was to describe professional values held by undergraduate degree students at a nursing school in South Africa.

2.2. Design. A cross-sectional survey using a self-administered questionnaire was conducted with undergraduate student nurses at a university in the Western Cape in South Africa.

2.3. Study Population and Sampling. The study population had 1,233 nursing students registered for the undergraduate nursing program at a school of nursing at a university in the Western Cape in South Africa at the time of the survey. Using a 95% confidence level, a 5% margin of error, and a 50% response distribution, a sample of 294 was calculated, and using quota sampling per year level, all students were asked to participate.

2.4. Data Collection. This study utilizes data from a larger data collection project on values-based leadership. Data were collected, with permissions from the university and the school of nursing, through face-to-face self-administered questionnaires from 29th October 2019 to 5th November 2019. Appointment schedules were drawn up to meet with year-level coordinators of six-year levels to arrange for an information session and a suitable timeslot in which the nature and purpose of the project were explained to the participants. They could then ask clarifying questions about the project. Written permission was obtained from participants who chose to voluntary participate in the project. Academic staff administered the questionnaire after class sessions.

The inclusion criteria were that all students had to be registered in the legacy four- or five-year degree program. Only 245 participants completed the questionnaires. Forty-nine students of the calculated sample of 294 voluntarily decided not to partake in the study.

2.5. Instrument. The questionnaire included the validated nursing professional values scale (NPVS-R-5) (Weis & Schank, 2009). The NPVS-R has previously been used in South Africa and comprises 26 items representing five professional value dimensions, namely, justice (five statements: 1, 2, 9, 14, and 15), trust (statements: 3, 12, and 13), professionalism (four statements: 5, 6, 7, and 8), caring (nine statements: 16, 17, 18, 20, 21, 22, 23, 24, and 25), and activism (five statements: 4, 10, 11, 19, and 26). The NPV-R scale used a 5-point Likert scale rating the importance of each individual statement with 1 rated as not important, 2 somewhat important, 3 important, 4 very important, and 5 most important. The overall professional value score is out of 130 with a range of 26–130. More importance an individual ascribes to a value statement was reflected in a higher total score, with scores below 43, between 43 and 86, and above 86 classified as overall low, medium or moderate, and high importance of professional values, respectively [7]. Studies conducted in Nigeria, Iran, Israel, Spain, and Turkey demonstrated scale reliability of the scale with a range of Cronbach Alphas from $\alpha = 0.81$ to $\alpha = 0.96$ [1, 3, 7, 9, 13]. This was also confirmed in this study ($\alpha = 0.941$). To further ensure reliability, a pretest study was conducted with 10 student nurses in their third year of study. No changes were made to the tool following the pretest, and the responses were included in the results.

2.6. Data Analysis. Data were analyzed using SPSS version 28. Demographics and scale dimensions were reported using descriptive statistics (frequency, percentage, mean, 95% confidence intervals, and standard deviation) and Mann–Whitney U and Kruskal–Wallis independent sample tests to compare scores across demographics. The level of significance was set at $p < 0.05$.

3. Results

A total number of 245 respondents completed the questionnaire (a response rate of 83.3%). The respondents had an average age of 22.2 (± 3.6) years, and most of the respondents were female (210, 85.7%). The respondents were evenly distributed across year levels with 62 (25.3%) in year 1, 62 (25.3%) in year 2, 62 (25.3%) in year 3, and 58 (23.7%) in year 4 (Table 1). Respondents reported having been in the school on average for 2.7 ±1.3 years, ranging from 1 to 7 years.

Overall, the importance of professional values from the respondents' perspectives was high (113.1 ± 13.1), with no significant differences between genders ($p = 0.102$, Table 1). Nearly, all respondents rated professional values as very important (197 (80.4%)) and only 11 (4.5%) as medium important. There were significant differences between year levels with year 1 and year 4 respondents (115.9 and 114.2, respectively) reporting significantly higher levels of importance of professional values than years 2 and 3 (112.8 and 109.6, respectively, $K = 11.1$, $p = 0.025$) (Table 1). In terms of the professional values, trust (4.46 ± 0.61), justice (4.39 ± 0.57), and caring (4.38 ± 0.55) were rated significantly higher

TABLE 1: Demographics and NPV-R scores ($n = 245$).

	n (%)	Mean (sd)	Test	p value
Gender ($n = 245$)				
Male	35 (14.3)	109.4 (14.6)	$U = 1.6$	0.102
Female	210 (85.7)	113.7 (12.8)		
Year level ($n = 244$)				
Year 1	62 (25.3)	115.9 (10.1)	$K = 11.1$	0.025
Year 2	62 (25.3)	112.8 (14.3)		
Year 3	62 (25.3)	109.6 (11.8)		
Year 4	58 (23.7)	114.2 (15.0)		

FIGURE 1: Professional values.

than professionalism (4.23 ± 0.64) and activism (4.22 ± 0.57) (Figure 1).

The most important values from the respondents' perspective were "Maintaining confidentiality of patients" (4.59 ± 0.71), "Safeguarding patients' right to privacy" (4.58 ± 0.68), and "Protect moral and legal rights of patients" (4.53 ± 0.69) from the caring dimension, "Promote equitable access to health care" (4.53 ± 0.71) from the trust dimension, and "Maintain competency in area of practice" (4.53 ± 0.74) from the justice dimension (Table 2). The least important rated values were "Participate in peer review" (3.96 ± 0.90) from the professional dimension, "Participate in public policy decisions affecting distribution of resources" (3.88 ± 0.92) from the activism dimension, and "Refuse to participate in care if in ethical opposition to own professional values" (3.82 ± 1.16) from the caring dimension.

4. Discussion

This current study has shown high ratings of the importance of professional values by the nursing student respondents (113.1 ± 13.1) in this setting, similar to other studies that reported high scores for nursing students, as well as nurses' (who were at different levels of education and generations) professional values, using the NPVS-R [7–9]. This suggests that according to this scale, undergraduate nursing students in this school have achieved success in embedding professional values in nursing during the nurse training programme. This study also confirms another older South African study (Weis & Schank, 2009) who found high overall levels of professional values.

The most important value was trust, with the statement "Promote equitable access to health care," ranked third amongst all the value statements, with a mean score of 4.53 (0.71). A reason for this high score could be attributed to the context of the study where there are still disparities between socioeconomic groups in South Africa [17], and many respondents come from low socioeconomic communities with poor access to health care. Access to quality services in South Africa has remained low despite many efforts and approaches by African countries to equalise health care [18].

Within the value dimension of caring, the highest ranked ratings in the scale were for the following: "Maintain confidentiality of patients," "Safeguard patients" right to privacy," and "Protect moral and legal rights of patients" which was rated 4th highest. These findings were congruent with the
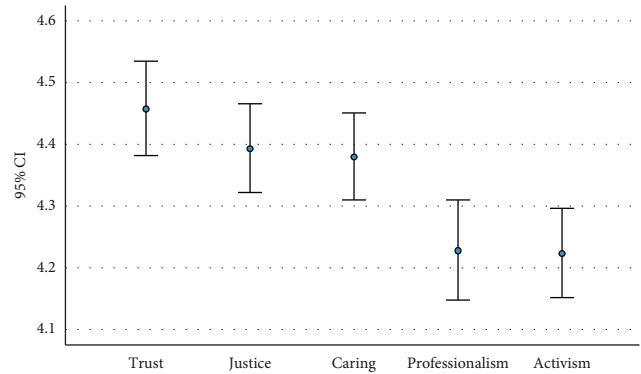
findings of a study conducted in Iran which compared the professional values of nursing students, nurses, and nursing educators and found overall mean scores for all within the range of relatively important or important. Similarly, from the student nurse's perspective in Iran, statements which relate to caring such as "Maintain confidentiality of patients" and "Protect moral and legal rights of patients" had the highest importance ratings for nursing students [2].

Similar to other studies by Chikeme [3] and Poorchangizi et al. [7], the following statements were rated as less important in the current study: "Recognizing role of professional nursing associations in shaping healthcare policy" (ranked 20th), "Engaging in ongoing self-evaluation" (ranked 21st), "Participating in nursing research/implementing research findings appropriate to practice" (ranked 22nd), and "Participating in peer review" (ranked 24th). Though similar, the respondents in the Poorchangizi et al. [12] study ranked "Recognizing role of professional nursing associations in shaping healthcare policy" 24th, "Engaging in ongoing self-evaluation" 17th, "Participating in nursing research/implementing research findings appropriate to practice" 23rd, and "Participating in peer review" 25th, which could be attributed to certain factors in their settings such as educational semester, low motivation, insufficient affirmation, and low encouragement by nursing educators. Although students in this study are being taught about the importance of participating in peer review during their course of training for quality assurance purposes, no actual opportunities exist in undergraduate progammes where students can actively engage and involve themselves in peer-review activities. However, nurse educators do ensure the presence of the "student voice" during accreditation processes by the regulatory body of South Africa and opportunities where there are formal disciplinary hearings and curriculum reform at the institution of higher learning. However, not all students get the opportunity to be selected when these opportunities arise, and therefore, the majority of students might regard this item "Participating in peer review" as least important amongst the values because of not knowing what it actually entails.

A major concern was the low ranking (26th) of importance of the statement "Refusing to participate in care if in ethical opposition to own professional values," in contrast with Poorchangizi et al. [12], whose respondents ranked this

TABLE 2: Value dimensions and statements.

Value dimensions and statements	Rank	Mean (sd)
Activism		
Participate in activities of professional nursing associations	13	4.4 (0.77)
Advance the profession through active involvement in health-related activities	16	4.36 (0.74)
Recognize role of professional nursing associations in shaping healthcare policy	20	4.3 (0.76)
Participate in nursing research/implement research findings appropriate to practice	22	4.18 (0.82)
Participate in public policy decisions affecting distribution of resources	25	3.88 (0.92)
Caring		
Maintain confidentiality of patient	1	4.59 (0.71)
Safeguard patients' right to privacy	2	4.58 (0.68)
Protect moral and legal rights of patients	4	4.53 (0.69)
Provide care without prejudice to patients of varying lifestyle	6	4.48 (0.77)
Practice guided by principles of fidelity and respect for person	7	4.45 (0.73)
Act as a patient advocate	11	4.41 (0.76)
Protect rights of participants in research	14	4.4 (0.81)
Confront practitioners with questionable or inappropriate practice	23	4.17 (0.91)
Refuse to participate in care if in ethical opposition to own professional values	26	3.82 (1.16)
Justice		
Maintain competency in area of practice	5	4.53 (0.74)
Accept responsibility and accountability for own practice	8	4.45 (0.77)
Seek additional education to update knowledge and skills	9	4.43 (0.76)
Request consultation/collaboration when unable to meet patients' needs	15	4.36 (0.8)
Engage in ongoing self-evaluation	21	4.21 (0.8)
Professionalism		
Promote and maintain standards where planned learning activities for students take place	17	4.33 (0.74)
Establish standards as a guide for nursing practice	18	4.33 (0.77)
Initiate actions to improve environments of practice	19	4.32 (0.78)
Participate in peer review	24	3.96 (0.9)
Trust		
Promote equitable access to health care	3	4.53 (0.71)
Assume responsibility for meeting health needs	10	4.42 (0.75)
Protect health and safety of public	12	4.41 (0.8)

statement more important at 13th amongst the value statements. This statement is from the caring value dimension and is central to ethical decision-making in practice [7]. Our finding may relate to the diverse context in South Africa with most of the student population having varied value orientations, but this would have to be investigated further. Another reason for the low ranking of this value statement could also be due to students not being exposed enough to real-life encounters of an ethical nature in practice, but this also requires more research.

A further concern is the low ranking of the statement "Participating in public policy decisions affecting distribution of resources" which ranked 25th in this study and 26th in the study by Poorchangizi et al. [12]. Health and public policy are essential elements of professional obligations of nurses [19]. Also, the American Nurses Association's [20] nursing Code of Ethics state that nurses have a responsibility to participate in political processes and advocate for their patients [21]. Though respondents rated "Acting as a patient advocate" as an important value under the caring dimension at 11th, "Participating in public policy decisions affecting distribution of resources" was ranked 25th which is considered as the least important, highlighting a difference of a belief and translating this value into practice amongst the respondents. These values are taught in the nursing school,

but being a student may provide limited ability to engage in health and public policy activities [22]. In addition, the current programme may not adequately equip students with the analytic, communication, and leadership skills to translate this into practice, but this should be further investigated [12]. This could be the same reason why students in this study scored the statement low, as not enough emphasis is placed on active involvement and engagement in public policy at student level. Also, in the current study, opportunities at policy discussion level are almost non-existent in the programme and should be further explored by nurse educators to give students more exposure to boost their leadership skills.

There was no significant difference found in this study between professional values and gender ($p = 0.102$). Nearly, all respondents rated professional values as very important (197 (80.4%)) and only 11 (4.5%) as medium important. The results of the current study were similar to those of a study that was conducted in Pakistan in 2018, which showed that male and female respondents paid equal attention to professional values [5]. However, the study confirmed previous papers which suggested that the level of education influenced the integration of values [10, 11, 13], with differences due to demographics related to academic levels of study. In all four-year levels, the respondents had high overall scores

for professional values, but first- and final or fourth-year level students recorded significantly higher ratings in professional values than students in their second and third years (112.8 and 109.6, respectively, $K = 11.1$, $p = 0.025$), though they might not consider each value and its corresponding statements as equally important [23]. The findings were in line with a study in Turkey [24] which indicated that the academic year had an effect on the professional values of nursing students, and [9] a study in Israel with novice (first year), advanced (third year), and senior (fourth year) students also found statistically significant differences between these groups. The high ratings in the first year in the current study were consistent with findings by Bleda et al. [13], who found that nursing students rated professional values as highly important when they enter the nursing profession because of some students having inadequate clinical experience to accurately rank the statements. In our study, the high scores of first-year respondents could relate to high levels of preexisting values which then further translate into professional values towards the end of their training [13]. Another reason could also be that South African nursing students come from different cultural backgrounds and enter the university with a set of diverse values that could influence how each student assigned meaning to the importance of professional values and how they scored the statements. The final-year respondents are also more mature students, preparing for practice as new graduates, which may reflect the preparation for practice [13]. Furthermore, the final-year respondents in this current study also have a formal professional practice module in their final year of study which exposes them to further growth and development of these values as they take on more responsibilities as senior students. This professional maturity is linked to chronological maturity as these students have been exposed to the need to make independent judgments in their professional and personal lives [8, 9]. Bijani et al. [2] also found a similar pattern with higher academic levels being associated with higher scores for professional values.

4.1. Limitations. There are some limitations in this study. First, respondents were from one university in the Western Cape Province of South Africa only, and though it confirmed 2009 South Africa study's findings, caution should be taken in generalizing these findings to undergraduate nursing students in South Africa. Furthermore, because of the diverse nature of the study population, religion, cultural background, language, and ethnic origin may influence the development of professional values but are not explored in terms of their association with nurses' professional values in this study. The study did not explore the reasons for the ratings, and further studies are needed to explore the factors that influenced the low ratings for professionalism and activism values.

5. Conclusion

Professional values in nursing students are central to their training as these values would determine quality patient care service delivery and guide new graduates in their ethical decision-making while in nursing practice. This study showed that the respondents rated professional values highly and that this may be due to the selection process of students entering the programme and the process of embedding professional values in the nursing curriculum.

Data Availability

The data that were used and analyzed to support the findings of this study are available from the corresponding author on request.

Additional Points

Clinical Resources. (1) An instrument to measure professional nursing values: https://sigmapubs.onlinelibrary.wiley.com/doi/abs/10.1111/j.1547-5069.2000.00201.x. (2) Importance of professional values in nursing and healthcare: https://www.heraldopenaccess.us/openaccess/importance-of-professional-values-in-nursing-and-healthcare. (3) Professional nursing values: a concept analysis: https://onlinelibrary.wiley.com/doi/abs/10.1111/nuf.12211.

Ethical Approval

This study received ethics clearance (BM18/09/20).

Consent

Participants were informed of the nature, purpose, and intention of the study through an information sheet. The respondents completed a signed consent form before participation and were assured of confidentiality and anonymity by using codes on the questionnaires.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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Hindawi

Research Article

Investigation of Caring Behavior and Caring Burden and Their Associated Factors among Nurses Who Cared for Patients with COVID-19 in East Guilan, the North of Iran

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Background. Nurses experience caring burdens, which can affect their caring behaviors. Caring for highly infectious patients, in particular COVID-19, is a new phenomenon and little is known about it. Considering that caring behaviors can be influenced by various factors and cultural differences of the society, it is necessary to conduct studies about caring behaviors and caring burdens. Thus, this study aimed to determine caring behavior and caring burden and their relationship with some associated factors among nurses who cared for patients with COVID-19. *Materials and Methods.* This cross-sectional, descriptive design study was conducted by census sampling on 134 nurses working in public health centers in East Guilan, the north of Iran, in 2021. The research instruments included the Caring Behavior Inventory (CBI-24) and the Caregiver Burden Inventory (CBI). Descriptive and inferential statistics were used to analyze the data using SPSS software version 20 with a significant level of 0.05. *Results.* The mean score of caring behavior and caring burden in nurses was 126.50 (SD = 13.63) and 43.65 (SD = 25.16), respectively. There was a significant relationship between caring behavior and some demographic characteristics (education, place of living, and history of COVID-19) and between caring burden and some demographic characteristics (housing status, job satisfaction, intention to change job, and history of COVID-19) ($p < 0.05$). *Conclusions.* Findings showed that despite the new emergence of COVID-19, the caring burden on nurses was moderate and they had good caring behavior. Despite these results, it is necessary for the relevant managers to pay special attention to protecting health workers during a national crisis such as COVID-19 so that they experience less caring burden and improve caring behavior.

1. Background

On 31 December, 2020, an outbreak of pneumonia due to COVID-19 was reported in Wuhan, China [1]. The prevalence of new infectious diseases and emerging dangerous viruses is a global health issue and a threat to nurses and other health care workers [2]. Compared to other health care professions, nurses spend more time with patients and are responsible for direct patient care [3]. Care is one of the basic concepts of nursing [4] and the most important part of nursing practice [5] that provides a framework and guidance for nursing practice [6]. Care can be seen in the form of

behaviors [7]. The main goal of caring behavior is to reduce patients' suffering [4]. Caring behaviors are actions concerned with the well-being of a patient, such as sensitivity, comfort, attentive listening, honesty, and nonjudgmental acceptance [8]. Lininger stated caring behaviors include concepts such as comfort, compassion, interest, coping, empathy, facilitation, helpful behaviors, love, nutrition, reinforcement, protective and inspiring behaviors, sharing, helping, support, sensitivity, touch, and trust [9]. Understanding nurses' caring behaviors is very important [6]. Studies on the importance of caring behaviors suggest that caring is not uniformly understood in different

communities. Caring behaviors can be influenced by cultural differences. Organizational factors also have the potential to change caring behavior [10]. Differences in nursing care behaviors from one institution to another or from one country to another have caused nursing researchers to study these behaviors [8]. Care-related research and the application of its related results play a vital role in improving and maintaining the quality of nursing care [10].

On the other hand, some studies have shown that nurses experience different care pressures when caring for patients. The caring burden is a type of distress that nurses feel only because they provide patient care and is different from anxiety and depression caused by other emotional issues. The caring burden has physical, psychological, social, and economic dimensions [11] and can cause many problems such as burnout, anxiety, and depression. For caregivers [12], Harding et al. (2015) in a study showed that the caring burden varies for caregivers of patients with cancer, dementia, and brain trauma [13]. This suggests that nurses experience varying degrees of care burden depending on the type of care they provide [11].

Caring behavior might be influenced by different factors including workload, lack of time, staffing issues, shift work, and lack of self-care [8, 14]. A qualitative study conducted by Oskouie et al. in a burn center in Tehran, Iran, reported that personal characteristics of nurses such as conscience, religious beliefs, personal philosophy, sense of responsibility, and altruism may affect nurses' caring behaviors. They also stated that staff shortage, lack of organizational support, heavy workload, low payment, feeling of pressure, lack of motivation, patients' characteristics, and patients' age are the factors that may affect nurses' caring behaviors [15].

Although nursing scholars are unanimous about the fact that caring behaviors might be affected by various factors, not many studies have been carried on to address the determinants of caring behaviors [8]. On the other hand, caring for highly infectious patients is a new phenomenon and little is known about it [16]. In particular, our information and knowledge about COVID-19 and its effects in various fields are low and there is still much to discover. The necessary preparations and measures to deal with it will be possible with the rapid integration of scientific knowledge and public health [17]. In order to deal with the COVID-19 pandemic, it is necessary to draw a clear picture of it [18]. All countries should increase their level of preparedness and response to identify, manage, and monitor new COVID-19 cases [17]. Caring behaviors can be directly influenced by the health care provider, organizational factors, nursing care delivery model, and cultural differences based on common values in society [3]. Therefore, it is necessary that studies on identifying the caring behaviors and caring burden should be conducted in each country, taking into account the existing conditions.

The review of the literature indicates that no study has been conducted on caring behaviors and caring burdens in nurses caring for patients with COVID-19. Considering that recognizing caring behaviors is an essential step in improving caring behaviors and improving the quality of care (especially in patients with COVID-19), ultimately helps to facilitate care planning; this study was conducted to determine caring behavior and caring burden and their relationship with some associated factors among nurses who cared for patients with COVID-19.

2. Materials and Methods

2.1. Study Design, Setting, and Participants. A cross-sectional, descriptive design study was conducted in 2021. The study setting was the East Guilan public hospitals that were affiliated to Guilan University of Medical Sciences, the north of Iran. In this study, three hospitals out of six public hospitals in East Guilan were selected randomly. A simple random method was used for randomization. In this way, the names of six hospitals were written on small pieces of paper and put inside in an envelope. Then, three small pieces of paper with the name of a hospital written on them were randomly taken out of the envelope. In the three selected hospitals, by using a census sampling, all the nurses working in the COVID and ICU wards who cared for patients with COVID-19 were considered for sampling. The samples included 134 nurses who were recruited based on inclusion criteria. Inclusion criteria included having a bachelor's degree in nursing and higher, working in public hospitals in East Guilan, having experience of caring for a patient with COVID-19, and willingness to participate in the study. Exclusion criteria included the unwillingness to continue cooperation in the study.

2.2. Research Instruments. The research instruments included demographic characteristics (e.g., age, sex, level of education, marital status, etc.), the Caring Behavior Inventory (CBI-24), and the Caregiver Burden Inventory (CBI), which are explained below.

2.2.1. Caring Behavior Inventory (CBI-24). This is an empirical instrument for measuring caring with a clear conceptual-theoretical basis, developed to determine perceptions of caring among patients and nurses in diverse settings [19]. This tool was first designed by Wolf et al. (1981) with 75 items to study caring behaviors in nurses [7]. After revision by Wu et al. (2006), it was reduced to 24 items [20]. This 24-item instrument includes four subscales, namely, (1) the assurance subscale, being readily available to a patient's needs and security (8 items); (2) the knowledge and skill subscale, demonstrating conscience and competence (5 items); (3) the respectful subscale, attending to the dignity of the person (6 items); and (4) the connectedness subscale, providing constant assistance to patients with readiness (5 items) [19]. To measure the average of each subscale, the scores of the items related to each are added and the sum of the scores is divided by the number of items. Each item is based on a six-point Likert scale and is graded from 1 (never) to 6 (always). The minimum score is 24 and the maximum is 144. In this tool, a higher score indicates more appropriate caring behaviors [20]. The caring behavior for each subscale as well as for the overall scale is calculated as the mean value within each separate scale [19]. The internal

reliability of the questionnaire in the study by Çelik et al. (2019) and Asadi et al. (2014) was calculated using Cronbach's alpha coefficient of 0.93 and 0.71, respectively [21, 22]. The reliability of the instrument in the present study was calculated using Cronbach's alpha coefficient of 0.79.

2.2.2. Caregiver Burden Inventory (CBI). This Questionnaire has 24 items, which was developed in 1989 by Novak and Guest. This questionnaire includes five subscales, namely, (1) time dependence (this indicates the amount of time a caregiver spends on taking care of her/his patient) including 5 items (questions 1 to 5); (2) developmental (the pressure/burden that occurs during different periods of the caregiver's life development (such as puberty), caused by taking care of the patient) including 5 items (questions 6 to 10); (3) physical burden including 4 items (questions 11 to 14); (4) social burden including 5 items (questions 15 to 19); and (5) emotional burden including 5 items (questions 20 to 24) [23]. Scoring each dimension includes a five-point Likert scale (0 = not at all; 1 = a little; 2 = medium; 3 = a lot; 4 = a lot). The total score for each dimension is calculated from zero to 20 and the total CBI score from a minimum of zero to a maximum of 100 [24].

The classification of scores is considered as zero to 19 (low caring burden), 20 to 50 (medium caring burden), and 51 to 100 (high caring burden) [11]. Shafizadeh et al. (2017) validated this questionnaire in 150 Alzheimer's patients. The total internal correlation (Cronbach's alpha) for the subscales was 0.93 [25]. The reliability of the instrument in the present study was calculated using Cronbach's alpha coefficient of 0.82.

2.3. Data Collection. In order to collect data, the researcher, after obtaining permission from the research ethics committee of Guilan University of Medical Sciences and relevant officials, referred to the medical center. After selecting the samples, providing sufficient explanations about the purpose of the research and obtaining their written consent, the questionnaires were given to the samples to be completed. The samples who were willing to participate in the study signed consent forms. Then, they were given questionnaires and asked to complete them. The completed questionnaires were collected later in the same shift. The data collection period lasted 3 months.

2.3.1. Ethical Consideration. For ethical considerations, permission was obtained from the Research Ethics Committee of Guilan University of Medical Sciences (ethics ID IR.GUMS.REC.1399.648). According to the principles of research ethics, participants were reminded that at each stage of the study, they could refuse to continue their cooperation if they did not want to. They were also reminded that, if they wished, the results of the research would be made available to them and that their information would be kept confidential.

2.4. Data Analysis. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 20 (IBM Corp., Armonk, NY, USA). The Kolmogorov–Smirnov test was used to investigate the hypothesis of normal data distribution. Data were analyzed using descriptive statistics (frequency distribution tables, mean, and standard deviation) and inferential statistics (*t*-test, ANOVA, and Linear Regression). All calculations were performed considering the significance level ($p < 0.05$).

3. Results

Findings related to demographic characteristics showed that half of the participants were in the age group of 21–30 years. The majority were female (93.3%) and married female (83.5%). In terms of education, the majority were bachelors (88.1%) and in terms of work experience, most of them were in the range of 1–5 years of work experience (42.5%). Findings indicated that there is no significant relationship between the caring behavior among nurses who cared for patients with COVID-19 and some demographic variables (age, sex, marital status, income, housing status, number of family members, number of children, responsibility for another person caring, work experience, employment status, shift work, job satisfaction, and intention to change job) ($p > 0.05$). However, there is a significant relationship between the caring behavior and education status, location, and history of COVID-19 ($p < 0.05$). (Table 1).

Findings showed that the mean score of nurses' caring behavior in nurses who cared for patients with COVID-19 was 126.50 (SD = 13.63), which indicated good caring behavior. In addition, the mean score of caring burden in nurses who cared for patients with COVID-19 was 43.65 (SD = 25.16), which indicated the moderate caring burden in nurses (Table 2).

On the other hand, in the relationship between caring behavior and demographic variables due to the presence of five variables (sex, education, place of living, history of COVID-19, and intention to change job) with $p \leq 0.2$, these variables were allowed to participate in the model regression. In the final stage, history of COVID-19 has the greatest impact on the caring behavior ($p < 0.05$) (Table 3).

The results of the study based on the linear regression model showed that nurses who did not have a history of COVID-19 had a higher mean score of caring behavior (128.40 ± 14.029) than nurses who had a history of COVID-19 (122.73 ± 12.093), and this difference was statistically significant ($t = 2.311$, $p = 0.02$).

Findings indicated that there is no significant relationship between caring burden on nurses who cared for patients with COVID-19 and some demographic variables (age, sex, education, marital status, place of living, income status, number of family members, number of children, responsibility for caring for another person, work experience, employment, and shift work with caring burden) ($p > 0.05$). However, there is a significant relationship between caring burden on nurses who cared for patients with COVID-19 and housing status, job satisfaction, intention to change job, and history of COVID-19 ($p < 0.05$). (Table 4).

TABLE 1: Demographic characteristics and caring behavior among nurses who cared for patients with COVID-19 in East Guilan public hospitals ($n = 134$).

Demographic variables n (%)		Caring behaviors			Tests	p value
		Mean ± SD	Minimum	Maximum		
Age (year)	21–30	(50.0) 67	13.73 ± 126.27	92	144	F = 1.013	0.468
	31–40	(35.1) 47	13.34 ± 128.32	95	144		
	41–50	(14.9) 20	12.91 ± 124.32	101	144		
Sex	Female	(93.3) 125	13.41 ± 127.06	92	144	t = 1.800	0.074
	Male	(6.7) 9	14.99 ± 118.67	100	143		
Marital status	Single/Divorced/widowed	(16.5) 22	13.84 ± 127.80	92	144	t = 1.472	0.233
	Married	(83.5) 112	13.46 ± 126.15	95	144		
Number of children	No children	(10.5) 14	11.35 ± 131.00	118	139	F = 0.832	0.507
	One	(45.5) 61	14.02 ± 126.03	92	144		
	Two	(35.1) 47	13.69 ± 126.77	97	144		
	Three and above	(8.9) 12	11.21 ± 129.18	113	144		
Place of living	City	(94.8) 127	13.39 ± 126.48	93	144	t = 3.988	0.021*
	Village/Suburbs	(5.2) 7	11.81 ± 132.67	111	143		
Education[a]	BS	(88.1) 118	13.08 ± 127.42	92	144	t = 2.139	0.034*
	M.Sc	(11.9) 16	16.019 ± 119.75	95	144		
Employment status[b]	Permanent	(33.6) 45	14.41 ± 123.38	95	144	F = 1.316	0.272
	Contracted to permanent	(26.1) 35	11.36 ± 129.14	104	144		
	Contracted	(9.7) 13	14.54 ± 127.77	101	144		
	Graduates' temporary employment contract	(30.6) 41	14.06 ± 127.27	92	144		
Work experience (year)	1–5	(42.5) 57	127.47 ± 13.61	92	144	F = 0.556	0.734
	6–10	(23.1) 31	127.65 ± 13.02	103	144		
	11–15	(18.7) 25	123.80 ± 15.39	95	144		
	16–20	(9.7) 13	127.92 ± 12.36	101	143		
	21–25	(4) 6	121.50 ± 15.24	98	144		
	26 and above	(1.5) 2	120.50 ± 6.36	116	125		
Working shifts	Morning	(17.2) 23	122.83 ± 13.442	95	144	F = 1.365	0.250
	Night	(6.0) 8	134.00 ± 15.784	101	144		
	Morning and evening	(4.5) 6	124.17 ± 9.948	112	137		
	Rotational	(72.4) 97	126.90 ± 13.576	92	144		
Housing status	Personal	(85.8) 115	125.93 ± 13.63	92	144	t = −1.192	0.235
	Rental	(14.2) 19	129.95 ± 13.46	103	144		
Responsibility for another person caring	Yes	(5.2) 7	126.69 ± 13.60	104	144	t = 0.696	0.487
	No	(94.8) 127	123.00 ± 14.75	92	144		
History of COVID-19	Yes	(33.6) 45	122.73 ± 12.09	95	144	t = 2.311	0.022*
	No	(66.4) 89	128.40 ± 14.02	92	144		
Job satisfaction level	Low	(51) 68	126.25 ± 13.20	97	144	F = 0.171	0.843
	Medium	(42.5) 57	127.05 ± 13.85	93	144		
	High	(6.5) 9	123.25 ± 21.31	92	140		
Intention to change job	Yes	(26.1) 35	123.37 ± 14.56	95	144	t = 1.589	0.115
	No	(73.9) 99	127.61 ± 13.18	92	144		

TABLE 1: Continued.

Demographic variables n (%)			Caring behaviors				
			Mean $\pm$ SD	Minimum	Maximum	Tests	p value
The number of family members	1–2	35 (26.1)	126.31 $\pm$ 12.47	103	144		
	3–4	88 (65.7)	126.57 $\pm$ 13.86	92	144	$F = 0.004$	0.996
	≥5	11 (8.2)	126.55 $\pm$ 16.41	93	144		
Income status	Low	36 (26.9)	127.14 $\pm$ 14.14	100	144		
	Medium	84 (62.7)	127.24 $\pm$ 13.12	93	144	$F = 1.564$	0.213
	Sufficient	14 (10.4)	120.43 $\pm$ 14.76	92	138		

Note: * significant level is indicated by $p < .05$. [a] BS = Bachelor of Science, M.Sc = Master of Science; [b] the employment status of Iranian nurses includes Rasmi (Permanent), Paimani (Contracted to Permanent), Gharardadi (Contracted), and Tarhi (Graduates' temporary employment contract), respectively.

TABLE 2: Mean of caring behavior and caring burden among nurses who cared for patients with COVID-19 in East Guilan public hospitals ($n = 134$).

Variable	Mean ± SD	Minimum	Maximum
Caring behaviors	126.50 ± 13.63	92	144
Caring burden	43.65 ± 25.16	0	120

Note: SD = Standard deviation.

TABLE 3: Relationship between variables with a significance level of less than 0.2 (sex, education, place of living, history of COVID-19, and intention to change job) with caring behavior.

Variable	B	Std. Error	Beta	t	p value	95.0% confidence interval for B	
						Lower bound	Upper bound
Constant	157.75	8.764	—	18.000	0.000	140.410	175.091
Sex	−7.150	4.562	−0.132	−1.567	0.120	−16.177	1.877
Education	−6.696	3.537	−0.160	−1.893	0.061	−13.694	0.303
Place of living	−4.466	4.290	−0.088	−1.041	0.300	−12.955	4.023
History of COVID-19	−5.145	2.419	−0.179	−2.127	0.035	−9.931	−0.360
Intention to change job	−3.584	2.601	−0.116	−1.378	0.171	−8.730	1.563

In the relationship between caring burden and demographic variables due to the presence of seven variables (education, history of COVID-19, intention to change job, job satisfaction level, income status, housing status, and responsibility for another person caring) with $p \leq 0.2$, these variables were allowed to participate in the regression model. In the final stage, the factors of the history of COVID-19 and the intention to change job have the greatest impact on caring burden ($p < 0.05$). (Table 5).

The results based on the linear regression model showed that the history of COVID-19 and intention to change job had the greatest impact on the caring burden, so that nurses who did not have a history of COVID-19 had a higher mean score of caring burden (47.04 ± 26.679) compared to nurses with a history of COVID-19 (36.93 ± 20.511). This difference was statistically significant ($t = 2.230$, $p = 0.027$). In addition, nurses who intended to change their jobs had a higher mean score of caring burden (55.06 ± 20.069) than nurses who did not (39.62 ± 25.624), and this difference was statistically significant ($t = -3.229$, $p = 0.002$).

4. Discussion

In this study, caring behavior and caring burden and their relationship with some associated factors among nurses who cared for patients with COVID-19 in East Guilan public hospitals were investigated. The results showed that the mean scores of nurses' caring behavior were high and they had good caring behavior. There was not found any similar study in the literature review to discuss the results of this study, and it seems that this study is the first study that deals with this issue. However, to discuss the findings, we tried to use the most relevant evidence for the findings of the present study. Results of a study by Asadi et al. (2014) showed nurses' caring behaviors at the desired level [22]. In addition, results of another study conducted by Çelik et al. (2020), to determine the effect of teamwork attitudes on caring behaviors of nurses working in surgical clinics in a public hospital in

Anatolia, Turkey, showed that nurses' perception of caring behaviors was at a good level [21]. Also, Soriano et al. (2019) [6] and Calong and Soriano (2018) [26] reported the nurses' caring behavior was excellent. Optimal status of caring behavior among nurses who cared for patients with COVID-19 in the present study, despite the emergence of this disease and conditions of the country's hospitals with a high workload and nonstandard number of nurses relative to the number of patients [3, 27], indicated high knowledge and professional skills among nurses.

Findings showed that caring burden among nurses who cared for patients with COVID-19 was moderate. The researchers did not find a similar study to discuss our finding. However, the caring burden on caregivers and family members for some patients has been investigated in several previous studies. Results of a study conducted by Ebrahimian et al. (2017) indicated a moderate caring burden [11], which is in line with our findings. Results in another study conducted by Rezaei et al. (2020) showed that the overall percentage of caring burden in patients with chronic disorders was 53.28%. The highest percentages of caring burden were related to dialysis, mental disorders, and Alzheimer's disease, respectively; the lowest percentage of caring burden was related to diabetes [28]. In general, the results of different studies show that caring burden varies in different diseases, and despite the emergence of COVID-19, it was expected that the caring burden on nurses in the present study would be very high. However, the findings indicated that nurses did not experience more caring burden than other disease caregivers, which indicated the good knowledge and readiness of nurses to provide care for all patients, in particular, COVID-19. This finding emphasizes that having knowledge and awareness makes it easier to deal with any type of crisis, even when it is emerging. Therefore, it is necessary and recommended to improve nursing knowledge and practice through continuous education to empower nurses.

TABLE 4: Demographic characteristics and caring burden among nurses who cared for patients with COVID-19 in East Guilan public hospitals ($n = 134$).

Demographic variables		n (%)	Caring behaviors				
			Mean ± SD	Minimum	Maximum	Tests	p value
Age (year)	21–30	(50.0) 67	42.70 ± 22.87	1	96	F = 0.337	0.799
	31–40	(35.1) 47	42.94 ± 27.09	0	120		
	41–50	(14.9) 20	49.00 ± 29.08	0	115		
Sex	Female	(93.3) 125	43.66 ± 24.61	0	120	t = 0.025	0.980
	Male	(6.7) 9	43.44 ± 33.66	0	94		
Marital status	Single/Divorced/widowed	(16.5) 22	43.54 ± 22.74	0	88	t = 1.175	0.312
	Married	(83.5) 112	43.28 ± 26.10	0	120		
Number of children	No children	(10.5) 14	37.00 ± 36.51	0	73	F = 1.319	0.266
	One	(45.5) 61	41.43 ± 21.63	0	88		
	Two	(35.1) 47	44.19 ± 27.25	0	120		
	Three and above	(8.9) 12	54.00 ± 32.93	0	115		
Place of living	City	(94.8) 127	44.42 ± 25.20	0	120	t = 1.287	0.280
	Village/suburbs	(5.2) 7	31.83 ± 22.46	5	60		
Education[a]	BS	(88.1) 118	42.52 ± 25.92	0	120	t = −1.420	0.158
	M.Sc	(11.9) 16	52.00 ± 16.97	19	77		
Employment status[b]	Permanent	(33.6) 45	48.98 ± 26.06	0	120	F = 1.526	0.211
	Contracted to permanent	(26.1) 35	44.97 ± 27.95	0	96		
	Contracted	(9.7) 13	37.62 ± 18.82	4	69		
	Graduates' temporary employment contract	(30.6) 41	38.59 ± 22.70	0	88		
Work experience (year)	1–5	(42.5) 57	39.93 ± 22.66	0	88	F = 1.289	0.273
	6–10	(23.1) 31	40.68 ± 26.84	0	96		
	11–15	(18.7) 25	47.92 ± 21.63	19	96		
	16–20	(9.7) 13	49.92 ± 27.81	15	120		
	21–25	(4) 6	61.83 ± 31.10	28	115		
	26 and above	(1.5) 2	47.00 ± 66.46	0	94		
Working shifts	Morning	(17.2) 23	45.26 ± 23.76	17	120	F = 0.772	0.512
	Night	(6.0) 8	54.25 ± 21.87	29	96		
	Morning and evening	(4.5) 6	34.83 ± 23.88	4	74		
	Rotational	(72.4) 97	42.94 ± 25.84	0	115		
Housing status	Personal	(85.8) 115	41.80 ± 25.29	0	120	t = −2.120	0.036*
	Rental	(14.2) 19	54.84 ± 21.73	16	96		
Responsibility for another person caring	Yes	(5.2) 7	57.00 ± 22.264	19	85	t = −1.448	0.150
	No	(94.8) 127	42.91 ± 25.184	0	120		
History of COVID-19	Yes	(33.6) 45	36.93 ± 20.51	0	73	t = 2.230	0.027*
	No	(66.4) 89	47.04 ± 26.67	0	120		
Job satisfaction level	Low	(51) 68	49.04 ± 26.13	0	115	F = 3.839	0.024*
	Medium	(42.5) 57	37.19 ± 22.81	0	120		
	High	(6.5) 9	37.25 ± 20.27	17	65		
Intention to change job	Yes	(26.1) 35	55.06 ± 20.06	1	94	t = −3.229	0.002*
	No	(73.9) 99	39.62 ± 25.62	0	120		

TABLE 4: Continued.

Demographic variables		Caring behaviors				
	n (%)	Mean ± SD	Minimum	Maximum	Tests	p value
The number of family members						
1–2	35 (26.1)	41.40 ± 27.38	0	115	F = 0.705	0.496
3–4	88 (65.7)	43.53 ± 25.03	0	120		
≥5	11 (8.2)	51.73 ± 18.09	26	84		
Income status						
Low	36 (26.9)	50.94 ± 30.06	0	115	F = 2.287	0.106
Medium	84 (62.7)	41.58 ± 23.32	0	120		
Sufficient	14 (10.4)	37.29 ± 18.71	1	70		

Note: * significant level is indicated by $p < .05$. [a] BS = Bachelor of Science, M.Sc = Master of Scie the [b] the employment status of Iranian nurses includes Rasmi (Permanent), Paimani (Contracted to Permanent), Gharardadi (Contracted), and Tarhi (Graduates' temporary employment contract), respectively.

TABLE 5: Relationship between variables with a significance level of less than 0.2 (education history of COVID-19, intention to change job, job satisfaction level, income status, housing status, responsibility for caring for another person), and caring burden.

Variable	B	Std. Error	Beta	t	p value	95.0% confidence interval for B	
						Lower bound	Upper bound
Constant	25.001	17.799	—	1.405	0.163	−10.222	60.224
Education	6.225	6.399	0.081	0.973	0.332	−6.437	18.888
History of COVID-19	−11.731	4.271	−0.221	−2.746	0.007	−20.183	−3.278
Intention to change job	14.042	4.936	0.246	2.845	0.005	4.274	23.810
Job satisfaction level	−4.489	4.065	−0.100	−1.104	0.272	−12.534	3.556
Income status	−4.357	3.682	−0.102	−1.183	0.239	−11.644	2.929
Housing status	9.620	5.959	0.134	1.615	0.109	−2.172	21.413
Responsibility for another person caring	12.660	9.236	0.112	1.371	0.173	−5.617	30.937

Findings of the study indicated that there is no significant relationship between caring behavior among nurses caring for patients with COVID-19 and some demographic variables (age, sex, marital status, income, housing status, number of family members, number of children, responsibility for caring of another person, work experience, employment status, shift work, job satisfaction, and intention to change job). However, there is a significant relationship between caring behavior and education status, the location, and history of COVID-19. In a study conducted by Kotronoulas et al. (2009), there was no significant relationship between nurses' demographic characteristics (age, sex, marital status, clinical work experience, and position) and understanding of the importance of nurses caring behaviors for patients with cancer [29]. In the study conducted by Asadi et al. (2014), the caring behaviors of nurses working in intensive care units were not significantly associated with demographic characteristics (age, sex, marriage, education, and work experience) [22]. Findings in the present study are consistent with the mentioned studies in terms of some demographic characteristics (age, sex, marriage, and work experience). However, our findings are not consistent with them in terms of education. Differences in wards and patients under care can be a justification for this discrepancy. However, higher education leads to a wider range of vision and thinking [30] and can lead to more favorable caring behavior.

In addition, findings in the present study indicated that the history of COVID-19 has the greatest impact on caring behavior. This means that nurses who did not have a history of COVID-19 had a higher mean score for caring behavior than nurses who had a history of COVID-19. This can be due to the effect of COVID-19 on the physical and mental ability of nurses, so that a nurse who is infected with COVID-19, due to the physical and mental problems related to this disease, her/his ability to care is reduced, because herself/himself needs care. Nevertheless, she/he has to go to work and try to meet the needs of her/his patient, and this causes her/his caring behavior to be affected and she/he may not be able to take care of her/his patient, and it disrupts the delivery of her/his caring roles.

Also, findings in the present study indicated that there is no significant relationship between caring burden and some demographic characteristics (age, sex, education, marital status, place of living, income status, number of family members, number of children, responsibility for caring for another person, work experience, employment, and shift work). However, there is a significant relationship between caring burden and housing status, job satisfaction, intention to change job, and history of COVID-19. The caring burden experienced by caregivers can be influenced by many factors [31]. The results of a study showed that age and gender are factors that can greatly affect the caring burden of a patient with dementia [32]. In a study conducted by Talebi et al. (2017), there was a significant relationship between caring burden and age of the caregiver, so that age of the caregiver increases and the caring burden increases [30]. In other studies conducted by Salmani et al. (2014) [33] and Bayoumi (2014) [34], there was a significant relationship between caring burden and age of the caregiver, which is not consistent with the results of the present study. The reason for this discrepancy can be due to the average age of the samples in the present study with the mentioned studies. As the majority of samples (85.1%) in the present study were young and in the range of 21 to 40 years, but the average age of caregivers in the studies was conducted by Talebi et al. (2017), Salmani et al. (2014), and Bayoumi (2014) was 43.42 ± 7.00, 38.41 ± 9.04 and 40 ± 11.00 years, respectively [30, 33, 34]. However, with increasing age, person's physical ability to care for others decreases and the caring burden increases [35], and this can be a justification for the inconsistency of the findings of present study with those studies.

Findings in the present study also showed that the history of COVID-19 and the intention to change job have the greatest impact on caring burden. In this way, nurses who did not have a history of COVID-19 felt a higher caring burden than nurses who had this. In the study by Talebi et al. (2017) [30], there was a statistically significant relationship between the caring burden and the caregiver's illness, so that the caregiver who had the disease herself/himself experienced more caring burden. This finding is not consistent with the results of the present study. In justifying this discrepancy, it can be explained that nurses in the present study who did not have a history of COVID-19 took more protective measures to avoid getting sick and followed health protocols more, and they were under more burden. They were also under pressure to take care of the patients. They may also feel more pressured because of fear of future COVID-19. Therefore, this has led to additional pressure

and more caring burden. Regarding the intention of changing job, the results showed that nurses who intended to change their jobs endured a higher caring burden than nurses who did not. It seems they were reluctant to work in this profession due to job dissatisfaction and were forced to attend a work setting and do their job. This forced presence brought them a lot of pressure and stress, it doubled with caring for people with COVID-19, and they felt more caring burden.

The present study, like other studies, has some limitations. The use of questionnaires, which are a self-reporting method for data collection, is not far from being biased in response. Although sampling was conducted with the consent of the staff, the work environment conditions such as workload, stress, and fatigue of the participants may affect the quality of their response. Another limitation was conducting research in public hospitals in East Guilan, which was limited to generalization to other medical centers. It is suggested that future studies should be conducted to clarify the relationship between research variables in the wider statistical population.

5. Conclusion

Findings showed that despite the new emergence of COVID-19, caring behavior among nurses who cared for patients with COVID-19 was good, and the caring burden on nurses was moderate. Despite these results, it is necessary for the relevant managers to pay special attention to protecting health workers during a national crisis such as COVID-19, so that they experience a less caring burden and improve caring behavior.

Data Availability

The data set generated in this study is available upon reasonable request from the corresponding author.

Ethical Approval

The Ethics Committee of Guilan University of Medical Sciences (ethics ID IR.GUMS.REC.1399.648) in Iran approved this research. The study was performed in accordance with the ethical standards as laid down in the Declaration of Helsinki and its later amendments or comparable ethical standards.

Consent

Written informed consent was obtained from all nurse participants included in the study.

Conflicts of Interest

The authors declare that they have no conflicts of interest associated with this manuscript.

Authors' Contributions

AD is the first researcher and corresponding author who wrote the study proposal, supervised data collection, and analyzed the data. SMF as the coauthor was involved in the study design, data collection, analysis, and interpretation of the data. All authors have read and approved the manuscript.

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Hindawi

Research Article

Healthcare Workers' SARS-CoV-2 Infections in Four Hospital Outbreaks during Delta Variant Prevalence in Sydney, Australia

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Background. Healthcare workers (HCWs) are at risk of SARS-CoV-2 infections due to occupational exposure. The use of airborne personal protective equipment (PPE) significantly reduces this risk. In June 2021, an epidemic of the Delta variant began in New South Wales (NSW), Australia. Concurrent PPE guidelines, set by the Clinical Excellence Commission (CEC), restricted the use of respirators. *Objective*. To understand the relationship of PPE guidelines with workplace-acquired HCW SARS-CoV-2 infections in different clinical settings and to examine the relationship between rates of community transmission and workplace-acquired HCW infections during the Delta outbreak in NSW. *Methods*. Total SARS-CoV-2 HCW infections between 13 June and 30 October 2021 (first four months of the Delta wave) were estimated from the government COVID-19 surveillance reports and compared with the surveillance reports of community transmission. In the absence of a detailed reporting of HCW infections, open-source data including news articles, media releases, and epidemiological surveillance reports were also collected. Data were extracted on HCW cases of SARS-CoV-2 from four hospitals, including the number of HCW cases (per NSW Health definition), clinical setting, PPE guidelines, and evidence of increasing local transmission. *Results*. SARS-CoV-2 infections in HCW identified as workplace-acquired infections ($n = 177$) and those without a known transmission source ($n = 532$) increased during the period of increasing community transmission ($n = 75,014$) in NSW. Four hospital COVID-19 clusters affecting 20 HCWs were identified between June and October 2021. HCW clusters occurred in general wards where staff were recommended to wear surgical masks. No workplace-acquired HCW infections were reported in these hospitals from critical care wards, where respirators were recommended during the same outbreak weeks. *Conclusions*. Differences in PPE policy across different wards may leave healthcare staff at risk of SARS-CoV-2 infection. During periods of high community transmission, respirators should be provided to protect hospital staff. Formal reporting of HCW infections should occur.

1. Introduction

Since the emergence of COVID-19, the disease caused by the SARS-CoV-2 virus, in December 2019, more than 495 million cases have been confirmed globally [1]. In New South Wales (NSW), Australia, an epidemic of the Delta variant in Sydney, Australia, began in June 2021 and spread to all regions of NSW [2]. Healthcare workers (HCWs) are at higher risk of contracting COVID-19 due to occupational exposure and may have not have had access to adequate

personal protective equipment (PPE) early in the pandemic due to the denial of airborne transmission of the virus [3].

The World Health Organization (WHO) has identified HCWs as a group at increased risk of becoming infected with SARS-CoV-2 due to the increased likelihood of exposure through contact with people infected with the virus [4]. This risk increases with increasing levels of community transmission [4]. In September 2021, WHO estimated HCW deaths due to COVID-19 between 80,000 and 180,000 globally, with a likely estimate of 115,500 deaths [4]. In the

Australian context, it has been shown that HCWs have up to three times the risk of infection compared with the general population, and there have been multiple hospital outbreaks throughout the pandemic [5]. During the first six months of the pandemic, the rate of HCW infection was 90/100,000, the overall population infection was 34/100,000, and HCWs comprised of an estimated 6.03% of all reported infections [5]. In the Australian state of Victoria, over 4000 health and aged care workers became infected in 2020, with at least 69 percent of infections acquired at the workplace [6].

Transmission of SARS-CoV-2 is airborne [7]. In performing routine care with prolonged patient contact and working within a contaminated indoor environment, HCWs are at risk of COVID-19 exposure in the workplace [8]. HCWs may then cause ongoing transmission to their co-workers, patients, their families, and community members [8]. The use of masks and respirators, has been shown to significantly lower the rate of COVID-19 infection among HCWs [9].

The NSW Department of Health policy regarding the use of PPE is informed by the guidelines set by the Clinical Excellence Commission (CEC) [10]. During the COVID-19 pandemic, HCWs have been required to use "contact and airborne precautions" (P2/N95 respirator and eye protection) when providing care to patients with confirmed or suspected COVID-19, or if determined a close contact by the Public Health Unit (PHU) [10]. At the start of the Delta outbreak (version 1.1 of guidelines [10]), staff working in the critical care wards, including emergency departments, intensive care units, and designated COVID-19 wards, were required to use respiratory PPE, while staff working in other clinical areas (noncritical care) were required to wear surgical masks when performing patient care during periods of moderate community transmission [10]. These guidelines do not account for the presence of asymptomatic infection among staff and patients. Furthermore, restrictive guidelines and shortages of respirators in the NSW hospital system led to some frontline HCWs to use surgical masks or PPE that had not been fit-tested [11]. In NSW, there is no formal reporting of HCW infections. Therefore, in this study, media articles and other publicly available data were searched for reports of hospital outbreaks.

1.1. Objective. The objective of this study is twofold: first, to investigate the relationship between PPE guidelines and workplace-acquired HCW SARS-CoV-2 infections at different clinical settings within hospitals, in the absence of a formal reporting of HCW infections; and second, to examine the correlation between rates of community transmission and HCW infections.

2. Methods

2.1. Data Collection. In the absence of formal, public reporting of workplace-acquired HCW infections in NSW, open-source data can provide valuable information on workplace outbreaks, although it may be limited with regard to completeness of case information [5].

We searched for open-source reports of HCW clusters of SARS-CoV-2 infections in hospitals in NSW, Australia, between 13 June 2021 (the start of the epidemiological week in which the first case of Delta variant of SARS-CoV-2 was reported in NSW [12]) and 30 October 2021.

We conducted a study with a retrospective comparative analysis using open-source data to identify HCW clusters in the Delta variant epidemic in NSW in 2021. In addition, we compared the PPE policy implementation across the affected and nonaffected wards in the same hospitals.

2.1.1. Identifying HCW Infections in NSW. Total SARS-CoV-2 HCW infections between 13 June 2021 and 30 October 2021 were collated using information from the State COVID-19 surveillance reports (Table 1) [8, 12–14]. In NSW surveillance reports, HCWs were defined as medical and nursing staff, administrative and support staff, paramedics, laboratory technicians, pharmacists, and cleaners [2]. For this study, this definition is maintained. The state PHU designates the source of HCW infections following a case investigation [6]. Attribution to workplace acquisition of SARS-CoV-2 may be difficult in periods of high levels of community transmission; therefore, both "possible" and "unknown" cases (Table 1) have been included in Figure 1.

2.1.2. Identifying HCW Workplace Outbreaks in NSW during the Delta Epidemic. Open-source data were collected for NSW, Australia, including media articles, hospital and state government media releases, and state government epidemiological surveillance reports, and were reviewed to identify workplace-acquired HCW infections between 13 June and 30 October 2021. The cohort study data collection began on 15 August 2021 and continued through 30 October 2021. A line list of reported positive cases was created with information including infection source, date of reported case, location including specific wards, policies relating to PPE, and vaccination coverage (see Table S1 in appendix). No identifying information was available or recorded. A Google search was conducted using the following keywords: (healthcare worker OR nurse OR hospital personnel) AND (NSW OR Sydney) AND (COVID-19 OR COVID OR coronavirus OR Delta OR SARS-CoV-2) AND (hospital OR ward) AND (outbreak OR cluster). The first six pages of each Google search were reviewed.

2.2. Inclusion and Exclusion Criteria for HCW Clusters. HCW clusters were defined as two or more cases of COVID-19 in the same healthcare facility within one week (Table 2). Critical care wards are defined as emergency departments, intensive care units, and designated COVID-19 wards, and noncritical care wards are defined as other wards providing clinical inpatient care.

HCW clusters were included if complete information was available about the hospital, the number of HCWs infected with documented transmission occurring at the

TABLE 1: NSW HCW SARS-CoV-2 infections by attributed source (13 June 2021 to 30 Oct, 2021) [8, 12–14].

Reporting period	13 June 2021 to 30 October, 2021 (epidemiological weeks 25–43)
Dominant strain	Delta
Vaccination	High rates of vaccination among HCW
Workplace-acquired cases*	177
Community-acquired cases*	181
Unknown source*	532
Total HCW with COVID-19	890
Total cases with COVID-19 in NSW	75,014

*As assessed by NSW Health. Criteria for attributing place of infection not available.
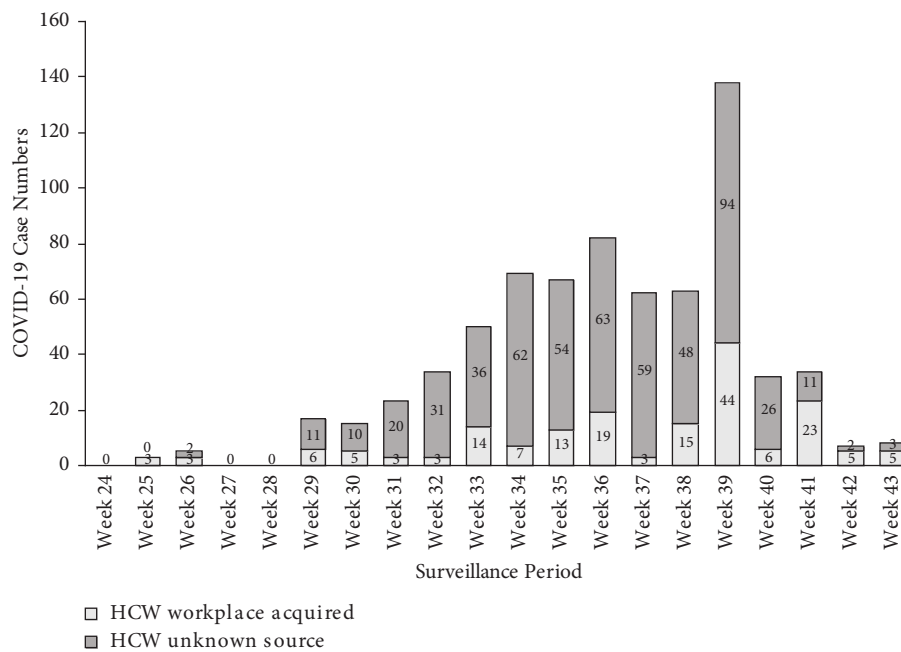
FIGURE 1: The number of HCW SARS-CoV-2 infections in NSW (13 June 2021 to 30 October 2021) ($n = 890$). Data source: COVID-19 in Healthcare workers in NSW. NSW Department of Health Health. COVID-19 weekly surveillance reports - Archive. NSW Department of Health. COVID-19 in NSW. NSW Department of Health. Coronavirus (COVID-19) case numbers and statistics. Australian Government Department of Health.

workplace, dates, and the ward type (Table 2). The PPE policy was as per the CEC guidelines unless otherwise stated by the hospital. Vaccination coverage was obtained by open-source media reports or hospital press releases. To establish an increased likelihood of HCW exposure to COVID-19 across all wards (including emergency department presentations), a criterion for inclusion was that the cluster occurred in the week/s following a documented increase in community transmission (Table 2). This was determined by the designation of local government areas (LGAs) of concern or suburbs of concern by the NSW Department of Health, through manual search of the daily NSW Health media releases and the weekly epidemiological reports [12, 17]. NSW Health used COVID-19 case data, vaccination coverage, and movement trends in the local area to determine LGAs of concern [18]. Inclusion and exclusion criteria and the results are shown in Table 2.

2.3. Data Analysis. Analysis and reporting were performed by using Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for epidemiological studies [19]. Data collected for analysis focused on the HCW in four tertiary care hospitals located in Sydney during the Delta epidemic in 2021. The four hospitals were selected due to well-reported outbreaks among health workers, including publicly available details on the type of wards involved.

A descriptive analysis was conducted, and case counts were compared between noncritical care wards and critical care wards within the same hospital over the same period.

Total SARS-CoV-2 community and HCWs confirmed infections between 13 June 2021 and 30 October 2021 were collated using information from the state and commonwealth COVID-19 surveillance reports.

TABLE 2: Inclusion and exclusion criteria and results.

Inclusion criteria	Included HCW clusters
Two or more HCWs in the same cluster were infected within a one-week period. Complete information about the hospital, the number of HCW infected with documented transmission occurring at the workplace, dates, and the ward type, in the week/s following an increase in community transmission, determined by the designation of LGA of concern	Hospital A ($n = 7$) Hospital B ($n = 2$) Hospital C ($n = 8$) Hospital D ($n = 3$)
Exclusion criteria	*Excluded*
No information about workplace transmission, less than 2 HCW infected, and no information about ward type	Hospital E: 24 patients and five staff members were infected across six separate wards ($n = 5$) in an epidemiological week. No information about workplace transmission [15] Hospital F: one patient and one HCW ($n = 1$) [16]
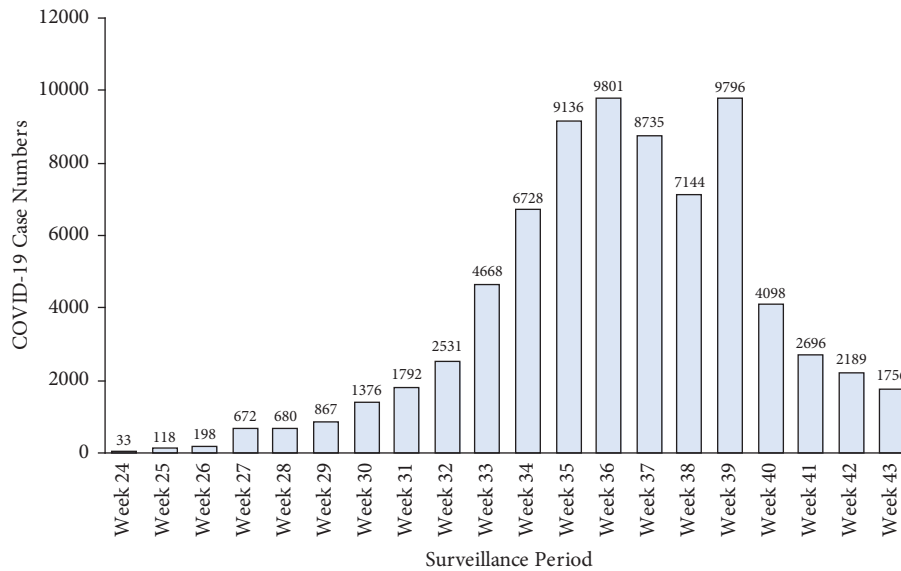
FIGURE 2: The total number of SARS-CoV-2 infections in NSW (13 June 2021 to 30 October 2021) ($n = 75,014$). Data source: COVID-19 Weekly Surveillance in NSW, NSW Department of Health, 2021.

3. Results

3.1. HCW Infections in NSW. Total SARS-CoV-2 HCW infections between 13 June 2021 and 30 October 2021 are shown in Table 1 [8, 12–14]. There were 890 cases in HCW in that period. The source of HCW infections is designated by the state PHU following case investigation, without further information about how the source was ascertained [6]. The majority of HCW infections ($n = 532$) were classified as "unknown source," followed by community-acquired cases ($n = 181$) and workplace-acquired cases ($n = 177$) [8, 12–14].

During epidemic periods, HCWs in NSW have had an increase in workplace-acquired infections (Figure 1). There had been 890 healthcare workers diagnosed with COVID-19 in the Delta outbreak by 30 October 2021 (epidemiological week 43), and of those, 42.1% ($n = 375$) were vaccinated with two doses of COVID-19 vaccine, 11.3% ($n = 101$) had received one dose, and 46.5% ($n = 414$) were unvaccinated [2]. The overall vaccination rate of HCWs in Sydney metropolitan hospitals as of 31 August 2021 was recorded as follows: 81% of HCWs had received two doses and 5% had received one dose [20].

3.2. HCW Workplace Outbreaks in NSW during Delta Epidemic. We identified six HCW outbreaks involving 25 infected HCWs, of which four met the inclusion criteria [21–27]. Table 3 shows that HCW outbreaks corresponded with the increasing community transmission by the local government area (LGA) [12, 28]. Vaccination rates were high compared to the community [20, 26, 29, 30]. The wards associated with the HCW clusters were general and non-critical care wards, including acute aged care, neurology, oncology, and orthopedic [21–27]. HCWs used surgical masks for patient care episodes on the affected wards, as per the CEC guidelines. Across the same weeks, there were no

clusters identified in critical care wards (ICU and emergency), where HCWs were provided respirator masks for patient care [21–27].

3.2.1. Hospital A 23–30 July 2021 (Epidemiological Week 31). The hospital A cluster was reported on 24 July with the index case of a partially vaccinated nurse who worked across two wards whilst infectious, neurology and geriatrics [31]. During the week from 23 July to 30 July 2021 (epidemiological week 31), there were seven workplace-acquired infections among HCWs in these two wards [22, 23]. During the same period, there were no HCW infections in critical care wards [23], despite the likely exposure to COVID-19-positive patients due to the increasing community transmission. The relevant LGA was designated an LGA of concern from 18 July 2021 due to the rising community transmission [12]. Following this outbreak, all clinical staffs were required to wear full respiratory PPE [22]. At the time of the hospital A cluster, the vaccination rates for the staff were greater than 50% [29].

3.2.2. Hospital B 13–20 August 2021 (Epidemiological Week 33). The hospital B cluster was reported on 14 August, with the index case of an oncology patient who tested positive on 13 August [25]. Subsequently, five other oncology patients and two staff members were tested positive [25]. The staff members, a nursing unit manager and a junior medical officer, were both fully vaccinated [25]. During the same period, there were no reported HCW infections on critical care wards [20]. The surrounding area was designated an LGA of concern on 28 July 2021, due to the rising community transmission [32]. While vaccination rates were unable to be sourced for the relevant epidemiological week, it was documented on 31 August 2021 that across all Sydney metropolitan hospitals, staff vaccination rates were 81% fully vaccinated (two doses) and 5% partial vaccination (one dose) [20].

TABLE 3: Summary of HCW clusters in NSW during Delta epidemic 2021 (epidemiological weeks 24–43).

HCW cluster	Hospital A	Hospital B	Hospital C	Hospital D
Local area identified as increasing community transmission*	18 July 2021	28 July 2021	8 August 2021	7 September 2021
Outbreak date	23–30 July 2021 *epidemiological week 31*	13–20 August 2021 *epidemiological week 33*	14–21 August 2021 *epidemiological week 33*	9 September 2021 *epidemiological week 36*
Vaccination rate	>50%	Approx. 80%	70%	92%
Wards associated with cluster	Acute aged care, neurology (29 patients)	Oncology (6 inpatients)	Oncology, orthopedic	Acute aged care
Number of HCW with workplace-acquired SARS-CoV-2 infection				
Noncritical care wards	7	2	8	3
Critical care wards	0	0	0	0
PPE policy in place at the commencement of the outbreak				
Noncritical care wards	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)	Surgical masks for patient care (as per CEC guidelines)
Critical care wards (ED, ICU, and COVID-19 wards)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)	Contact and airborne precautions (respirator mask)

*Determined by NSW department of health.

3.2.3. Hospital C 14–21 August 2021 (Epidemiological Week 33). The hospital C cluster was reported on 14 August, with an unknown index case. The first four cases of staff members in this cluster who tested positive for workplace-acquired COVID-19 were reported on 14 August [21]. During the week of 14–21 August (epidemiological week 33), eight HCWs were infected across the oncology and orthopedic wards; however, no HCW infections were reported in the critical care wards in the hospital [15, 21, 26]. The surrounding area was designated an LGA of concern from 8 August [33]. Following the outbreak, the hospital C required all staff to use respiratory protection during clinical interactions [21, 27]. Staff vaccination rates at hospital C were reported to be 70% at the time [26].

3.2.4. Hospital D 9 September 2021 (Epidemiological Week 36). The hospital D cluster was reported on 9 September, when two patients and three nurses tested positive in the geriatric ward [24]. Following this outbreak, staff were required to increase PPE levels for safety purposes [24], and no further cases were reported. During the same period of increasing community transmission in the surrounding area [28], there were no workplace-acquired infections reported in the critical care wards of hospital D. Staff vaccination coverage was 92% at the relevant time [30].

4. Discussion

There is variable public reporting of HCW infections due to workplace exposure to SARS-CoV-2. Due to this, we utilized open-source data to extract more detailed information on workplace outbreaks [5]. There were 171 HCW infections attributed to workplace-acquired sources by NSW Health, and this study examines outbreaks involving 20 of those cases. This is a descriptive study; therefore, while associations may be drawn, positive correlations with statistical significance have not been established.

We have shown that differences in PPE policy across different wards may contribute to healthcare staff risk of SARS-CoV-2 infection. The guidelines in operation during the study period recommended airborne precautions in critical care wards and no workplace-acquired infections in these settings were reported in open-source media or publicly available reports. In contrast, reported outbreaks occurred in general wards (geriatric, neurology, oncology, and orthopedics) where surgical masks were recommended during the same periods of high community transmission. Exposure of HCWs in emergency departments, intensive care units, and COVID-19 wards was likely, due to the high levels of community transmission; however, there were no HCW clusters reported in open-source media or publicly available reports in these clinical areas during that time. The guidelines used in NSW assumed that airborne transmission only occurs in selected situations such as aerosol-generating procedures; however, SARS-CoV-2 is airborne [7]. Approximately 35% of infections present as asymptomatic [34], and in addition, the presymptomatic stage of infection is highly contagious [35]; therefore, in times of increasing community transmission,

precautionary PPE should be available. With a high rate of hospital staff vaccination in the Sydney metropolitan area, it is possible that the differences seen in this study could be attributed to differences in the types of PPE used in the differing clinical areas.

Australian HCWs are up to three times more likely to have SARS-CoV-2 infection than the general population [5, 6]. The Victorian second wave in 2020 reported that 63.4% of cases were acquired in a healthcare setting, 19.3% in the community, and 17.3% were unable to be determined [6]. In NSW, there was less information about attribution and almost half were classified as "unknown" sources. This suggests a potential attribution bias, which may function to minimize the true picture of workplace transmission in NSW hospital settings, and could underestimate the impact of inadequate use of PPE.

There were high rates of HCW vaccination in NSW, in part due to eligibility, and also as a public health order mandating COVID-19 vaccination at least one dose of a COVID-19 vaccine by 30 September 2021 and both doses by 30 November 2021, as a condition of employment [36]. At the time, two doses of the COVID-19 vaccine were considered "fully vaccinated." By 31 August 2021, staff in metropolitan hospitals in Sydney had a vaccination rate of 81% vaccinated with two doses and 5% partial vaccination (one dose) [20]. However, it has been shown in other locations that even in highly vaccinated healthcare workforce, vaccine effectiveness decreases over time, in part due to characteristics of the circulating variant and in part due to waning immunity [37]. Vaccination should not be the only focus of COVID-19 control in high-risk settings such as hospitals, and respirators should be prioritized to protect HCW [37].

The WHO formally acknowledged that SARS-CoV-2 was spread through airborne transmission in May 2021 [7]. During times of increasing community transmission, HCWs are at a higher risk of acquiring workplace infections [5]. Changes in guidelines governing the provision of PPE can be expected to follow. In June 2021, the Infection Control Expert Group (ICEG) published national guidelines for the use of face masks by HCW in Australia [38]. The guidelines stated that respirator and eye protection should be used if the patient was known or suspected to be COVID-19 positive, if there was a current transmission in the community (especially if there were unlinked cases), if the duration of care was prolonged or at close proximity if there were other transmission risk factors such as the patient coughing or shouting, or if there was inadequate ventilation or sudden air movements (including a door opening or closing) [38].

The Clinical Excellence Commission in NSW updated the infection control and PPE guidelines on several occasions in 2021; however, the recommendations regarding the use of N95/P2 respirators did not change [10]. Therefore, it remained in the NSW hospital system that airborne protection (the use of N95 and eye protection) was to be used with patients with suspected or confirmed COVID-19 or close contact with COVID-19 cases as determined by the PHU [10].

These guidelines may not have been sufficient to protect HCWs in noncritical care wards during the pandemic [11]. Following the HCW clusters and severe staffing shortages, the relevant local health districts (LHDs) moved

independently to require their workforce to wear PPE during all clinical interactions, overriding the CEC guidelines [21, 22, 24, 27]. Burnout, illness, and mass furloughing have created severe health workforce shortages during the pandemic. Therefore, there is a benefit beyond the protection of the individual to mitigating the airborne transmission of SARS-CoV-2 in healthcare facilities.

5. Limitations

The lack of formal reporting on health worker infections necessitated the use of open-source data for this study. Although the number of HCW cases was provided in Health bulletins, other information was not available, and the attribution of the source of infection was not described, with the majority of cases classed as "unknown." Compliance with the outbreak measures by HCWs was also assumed and it is unknown what strategies were employed to measure it. The quantitative measure of compliance rates and qualitative data on the reasons for compliance with infection control measures could provide more depth to our understanding of the transmission of the SARS-CoV-2 virus among HCWs in a tertiary hospital setting. Further limitations to the study include the use of open-source data, including media articles, government reports, and documents, which may vary in completeness of case information and impact validity. The quality of the data used may be further improved by verification of the open-source data by hospital authorities or formal reports being issued, similar to the state of Victoria. This study conducted a descriptive analysis by comparing case counts of workplace-acquired HCW SARS-CoV-2 infections in non-critical care wards and critical care wards within the same hospital over the same period, as well as investigating HCW infections at times of increasing community transmission. While the variables under study (lack of policy requirement to use respirators in the work environment and workplace-acquired infection and community transmission and HCW infections) appear to have a relationship, no statistical analysis was performed, and therefore, a positive correlation between the variables cannot be concluded.

6. Conclusions

In this descriptive study, we analysed four hospital outbreaks affecting 20 HCWs during the Delta wave of SARS-CoV-2 in Sydney, Australia. All the identified HCW clusters were in general wards who utilized surgical masks as PPE. Differences in PPE policy across different wards may leave healthcare staff at a disproportionate risk of SARS-CoV-2 infection. All hospital HCWs should be provided with respirators during periods of increasing community transmission of SARS-CoV-2. To meet work health and safety obligations toward HCW, healthcare-acquired infections should be reported.

Data Availability

The data that support the findings of this study are derived from public resources, namely, media articles, press releases, and government surveillance reports, which are openly available at locations cited in the reference section.

Conflicts of Interest

All authors are employed by the Kirby Institute of the University of New South Wales. The authors declare that they have no conflicts of interest.

Authors' Contributions

Danielle Hutchinson wrote the original draft, conceptualised the study, proposed the methodology, and performed the formal analysis. Mohana Kunasekaran and Haley Stone reviewed and edited the manuscript, proposed the methodology, and performed the formal analysis. Xin Chen reviewed and edited the manuscript and proposed the methodology. Ashley Quigley reviewed and edited the manuscript and performed the formal analysis. Aye Moa reviewed and edited the manuscript, supervised the study, and proposed the methodology. C Raina MacIntyre conceptualised the study, reviewed and edited the manuscript, and supervised the study.

Acknowledgments

Supplementary Materials

Table S1 contains details of reported positive cases including infection source, date of reported case, location including specific wards, policies relating to PPE and vaccination coverage, and the data source with corresponding uniform resource locator (URL). (*Supplementary Materials*)

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Research Article

Psychometric Evaluation of the Postoperative Recovery Profile

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Aim. To further evaluate the postoperative recovery profile regarding its psychometric properties. *Background*. The postoperative recovery profile is an instrument for the self-assessment of general postoperative recovery that has received increased attention within nursing research. However, psychometric evaluation during development was sparse. *Design*. Psychometric evaluation was done using classical test theory. *Method*. Data quality, targeting, reliability, and scaling assumptions were measured. In addition, confirmatory factor analysis was used to evaluate construct validity. Data collection was made during 2011–2013. *Result*. Data derived from this study showed acceptable quality; however, item distribution was skewed, with ceiling effects in the majority of items. Cronbach's alpha showed high internal consistency. Item-total correlations indicated unidimensionality, whereas six items demonstrated high correlations pointing at redundancy. The confirmatory factor analysis confirmed problems related to dimensionality as the five proposed dimensions were highly correlated with each other. Furthermore, items were largely uncorrelated with the designated dimensions. *Conclusion*. This study shows that the postoperative recovery profile needs to be further developed to serve as a robust instrument within nursing as well as medical research. Arguably, values from the instrument should not be calculated at a dimensional level for the time being because of discriminant validity issues.

1. Introduction

Recovery after a surgical intervention has different meanings depending on whom it concerns. For the anesthesiologist, recovery means the return of vital reflexes when awakening from anesthesia [1, 2]. For a surgeon, short-term recovery equals home-readiness, while long-term recovery is conditioned by normal functioning and the resumption of normal, daily activities [3]. Consequently, there are several instruments measuring postoperative recovery from different points of view. However, patient-reported outcomes (PRO.s) are of utmost importance when measuring postoperative recovery; consequently, several instruments have been developed with that purpose during the past decades.

Patient-reported outcomes are measures that concern patients' health, quality of life, or functional status associated with healthcare or treatment and are reported by patients themselves [4]; (p.62). Acknowledging PROs can contribute to the delivery of high-qualitative, patient-centred care, and for this purpose, the need for patient-reported outcome measures (PROM) have increased. Using PROMs will provide a better understanding about the impact surgery has on patients' lives [5]. This, together with medical improvements, can advance the field of surgical care. Within the sphere of surgical research, there are numerous PROMs frequently used, for example, the Medical Outcome Study 36-Item Short-Form Health Survey (SF-36) [6]; the EuroQoL 5-Dimensions (EQ-5D) [7]; and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ) [8]. However, these are generic measures of health and should not be used if postoperative recovery is the specific outcome of interest. Instead, instruments that are developed with that specific purpose needs to be used and, most importantly, such instruments should be valid and reliable. Despite this, the majority of instruments are claimed to fail in robustness, leading to uncertainties when using the information provided [9]. In a systematic review aiming at evaluating psychometric properties of PROMs used in research for measuring recovery after abdominal surgery, Fiore et al. [10] found 22 different PROMs. In the review, 74% of the PROMs received only poor or fair quality ratings. Most frequently

appraised were the three versions of quality of recovery (QOR-9, QOR-15, and QOR-40) and the abdominal surgery impact scale (ASIS); however, both instruments showed significant limitations regarding psychometric properties, except for the ASIS, which showed a high content validity. The use of PROMs for the evaluation of postoperative recovery is highly relevant. However, using instruments that are developed for a different reason or are poorly functioning might be counterproductive and result in low-quality care and reduced opportunities for enhancing patients' recovery. Most importantly, it will not benefit the patients.

One PROM that has increased in use within nursing research during recent years is the postoperative recovery profile (PRP) by Allvin et al. [11]. The instrument has been used for patients recovering from general and orthopedic surgery [12–15], heart and lung transplantation [16, 17], upper abdominal cancer surgery [18], gastric bypass [19], colorectal cancer surgery [20–22], trauma [23], and coronary artery bypass grafting [24]. The PRP was developed in Sweden, but the instrument has also been translated and used in the United States [25]. In the systematic review by Fiore et al. [10], the PRP received high ratings regarding content validity, but it could not be judged regarding another psychometric aspect since information in published studies from the development was missing.

The PRP was developed based on a concept analysis that provided a definition of postoperative recovery [26] as well as from focus group interviews with patients, nurses, and surgeons describing their understanding of postoperative recovery [27]. From the formulated definition and subsequent interviews, the developers selected 19 items and divided them into five dimensions. The PRP was assigned features to serve as a multi-item, multidimensional instrument for the self-assessment of general recovery after surgery. The PRP has been evaluated regarding content and face validity, reliability, and construct validity. The initial evaluation resulted in a minor revision of the layout, and the instrument showed high test-retest reliability [11]. Construct validity was tested on the final version pointing at a good construct validity [28]. However, later studies using the PRP have expressed concerns, especially about the scoring procedure when analyzing and interpreting results from the PRP, suggesting that the scoring might be insensitive, both at the item and dimensional levels [20, 21]. Further potentially problematic issues arise from reviewing the developmental process in more detail. First, despite some reported validity and reliability issues for two of the 19 initial items (*appetite changes* and *interest in surroundings*), all items were included in the final version of the instrument [11]. Second, it is unclear how the items were divided into five dimensions as that process is not described. Furthermore, the objective behind the scoring procedure at a dimensional level is not explained or justified.

The increasing use of the PRP within nursing research demonstrates a continuing need for an instrument that adequately measures PRO after surgery. However, to ensure the trustworthiness of studies building their results on the PRP, the instrument needs additional evaluation.

TABLE 1: Correspondence between number of items responded by "none" and level of recovery constituting the original scoring procedure as recommended by Allvin et al. [28].

Number of items	Level of recovery
19	Fully recovered
15–18	Almost fully recovered
8–14	Partly recovered
7	Slightly recovered
0–6	Not at all recovered

2. Methods

2.1. Aim. This study aims to further evaluate the postoperative recovery profile regarding its psychometric properties.

2.2. Design. A psychometric evaluation of a 19-item questionnaire intended to measure postoperative recovery.

2.3. Participants. This study utilizes data from a larger data collection prospectively following the recovery process in patients after colorectal cancer surgery. A consecutive recruitment was made at a university hospital in Sweden. Eligible patients had a cancer in the colon or rectum and were planned to undergo surgery to remove the tumor. Hence, participants were recruited at their preoperative informational visit before surgery. The inclusion criterion was the ability to understand and respond to the instrument in Swedish.

2.4. Data Collection Procedure. Patients who agreed to participate received the PRP instrument one month after surgery. The PRP was distributed by regular mail together with a prepaid envelope for return. Two reminders were sent to those who did not return the instrument.

2.5. Instrument. The PRP consists of 19 items that represent symptoms that can arise during the postoperative recovery process, for example, *pain, nausea,* or *problem with emptying the urinary bladder.* The items are formulated as statements, and patients are asked to indicate how much they experience each symptom, for example, "right now I feel a pain that is….." The response alternatives are "none," "mild," "moderate," and "severe." The recommended scoring at the item level is made by counting all the items responded to by "none." The number of "none" responses constitutes an indicator sum and equals the level of recovery (Table 1). In order to assess recovery at a dimensional level, the developers have described that level of recovery in each dimension should be based on the most severe problem reported by the patient [29]. For example, the dimension *physical function* includes five items. According to the proposed scoring procedure, level of recovery should be assessed as "severe" if the patient reports "none," "none," "severe," "mild," and "mild" since the most severe problem direct the scoring.

The instrument has a second version with 17 items instead of 19. It excludes the items concerning *sexual activity* and *reestablishing everyday life* and is intended to measure recovery while patients are hospitalized. For this current study, the version with 19 items was used since included patients responded to the instrument after discharge from hospital.

2.6. Data Analysis.

According to the original recommended scoring procedure of the PRP at an item level, as described above, recovery should be evaluated by calculating an indicator sum based on items responded by "none." However, there have been concerns about this scoring procedure because it excludes all possible answers except the "none" answers. To better reflect the full range of recovery, the scoring procedure at the item level was revised in this current study to include all response alternatives. Hence, a total score was calculated according to the following: "severe" = 1, "moderate" = 2, "mild" = 3, and "none" = 4. Thus, the total score could range between 19 and 76. A higher total score means better recovery. Current study did not propose a revised scoring procedure at the dimensional level.

The data were initially analyzed using classical test theory (CTT) to explore data quality, targeting, reliability, and scaling assumptions. In addition, a confirmatory factor analysis (CFA) was performed to evaluate construct validity. Classical psychometric tests were made using the IBM SPSS Statistics (version 28) and the CFA using IBM SPSS Amos (version 28).

2.7. Data Quality.

A high proportion of missing data leads to uncertain results. Therefore, data quality was examined regarding missing data for items and computable scale scores. The proportion of missing data for items should be less than 10%, and in case of missing items, the scale score was considered as computable if more than 50% of the items were completed [30].

2.8. Targeting.

In order to evaluate whether the PRP instrument targeted the full variance within the sample, floor and ceiling effects as well as skewness were calculated. Floor and ceiling effects were considered as present if the proportion of answered response alternatives exceeded 20%. Furthermore, the skewness range should be between −1 and 1 [30, 31].

2.9. Reliability.

Because this study is based on previously collected data, no test-retest reliability was measured. Therefore, reliability was measured only regarding internal consistency using Cronbach's alpha. Alpha coefficients >0.8 were considered as acceptable [30, 32].

2.10. Scaling Assumptions.

In a unidimensional scale, all items contribute equally to the total score. Furthermore, Likert-based items can be legitimately summed if they have approximately the same mean values and standard deviations (SD) [30]. To evaluate this, item response distributions were reviewed. In addition, item-total correlations

were calculated. The correlation values were considered as satisfactory when ranging between 0.40 and 0.70 [31].

2.11. Construct Validity.

To examine construct validity of the PRP dimensions and how well items represented the dimensions, a CFA was performed. Cases with missing items were excluded from the CFA; thus including 122 cases.

To indicate how well the five dimensions, proposed by Allvin et al. [28], fitted the sample data, the model fit was assessed using relative/normed chi-square statistics (CMIN/DF), goodness-of-fit statistics (GFI), adjusted goodness-of-fit statistics (AGFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Furthermore, a comparative fit index (CFI) was used to test the hypothesis that all dimensions in the model were uncorrelated, thus pointing at good discriminant validity [33, 34]. Table 2 present the thresholds for model fit. In addition, correlations between dimensions as well as item loading scores were examined. As the PRP is supposed to be multidimensional, assessing different aspects of postoperative recovery, its dimensions were expected to be uncorrelated with each other. In contrary, the items within each dimension were expected to show high correlations with their respective dimension. Correlations between dimensions should therefore not exceed 0.80, and item loadings should be above 0.70.

2.12. Ethical Considerations.

The study was approved by the Swedish Ethical Review Authority before the study started (No. 2011/451; 2021-06818-02). It was also conducted in line with the ethical principles expressed in the Declaration of Helsinki [35]. All eligible patients were approached with verbal and written information containing the aim of the study, a description of the study procedure, an assurance of confidentiality, and the right to withdraw at any time. Patients who did not return the instrument despite two reminders were considered as having withdrawn and did not receive further reminders.

3. Results

In all, 154 patients participated in the study. Those were equally distributed based on gender with a mean age of 69.4 years (SD 10.9). The majority of patients had undergone a low anterior resection of the rectum. Further participant characteristics are displayed in Table 3. Results from the psychometric evaluation are presented below.

3.1. Data Quality.

The percentage of missing data for items was acceptable varying from 0 to 1.9%, except for the item *sexual activity*, which had 15.6% missing data (Table 4). The proportion computable scale score was 79.2%.

3.2. Targeting.

Regarding the total score, there were no floor and ceiling effects present (0.6% and 3.9%, respectively). However, the item distribution was skewed (−1.167) with a total mean score (62.27) close to the maximum value.

TABLE 2: Model fit measures with recommended thresholds.

Measure	Results	Thresholds[†]
CMIN/DF	1.898***	<3 good
CFI	0.895	>0.95 great, >0.9 acceptable, and >0.8 sometimes acceptable
GFI	0.810	>0.95
AGFI	0.746	>0.8
SRMR	0.0672	<0.09
RMSEA	0.086***	<0.05 good, 0.05-0.1 moderate, and >0.1 bad

[†]Thresholds as recommended by Hu and Bentler [34]. ***p value <0.001.

TABLE 3: Patients' characteristics.

Characteristics	
Gender (n, %)	
Male	79 (51.3)
Female	75 (48.7)
Age (years)	
Mean (SD)	69.4 (10.9)
Length of stay (days)	
Mean (SD)	10.1 (4.9)
Duration of surgery (minutes)	
Mean (SD)	276.9 (119.7)
Type of surgery (n, %)	
Low anterior resection of rectum	59 (38.3)
Abdominoperineal rectal resection	31 (20.1)
Colectomy	2 (1.3)
Left-sided hemicolectomy	5 (3.2)
Right-sided hemicolectomy	34 (22.1)
Sigmoid resection	23 (14.9)
PRP total score[†]	
Mean (SD)	61 (10.5)
Md	64
Min-max	27–76

PRP: the postoperative recovery profile, [†]total score was used as a scoring procedure in the current study.

Reviewing each item revealed considerably high proportion of ceiling effects in all items except one (ranging from 17.8% to 84.9%), pointing to the instrument being unspecific (Table 4).

3.3. Reliability. Cronbach's alpha was 0.927, indicating high internal consistency in the sample. If the item *gastrointestinal function* was deleted, the alpha would only be slightly improved (0.929).

3.4. Scaling Assumptions. In general, mean scores were high (ranging from 2.78 to 3.78), but item response distributions showed relatively equivalent mean scores and SDs, justifying the items to be summed. One item, *sexual activity*, presented an SD of 1,258, which was considerably higher than those for other items. Item-total correlations exceeded 0.40 for all items except one with a slightly lower, but still acceptable, correlation (0.355). This indicates that the instrument might be unidimensional. Moreover, there were six items with a correlation >0.70, indicating a potential redundancy (Table 4).

3.5. Construct Validity. In the CFA, model fit showed a generally acceptable fit to sample data (Table 2). The GFI and AGFI were lower than the desirable amount. The CFI was close to acceptable.

As displayed in Figure 1, high correlations between dimensions were shown, except between the dimension physical function and dimension psychological function (0.71) and between the dimension psychological function and dimension social function (0.79). Furthermore, most items showed low correlations with their respective dimensions. The highest correlations were seen for item 8 (*anxiety and worry*) and item 9 (*feeling down*) and the dimension *psychological function* (0.88; 0.93), proving them useful for measuring the psychological aspects of recovery. Moreover, item 12 (*social activities*) showed acceptable correlation with the designated dimension *social function* (0.80).

4. Discussion

The study by Fiore et al. [10] indicates that there is an apparent risk that weak instruments are being applied in research and for clinical decision making. When the PRP was developed, it initially demonstrated promising results regarding its psychometric properties, but it was never fully evaluated. The results from this study clearly show that the PRP has potential but needs to be further developed.

A good instrument should have the ability to target the full variance within the sample. If not, valuable information is lost. Therefore, the previously suggested scoring procedure, namely counting the "none" responses to produce an indicator sum, is problematic as it only considers one response option. Hence, targeting becomes limited. In addition, by using such a scoring procedure, it could be argued that one does not measure postoperative recovery. Instead, it measures patients that are more or less fully recovered, and doing so is of minor scientific and clinical value. Scientifically, there is a need to discover the normal pattern of recovery, and clinically, there is a need to identify patients who do not follow the expected, normal pattern. In this study, the total score was calculated, and the results showed that the data had a positive skewed item distribution. Although there were no ceiling effects regarding the total score, the total mean was close to the maximum score. At an item level, there was a considerable high proportion of ceiling effects for almost all items. This is another argument for not using the previously proposed scoring procedure, only accounting for the "none" options, but beyond that, the results suggest that

TABLE 4: Descriptive statistics for the items within the PRP instrument.

Item	Frequency distribution of response categories[†], %				Missing, n (%)	Valid, n (%)	Item mean	Item SD	Md	Skewness	Item-total correlation
	1	2	3	4							
[#]1. pain	2.0	13.8	45.4	38.8	2 (1.3)	152 (98.7)	3.21	0.751	3	−0.653	0.515
[#]2. Nausea	0.6	5.2	15.6	77.9	1 (0.6)	153 (99.4)	3.72	0.590	4	−2.174	0.509
[#]3. Gastrointestinal function	4.5	13.6	33.1	46.8	3 (1.9)	151 (98.1)	3.25	0.864	3	−0.938	0.355
[#]4. Fatigue	3.2	32.5	45.5	17.5	2 (1.3)	152 (98.7)	2.78	0.771	3	−0.043	0.655
[#]5. Muscle weakness	3.9	22.1	48.1	26.0	0 (0)	154 (100)	2.96	0.799	3	−0.396	0.655
[#]6. Appetite change	5.8	13.0	34.4	46.8	0 (0)	154 (100)	3.22	0.887	3	−0.961	0.631
[#]7. Sleeping difficulties	7.1	22.1	35.1	35.7	0 (0)	154 (100)	2.99	0.932	3	−0.526	0.598
[#]8. Anxiety and worry	7.1	16.9	30.5	44.8	1 (0.6)	153 (99.4)	3.14	0.946	3	−0.798	0.727
[#]9. Feeling down	7.8	13.0	31.2	46.8	2 (1.3)	152 (98.7)	3.18	0.945	3	−0.950	0.769
[#]10. Reestablishing everyday life	11.0	22.7	37.7	27.9	1 (0.6)	153 (99.4)	2.83	0.965	3	−0.408	0.709
[#]11. Sexual activity	22.1	9.7	14.9	37.7	24 (15.6)	130 (84.4)	2.81	1.258	3	−0.436	0.530
[#]12. Social activities	5.2	14.9	31.2	46.8	3 (1.9)	151 (98.1)	3.22	0.894	3	−0.900	0.725
[#]13. Personal hygiene	5.2	20.8	73.4	99.4	1 (0.6)	153 (99.4)	3.69	0.567	4	−1.650	0.646
[#]14. Interest in surroundings	1.3	3.9	9.7	83.8	2 (1.3)	152 (98.7)	3.78	0.574	4	−2.937	0.536
[#]15. Bladder function	3.9	9.1	20.8	64.9	2 (1.3)	152 (98.7)	3.49	0.822	4	−1.554	0.442
[#]16. Mobilization	2.6	13.0	35.7	48.1	1 (0.6)	153 (99.4)	3.30	0.795	3	−0.913	0.729
[#]17. Feeling lonely/abandoned	2.6	8.4	18.8	70.1	0 (0)	154 (100)	3.56	0.758	4	−1.730	0.713
[#]18. Dependence on others	1.3	11.7	23.5	54.5	0 (0)	154 (100)	3.40	0.746	4	−1.003	0.674
[#]19. Difficulties in concentration	0.6	8.4	32.5	57.8	1 (0.6)	153 (99.4)	3.48	0.680	4	−1.087	0.666

n = number; SD = standard deviation; md = median; [†]response categories were 1 = severe, 2 = moderate, 3 = mild, and 4 = none.

the scaling does not satisfy criteria for acceptability [30]. Despite changing the scoring procedure, there are still problems with covering the entire range of the scale. It might be that the response options are too few, although it has been discussed whether an increase in the number of response options will enhance validity if the response options are unable to distinguish differences [36]. If going forward with the development of the PRP, it would be beneficial to test an expansion of the response alternatives to include at least five options as well as check that the wording of the items functions as intended. Skewness and ceiling effects could, of course, also depend on the respondents feeling quite well one month after surgery and therefore selecting the "none" response alternative more frequently, although, this is not the most likely explanation, as colorectal cancer surgery is a major procedure. Despite ceiling effects at the item level, all response alternatives were used for all items. In addition, there was an acceptable rate of missing items, pointing to good data quality. One exception was the item measuring *sexual activity*. This item demonstrated a high proportion of missing answers. Questions concerning sexuality are known to be sensitive and sometimes experienced as intrusive. Consequently, respondents might refrain from answering [37]. Earlier research has acknowledged sexuality as a problem area after colorectal surgery that is often disregarded by healthcare [38, 39]. Therefore, questions about sexuality and sexual function should be asked in a proper way to encourage respondents to answer. This underpins the importance of checking the wording of items during an

instrument's development, for example, by conducting cognitive interviews.

The PRP was developed as a multidimensional instrument that includes five dimensions. However, it is not described anywhere how the division was made, and in this study, item-total correlations showed signs of unidimensionality. The following CFA confirmed problems with discriminating dimensions as the proposed dimensions were strongly correlated with each other. This indicates that the dimensions cannot be calculated separately because they likely do not reflect different aspects of recovery. In addition, most items had low correlations with their designated dimensions, which means that they are weak indicators. The PRP is intended to measure aspects of postoperative recovery. However, theoretical conclusions that can be drawn from such models are dependent on the direction of the causality between items and dimensions, and misspecification can lead to Type I or Type II errors [40]. Because the multidimensionality of the PRP is associated with great uncertainty, recovery should not be calculated at a dimensional level when using the current version of the PRP.

4.1. Methodological Limitations. A potential methodological limitation is the relatively low sample size ($n = 154$). According to the COSMIN study design checklist, a sample of at least 100 persons would be sufficient to produce methodologically sound estimates [41]. Regarding the CFA,
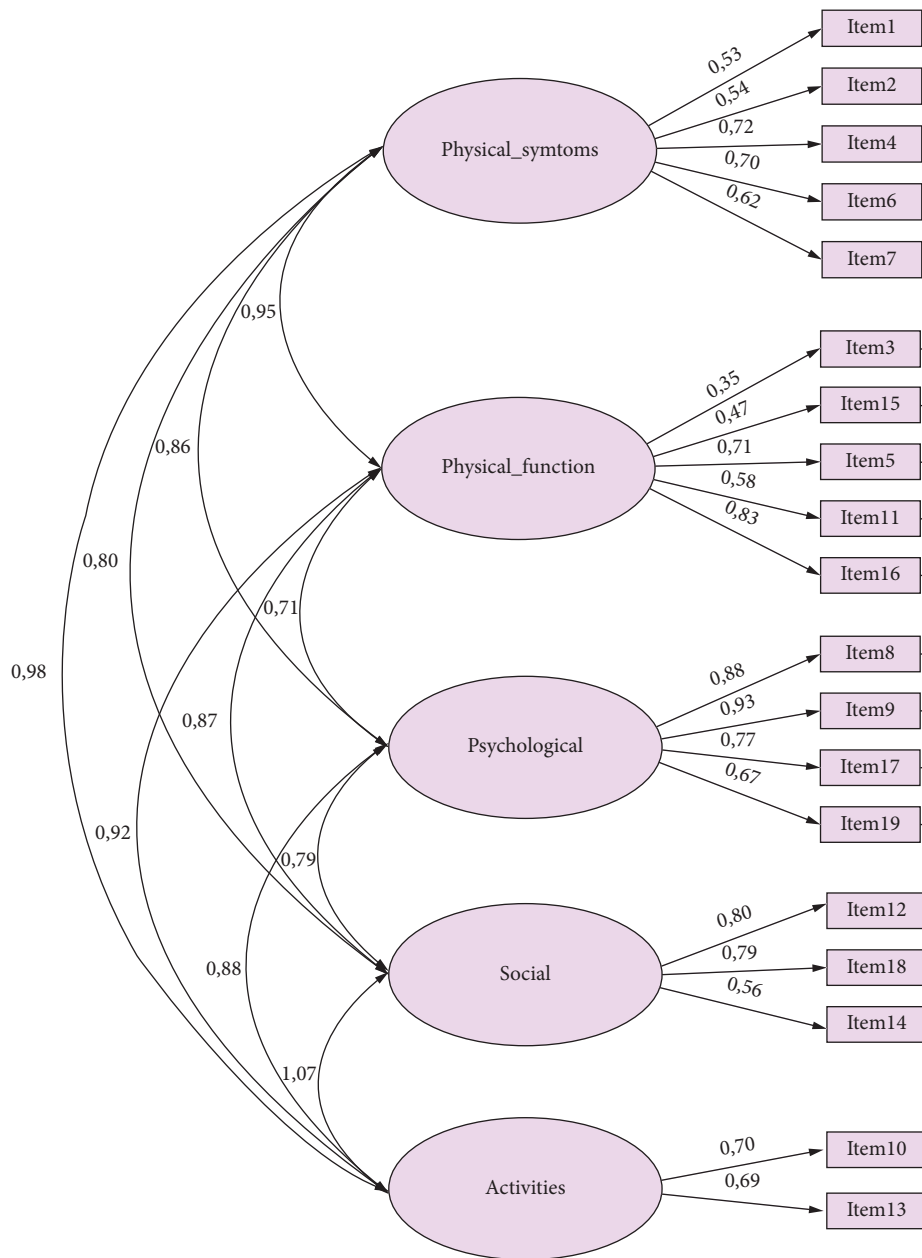
FIGURE 1: Path diagram from CFA showing correlations between dimensions and between dimensions and respective items.

it has been argued that model fit measures are sensitive to sample size. For example, chi-square statistics performed in large samples tend to reject the models, whereas small samples result in lack of statistical power. However, the measures for model fit that were reported in this study function well with small samples [33].

5. Conclusions

The PRP is an instrument that has shown promising properties during development and initial testing. However, the results of this study indicate that the instrument needs to be further developed and undergo a thorough psychometric evaluation before it can be used as a reliable and valid tool. As a suggestion, future studies should test measurement

functioning in more depth, preferably using modern test theory. Furthermore, future studies should also focus on a revision of the scoring procedure at a dimensional level. However, discriminant validity issues need to be solved first, and meanwhile, recovery should not be calculated or reported at a dimensional level.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Research Article

Violence against Emergency Nurses in Kermanshah-Iran: Prevalence and Associated Factors

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Background. Violence against emergency nurses is a global concern with undesirable physical and psychological consequences. This study was conducted to investigate the characteristics of physical and verbal violence against emergency nurses in Iran. *Methods*. In this cross-sectional study, 150 nurses working in seven hospitals affiliated to Kermanshah University of Medical Sciences were included in the study using the stratified random sampling method. The data collection tools included a personal information form and a researcher-made questionnaire. Violence-related characteristics were assessed using descriptive statistics. Logistic regression was used to identify factors related to physical and verbal violence. *Results*. The frequency rates of physical and verbal violence during the past 12 months were equal to 62% ($n = 93$) and 94.7% ($n = 142$), respectively. In both types of physical violence (49.5%, $n = 46$) and verbal violence (40.4%, $n = 57$), the nursing station was the most common place of violence. In both physical ($n = 40$, 43.0%) and verbal violence ($n = 101$, 71.1%), the most common perpetrator was the patient's family. Most physical violence (57.0%, $n = 53$) and verbal violence (35.2%, $n = 50$) occurred in the night shifts. No statistically significant relationship was found between physical and verbal violence and gender, age, marital status, type of employment, and work experience. *Discussion*. The results indicate the seriousness of workplace violence against nurses. It is necessary to adopt a global approach along with providing sufficient manpower and psychological empowerment of nurses. Further studies with a forward-looking approach are suggested.

1. Introduction

Workplace violence (WPV) against emergency nurses is a global problem [1]. According to the International Labor Organization, WPV includes ill-treatment and threatening or abusive behavior, including physical or psychological violence [2–6]. WPV varies from verbal aggression and sexual harassment to physical assault, of which the verbal type is the most common form of healthcare-related aggression, and about two-thirds of nurses worldwide have experienced this type of violence [7].

By definition, physical violence is the intentional use of physical force against an individual or a group that results in physical or psychological harm. Verbal violence is a behavior that leads to humiliation or disrespect for a person's dignity [8]. Evidence suggests that healthcare workers, especially nurses, are the most vulnerable to violence due to their daily exposure to patients and their families [9]. In this regard, the results of a study in Pakistan (2021) showed 29 cases of violence against doctors and nurses committed by the patients' relatives from April to August 2020. The reasons for the violence were the deaths

of patients, the nonadmission of patients, and the lack of trust in medical personnel [10].

In a study in Kenya (2021), the prevalence of violence against emergency nurses in one year was 73.2%, and the perpetrators of most of the violence were patients and their relatives. The most common type of violence was verbal abuse [11]. In a study conducted in Saudi Arabia (2022), the prevalence of violence against emergency nurses during the previous two years was 73.7%, and the most common type of violence was verbal abuse. The perpetrators in 88.3% of cases were patients' family members or relatives [12].

Moreover, a study in China (2021) indicated that 29.1% of violence occurred against emergency department clinicians, and a negative correlation was reported between WPV and quality of care [13]. In another study in Turkey (2022), the prevalence of violence against emergency nurses was 90%, and verbal abuse was the most common type of violence. The perpetrators of most of the violence were the patients' relatives, and the cause of violence in most cases was the long waiting time to receive care [14]. The results of a study in Taiwan (2021) showed that the prevalence of violence against emergency nurses was 54%, and the most common type of violence was mental violence [1].

WPV may increase the risk of physical, psychological, and behavioral problems in nurses, including sleep disorders, fatigue, pain, fear, anxiety, depression, post-traumatic stress disorder, substance abuse, communication problems, and job burnout [7, 15], also aggravating the nurse shortage problem [1].

Since WPV is a growing phenomenon and a major threat to nurses [16], it is necessary to take practical measures to reduce violence in this walk of life, and the first step in this direction is to know the prevalence of violence [9, 17]. In this regard, several studies that have investigated the prevalence of WPV and its related factors in emergency nurses in Iran [2, 5, 6] and around the world [1, 3, 14, 18] have reported different results. This difference may be related to cultural differences and psychological characteristics of patients and their relatives, as well as the nurses' behavioral and emotional balance [1]. Accordingly, the present study was conducted to investigate the prevalence of WPV and its related factors in emergency nurses.

This study sought to answer the following questions: (1) What is the prevalence of physical and verbal violence against emergency nurses during the past 12 months? (2) What are the factors related to violence against emergency nurses? (3) What is the response of emergency nurses to violence? (4) What are the strategies for preventing and managing WPV? and (5) What are the characteristics of WPV?

2. Methods

2.1. Study Design. This research is a cross-sectionaldescriptive-analytical study. In this type of study, the outcome and exposure variables are collected simultaneously; therefore, it is not possible to determine the cause-and-effect relationships between these variables [19]. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement was used to report the results [20].

2.2. Sample and Sampling Method. The study population included nurses ($n = 300$) working in the emergency departments of seven hospitals affiliated to Kermanshah University of Medical Sciences (KUMS). Considering the prevalence of violence against nurses in the study of Honarvar et al., with a rate of about 90% [3], 5% accuracy, and a 95% confidence level, the sample size was estimated to be 143 nurses, and with 5% nonresponse, the sample size was increased to 150. The inclusion criteria were a bachelor's degree or higher in nursing and at least one year of experience in the emergency department. For sampling, first, the sampling frame of each hospital was received from the nursing office. The participants were recruited by stratified random sampling method. In this method, the research population is divided into several subgroups or strata based on common characteristics. Then, within each group, the necessary sample size is randomly selected. In the current study, seven emergency departments of KUMS-affiliated hospitals formed the strata. Within each stratum, simple random sampling was performed using a table of random numbers. Incomplete completion of the questionnaire was regarded as the exclusion criterion. It should be pointed out that no one was excluded from the study.

2.3. Measurement Instrument. The study tool was a researcher-made questionnaire that was designed using previous studies [2–5]. The questionnaire consisted of two parts. The first part was about the participants' demographic information, including age, gender, marital status, work experience, and type of employment. The second part consisted of 15 questions on the frequency of physical and verbal violence during the past 12 months, the availability of instructions on reporting the violence, the level of concern about the occurrence of violence in the workplace, the perpetrator's characteristics, the place of violence, the time of violence, the perceived causes of violence, and the nurses' response to violence. At the end of the questionnaire, an open-ended question was placed, and the nurses were asked to express their ways of preventing and managing WPV.

Questions were of the multiple choice, yes/no, likert, and open-ended types. Some of the questions were: "Have you been physically abused in the past twelve months? Yes/No," "What was the gender of the perpetrator? Male/female," "Who was the perpetrator? Patient, patient's relatives, patient's friends, patient's family, and colleague," "Does your workplace have guidelines for reporting cases of violence? Yes/No," "How concerned are you with workplace violence? Never, very little, little, moderately, very much," and "In your opinion, what are the ways to prevent and manage workplace violence against nurses?" To score the questionnaire, the simple and relative frequency and standard deviation of the responses were calculated.

Quantitative and qualitative content validity methods were used to evaluate the validity of the measurement tool. In the qualitative section, the tool was provided to 15 faculty

members, their corrective opinions regarding different parts of the questionnaire were obtained, and necessary corrections were made in the questionnaire. In the qualitative part, the content validity index and content validity ratio were calculated, which were equal to 0.82 and 0.72, respectively. A four-point Likert scale was used to calculate CVI, and experts were asked to choose one of the options of completely relevant, relevant, approximately relevant, and irrelevant for each question. The number of experts who chose approximately relevant and irrelevant options was divided by the total number of experts [21]. A CVI higher than 0.79 was considered appropriate. CVR was calculated using a three-point Likert scale, including the options "essential," "useful, but not essential," and "not necessary." Experts were asked to choose one of the options for each question. The number of experts who chose the answer "necessary" was included in the calculation formula of CVR [21]. A CVR higher than 0.49 was considered satisfactory.

The test-retest method was used to evaluate the reliability. For this purpose, the questionnaire was completed by 30 nurses working in the emergency department with an interval of one week, and a correlation coefficient of 0.78 was obtained. It should be noted that these nurses were not included in the study.

2.4. Data Collection Method. To collect data, the researcher referred to the nursing offices of hospitals affiliated to KUMS and received a list of nurses working in the emergency department. Then, according to the number of nurses in each hospital, the required sample size was selected. Next, the selected nurses were visited according to their work schedule. At first, the objectives of the study were stated for nurses, and if they were willing, they were included in the study. Then, a questionnaire was given to the participants and collected after completion. If the participant did not agree to participate in the study, the person before or after him/her in the list of names would be replaced.

2.5. Statistical Analysis. Data were analyzed by SPSS V.18 software using descriptive and inferential statistics. In the descriptive part, the frequency, mean, and standard deviation indices were used. In the analytical section, the logistic regression analysis was used to determine the factors related to physical and verbal violence. The desired significance level was less than 0.05. The quantitative content analysis method was used to analyze the samples' answers to the open-ended question. In this method, data analysis is done based on frequency and percentages. In the current study, the frequency of WPV prevention and management strategies was determined.

2.6. Ethical Considerations. The Ethics Committee of Kermanshah University of Medical Sciences approved the study with the code KUMS.REC.1395.494. The goals of the study were stated for all participants, and they were assured that their details and responses would remain confidential. Written informed consent was obtained from all participants.

3. Results

A total of 150 nurses participated in this cross-sectional study, with a response rate of 100%. All participants were nurses, and 77.3% ($n = 116$) contractual nurses. Most of them were female ($n = 88$, 58.7%) and single ($n = 80$, 53.3%), with an age of less than 30 years ($n = 106$, 70.7%) and a work experience of 1–5 years ($n = 109$, 72.7%) (Table 1).

The frequency rates of physical and verbal violence during the past 12 months were equal to 62% (95% CI: 53.8, 69.5) ($n = 93$) and 94.7% (95% CI: 89.6, 97.3) ($n = 142$), respectively. In both physical ($n = 40$, 43.0%) and verbal violence ($n = 101$, 71.1%), the most common perpetrator was the patient's family. The most common perpetrator gender was male in both physical ($n = 83$, 89.2%) and verbal violence ($n = 125$, 88.0%). From the nurses' point of view, the most common perceived causes of violence were lack of nurses ($n = 137$, 96.0%), long waiting times ($n = 131$, 92.0%), deterioration of patients' clinical conditions ($n = 120$, 84.0%), and weakness in nurses' communication skills ($n = 105$, 73.5%). In both types of physical ($n = 46$, 49.5%) and verbal ($n = 57$, 40.2%) violence, the nursing station was the most common place of violence. Most physical violence ($n = 53$, 57.0%) and verbal violence ($n = 50$, 35.2%) occurred in night shifts (Table 2).

The majority of participants ($n = 124$, 82.7%) were highly concerned about violence and aggression in the workplace. Most nurses ($n = 124$, 82.7%) stated that there are no specific guidelines for reporting WPV. In response to physical violence, 22.6% ($n = 14$) of nurses stated that they reported the event to their superiors, and 16.1% ($n = 15$) did not take any action. Regarding verbal violence, 21.1% ($n = 30$) of nurses stated that they did not take any action, and only 22.6% ($n = 14$) reported it to their superiors. Further, 69% ($n = 98$) of the participants believed that reporting violence was useless (Table 1).

Based on logistic regression analysis, no statistically significant relationship was found between physical and verbal violence and participants' demographic variables, including gender, age, marital status, type of employment, and work experience (only in the case of physical violence, which entered the model) (Tables 3 and 4).

In response to an open-ended question, ten nurses mentioned two to three ways to prevent and manage WPV. All the answers were explained in four items, including adequate manpower supply ($n = 8$, 80%), holding periodic communication skills workshops ($n = 6$, 60%), prosecution of cases of violence ($n = 5$, 50%), and review of antiviolence policies ($n = 3$, 30%).

4. Discussion

WPV against nurses is a global concern [3]. This study was conducted to investigate the prevalence of WPV and its related factors in emergency department nurses. In the current study, 94.7% and 62.0% of nurses reported experiencing verbal and physical violence in the previous year, respectively. Evidence shows that verbal violence among emergency department nurses over a period of one year is

TABLE 1: Demographic characteristics of the nurses according to the type of violence.

Variables		Total	Physical violence n (%)		Verbal violence n (%)	
			Yes	No	Yes	No
Sex	Male	62 (41.3)	37 (39.8)	25 (43.9)	59 (41.5)	3 (37.5)
	Female	88 (58.7)	56 (60.2)	32 (56.1)	83 (58.5)	5 (62.5)
Age (year)	≤30	106 (70.7)	63 (67.7)	43 (75.4)	99 (69.7)	7 (87.5)
	>30	44 (27.3)	30 (32.3)	14 (24.6)	43 (30.3)	1 (12.5)
Marital status	Single	80 (53.3)	53 (57.0)	27 (47.4)	78 (54.9)	2 (25.0)
	Married	70 (46.7)	40 (43.0)	30 (52.6)	64 (45.1)	6 (75.0)
Employment type	Formal	34 (22.7)	21 (22.6)	13 (22.8)	33 (23.2)	1 (12.5)
	Contractual	116 (77.3)	72 (77.4)	44 (77.2)	109 (76.8)	7 (87.5)
Job experience (Year)	1–5	109 (72.7)	69 (74.2)	40 (70.2)	106 (74.6)	3 (37.5)
	6–10	31 (20.7)	17 (18.3)	14 (24.6)	26 (18.3)	5 (62.5)
	≥11	10 (6.7)	7 (7.5)	3 (5.3)	10 (7.0)	0 (0.0)
Concerns about workplace violence	Low	9 (6.0)	6 (6.5)	3 (5.3)	9 (6.3)	0 (0.0)
	Medium	17 (11.3)	9 (9.7)	8 (14.0)	15 (10.6)	2 (25.0)
	High	124 (82.7)	78 (83.9)	46 (80.7)	118 (83.1)	6 (75.0)
Existence of violence reporting guidelines	Yes	26 (17.3)	17 (18.3)	9 (15.8)	24 (16.9)	2 (25.0)
	No	124 (82.7)	76 (81.7)	48 (84.2)	118 (83.1)	6 (75.0)

"Age, gender, work experience, marital status, job experience, concerns about workplace violence, and type of employment."

TABLE 2: Characteristics of violent incidents in emergency department nurses.

Variables		Physical violence n (%)	Verbal violence n (%)
Exposure to violence over the past year	Yes	93 (62.0)	142 (94.7)
	No	57 (38.0)	8 (5.3)
Source of violence	Patient	4 (4.3)	17 (12.0)
	Patient's family	40 (43.0)	101 (71.1)
	Staff member	22 (23.7)	6 (4.2)
	Supervisor/head nurse/manager	14 (15.1)	17 (7.2)
	Other	13 (13.9)	2 (5.5)
Perpetrator gender	Male	83 (89.2)	125 (88.0)
	Female	10 (10.8)	17 (12.0)
Place of violence	Patient room	19 (20.4)	48 (33.8)
	Waiting room	4 (4.3)	4 (2.8)
	Treatment room	4 (4.3)	33 (23.2)
	Nursing station	46 (49.5)	57 (40.2)
	Other	20 (21.5)	—
Violence in the work shift	Morning	17 (18.3)	45 (31.7)
	Evening	23 (24.7)	47 (33.1)
	Night	53 (57.0)	50 (35.2)

between 66.4% and 100%, and the frequency of physical violence varies from 16.7% to 74.9% [4].

A study showed that about 90.0% of emergency department nurses in 13 general hospitals in Beijing, China, had experienced WPV in the previous year [22]. In a study in Shiraz, Iran (2019), 89.6% of nurses had experienced at least one type of violence in the past year, and the verbal harassment rate was about three times greater than physical violence [3]. In another study in Italy (2020), 96.3% of nurses stated that they had suffered from WPV in the past 12 months [18]. Evidence suggests that nurses working in emergency departments are at the risk of violence, which can affect their physical and mental health as well as the quality of nursing care provided.

In line with previous studies [18, 23–27], the perpetrator in both physical and verbal violence was the patient's family. However, in a study conducted among Indonesian nurses, the perpetrators in 43.5% of physical violence and 55.6% of verbal violence were patients and their relatives, respectively [3, 28]. Violence by the patient's family can be related to their concerns about the patient's condition, unfulfilled expectations, and inappropriate psychological conditions.

In the present study, the most common sex of the perpetrator was male in both physical and verbal violence, which is consistent with the results of previous studies [3, 18, 28]. There are several factors involved in this gender difference, including the cultural characteristics of the society and the physical abilities of men.

TABLE 3: Relationship between demographic variables and physical violence.

Variables		Physical violence					
		Crude OR[a]	95% CI[b]	P value	aOR[c]	95% CI	P value
Sex	Female	Ref	—		Ref		
	Male	1.95	0.97, 3.88	0.059	1.77	0.86, 3.64	0.123
Age (years)	≤30	Ref			Ref		
	>30	1.46	0.69, 3.08	0.316	2.86	0.62, 13.21	0.178
Marital status	Married	Ref			Ref	—	
	Single	1.17	0.61, 2.27	0.637	1.13	0.54, 2.38	0.748
Employment type	Official	Ref			Ref		
	Contractual	1.01	0.46, 2.22	0.974	2.15	0.43, 10.67	0.347
Job experience (years)	≥11	Ref			Ref		
	6–10	0.68	0.17, 2.8	0.596	1.02	0.13, 8.04	0.986
	1–5	0.68	0.15, 3.1	0.620	0.82	0.17, 3.99	0.803

Note. [a]Odds ratio; [b]confidence interval; [c]adjusted odds ratio.

TABLE 4: Relationship between demographic variables and verbal violence.

Variables		Verbal violence					
		Crude OR[a]	95% CI[b]	P value	aOR[c]	95% CI	P value
Sex	Male	Ref			Ref		
	Female	0.84	0.19, 3.67	0.821	1.03	0.23, 4.67	0.972
Age (years)	≤30	Ref			Ref		
	>30	3.04	0.36, 25.47	0.305	3.33	0.15, 72.69	0.445
Marital status	Married	Ref			Ref		
	Single	3.65	0.71, 18.74	0.120	3.49	0.66, 18.49	0.142
Employment type	Official	Ref			Ref		
	Contractual	0.47	0.06, 3.97	0.490	1.29	0.06, 28.96	0.874

Note. [a]Odds ratio; [b]confidence interval; [c]adjusted odds ratio.

Contrary to previous studies [2, 29, 30], in the present study, most of the nurses who were subjected to physical and verbal violence were female. But in the study of Saleh et al. (2020) in Mashhad, Iran, most of the abused nurses were male [5]. Nurses, whether male or female, are not immune to violence. Contradictions in the results of studies can be related to differences in sample size and organizational research environments.

In line with previous studies [23, 28, 31, 32], most of the physical and verbal violence occurred during the night shift, which may be related to the increased number of patients referred to the emergency department due to the closure of specialized clinics and the absence of a management team.

In the present study, the nursing station was the most common site of physical and verbal violence. In a study in Iran (2010), the most common sites of verbal and physical violence were the nursing station (49.1%) and the patient's bedside (48.5%), respectively [2]. However, in Italy (2020), the most common site of violence was around the triage area (38.5%) [18], but in Taiwan (2020) and Oman (2020), most cases of violence occurred in the treatment area (61.2% and 63.2%, respectively) [23, 33]. Although there is a possibility of violence in any part of the emergency department, the probability of violence in this area is higher due to the importance of the nursing station in patient management.

In line with previous studies [2, 25], most nurses reported the violence to their superiors, but most believed that reporting the violence was useless. However, in a study in Indonesia (2018), 92.1% of nurses were reluctant to report violence, found it useless, and feared the negative consequences of reporting [28]. Unfortunately, evidence suggests that hospital managers are not serious about pursuing and investigating cases of violence [3]. Lack of trust in the reporting team and fear of retaliation are other reasons for not reporting violence [2]. Reporting violence has positive effects on nurses as well as hospitals and can be helpful in adopting better policies to prevent future violence.

In the present study, the most common causes of physical and verbal violence were a lack of nurses, long waits, patients' inadequate clinical conditions, and nurses' poor communication skills. In other studies, the causes of violence against nurses have been reported to include inappropriate conditions of the patient and their family, unrealistic expectations of patients, noncompliance with hospital rules by patients and their companions, poor communication skills of nurses and patients, a lack of nurses, a lack of facilities, burnout of nurses, and a lack of security forces [2, 3, 28]. Clearly, eliminating the underlying causes of violence plays an important role in preventing WPV, and it seems that manpower supply has a more effective role.

The results showed no statistically significant relationship between WPV and nurses' age. However, in a study conducted on Iranian nurses (2020), the age group of 20–30 years was more exposed to verbal and physical violence than other age groups [5]. The results of a study (2019) in Italy showed that the rate of violence against nurses decreased as the age increased, so that the age group of 40–60 years experienced the least amount of physical and verbal violence compared to the age group under 40 years [4]. With an increase in age, nurses are expected to have more communication skills and therefore play a more effective role in managing and preventing violent incidents.

Consistent with the results of Pandey et al. in Nepal [34], in the current study, no statistically significant relationship was found between the occurrence of violence and nurses' type of employment. However, in a number of studies, a statistically significant relationship has been reported between the occurrence of violence and the type of employment. In this regard, in the study of Honarvar et al. in Shiraz, Iran, more verbal violence occurred among contract nurses [3]. In a study by Jafree in Pakistan, contractual employment was one of the risk factors for experiencing violence among nurses [35]. However, the authors of the present study believe that violence can affect all nurses, regardless of their type of employment.

The results showed no statistically significant relationship between violence and nurses' marital status, which is in line with the results of the study of Pandey et al. in Nepal [34]. But in the study of Saleh et al. In Iran, the rate of physical and verbal violence was higher among married nurses [5].

Similar to previous studies [5, 23, 36], the results of the present study showed no statistically significant relationship between nurses' work experience and violence. In a study in Egypt (2017), 68% of abused nurses had less than 50 years of work experience [37]. But in the study of Choi and Lee, the frequency of violence was higher in nurses with more than 5 years of work experience than in others [38]. The results of a study in Italy (2019) also showed that nurses with a history of less than 10 years had the highest rate of verbal and physical violence [4]. Regardless of the differences in the results of the studies, nurses with more work experience are expected to have better communication skills, to act as role models for less experienced nurses, and to prevent the occurrence of violence.

4.1. Study Limitations. In this study, data were collected by the self-report method, which might have affected the results. The second limitation is the possibility of recall bias, which might also have affected the accuracy of the results. In this type of bias, the participants may not remember all the violent events and their details. In this study, the occurrence of violence was based solely on the participants' responses to a yes/no question. Also, different types of verbal/physical violence were not investigated.

5. Conclusion

Our results emphasize the high prevalence of violence against emergency department nurses. Most cases of violence were committed by patients during night shifts at the nursing station. Although most nurses reported the violence to their supervisor, they found it useless. Considering the important role of nurses in the health care system, their safety in the workplace must be guaranteed. It is necessary to adopt a global approach to reduce violence in the nurses' workplace. In this regard, health policymakers should take the necessary measures to eliminate violence against nurses and provide a safe work environment with the cooperation of experts and the mass media. Adopting security measures in emergency departments can also play an important role in reducing violence. In this regard, installing closed-circuit cameras in nursing stations and waiting rooms, using fixed security forces, and physically inspecting people for weapons are necessary measures. Also, holding training workshops on the prevention and management of workplace violence can be useful for emergency nurses. Similar studies in other care sectors as well as longitudinal studies are required to investigate the effect of intervention measures on the frequency of workplace violence.

Data Availability

The identified datasets analyzed during the current study are available from the corresponding author on a reasonable request.

Ethical Approval

The Ethics Committee of Kermanshah University of Medical Sciences approved the study with the code KUMS.-REC.1395.494. All methods were performed in accordance with the relevant guidelines and regulations.

Consent

Written informed consent was obtained from all the participants.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

MJ, SR, AA, NFN, and AK contributed in designing the study. NFN, AK, and AA collected the data. SR analyzed the data. MJ, SR, and AK wrote the final draft. All the authors read and approved the version for submission.

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Research Article

Nurses' Perceptions on How Recovery-Oriented Mental Health Care Can Be Developed and Implemented

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Aim. This study explored how nurses working in inpatient mental health units perceived the development and implementation of a recovery-oriented mental healthcare programme (ROMHCP). *Background.* The recovery-oriented mental healthcare approach (ROMHCA) in mental health is regarded as the future of mental health services and has been implemented in different countries worldwide. However, regarding developing and implementing the recovery approach, Africa appears to have been left behind by the rest of the continents. *Design.* The study used a qualitative approach to describe how a recovery-oriented mental healthcare approach could be developed. *Methods.* Thirty nurses who worked in Botswana's four inpatient mental health facilities consented and voluntarily participated in the study. Data were collected from February to mid-March 2022 through online focus group discussions and analysed using thematic analysis. The COREQ checklist was used to report the findings. *Results.* Two main themes emerged as follows: (i) developing and implementing a recovery-oriented mental healthcare programme is possible and (ii) certain elements are required to develop and implement ROMHCP. *Conclusion.* The participants believed that people diagnosed with mental illness could recover from the illness and suggested how it could be achieved. They also contended that the programme's success would lie mainly with multisectoral support from policymakers, facilities, hospital personnel, patients, and the community. *Clinical Relevance.* ROMHCP has the potential to benefit people with mental illness in the country. In addition, it would allow nurses to improve their knowledge and skills in managing mental illnesses. *Patient or Public Contribution.* The patients and the general public did not contribute to the study's concept, design, and outcomes. However, the nurses working in mental health facilities volunteered to participate in the study.

1. Introduction

Mental health services, notably the community based, from certain Western high-income countries have embraced ROMHCA as a new dimension for mental health departments when treating people diagnosed with mental illness [1] online [2, 3]. The recovery vision entails rethinking and reforming the current mental healthcare practice, whose approach is predominantly biomedical, to a person-centred approach in providing care to people with mental illness. The biomedical approach in mental health positions the cause of mental illness to brain disorders, thus relating the cause of mental illness to biological abnormalities in an individual, and therefore, one

will need pharmacological interventions [4]. Doing so has led to shifting to ROMHCA. ROMHCA recognises the individuality of a person diagnosed with a mental illness. It is entrenched in the principles of self-determination, empowerment, citizenship, love, connectedness, respect, and the installation of hope for the future of people with mental illness [5, 6]. In this model, the patient drives their recovery process.

There is no common understanding of what mental health constitutes. Anthony [7] gave the most popular and widely accepted definition. He explained recovery as living a gratifying life notwithstanding being decapacitated by the symptoms of mental illness. Ørjasæter and Almvik [8] also described recovery as a multifaceted process through which

individuals with mental illness live satisfying and fulfilling lives like any other citizen. This definition validates the personal nature that people attribute to recovery. The literature has revealed that the person centeredness of recovery alone highlights the need for individualised care plans for people with mental illness [9, 10].

Intervention programmes have been developed to facilitate ROMHCA. For instance, in the United States of America, Copeland [11] developed a Wellness Recovery Action Plan (WRAP) programme to teach healthcare workers and people with mental illness how to live with and manage mental illness. WRAP is a framework where healthcare workers use to learn more about mental illness and how to manage it from a recovery-oriented approach, and it has been proven to improve the general well-being of people with mental illness [12]. In England, Bird and Slade [13] developed a REFOCUS intervention to improve the working relationships between the staff and patients. REFOCUS is an intervention focusing on activities promoting recovery and recovery-working practices and relationships among staff for them to connect better with patients [14]. In addition, it coaches staff to understand mental health users' values and treatment preferences to support them in a better recovery process [14].

Flaherty-Jones et al. [15] developed a Steps to Recovery (STR) programme in Australia to improve mental illness by providing information, including instilling hope for the future by providing people with mental illness skills on managing mental illnesses. In Ireland, a psychoeducation programme called EOLAS (Irish for knowledge) was developed in collaboration with peers, family members, and healthcare workers to help support people with psychosis and their caregivers. [16]. EOLAS is delivered in a manual format and teaches people about psychosis, focusing on the biopsychosocial model, relapse prevention, and how families can support patients [16, 17]. The programme improved the understanding of recovery and communication between healthcare workers and other stakeholders [16]. An e-version of EOLAS has been implemented following the COVID-19 pandemic, and it has shown that it was feasible to use and effective [17]. The findings support the usefulness of digital platforms to deliver health education interventions to support people with mental illness [18, 19].

The effectiveness of ROMHCPs is well documented in the literature [20–23]. However, evidence from the literature indicates that the implementation of these programmes is from mainly high-income countries, mainly from the West [3, 24–26]. Other regions, such as Asia and South America, have adopted ROMHCA despite challenges such as poor implementation [27, 28]. Africa is still behind in delivering mental healthcare services, let alone adopting recovery-oriented mental health care services. Studies from Africa have indicated that the delivery of mental healthcare services is hampered by a lack of mental health policy, overreliance on biomedical approaches, and a general lack of knowledge about recovery-oriented mental health care [29–31].

ROMHCA in Botswana has not yet been implemented and uses the biomedical approach, which does little for people with mental illness at the community level but admits them to mental health institutions [32]. The country operates only one psychiatric hospital, Sbrana Psychiatric Hospital (SPH), with a bed capacity of 300 patients. The provision of mental health care is through the mental health policy of 2003, which serves as a reference for integrating mental health into general health care [33]. SPH is backed by eight mental health units, all with a bed capacity of 10–15 patients. There are 11 psychiatrists in the country, and most are based in private practice. Only two are based at SPH. Psychiatric mental health nurses operate most mental health services with the help of general nurses [32, 34].

With the increasing evidence from international studies on the effectiveness of recovery-oriented mental health services [23, 26, 35], Botswana should also position itself to implement the latest evidence-based care approaches in mental health to support people with mental illness in the community. Following admission, patients are discharged to their families without proper preparation to reintegrate them into society. The mental health service continues to face a shortage of mental healthcare personnel. Nurses are the leading providers of mental health care and mostly see patients first on arrival at mental health facilities [36]. The researchers, who are mental health nurse specialists, have observed that "nurses talk about recovery" in their daily interactions with patients. The meaning attached to recovery is mainly symptom reduction and compliance with treatment. The recovery-oriented practice goes beyond symptom reduction and treatment adherence but calls for patient-centred care [9].

Nurses in Botswana must devise or participate in developing interventions to improve the care of people diagnosed with mental illness. Brooke-Sumner et al. [30] from South Africa have attributed the failure of health workers to implement recovery-oriented mental health services to a lack of understanding and involvement of mental healthcare personnel. In addition, a review of how recovery is understood among ethnic minorities by Sofouli [37] concluded that more work should be carried out on the policy so that cultural minorities can access culturally tailored interventions to address their needs. Therefore, this calls for developing interventions informed by findings from the localised data context to accommodate the uniqueness of different communities. To our knowledge, no study has been conducted in Botswana that solicited nurses' views on how ROMHCP can be developed and implemented. Since most mental healthcare professionals in Botswana are nurses, eliciting their views on developing ROMHCP is essential.

2. Methodology

2.1. Design.
This qualitative study explored nurses' views on developing a recovery-oriented approach. The qualitative method investigates people in their locality and emphasises how the study participants experience and interpret phenomena [38]. Therefore, the design was appropriate since it described the contextual meaning of the participants of how a recovery-oriented mental healthcare programme could be developed and implemented. This study focused on the following questions and further probing statements from the

participants to find more meaning in their responses. The study participants were nurses working in mental health facilities, with at least 3 years of experience. It was believed that the participants would be able to use their experience to provide information about the following objective:

(1) What are your views on developing a recovery-oriented programme for Botswana?

(2) How could a recovery-oriented mental healthcare programme be developed?

2.2. Context. The study was conducted in Botswana in four sites offering inpatient mental health care to people with mental illness. Among the four sites was the country's only mental health referral hospital in southeastern Botswana, Lobatse. The other three sites were psychiatric units attached to district hospitals. Of the three sites, one was in the far north west of Botswana Maun, one in central north east Botswana Francistown, and the last in the south west of Botswana, Molepolole. The three mental health units provide care to clients daily, with a bed capacity of 15–20 patients each. However, since they are small units, most of their patients are referred to the main psychiatric hospital, which has a bed capacity of 300.

2.3. Population and Sample. The study's population was all the nurses in the four sites actively treating patients with mental illness for at least three years. Thirty-two nurses were purposively selected out of 149 who consented to participate in the study. All the selected nurses consented to participate in the focus group discussions (FGDs). The number of FGDs was determined by data saturation.

2.4. Data Collection. Data were collected through online FGDs with nurses with at least three years of experience treating people diagnosed with mental health challenges. Microsoft Teams was used to conduct the FGDs since data were collected during the active phase of the COVID-19 pandemic. Two FGDs had seven participants, and the other two had 8. According to Nyumba et al. [39], six–eight people are ideal for FGDs. The FGDs were preferred for this study due to their ability to produce an interactive atmosphere that allows the participants to produce diverse information quickly from multiple participants [40]. One FGD was conducted per site, and in total, four FGDs were conducted across the four sites.

The steps to recruit nurses and study participants are described below. Through an identified mediator and independent person in each facility, meetings were set, and the purpose of the study was explained to potential participants following the study advertisement. Then, each potential participant was given information about the study and a consent form by an independent person. The nurses who eventually consented to participate voluntarily provided their phone numbers to the researcher through the help of an independent person. All participants consented to be virtually and audio-recorded. K.M.K., a lecturer and a mental health nurse specialist, conducted the FGDs. K.M.K., a PhD student, had undergone training in qualitative data collection methods and had conducted qualitative interviews as a lead investigator in one study before conducting the interviews. K.M.K. was also supervised by two study supervisors experienced in qualitative research methods.

The FGDS were conducted in a private, secure place, and participants participated from their homes. The interviewer used an interview guide pilot tested with the participants from one mental health unit that was not part of the study. The pilot test offered insight into probing to get rich responses. FGDs were conducted in English and Setswana, the local language, allowing the participants to express themselves in the language they felt comfortable in. However, English remains Botswana's official language in workplaces. Besides, all the nurses have undergone intensive training in English. The FGDs lasted between 60 and 80 minutes. The interviewer took notes as the participants expressed their views, summarised each interview, and shared the summary with the participants to validate the content during the interview.

Data saturation was reached at FGD number three although the researcher went on to complete the last FDG to confirm the recurring themes. According to Hennink et al. [41], data saturation refers to a point at which issues become repetitive to the point of redundancy. Furthermore, Saunders et al. [42] conceptualised data saturation as "a matter of identifying redundancy in the data, with no necessary reference linked to these data; saturation appears to be distinct from formal data analysis." As such, in this study, at the end of the third FGD, it became clear that no new data were identified, confirming that data saturation had been reached. Therefore, the fourth FGD was conducted to confirm the themes.

2.5. Data Analysis. Data were analysed using Tesch's eight steps of data analysis [43] as it provides a detailed eight-step guideline for organising unstructured data. First, the interviewer transcribed visual recordings. The interviewer masked the participants' names to ensure confidentiality by using P0–P8. Following data transcription, the researcher (K.M.K.) read all the data carefully to make sense of the transcribed data and notes. Some notes were scribbled on the side of the script. At this point, the researcher generated and wrote topics on the margin of the script. A similar process of note writing was completed for all of the scripts. Then, similar ideas and topics were grouped into columns. Once the ideas were grouped, the researcher took the completed list and revisited the data. Abbreviations were used to code the topics and put them next to the text representing that particular code. That exercise helped to tell if any new codes and categories emerged. The researcher used descriptive words to name and group the topics into categories. At this stage, related topics were grouped to reduce the number of topics. The researchers labelled each category and arranged the codes alphabetically. Data were assembled according to a category it belonged to for preliminary analysis. The

repeating data informed the grouping of categories, and irrelevant data were discarded. The researcher then sent raw data to the cocoder for an independent analysis. The cocoder was an experienced mental health specialist qualitative researcher identified and recommended by the study's supervisors.

Subsequently, a meeting was set to discuss the themes and categories, and a consensus was reached. The results were further discussed with the study's participants to ensure that the emerging themes reflected the study context. A virtual meeting was held with the participants and nurses in each site through Microsoft Teams to validate the themes. The participants validated the themes orally and confirmed the descriptions of the sites by raising their hands to confirm that they represented what had been said during the interviews. In addition, the study's supervisors, professors E.M. and S.M., together with experienced qualitative nursing researchers, also checked, validated, and confirmed the themes.

2.6. Measures to Ensure Trustworthiness. To ensure the trustworthiness of this qualitative study, the researchers demonstrated thoroughness in credibility, transferability, dependability, authenticity, and confirmability [44]. Credibility was ensured through triangulation and visual recording of the FGDs. Researcher triangulation was achieved by reviewing the visual recordings and comparing them with the emerging themes and subthemes. In addition, credibility was further ensured through prolonged engagement with the study's participants. To achieve that, the interviewer took time, for example, to meet and set an appointment with participants for the FGDs to form and strengthen relationships to build rapport. In addition, the researcher had one virtual meeting with the study's participants to validate the themes and subthemes (member checking). For transferability, the researchers gave a thick description of the context, the study participants, and quotes from the participants. Authenticity was ensured by giving a complete description of the study context and engaging the cocoder to verify the themes. Finally, the researchers documented a detailed description of the research process to ensure dependability and confirmability. Moreover, the research supervisors, EM and SM, monitored the research process throughout data collection and analysis to ensure confirmability. The study was reported based on the consolidated criteria for reporting qualitative research (COREQ) [45].

2.7. Ethical Considerations. Fleming and Zegwaard [46] posit that all human research must be approved before data collection to protect the participants and demonstrate good research conduct. Therefore, North-West University Health Research Ethics Committee cleared the study to be conducted. The participants were given information about the study and voluntarily consented to participate. The researcher used codes to protect the anonymity of all those who participated. All participants consented to the visual recording of the data collection procedure. All COVID-19 protocols were adhered to during the phase of study

promotion and recruitment of the study participants. The researcher compensated each participant with P200.00 ($12) since they used their data to participate in the online FGDs.

3. Results

Thirty nurses participated in the FDGs. The age of the participants ranged from 26 to 53 years. Twenty-five nurses (83.3%) had a diploma in nursing, 14 (46.66%) had a diploma in psychiatric mental health nursing, 3 (10%) had a degree in nursing, and 2 (6.66%) had a master's degree in nursing qualification. Only two 2 (6.66%) nurses were nurse managers. The average experience of working in mental health facilities ranged from 4 to 13 years. All the nurses had more than three years of experience working directly with patients diagnosed with mental illness.

3.1. Themes and Subthemes. Participants indicated that Botswana's recovery-oriented mental healthcare programme could be developed and implemented. Table 1 includes the following themes: (a) "developing and implementing of a recovery-oriented mental healthcare programme," (b) "elements needed to develop a recovery-oriented mental healthcare programme," and (c) elements needed to implement recovery-oriented mental healthcare programmes.

3.2. Theme 1 Development and Implementation of a Recovery-Oriented Mental Healthcare Programme

3.2.1. Implementation of Recovery-Oriented Mental Health Care Is Possible if It Is Supported. Participants believed that Botswana's mental health facilities could implement the recovery-oriented mental healthcare programme.

> F, P4: "I believe this is all possible if we can all come on board, from family, community and leadership levels and prioritise mental illnesses or mental health services as much as we prioritise other health services. So, it can be achieved if we can all come on board."

In addition, the participants indicated that mental health recovery-oriented care could be developed and implemented if prioritised and well-funded. However, there was a belief that that could only be possible if there was support from the government, hospital managers, and the community.

> L, P0: "Yes, it is possible to have a mental health programme in our country, provided mental health is prioritised and supported by the top management."

> S, P1: "I believe it can happen with support."

3.3. Theme 2 Elements Needed to Develop and Implement Recovery-Oriented Mental Healthcare Programmes. Participants in this study believed that a recovery-oriented mental healthcare programme could be developed and implemented and suggested how this could be carried out.

TABLE 1: Showing how a recovery-oriented mental healthcare programme can be developed and implemented.

Themes	Subthemes	Categories
(1) Development of a recovery-oriented mental healthcare programme is possible	(1) Implementation of recovery-oriented mental health care is possible if it is supported	(1) Recovery is possible and achievable (2) Prioritise mental health initiatives (3) Provide funding for mental health
	(1) Having proper policies and up-to-date guidelines and SOPs within and between facilities	(1) Having policies in place (2) Have a consistent standard of operations (3) Develop guidelines to support the implementation of a recovery programme
	(2) The inclusion of external stakeholders in the recovery plan of patients	(1) Provision of holistic care in mental health services (2) Include pastors, traditional healers, herbalists, spiritual healers (3) Have policies on the inclusion and regulation of spiritual care
(2) Elements needed to develop and implement recovery-oriented mental healthcare programmes	(3) The importance of aftercare	(1) Have proper discharge and follow-up policies (2) Have proper linkages in the community for continuity of care
	(4) Education among the community and the patients themselves (psychoeducation) and stigma eradication	(1) Develop educational programmes for mental health awareness (2) Provide education to patients, families, community/society, nurses, and other healthcare workers on mental health issues (3) Training plan of nurses on the recovery-oriented mental healthcare approach (4) Provide education to society and cultural leaders on mental health issues and cultural misconceptions about mental illness

They suggested the following subthemes on how a recovery programme could be implemented. Having appropriate policies and up-to-date guidelines and SOPs within and between facilities, including external stakeholders (e.g., pastors and traditional healers) in the recovery plan, the importance of aftercare, and psychoeducation for the community and patients and stigma eradication regarding mental illness in communities are very important.

3.3.1. Proper Policies, Up-to-Date Guidelines, and Standard Operating Procedures (SOPs) within and between Facilities.

The participants felt that for a recovery-oriented mental healthcare programme to be successful, there must be appropriate policies, guidelines, and SOPs to guide its development and implementation. They stated as follows:

L, P5: I believe there should be a team in place that can measure whether care rendered to clients is as per the standards according to our SOPs. I believe commitment to quality care in all facilities should be a priority.

M, P6: There must be detailed guidelines on how the client will be assisted starting from admission until discharge.

3.3.2. Inclusion of External Stakeholders (e.g., Pastors and Traditional Healers) in the Recovery Plan.

The participants also felt that external stakeholders such as herbalists, traditional doctors, and spiritual leaders should be involved in implementing the mental healthcare programme. Health involves restoring health from all the client's biopsychosocial sphere, including the spiritual needs often left unattended in mental health, as already discussed. They suggested that policies could be developed and implemented to assess the involvement of external stakeholders.

F, P1: "I will give an example if patients want to be seen by a herbalist, spiritualist or traditional doctor in the hospital, there should be assistance to provide holistic care. Someone from the spiritual perspective can pray for them. All stakeholders must come on board to make the patient's recovery possible."

M, P7: "Spirituality is very important in the recovery of patients. Hospitals should respect the spirituality of patients. Wards and facilities can have policies that regulate at what level patients engage in spirituality."

3.3.3. The Importance of Aftercare.

Furthermore, the results also indicated that the participants felt that the programme should have aftercare and follow-up programmes to cater for the clients once they get discharged from mental health facilities. In addition, there should be a link between the hospital and the community to receive the patients and continuity of care.

S, P4: "It is possible to achieve full recovery of this client by ensuring there are linkages or continuity in the community. If they get discharged from a hospital, there should be continuity of care or after-care to support the patients."

L, P3: "Sometimes we find that the patients are just discharged into the society without notifying the local clinics of their whereabouts. We must have proper discharge procedures that link the patients to the clinics where they are discharged."

In addition, one participant emphasised the need for a follow-up plan following the discharge of patients from mental health facilities. For example, the current setup in Botswana needs a better-defined follow-up plan following the discharge of patients from the hospital.

S, P2: "When we discharge patients, there is no follow-up until we see the patient upon readmission. We need personnel that can do follow-ups of patients."

3.3.4. Psychoeducation for the Community and Patients and Stigma Eradication regarding Mental Illness.

Furthermore, there was a great emphasis on implementing a recovery-oriented mental healthcare programme with a strong psychoeducation programme targeting individuals, families, and the community at large on issues of mental health and stigma eradication. They further indicated the need to target the cultural misconceptions about mental illness and its causes by involving cultural leaders in psychoeducation interventions as they greatly influence the community members.

M, P1: "The health care workers should do thorough psychoeducation to the individual, the family and the community. Psychoeducation can include many things regarding the diagnosis that can help the individual and what to expect."

L, P3: "First, teach the clients and the family about the condition so that the patient can accept themselves and the family accepts the client. That can happen if there is education about the patient's condition and treatment."

The participants also felt that psychoeducation should be extended to community leaders because of their critical societal roles. There was a belief that because of their influence, they could help dispel the myths and stereotypes that are normally associated with mental illness due to their influence.

S, P4: "Our cultural leaders must be on the same page with modern health. Clients relapse because of the myths surrounding mental health."

S, P2: "There is a way that culture perceives mental illness. We can reach cultural leaders and the community and teach them how culture and mental illness intersect."

The issue of stigma towards mental illness also came very strongly. The participants felt that for our setting to be recovery oriented, issues of stigma must be dealt with.

L, P3: "The patient should know about the stigma in society. Sometimes we need to understand that stigma is one of the factors that contribute to patients rejecting treatment. The patient can sometimes commit suicide because of stigma."

The participants also believed that cultural perspectives and myths surrounding the cause of mental illness influence how patients with a diagnosis of mental illness deal with and facilitate their recovery process.

F, P4: "We still have setbacks regarding mental health issues because of our belief systems. People still hold that mental illness comes as a result of witchcraft. Some believe that you have done something bad to another person and they're trying to fix you. A lot of people have got people with mental illness in their communities and in their families but still fail to accept that mental illness can happen to anyone."

4. Discussion

The study explored how nurses working in four inpatient mental health units in Botswana perceived the development and implementation of a recovery-oriented mental care programme for Botswana. The study used an explorative, descriptive, and qualitative method and FGDs to collect data on nurses' views on the phenomenon.

Participants in this study believed that developing and implementing a recovery-oriented mental healthcare programme could be possible for Botswana nurses to guide the care of people diagnosed with mental illness. The participants further believed that the programme's success could be realised if all stakeholders came on board in support of the programme. Similar findings were reported in a study from Indonesia by Nurhayati et al. [47], where stakeholders indicated that a mental health community recovery programme could be applied in community settings. On the other hand, they averred that the care of people diagnosed with mental illness is still addressed through hospital admissions, where medication is the preferred choice of treatment.

On the important elements in facilitating the development of a recovery-oriented mental healthcare programme, the participants in this study highlighted the importance of having proper policies and guidelines on the proposed programme. In addition, they underscored the need for mental health interventions to be prioritised in terms of funding. The same findings were established in a study by Nurhayati et al. [47]. The participants indicated that there must be supporting policies on the recovery programmes and the availability of funds to ensure their success. A lack of funds for mental health initiatives was reported in a study from Taiwan in [27]. In the study, the staff proposed more resources in implementing recovery-oriented mental health services.

It is crucial for countries implementing a recovery-oriented mental health approach to have proper guidelines and policies to guide its implementation [2, 3, 48, 49].

Policies are effective in enforcing what is on paper. For example, staff and peer workers expressed concern about implementing recovery-oriented care in an organisation that does not support it in terms of having policies and procedures in place [50]. They contended that such a care project was unlikely to succeed. However, nurses in this study believed that the programme could be developed. Nonetheless, the implementation would require policies, procedures, and standards in place.

Other views on essential elements in developing the recovery-oriented mental healthcare programme were the involvement of other stakeholders such as traditional doctors, herbalists, and spiritualists. According to studies conducted in South Africa and Botswana, people diagnosed with mental illness usually seek help from traditional doctors, herbalists, and spiritual healers before they can resort to modern health [31, 51]. In concurrence, nurses in this study suggested that mental health facilities should provide for the spiritual needs of clients in a mental health facility. The participants suggested that patients' spiritual needs could be provided for by having spiritualists, herbalists, and traditional doctors in the facilities to avoid situations where clients might end up overusing the prescriptions they might get from such services, which may be fatal. One participant suggested that the facilities could develop guidelines on how spiritual care could be incorporated and regulated into the mental health services in Botswana.

The importance of aftercare, proper follow-up, and planned home of patients was mentioned by participants as essential in implementing the programme. Participants expressed the need for proper discharge and follow-up channels following discharge from the mental healthcare facility. To corroborate this study's findings, patients in a study conducted in Norway highlighted the importance of follow-up plans for continuity of care [52]. In addition, the participants in the same study suggested that follow-up plans should be communicated on time, be flexible, and include the service users and their families. Findings from Indonesia from a study by Nurhayati et al. [47] also back the study as stakeholders in their study emphasised that home visits were essential to support the recovery of people diagnosed with mental illness. In Botswana, mental health service has a discharge and follow-up plan; however, when patients are discharged, they are not followed and reintegrated into the community. There is a need for this gap to be closed and that could be achieved through developing a functional recovery-oriented mental health programme.

Some recovery-oriented mental healthcare programmes are aftercare programmes that help facilitate patients' recovery and reintegration into the community following discharge from a mental healthcare facility [5, 53]. Being cared for in a community setup has been demonstrated to be effective in helping patients recover from mental illness. Fletcher et al. [53] evaluated the effectiveness of residential recovery-oriented facilities that helped people with severe mental illness from recidivism in Australia. The services effectively provided community-contextualised care that aligned with the recovery principles of empowerment and inclusion in line with the Australian mental health policies of

a recovery-oriented approach. In addition, the services were well appreciated by clients as they felt they were supported and valued by staff. The findings were further supported by Heyeres et al. [54], as their study also indicated that residential facilities were recovery focused and complied with the recovery policies set by their government. The findings on the importance of community mental health services in caring for people diagnosed with mental illness could be why nurses in this study felt there should be aftercare and follow-up in place.

Lastly, the participants raised the importance of a functional and practical programme. In their view, the programme should have a psychoeducation programme targeting the staff, the patients, families, and the community. The participants felt a general lack of awareness about mental illness and mental health issues. In addition, stigma towards mental illness and cultural misconceptions about the causes and management of mental illness could hinder the successful implementation of the programme. Similar views were echoed in a study from Tanzania, which reported a general lack of awareness of mental illness and its causes in the community [55].

Furthermore, caregivers in the same study indicated that the community needed to be educated on handling people with mental health problems. The findings are further supported by findings of a study from Taiwan where health workers expressed the need for families and public health education on mental health issues with the hope that once the public is informed, they could be a major contributor to stigma reduction and hence better understanding, leading to the better outcomes for patients [27]. Moreso, the Taiwanese study, emphasised the need for health professionals to be educated on the recovery-oriented mental health approach to enhance their competencies and confidence in caring for clients with mental illness.

A study from Botswana on beliefs on the cause of HIV and mental illness by Becker et al. [32] associated the cause of mental illness with witchcraft. The study further indicated that people diagnosed with mental illness were viewed negatively as dangerous, untrustworthy, and discriminated against in the workplace. The study recommended training and public sensitisation on mental health issues to align rehabilitation services to a recovery-oriented care approach. In addition, a metasynthesis on the beliefs and perceptions about mental health issues by Choudhry et al. [56] associated mental illness with punishment from God. The authors recommended that mental health services develop clinical interventions to address cultural beliefs by encouraging dialogue with traditional leaders and developing strategies for involving them.

In the same vein, the participants in this study suggested that a recovery-oriented mental healthcare programme should include a psychoeducation training component for people with mental illness, families, and mental healthcare personnel on stigma in mental illness. Moreover, a systematic review by Waqas et al. [57] on interventions to reduce stigma in higher education indicated that psychoeducation programmes successfully reduced the self and public stigma of students with mental health problems.

These findings, therefore, emphasise the need to educate the community on mental health issues to dispel stigma and misconceptions about mental illness. Thus, a recovery-oriented mental healthcare programme developed for Botswana should be inclusive and consider elements such as funding, a training plan, the interplay of different stakeholders, and a strong psychoeducation programme to improve its effectiveness.

5. Conclusion

This study is a preliminary exploration of factors that could enhance the development and implementation of mental health recovery in Botswana. The study is the first to be conducted in Botswana. It provides insight into how nurses in four inpatient units perceive the implantation of a recovery-oriented approach in mental health services. The study suggested essential factors for consideration for the success of the approach, including the development of mental health policies that support the recovery-oriented approach; revising hospital admission, discharge, and follow-up plans for people diagnosed with mental illness; revitalising the community mental health services; and involvement of other stakeholders such as traditional leaders, herbalists, traditional healers, and spiritualists. In addition, nurses recommended developing health education programmes to reduce the stigmatisation of mentally ill patients in the community. Besides, other influential people such as community cultural leaders such as chiefs and ward men would be targeted for inclusion in the programme. They would help change people's perceptions towards the causes and management of mental illnesses.

5.1. Recommendations. Mental health problems remain a burden and a significant public health concern. Unfortunately, mental health programmes remain the least funded among health programmes, especially in low- and middle-income countries [58]. For example, in Botswana, mental health still operates under 1% of the national health budget. The participants in the study recommended that the programme could be developed and implemented if it received funding, involved multiple stakeholders, and had a psychoeducation programme targeting all the major stakeholders, community leaders, mental health personnel, and the patient's families. In a meeting hosted by the WHO in conjunction with the World Bank Group in 2016, Global Mental Health included mental health as one of the sustainable development goals, which underscores the need to prioritise mental health and well-being at all ages [58]. To meet the goal, mental health initiatives should be prioritised in terms of funding.

5.2. Relevance to Clinical Practice. The recovery-oriented mental healthcare programme has the potential to benefit people with mental illness in the country. In addition, it would allow nurses to improve their knowledge and skills in managing mental illnesses. Findings might also inspire policy change in Botswana and other countries with limited resources as they move to adopt the recovery-oriented approach and guide its implementation.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon reasonable request.

Additional Points

What Does This Paper Contribute to the Clinical Community?. The paper has the potential to (i) contribute to the transformation of mental health care in Botswana to recovery oriented and (ii) reduce the scarcity of the literature on developing and implementing recovery-oriented mental healthcare programmes in Botswana.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

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Research Article

Midwives' and Diabetes Nurses' Experience of Screening and Care of Women with Gestational Diabetes Mellitus: A Qualitative Interview Study

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Background. Gestational diabetes mellitus (GDM) is increasing and is associated with adverse outcomes for both mother and child. The metabolic demands of pregnancy can reveal a predisposition for type 2 diabetes mellitus (T2DM), and women with a history of GDM are more likely to develop T2DM than women with normoglycemic pregnancies. *Aim*. The aim of this study was to explore midwives' and diabetes nurses' experience of their role in screening, care, and follow-up of women with gestational diabetes mellitus and, further, to explore their opinions and thoughts about existing routines and guidelines. *Method*. Individual interviews were performed with ten diabetes nurses and eight midwives working in primary and special care. Qualitative content analysis was done according to Graneheim and Lundman. *Results*. The analysis of the interviews resulted in the overall theme "An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care." Difficulties in carrying out the important task of handling GDM while at the same time keeping the pregnancy in focus were central. Women were described as highly motivated to maintain a healthy lifestyle during pregnancy with the baby in mind, but it seemed difficult to maintain this after delivery, and compliance with long-term follow-up with the aim of reducing the risk of T2DM was low. The women came to the first follow-up but did not continue with later contact. This was at a time when the women felt healthy and were focusing on the baby and not themselves. A lack of cooperation and easy access to a dietician and physiotherapist were pointed out as well as a wish for resources such as group activities and multiprofessional teams.

1. Introduction

Gestational diabetes mellitus (GDM) is increasing globally and is associated with adverse outcomes for both mother and child, such as greater risk for type 2 diabetes mellitus (T2DM), macrosomia, and pre-eclampsia [1, 2]. Globally, 14% of all pregnant women develop GDM according to a pooled prevalence number [3], and in Sweden, the prevalence was 5.2% in 2020 [4]. The metabolic demands of pregnancy can reveal a predisposition for T2DM, and women with a history of GDM are more likely to develop T2DM than women with normoglycemic pregnancies [5, 6]. A review from 2020 [5] showed a 10-fold higher risk for developing T2DM, and another review about the incidence of T2DM showed an estimated risk of 19.7% after 10 years and nearly 30% after 20 years [6].

As for other types of diabetes, an increased plasma glucose level is used to diagnose GDM [2]. WHO has changed its recommendations and lowered the cutoff for diagnosing GDM [2]. In 2020, seven of Sweden's 21 regions used the lower cutoff [4]. The CDC4G study [7] is in progress in Sweden to further evaluate whether to implement the lower cutoff recommended by WHO. Screening to detect GDM is performed at the maternity health clinic, based on risk factors such as heredity and overweight, but a few regions offer screening to all pregnant women [4]. Recommendations for screening differ between regions in Sweden [4]. When diagnosed, the woman is referred to a diabetes nurse in special care during pregnancy and for follow-up with the diabetes nurse in primary care postpartum. A lower cutoff for GDM diagnosis would result in an increased number of women with GDM, and this will entail demands on health-care organisations and resources. Therefore, it is important to study how health-care professionals today experience their work with this group of women.

Earlier research is limited concerning health-care professionals' experience of treating women with GDM. In interviews with midwives about their experience providing care and counselling to pregnant women with GDM, Persson et al. [8] identified fear of failure as a central factor affecting the midwives' choice of strategies. On top of their ordinary work tasks, the midwives felt that they needed to give specific counselling regarding GDM and to initiate lifestyle changes. Persson et al. reported a need for a more supportive organisation.

Interviews with Swedish midwives about strategies for handling challenging dietary counselling situations presented ambiguous strategies. The information focused on GDM prevention, but extra challenges were raised when counselling women who were obese, on special diets, had eating disorders, or came from different cultures. Those challenging situations demanded other strategies. The researchers concluded that further education towards a more person-centred approach was needed as well as possible cooperation with dieticians [9].

In a Norwegian study, midwives at a special care unit for women with diabetes mellitus were interviewed. They described a conflict owing to lack of time, where medical issues were prioritised, and person-centred care with a midwifery focus was given less space and time [10].

A qualitative study from Denmark interviewed healthcare professionals who met women with GDM during and after pregnancy. They found that collaboration and information between the different clinics and different healthcare professionals need to be improved. It was unclear who was to be mainly responsible for long-term follow-up work to prevent T2DM. Due to a lack of guidelines and poor knowledge about existing guidelines, the women received very different care [11].

Examples of the few existing studies [8–11] indicate organisational issues and a clinical struggle to handle and balance different situations and work tasks in a tight time schedule. Thus, a need for further research within the area to map and increase understanding/knowledge about work with patients with GDM is necessary, during pregnancy as well as after delivery. In this study, we want to investigate further how consultations take place in different parts of the chain of health care, and during pregnancy as well as after delivery, both from the midwives' perspective and diabetes nurses' perspective. The results of this study can increase knowledge about daily work in the clinic and thus give important information for possible improvements and changes.

2. Aim

The aim of this study was to explore midwives' and diabetes nurses' experience of their role in screening, care, and follow-up of women with gestational diabetes mellitus and, further, to explore their opinions and thoughts about existing routines and guidelines.

3. Method

3.1. Study Design. A qualitative method with an inductive approach was chosen since we wanted to gain deeper insight into participants' personal experiences [12]. Semistructured individual interviews were performed to explore midwives' and diabetes nurses' experience of their role in screening, treating, and following up on women with GDM. Opinions and thoughts about existing guidelines were also explored.

3.2. Participants. All midwives and diabetes nurses in primary care and in special care units working with women with GDM in a region in the northern part of Sweden were invited to participate. This study used a purposive sample [12]. Potential participants were contacted through coordinating personnel and/or the responsible chief of the respective professions, and information was distributed among their contacts. Permission to participate in the interviews during working hours was given by the regional management. Ten diabetes nurses (age 27–61 with median age 46.5, work experience 2–15 years with a median of 5.6) and eight midwives (age 34–63 with median age 47.5, work experience 3–33 years with a median of 15.5) chose to participate in individual interviews. The participants were equally spread between rural and central areas in both groups. Two declined participation due to lack of time, one due to a feeling of lack of experience, and four did not reply to our contact.

Information about the study was given orally and in writing, and participants were able to ask questions. Informed consent was signed before entry into the study.

3.3. Data Collection. Data were collected through individual interviews conducted by phone or online, depending on the participants' choice. Face-to-face sessions were not possible due to the ongoing pandemic. All interviews were conducted by the first author, S.K., between May and July 2021. A semistructured interview guide with open-ended questions was used. A pilot interview was performed, and only minor adjustments to the interview guide were made; thus, pilot data were included in the study. The interviews were

recorded digitally (Olympus VN-541 PC) and lasted between 12 and 28 minutes with a mean of 20 minutes. There was no time restriction, and the participants were asked at the end whether they had anything to add. Participants agreed to be contacted again later should any questions come up during the analysis, but no such need occurred. Transcripts were not returned to the participants for comments.

3.4. Data Analysis. The interviews were recorded digitally, transcribed verbatim by S.K., and deidentified and analysed using qualitative content analysis according to Graneheim and Lundman [13–15]. Qualitative content analysis emphasises variation, through similarities and differences in the material [13–15].

The analysis started with repeated readings of the material to get a sense of its entirety and content. Meaning units were identified and condensed to shorten their content, while preserving their core content, and then, they were labelled with codes to capture their essence. The codes were then grouped and abstracted into categories and subcategories by their commonalities on a manifest level. Further interpretation and abstraction resulted in a theme that exposes the latent content in the material. To ensure dependability, S.K. and R.S. read the material, identified meaning units and coded the material separately, and then compared and discussed the differences until a consensus was reached. Cocreation in the analysis is often described as consensus [14]. Codes were then grouped into categories and subcategories separately, compared and discussed, and adjusted separately and then discussed again until reaching consensus. To further ensure dependability, this material was discussed in the whole group who had read parts of the material. An overall theme was created after discussions. Quotations were chosen to exemplify and clarify. All steps of the analysis process were managed manually. An example of the analysis is shown in Table 1.

3.5. Ethics. Ethical approval for the study was obtained from the Swedish Ethical Review Authority, Dnr 2021-00179. All participants gave signed informed consent before the start of the study. Data materials were kept in computer files behind two-factor authentication, and transcripts were kept in a locked cabinet.

4. Results

The analysis resulted in four categories, nine subcategories, and one theme (Table 2).

From the categories to subcategories, the theme *"An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care"* was abstracted and interpreted. The theme originates from the participants' stories about difficulties providing necessary information about the patients' illness while maintaining focus on positive aspects of this special time during pregnancy. They also spoke about difficulties later, at follow-up in addressing the risk of future illness and health risks at a time when the woman is "healthy." This was a challenge at all parts of the chain of

health care, and being supportive and encouraging was regarded as a central issue. The participants expressed different motivational challenges depending on occupation and place in the chain of care.

4.1. Structure within and between Caregivers. Different ways of cooperation between caregivers and parts of the chain of health care were described, but so were a lack of cooperation and uncertainty about details in routines and guidelines. Participants described flexibility in the care and contact and possibility to adapt to the patient as important.

4.1.1. Caregivers' Role and Cooperation throughout the Chain of Health Care around the Women. The participants described their role in the care of the women, what their work assignments were, how they referred patients to other caregivers, and/or how patients were referred to them by others. They further reported on different forms of contact, for example, in person, by phone or online, according to the needs and preferences of the individual women. Midwives in primary care felt that their role was central during pregnancy but that their part in considering GDM was small; they set the diagnosis and then referred to "professionals" at the diabetes clinic.

> Well, if we detect GDM we refer, we get professional help. We contact the diabetes clinic and then they start doing controls. The women continue with us according to the base programme. You are a key contact from the start to catch and find, and then refer... #13

All women diagnosed with GDM were referred to diabetes nurses in special care for regular contact during pregnancy. However, diabetes nurses in primary care are responsible for the follow-up after delivery (up to a year after delivery), a time when many women consider themselves healthy; the GDM is in the past.

Good experiences of quick nurturing after set diagnosis were common and well spread in the interviews, as were accounts of easy contact between primary care and special care nurses and then prompt contact with the woman after diagnosis. Due to long distances in parts of the area where the interviews were conducted, special care and primary care cooperate in special cases, for example, by having personal meetings with primary care close to home instead of travelling long distances for each visit or having contact by phone.

In primary care, the diabetes nurses felt alone with these patients and had no active cooperation with other caregivers at the clinic.

Some of the midwives communicated to the diabetes nurse at their clinic when a woman was diagnosed with GDM, but this was an individual initiative and not routine. A recurring opinion was that there was no access to a dietician and that this category of competence would be important and beneficial in the work with those women.

Also, cooperation with a physiotherapist was lacking, as were group activities, which many participants thought would be beneficial for this patient group. The opportunity to meet others in the same situation and support each other was thought to be very rewarding.

TABLE 1: Example of the analysis.

Meaning unit	Condensed meaning unit	Code	Category	Subcategory
It's not only, I meet other patients with diabetes with foreign background, and there are difficulties with the language... Then it's good that you can take information from the Internet in their own language	Meet other with diabetes with foreign background. Language difficulties. Good to have information on the Internet in their language	Language difficulties Information in native language	Complexity of counselling situation	Languageand cultural differences

TABLE 2: The results of the analysis.

Category	Subcategory	Theme
Structure within and between caregivers	Caregivers' role and cooperation throughout the chain of health care	
	Thoughts about routines and guidelines	
	Screening and testing/sampling	An act of balance between normalcy and illness, working for motivation with dilemmas throughout the chain of health care
Content of the daily tasks	Promote healthy lifestyle and encourage the normal	
	Inform and increase knowledge of risks and consequences	
	Compliance and course of action at follow-up	
	Challenges in the daily work	
Complexity of counselling situations	Obstructive physical impact of pregnancy	
	Language and cultural differences	
Professional competence and need for further education		

4.1.2. Thoughts about Routines and Guidelines. Even within the same profession, there were different opinions about existing routines and guidelines. Some thought they were clear and easy to follow, while others saw a need for clarification and improvement. It was apparent that there were some details that needed clarification, based on diverse stories about how, for example, referrals should be made.

> Our routines are a bit fuzzy when it comes to screening for GDM. A bit vague. I have pointed that out before; maybe it will change... #17

Some differences were seen in the layout of the work, and several participants expressed a wish for clearer guidelines to ensure equal care. Some had developed local guidelines on how to perform follow-ups at their clinic to provide clarity when the regional guidelines were considered unclear and/or not updated.

Different tools and resources were used to accomplish the work tasks. Some used the diabetes handbook available online [16] along with other patient information also available online. The women were, therefore, getting more diverse information than they might have if there had been more detailed regional guidelines.

A recurrent notion that came up in the interviews was that some women might be missed and that the routine of referring women with previous GDM to a special care diabetes nurse directly at the enrolment meeting with the midwife needed clarification. The participants also indicated uncertainty about glucose tolerance tests and said there was a need to clarify the routine and follow-up requirements. Another lack in the routines that came up was that the diabetes nurses in special care do not have access to the medical journals of midwives in primary care, which may impede the communication between caregivers.

There were questions and uncertainty about potential new cutoff limits for the diagnosis of GDM in the future. This raised thoughts about a possible need for a change in organisational responsibilities due to a growing number of patients.

4.2. Content of the Daily Tasks. Different work tasks were described in the interviews. All caregivers focused on a healthy lifestyle as well as screening and follow-up.

4.2.1. Screening and Sampling. Collecting and handling blood samples was described as an important part of the work tasks, first to diagnose GDM and then to follow blood glucose levels over time during pregnancy as well as during long-term follow-up after delivery. Screening and sampling were seen as essential in order to detect GDM and prevent further illness. Screening is done based on risk factors and is important for detecting GDM, but several midwives said that

many cases are found by the random testing of blood glucose that is performed during pregnancy.

> It can be during our consultations that blood glucose shows that you need to progress to do an OGTT or you do it due to previous risk factors. And a GDM turns up. #4

After diagnosis, the women with GDM are taught to self-monitor blood glucose levels regularly and report to their diabetes nurse at the special care unit. After delivery, the routine is to offer recurrent follow-ups with the diabetes nurse in primary care, and blood samples are also an important part of this.

4.2.2. Promote a Healthy Lifestyle and Encourage the Normal. All participants saw the provision of lifestyle information as a central task in their daily work and talked about how to promote a healthy lifestyle, saying that this should be presented as the normal way of living and taking care of yourself. Healthy eating and physical activity were viewed as the main objectives.

> In general we inform everybody about lifestyle factors. When you are pregnant, you are prone to making lifestyle changes, this we know. Many start exercising, start to be aware of weight and not gaining too much, thinking about what they are eating. Many think about what they are eating. . . . It's quite general, regardless of whether you are a diabetic or not... #8

For the midwives in primary care, despite the GDM, the emphasis was on keeping the pregnancy and baby in focus and giving the mother-baby connection priority.

Providing support and reassurance while giving women the opportunity to ask questions was important in getting the information out effectively. The desire to do everything possible to ensure the baby's well-being during pregnancy was perceived as a key motivator for the women to adopt lifestyle improvements before childbirth. Later, after childbirth, this could be more difficult since the focus shifts to the baby and family and is not so much on the mothers themselves. Many spoke of the importance of having healthy habits for the future and indicated that further support is needed to help mothers maintain a healthy lifestyle.

4.2.3. Inform and Increase Knowledge of Risks and Consequences. Another important work task the participants described was providing information and increasing knowledge about diabetes and its risks and consequences. The importance of continuing this work after delivery, when most women consider themselves healthy, was seen as a key issue.

I think it is very important to follow up. Since they have such a big risk of developing T2DM... Yes, it is important to follow up and to inform them. #5

The midwives perceived that increasing body mass index prepregnancy is getting more prevalent, and mental health issues are more common. This makes the work, and helping mothers become role models for their children even more important.

4.2.4. Compliance and Course of Action at Follow-Up. The participants expressed that compliance was generally good during pregnancy, but it became more difficult with the follow-ups after delivery. Many participants described a long time delay between delivery and the first follow-up. They found that the women would come to the first visit for follow-up but would not continue with regular appointments in the long run, since they were feeling healthy at this point and were focused on the baby and the family. Attempts had been made to customise follow-up routines according to individuals' needs and preferences, but the compliance was still low.

I think it is easy as a patient to think that I have good blood sugar and that there is nothing to worry about now. But you still have to make them understand that the risk of developing T2DM is quite big. #6

The informants described uncertainties and differences concerning strategies and the interval when it came to follow-ups in primary care after delivery. The diabetes nurses expressed that, in the end, it came down to the woman's own responsibility. The low compliance for long-term follow-up was considered problematic.

4.3. Complexity of Counselling Situations. Obstacles, challenges, and difficulties of course occur in the contacts with these patients. Motivational work, normal impacts of pregnancy, and cultural differences, including language barriers, were the main subjects spoken about.

4.3.1. Challenges in the Daily Work. Different challenges were reported in the interviews. A recurrent topic was difficulties concerning motivation. Participants indicated that health education and motivation were time-consuming and that time was lacking. The work of changing habits and lifestyles is also time-consuming, so the same problem with lack of time is connected to this. Anxiety was quite common among the mothers-to-be, with different levels of worry among the women, both for the coming babies and for themselves. Anxiety could be a difficulty and an impediment, but it could also motivate women to change and to maintain new habits. Many participants reported that motivation was higher during pregnancy than after delivery.

To keep them motivated, it is different while they are pregnant; then they have someone else to think about./... ./It is the same as that you transmit good lifestyle to the children, that is what I think about, teaching the children to be physically active along with eating healthy. #9

It was a big challenge to try to keep a recurrent contact over time after delivery. Maintaining healthy eating and physical activity was considered a challenge. Another challenge was complex counselling situations on delicate matters such as weight and being monitored with a scale, which was very sensitive for many of the women. The participants felt that they could do better if they had more time and resources.

4.3.2. Obstructive Physical Impact of Pregnancy. A recurrent topic in the interviews concerned the physical strains and events that normally occur during pregnancy that could be a complicating factor for lifestyle changes. For example, nausea and cravings make it even harder to keep a healthy diet, and pregnancy-related lumbopelvic pain can make physical activity harder. Even during a healthy pregnancy, there are many emotions and bodily events to manage.

To encourage them to exercise. Sometimes they get stuck in that they cannot walk because of pain from joint loosening in the pelvis and all that. So there is that... To get them more physically active early. #10

4.3.3. Language and Cultural Differences. Many of the women the participants meet are immigrants, and this often raises difficulties related to language and communication as well as cultural differences such as different food cultures and customs when it came to physical activity.

Dietary habits and general... this with cultural differences... You can notice big differences in what people eat and that there are different cultures. #4

Communication via interpreter was described as an aggravating factor in the consultation situations that made it more difficult to connect with the mother and to ensure that all the vital details in the conversation were clearly relayed.

Moreover, some women are illiterate and therefore cannot assimilate written information indicating, for example, the carbohydrate content in various products or other written information which would complement and repeat oral information. In addition, the numbers displayed on the blood sugar tester might not be understood by women in this group.

When you don't speak the same language and perhaps need an interpreter. And the interpretation does not always work well. Now during COVID-19 there have only

been telephone interpreters, and you do not always reach all the way. Then there are many who can't read or count; if the woman is illiterate, that is very difficult. #12

4.4. Professional Competence and Need for Further Education. The participants had a varying number of years in the profession and the desire for further training varied, not always connected to longer or shorter experience. Many wanted further education to be given the opportunity and time to learn about new findings and new knowledge within the area.

I would be grateful for more education since this... I meet so few patients that I feel I don't.... I don't work with it so much that I feel so very secure in what I do. The more you meet a group of patients the more secure you get within that area. And there are not that many patients, so it would have been nice to get some updates and more education. #16

A recurrent wish was to have the opportunity to learn more about areas that were not their speciality, for example, more knowledge about pregnancy for the diabetes nurses and so on. This would enable them to answer questions from the women, but they also wanted the information to increase their own understanding. A need for further education about cultural differences and, for example, food cultures was expressed as well as further training in conversation methodology.

5. Discussion

5.1. Result Discussion. This study aimed to explore midwives' and diabetes nurses' experiences of screening and care of women with GDM during and after pregnancy. The participants were active in different phases, according to their profession and placement in the chain of health care. Descriptions of the act of balancing between normalcy and illness came up several times in the interviews, and this has also been reported in previous research concerning health-care professionals' experience working with women with GDM [8, 10]. This balancing act was described in different ways; for example, that a lack of time puts the illness in priority instead of the pregnancy and also that it was important to emphasise that lifestyle advice should be considered for everybody, thus as something normal and not specifically because of their GDM. The informants thought this was an important group of patients that need time and care, and also that it was important to consider that the health of the mother would affect the health of the baby and family for a long time to come.

It was noticeable in the material that there were different opinions about routines and guidelines among the informants and that there were some misunderstandings about who does what and thinking that certain tasks were someone else's responsibility. There was a lack of knowledge and understanding of how work tasks and information were organised and distributed between professions and between

parts of the chain of health care. Similar difficulties were pointed out in a Danish study [11], where suggestions about an overview of organisation, collaboration, and information transfer were made. A study from 2009 [17] showed low compliance with guidelines about risk factor-based screening. Only 30.7% of women with one or more risk factors were exposed to OGTT.

Different primary health-care centres had developed their own, more specific, routines, which caused diversity between units. This was time-consuming work that, in a situation with well-functioning routines, should not have been necessary, and it led to a risk of unequal care. A related issue that should be possible to solve more effectively was that most participants found written information online to hand out to their patients since no such things were in the local guidelines. Of course, this provided opportunities to adapt the information to individual women, taking into consideration language and depth of information, but it could also be time-consuming and lead to unequal care. Besides the local guidelines, there are also national guidelines published by the National Board of Health and Welfare (Socialstyrelsen) concerning the prevention and treatment of unhealthy lifestyle habits. These guidelines can be of some help in ensuring the provision of equal treatment and care. The national guidelines stipulate person-centred care adapted to the individual, with a focus on patient education and support [18]. This was a focus that the informants spoke about frequently.

Cooperation concerning referrals from primary care midwives who had diagnosed women with GDM to diabetes nurses in special care seemed to be fast and effective, although there were some uncertainties about the correct way to make a referral. Beyond this, there was very little co-operation between special care and primary care and between occupational groups within primary care. Several participants remarked on the lack of a dietician and expressed a wish for further cooperation with a physiotherapist. It would be beneficial to have access to a multi-professional team [19].

In both special and primary care, participants expressed a wish to be able to offer different group activities/treatments in order to take advantage of the strength in a group, where patients can share experiences and support each other. Previous research has shown the benefits of groups, which can improve maintenance and adherence [20]. Identification has been pointed out as an important factor when attending a group treatment, and a facilitator is needed for successful treatment [21, 22]. A review shows the effect of social identification-building on health, offering the possibility to identify with and belong to a group [21].

A clear organisational detail that would simplify and secure the work for diabetes nurses in special care would be to enable them to read midwives' reports from the women's primary care appointments. This was not possible at the time of the interviews.

A key challenge was communication since many women are immigrants and have no or only a limited ability to communicate in the Swedish language. Communication

through professional interpreters or with the help of a relative is a complicating factor in the personal meeting and makes it more difficult to create a relationship and to empower the woman [23]. Furthermore, immigrants may bring different cultural customs when it comes to food and physical activity and different opinions about how women should take care of themselves during pregnancy [23, 24]. Transcultural understanding and competence are important, and health-care professionals need to get proper education in this to be able to meet those patients [24, 25]. Previous research also points out the importance of education and competence on how to collaborate with an interpreter, which is vital for a successful communication [24, 26]. The diabetes nurses also talked about challenges concerning women who are illiterate and who therefore have difficulties understanding what the numbers on the blood glucose tester mean. This leads to difficulties in getting the daily feedback that those measures are supposed to provide. The inability to interpret those results leads to the need for resource-intensive recurrent personal meetings that would otherwise often be managed by phone or digital messages. It has been previously pointed out that illiteracy is a complicating factor that adds to the workload, and that cultural differences create a need for information that is adapted to be made more broadly accessible [27].

The diabetes nurses in primary care felt alone with those patients, women previously diagnosed with GDM, and came in contact with the women quite late after delivery, without having had former contact or any relationship with them. A known facilitator for compliance with recommendations given at consultations is connection and continuity with the caregiver, and this could be a factor here [28, 29]. The compliance following such consultations was experienced to be low, which has also been highlighted in previous studies [29–31]. Often the woman came to the first consultation after delivery but then as time passed, the attendance rate decreased. These consultations are introduced when the woman feels healthy, the baby and the family are in focus, and the risk of T2DM feels distant and no longer relevant. Kim et al. describe how women, despite knowing that GDM gives an increased risk of developing T2DM, did not see themselves as having an increased risk [32]. The consultations are voluntary, and a lot comes down to the woman's own responsibility and interest. Interviews with women treated for GDM report a lack of coordination, unclear responsibility for follow-up among health-care professionals, and absence of individual focus as factors contributing to low compliance with long-term follow-up [29].

If the lower cutoff for diagnosing GDM is implemented, the number of women diagnosed with GDM will increase, leading to new demands on health-care resources and organisations. An organisation where diabetes nurses in primary care have contact with the woman during pregnancy could improve continuity and might improve compliance with long-term follow-up. Continuity in contact and a person-centred approach are facilitating factors [28, 29].

Opinions about more education were varied. Different thoughts about the need and wish for knowledge about the part that was not the focus of one's own profession affected opinions about whether or not more education is needed, for example, for midwives to learn more about diabetes, or for diabetes nurses to know more details about pregnancy and its effects.

5.2. Methodological Discussion. The study's aim to explore participants' experiences led to the choice of qualitative method, more specifically, interviews analysed according to Graneheim and Lundman [13–15]. With interviews, there is a chance to go deeper into the subject with supplementary questions, which is not a possibility when using a survey. In this study, semistructured individual interviews were conducted by phone or online. Face-to-face sessions were not possible due to the ongoing COVID-19 pandemic. Bryman [12] discusses the pros and cons and possible differences in results between face-to-face interviews and interviews by phone or other means. There have been concerns that phone interviews might be less rich in content compared to face-to-face sessions, but according to Bryman [12], this has not been shown. By phone, there is a lack of body language, but you can still hear, for example, changes in tone and speed of talk. In an online interview, you can observe body language to some extent. Not conducting interviews face-to-face can be time- and cost-effective and might enable participation despite long distances. The participants in this study could choose which format they considered most convenient, and even over long distances, this made it equally easy for everybody in the area to participate, which is seen as an advantage.

The original plan was to hold focus group interviews, but this was changed to individual interviews due to the pandemic, which prevented in-person meetings. Holding focus group meetings online or by phone was not considered adequate since it would be very difficult to get a good group dynamic and discussion by those means. Focus groups would have been interesting, giving the possibility to observe how individuals act as members of a group discussing a special topic and how they react to others' opinions and experiences [12, 33].

There is no consensus on how many informants are needed in qualitative research and no way to calculate this compared to how participants are calculated in qualitative research. Kvale recommends 5–25 informants, to be able to overview the text material [33]. Too many informants and a big set of data could make it difficult to analyse all data as deeply as needed, while too few or thin materials do not give the necessary richness to the material [12, 33, 34]. The 18 interviews in this study were considered to provide a good amount of data, offering material with richness and to be able to have an overview of the material, analysing similarities and variation.

A purposive sample was used as the researchers turned directly to the group of professionals actively working with this patient category and who thus have knowledge of and experience with the topic [12]. The participants were equally spread between midwives and diabetes nurses, working in rural and central areas, and they were spread among ages

and years of work experience. This contributed to the width of the content of the interviews, which is important for the credibility as well as transferability of the study [13, 35].

The use of a semistructured interview guide ensured similar questions and topics in all interviews while still maintaining a flexible interview process. The questions do not have to be asked in the same order to all informants, which gives space and possibility for the informants' opinions and wishes to share [12]. The questions were not distributed beforehand so there was no chance to prepare specifically, but knowing the purpose of the interview made it possible to prepare more generally and consider what they wanted to share. This gives spontaneous answers, which are considered preferable. A pilot interview was conducted to test the interview guide and to make sure that it gave rich answers correlating with the aim of the study. This strengthens the study's credibility [35].

The analysis was done manually, without software. As described in the Method section, the analysis was performed in specific steps and with discussions, cooperation, and consensus between the authors. No member check was performed, since there were no specific questions and because this type of control is criticised [12]. The inclusion of more than one researcher in the analysis strengthens dependability [13, 35]. Furthermore, the process—from recruiting participants, through the analysis and production of finished result—is thoroughly described, which enables the reader to follow along and thereby to judge the study's transferability and credibility. Different steps and examples of the analysis are presented, and the results are clarified in the text and confirmed with quotations, which further strengthens dependability as well as transferability [13, 35]. Quotations help to show that the text in the results comes from the collected data, strengthening conformability as well as credibility [35].

As described in the Method section, the research group was involved in the analysis.

An interview is considered to be a cocreation between the interviewer and the interviewee and later between researcher and text through interaction in the situation [14, 33]. This makes it important for the researchers to be aware of preunderstanding that might affect the process. The authors have strived to be objective. The interviewer had no previous experience working with GDM and does not have the same occupation as the informants.

6. Conclusion

Our results demonstrate how women with GDM postpartum, with normalised glucose parameters and a new life situation, often have problems holding on to a healthy lifestyle and that they are often lost to follow-up from the health care. The participants describe that their care organisations have a lack of structure, coordination, and sometimes the knowledge to meet the specific needs linked to follow-up after GDM aiming at long time follow-up, health promotion, and diabetes prevention. If the lower cutoff recommendations from WHO for GDM would be implemented in Sweden, with an increasing number of GDM diagnoses, the urge for organisational changes will be even more relevant.

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Hindawi

Research Article

The Effects of Education Based on the Nursing Process on Ostomy Self-Care Knowledge and Performance of Elderly Patients with Surgical Stoma

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Background. Patients with surgical stoma experience problems, which can lead to their impaired adaptation and self-efficacy. The nursing process provides a framework for planning and implementing nursing care. This study aimed to investigate the effect of education based on the nursing process on ostomy self-care knowledge and performance of elderly patients with intestinal stoma. *Materials and Methods.* In this quasi experimental study, 52 elderly patients with intestinal ostomy who were referred to Razi Hospital in Rasht and met the inclusion criteria were invited to participate in research. Sampling was done by a simple random method. The intervention group received an educational programme based on the nursing process, whereas the control group received traditional training. The research instruments included a questionnaire to assess the level of ostomy self-care knowledge and ostomy self-care performance. Data were analyzed by SPSS software version 21 using descriptive and inferential statistics at a significant level of $p < 0.05$. *Results.* The mean scores of ostomy self-care knowledge and performance in both groups (intervention and control) were increased. However, the improvement in self-care knowledge and performance of the intervention group was significantly greater than that in the control group ($p < 0.001$). *Conclusions.* The educational programme based on the nursing process compared to the routine patients training caused more improvement in ostomy self-care knowledge and performance of older adult patients with surgical stoma. Therefore, an educational programme based on the nursing process can be used as an educational model for these patients.

1. Background

The world's elderly population is growing rapidly [1]. It is predicted that in the 21st century, the elderly population will reach its highest level in human life, which is why this century has been called the "Century of old age" [2]. Similarly, the report of the general population and housing census of the Islamic Republic of Iran in 2016 in Iran showed that about 9.3% of the country's population consists of people of 60 years and older [3]. In addition, there are some predictions which show that the elderly population of Iran will reach more than 26 million by 2050 [4]. Old age is not a disease. It is the physiological changes that occur over time, and as a result of these changes, the rate of acute and chronic diseases increases [5]. Cancer can be considered an age-related disease because the incidence of most cancers increases with age, rising more rapidly beginning in midlife [6]. Cancer is the second leading cause of death in older adults [7] and among cancers, colorectal cancer has a high prevalence in the elderly. So that approximately 60% of colorectal cancer patients are older than 70, with this incidence likely increasing in the near future [8]. Colorectal

cancer in people with colon cancers that have not spread to distant sites is most commonly treated by surgery [9]. Colostomy or ileostomy is a well-known surgical intervention aimed at treatment of various diseases, including cancer [10]. Intestinal ostomy is the creation of an artificial opening in the abdominal wall by surgery that drains the contents of the intestine out of the body [11]. As the frequency of major abdominal operations being performed in older patients rises, there is an associated rise in procedures involving fecal ostomies [12]. Ostomies are being placed frequently in surgically treated elderly patients with colorectal cancer [13]. Studies specifically evaluating the outcome of surgery for colorectal disease in older persons have demonstrated that major procedures should not be denied on the basis of age alone and that colorectal surgery can be conducted with an acceptable margin of safety in older persons [12].

Although the creation of a stoma is associated with positive outcomes such as symptom relief and improvement in overall health, it may have a negative impact on the patient [10]. The majority of patients with stoma suffers with a lack of physical activity, dietary changes, and general lifestyle changes [14]. Ostomy surgery has effects on person's physical appearance and functions and also has a bad effect on patients' body image [15]. Factors linked to living with a stoma may increase or decrease the health-related quality of life after stoma creation. For example, perceptions of living with a stoma are influenced by the presence of stoma complications. Leakage of effluent from the ostomy is perceived as especially bothersome, and a great deal of professional effort goes toward teaching patients to manage their pouching systems in a manner that avoids leakage [10]. To support patients in adjusting to their condition, they should receive self-care-related information and skill training during their hospital stay after colostomy, which might include instructions on colostomy care provided either verbally or via handout [9].

Education has an important part in the development of self-care, independence, and adaptation of individuals to the disease [16]. It has been suggested that patient education might reduce the length of hospital stay, the frequency of postoperative complications, and the frequency of hospital readmissions [17]. Education changes health behaviors and leads to better understanding of the disease and reduces or delays the incidence of complications [18]. Clinical nurses play a major roles to provide the health education for patients in the process of getting used to living with stoma. The main content of the health education should focus on technical skills related to wound care and incontinence (skin cleansing, bag/adapter replacement, changing dressings, and making the proper position). In addition, encouraging people to make decisions about treatment and care, organizing educational programs for daily activities to ensure adaptation to patients' social life, and developing educational materials and educational support systems are recommended [16]. The main goal of nursing care is to provide appropriate quality care to improve the condition of patients [19], and one of the most important policies and principles of nursing care is the use of the nursing process model

[20, 21]. This model is a systematic framework for evaluating patients' needs for clinical decision-making. The nursing process moves the care of patients from traditional and old methods to modern, scientific, and patient-centered methods [20]. Patient education is an integral part of the nursing process, and nurses can use this process to assess, plan, implement, and evaluate an effective and individualized patient education programme [22]. However, age-appropriate teaching strategies for the older adult must be planned, purposeful, and adapted to accommodate the special needs of the elderly patient. Specific strategies that adhere to the principles of geragogy should also be an integral part of every nurse's teaching repertoire to promote health literacy in this special population [23].

The effects of education on self-care ability of patients with colorectal cancer have been evaluated in several studies [9, 16, 24]. These studies confirmed the effect of education on patients' self-care ability. It was shown in the study of Wang et al. that multimedia patient education is an adequate educational tool for patients with colorectal cancer who have undergone colostomy surgery [9]. In Shrief and Mokhtar's study, the use of structured educational guidelines had a positive effect on patient knowledge, performance, and self-efficacy regarding colostomy care [24]. In Culha et al.'s study, the effect of self-care education on self-care awareness and agency of patients with colostomy and ileostomy was investigated. These researchers concluded that education may assist in self-care agency and stoma knowledge of patients with stoma [16]. However, the review of the literature indicated that no study has been conducted to investigate the effect of education based on the nursing process on the knowledge and self-care performance of elderly patients with surgical stoma. However, the ultimate goal of patient education programs is to achieve long-lasting changes in behavior by providing patients with knowledge that allows them to make autonomous decisions to take ownership of their care as much as possible and improve their own outcomes [22]. Therefore, considering the importance of this issue and due to the lack of evidence on an educational model based on the nursing process in Iran, the present study was conducted to determine the effect of education based on the nursing process on knowledge and self-care performance of elderly patients with surgical stoma.

2. Materials and Methods

2.1. Study Design, Setting, and Participants. This quasi-experimental study was conducted by using a pretest-post test two-group design. The population of this study was the elderly patients with an intestinal ostomy (ileostomy or colostomy) who were referred to Razi Hospital in Rasht, in 2020–2021. This hospital is the largest public and educational hospital in Guilan province in terms of size, which provides the most diverse general, specialized, and subspecialized services in the field of internal diseases and surgery to its patients.

Sampling was done by a simple random method. In this way, the samples were allocated from the list of intestinal stoma surgery candidates who met the inclusion criteria and

were placed one in between the control and intervention groups. For example, the first patient from the list of surgical candidates was allocated in the intervention group and the second patient from the list was allocated in the control group. To determine whether the first patient will be in the control group or in the intervention group, a random lottery method by flipping a coin was used.

The inclusion criteria included the following: elderly patients who were 60 years or older with intestinal ostomy were willing to participate in the study and had not participated in similar programs before. They should be literate to speak and write Persian fluently, had no visual or auditory problems (they should not have problems communicating), did not have a psychological disorder (scored 8 or higher above the 10-item AMT instrument), were able to perform daily life activities (getting a score of 12 or higher assessed by using daily life tool), getting a score of 17 and lower (average and poor knowledge level) assessed by the Stoma Care Knowledge Level Questionnaire, earning a score of 18 and below (average performance level and poor) assessed by the checklist of checking the level of ostomy care performance and lack of work experience in the health system. The data collection took place from August 2020 to February 2021 and lasted for 7 months.

2.2. Research Instruments. Research instruments included a demographic characteristic questionnaire (including age, sex, and education), an ostomy self-care knowledge questionnaire, and an observational checklist of patients' ostomy self-care performance. The stoma care knowledge questionnaire developed by researchers is based on scientific text [25]. In this way, according to the objectives of the study, appropriate items were designed. Then, the phrasing, sequence, and arrangement of the questions and the proper format to receive the answers were considered. This questionnaire was related to how to take care of the ostomy (ileostomy and colostomy) and evaluates items such as the definition of ostomy, definition of ileostomy and colostomy, types of ostomy bags, duration of use of bags, appropriate time to change the bag, diet, lifestyle with ostomy, and stoma care tips. This questionnaire has 26 questions with "correct," "incorrect," and "I do not know" answers and is in 5 dimensions. For each correct answer, 1 point, and for incorrect and "I do not know" answers, zero points were considered. The sum of the total correct answers was 26. That if they got a score of 18 to 26, had good knowledge; 10 to 17, had average knowledge; and a score of 0 to 9, had poor knowledge. People with average to poor knowledge entered the training program. The questionnaire was answered one day before surgery as a pretest, and the first day, one week and one month after surgery as a posttest. The validity of the ostomy knowledge level questionnaire was confirmed using content validity (CVI and CVR) and its reliability was determined 0.85 by Kuder–Richardson 21 (KR-21). In this way, the questionnaire was sent to 10 faculty members of the gastroenterology, cancer surgery, and nursing departments of Guilan University of Medical Sciences, and their opinion regarding the importance of questionnaire items was obtained by selecting one of the options of relevance, clarity, simplicity, and necessity. After applying the professors' opinions, the final questionnaire was prepared. In the reporting phase, the questionnaire was sent to all professors and their approval was obtained.

The observational checklist of patients' ostomy self-care performance was taken from a book about basic nursing techniques. This procedure checklist book applied all the procedures from Craven and Hirnle's Fundamentals of Nursing [26]. This observational checklist has 13 items with a three-choice Likert rating of "excellent performance," "satisfactory performance," and "need to practice," which evaluates the steps of changing the ostomy bag. For scoring, 2 points for "excellent performance," 1 point for "satisfactory performance," and zero for "need to practice" were considered. The total result was 26 because 13 items were examined. If the participants got a 18–26 score, their performance was excellent; 10 to 17 was used for average performance; and a score of 0 to 9 for poor performance. People with average to poor performance entered the training program.

To evaluate the performance of both groups in terms of how to change the bag and wash the ostomy, a pretest was performed on the day before surgery. An observation checklist of self-care performance was used for evaluation, which was completed by one of the researchers.

To evaluate the performance of both groups in terms of how to change the bag and wash the ostomy, a pretest was performed on the day before surgery. An observation checklist of self-care performance was used for evaluation, which was completed by one of the researchers. Then, changing the bag and washing the ostomy were practically taught in a session and the performance evaluated through posttest 1 on the first day, posttest 2 in one week after the training, and posttest 3 in one month after the training.

The validity of the observational performance checklist was confirmed using content validity, and its reliability was determined by an inter-rater reliability method ($r = 0.9$). Charlson Comorbidity Index was used to control concomitant diseases in the present study.

2.3. Intervention. The educational intervention in this study adopted five stages of the nursing process: assessment and recognition of educational needs, nursing diagnoses, planning, implementation of the educational program, and evaluation of the educational outcome [22, 27]. The first stage of the nursing process is assessing and recognizing the educational need, which was done using a questionnaire to assess the level of knowledge of ostomy care. After the necessary information was collected in the nursing assessment stage, nursing diagnoses were designed in the next stage. These nursing diagnoses were in the fields of patient knowledge related to nutrition, activity, and exercise, how to change the colostomy and ileostomy bag and the right time to change the bag, signs of the need to see a doctor or nurse, and important points of ostomy care. Then, in the third stage of the nursing process (planning), educational goals were formulated and educational content was prepared to achieve the goals.

The fourth stage of the nursing process was the implementation of educational intervention. Patients were trained individually and face-to-face. The training sessions were conducted in two sessions. The first training session was conducted one day before surgery with the aim of assessment of the patient's knowledge about ostomy care. Knowledge of ostomy care includes the definition of ostomy; the types of ostomy bags; proper nutrition; time to change the bag and the amount of activity, exercise, and symptoms required to see a doctor or nurse; and important ostomy care tips. An educational pamphlet was also provided for each patient.

In the evaluation process of the nursing process, the questionnaire was answered by a pretest and post-test by the subjects. For posttest, a questionnaire to assess the level of ostomy care knowledge was distributed and completed by the subjects one day after training, one week and one month after training. The second session of postoperative training was performed on the first bag replacement and ostomy lavage. In this session, the patient was taught how to take care of the ostomy and change the bag in a practical way. The duration of training was 15 minutes.

In the evaluation phase of the nursing process, the performance of the subjects in relation to how to change the bag and wash the ostomy as a pretest and post-test one day after training on how to care for the ostomy and how to change the bag, one week and one month after training with checklist.

In order to collect data, the researcher obtained informed consent after selecting the research samples and introducing herself and providing sufficient explanations about the purpose of the research. The participants were also reminded that the information obtained from them will remain completely confidential and they can withdraw from the study whenever they wish.

2.4. Data Analysis. Collected data were analyzed using the SPSS software version 21. To analyze the general data, descriptive statistics of mean, median, and standard deviation were used. The Kolmogorov–Smirnov (KS) test was used to investigate the normality distribution of quantitative variables. The Mann–Whitney U test was used to analyze the differences in the performance status and knowledge status between the two groups of the study, and Wilcoxon test was used to analyze the differences within the group of the study. The significance level (p value) in all tests was considered 0.05.

3. Results

The results showed that the majority of allocated participants was in the age group of 60–74 (86.5%) and were males (65.4%). All allocated participants (100%) were married. There was no statistically significant difference between the demographic characteristics of the two groups ($p < 0.05$).

The results related to the level of self-care knowledge showed that the mean score of knowledge increased one day and one week after the intervention in both intervention and control groups. At the end of the study, after thirty days, the self-care knowledge score of the intervention group had a higher median and mean than the control group ($p < 0.001$) (Table 1).

Figure 1 indicates that although both groups of the study improved their level of knowledge throughout the timeline of the study, the rate of promotion in the intervention group was more significant than the control group.

The results showed that the mean score of patients' performance in all time intervals (one day, one week, and one month after training) in the intervention group was higher than the control group (Table 2).

Figure 2 shows the mean score of ostomy self-care performance in both groups. It indicates that although both groups had improved performance levels during the study, the rate of promotion in the intervention group was significantly higher.

4. Discussion

This study was performed to determine the effect of education based on the nursing process on self-care knowledge and performance of elderly patients with intestinal stoma. Findings about self-care knowledge and performance in the intervention group and control group before and after the intervention showed that although both groups had improved the level of knowledge and performance, the percentage of promotion in the intervention group was significantly higher. In relation to the justification of this finding, it can be said that older adults are more at risk of developing chronic conditions. Thus, their search for health care will likely also increase [28]. This makes them look for the necessary information to take care of themselves, which can be a justification for improving the level of knowledge and performance in both the groups in the present study. However, the percentage of higher improvement in the level of knowledge and performance among the intervention group compared to the control group is related to the effect of the intervention. In other words, the results of the present study indicate that education based on the nursing process has been effective in improving self-care knowledge and performance. In justification of this finding, there was not found a study similar to the present study that investigated the intervention of education based on the nursing process on the level of knowledge and performance of patients with ostomy. For this reason, to discuss the findings, studies that have generally dealt with the effect of education on the self-care of these patients have been mentioned as evidence. For example, Shrief and Mokhtar examined the effect of structural education on the knowledge of patients with surgical stoma [24]. Consistent with the present study, the results of this study indicate the effect of education on self-care knowledge of patients with surgical stoma. Similar results were observed in the study of Ran et al. [29], Culha et al. [16], Hegazy et al. [30] and Oshvandi et al. [31]. In line with the results of the present study, the findings of the study by Pouresmail et al. [32], Hegazy et al. [30], and Sanabadi et al [33] showed the positive effect of education on increasing self-care skills and behaviors.

TABLE 1: The comparison of the mean score of ostomy self-care knowledge between the intervention and control groups after the completion of the programme.

Variables	Study groups						Sig
	Intervention group			Control group			
Increase in the score of ostomy self-care knowledge	Mean	SD	Median	Mean	SD	Median	
One day after intervention	4.65	3.11	4.00	4.00	1.74	4.00	0.356
7 days after intervention	12.81	3.14	12.00	7.15	3.38	7.00	0.000
30 days after intervention	16.46	2.60	17.00	9.08	2.92	8.00	0.000

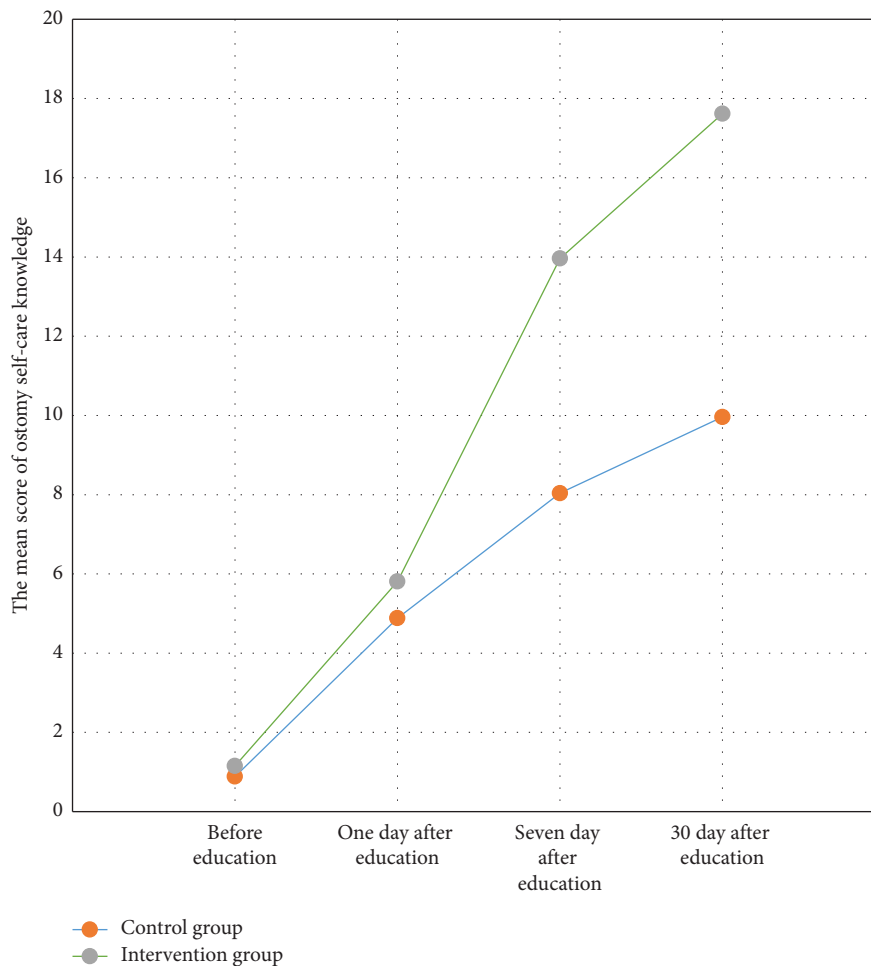SD: standard deviation; Sig: significance level.

FIGURE 1: The mean score of ostomy self-care knowledge throughout the timeline of the study.

In general, adult education about various health care topics is essential to improve health care behavior and self-management as well as reduce risky behavior [34]. The ultimate goal of patient educational programs is to achieve long-lasting changes in behavior by providing patients with the knowledge to allow them to make autonomous decisions to take ownership of their care as much as possible and improve their own outcomes [22]. A great deal of effort must be invested to support the empowerment of older people to increase their benefits from educational interventions. To achieve empowerment, people must obtain knowledge that is related to individual needs and expectations. By providing empowering care, nurses help increase the residents' independence and their feelings of autonomy [34]. Gaining insight into older patients' needs, priorities, and experiences is also mentioned and of high importance in reviews on principles of learning in older people [35]. In older people, age-related conditions and the related decline in physical and cognitive functions require that they receive appropriate education to continue living as actively and independently as possible [34].

TABLE 2: Comparison of the increase in the score of ostomy self-care performance in the two groups of the study.

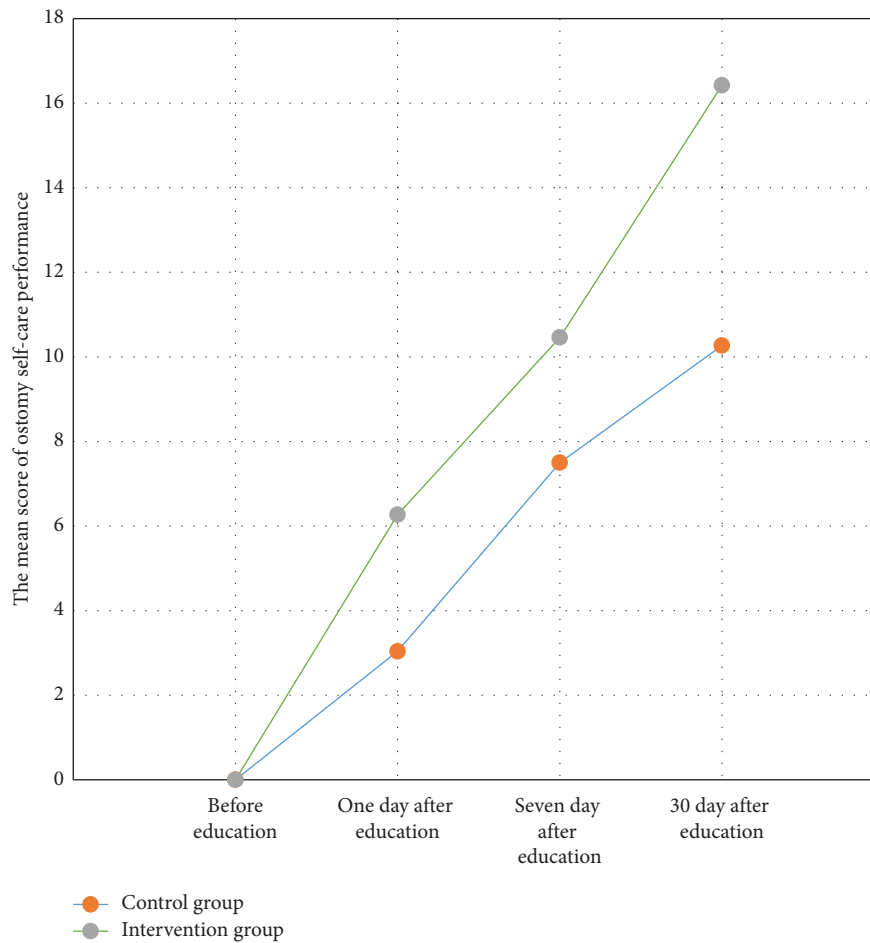| Variables	Study groups						
	Intervention group			Control group			
Increase in the score of ostomy self-care performance	Mean	SD	Median	Mean	SD	Median	Sig
1 day after intervention	6.27	3.32	6.50	3.04	3.42	2.00	0.000
7 days after intervention	10.46	6.02	12.00	7.50	3.48	8.00	0.035
30 days after intervention	16.42	7.48	18.00	10.27	5.77	8.50	0.002

SD: standard deviation; Sig: significance level.

FIGURE 2: The mean score of ostomy self-care performance in different distinct times.

The nurse, as a part of the multiprofessional health team, has the duty of managing the care of elderly people with an intestinal ostomy, from any levels of assistance, from the diagnosis process to home monitoring [36]. Nurses are required to be adequately prepared with a sufficient theoretical knowledge base which guides their clinical practices [37] and provision of comprehensive nursing care to older adults [38]. The nursing process has become the basis of contemporary practice, as a core component of nursing education, as well as a point of reference in providing nursing care in many parts of the world. Arguably, it is central to all nursing actions, applicable in any setting and within any frame of [39]. The nursing process functions as a systematic guide to client-centered care [40]. Using the five-step nursing process for developing a patient teaching plan will help to deliver comprehensive and effective teaching. Simple teaching plans accompanied by multiple teaching strategies provide patients with valuable information [27]. The nursing process is regulated and implemented according to the needs of patients and due to the fact that implementation of care programs based on patients' needs will produce better results [41], it is expected that more attention will be paid to it in patient care plans.

5. Conclusion

Generally, the results of the study indicate that the use of education based on the nursing process has a positive effect on the self-care knowledge and performance of elderly patients with intestinal stoma and can be used as a model for nursing interventions in caring for patients. Therefore, it is suggested that education based on the nursing process has been considered in clinical and educational environments, and the relevant authorities should provide the necessary resources and facilities for nurses to use them.

The main limitation of the present study is that it was conducted on elderly patients of one medical center of Guilan University of Medical Sciences, which may not be representative of all older adults, and therefore, its results cannot be generalized to all older adults. It is suggested that future studies be conducted on participants from other regions and countries with cultural diversity and their results be compared with the findings of the present study.

Data Availability

The data set generated in this study is available upon reasonable request from the corresponding author.

Ethical Approval

This research was approved by the ethics committee of Guilan University of Medical Sciences (ethics ID IR.GUMS.REC.1398.301) in Iran. The study was performed in accordance with the ethical standards as laid down in the Declaration of Helsinki and its later amendments or comparable ethical standards.

Consent

Written informed consent was voluntarily obtained from all participants included in the study.

Conflicts of Interest

The authors declare that they have no conflicts of interest associated with this manuscript.

Authors' Contributions

RM is the first researcher who wrote the study proposal, collected the data, and analyzed the data. AD is the corresponding author and supervised the research work and was a major contributor to writing the manuscript. She designed the study, conducted data collection and analysis, and supervised the research work. RMG was involved in the study design and interpretation of the data and review of the report. EK was involved in the study design, analysis and interpretation of the data, and statistical advice. All authors have read and approved the manuscript.

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Hindawi

Review Article

Effectiveness of Psychoeducation on Burden among Family Caregivers of Adults with Schizophrenia: A Systematic Review and Meta-Analysis

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Caring for relatives living with schizophrenia could lead to caregivers' burden. It is believed that lack of information and understanding about schizophrenia and lack of skills to cope effectively while caring for their adult relatives largely contribute to the burden they experience. The burden is assessed using assessment scales. This review aims to assess the effectiveness of psychoeducation in alleviating the burden experienced by family caregivers of adults living with schizophrenia and to identify essential factors that facilitate positive outcomes. Five databases (ASSIA, CINAHL, Embase, MEDLINE EBSCO, and PsycINFO) were systematically searched using combinations of the following key terms: "family caregivers," "schizophrenia," "burden," "psychoeducation," and "adults." Meta-analysis of included studies was conducted using RevMan 5.4. Five RCTs with 320 family caregivers were included in the review. Overall, none of the studies showed a low risk of bias. The evidence suggests that face-to-face group psychoeducation reduced family caregivers' burden when measured across different time points: one-week postintervention (mean difference -3.87 and Cl -6.06 to -1.70), six months (MD -8.76 and Cl -12.38 to -5.13), and twelve months (MD -7.38 and Cl -9.85 to -4.91). Measurements immediately after the intervention, one month, and three months postintervention when reported narratively also showed a reduction in family caregivers' burden. Face-to-face group psychoeducation provided for family caregivers effectively alleviates the burden they experience. Factors such as program content and teaching methods facilitated positive outcomes. It is recommended that psychoeducation should be integrated as a routine intervention for family caregivers.

1. Introduction

The effective promotion of recovery-oriented care for adults living with a diagnosis of schizophrenia is considered to include not just providing interventions for the person but also providing adequate support to family and caregivers [1–3].

Schizophrenia is a severe mental health difficulty that affects 7 per 1,000 of the adult population [4]. While its incidence is low, its prevalence is high due to the enduring nature of the symptoms associated with this mental health difficulty [5]. Even with effective pharmacological interventions for managing positive symptoms, adults living with schizophrenia may still experience adverse symptoms.

This may limit their ability to be financially stable and care for themselves independently [6].

Family caregivers play an essential role in supporting the care and recovery of adults living with schizophrenia [7]. Studies suggest that 90% of adults experiencing schizophrenia live with family members when discharged from hospitals [2, 7]; hence, they depend on the assistance and involvement of family and caregivers in managing symptoms and providing support, including emotional and financial support [8].

Caring for adults living with schizophrenia has been linked to increased family caregivers' burden [9–14]. Due to the intensity and diversity of caregiving, family caregivers may experience burdens as either physical,

emotional, and financial or as a combination of these factors [2, 12, 15–17]. The Global Burden of Disease Report [18] highlighted that family caregivers often ignore their own emotional, physical, and mental health while providing care for their relatives; hence, resulting in severe stress, depression, and anxiety [19]. The longer the caregiving role, the greater burden the family caregivers' experience [7, 17, 19–21].

Lippi [8] identified that family caregivers experience caregiving burdens due to lack of information and understanding of schizophrenia as well as lack of skills to cope with the symptoms the person may be experiencing [8].

Psychoeducation is recommended as an intervention to provide support and information to family caregivers (National Institute for Health and Care Excellence (NICE) 2014).

However, despite the significant burden experienced by family caregivers of adult relatives living with schizophrenia, few primary studies have specifically investigated the impact of psychoeducation on family caregivers' burden without including their adult relatives in the studies. This is possibly because family caregivers' needs are not considered as important as the needs of individuals experiencing schizophrenia [9–13, 22–26].

Few studies have conducted systematic reviews in exploring caregiving-related outcomes for family caregivers [26–31]; however, none have explicitly focused on the concept of burden experienced by family caregivers. Furthermore, no systematic review of randomised controlled trial studies carried out on the effectiveness of psychoeducational programs on the burden experienced by family caregivers of adults living with schizophrenia was identified in the Prospero register for systematic review.

This systematic review aims to determine the effectiveness of psychoeducational programs on the burden experienced by family caregivers of adults living with schizophrenia.

The objectives were to investigate the effectiveness of face-to-face psychoeducational programs on the burden experienced by family caregivers of adults living with schizophrenia using the Family Burden Interview Schedule and to identify essential factors that facilitate positive outcomes.

2. Methods

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement checklist [32]. There was no review protocol for this study.

2.1. Inclusion/Exclusion Criteria.
The inclusion and exclusion criteria used in this review are outlined using PICOS (population, intervention, comparators, outcomes, and study design) [33].

Studies were eligible and included in this review only where they reported on the following terms.

(i) Population: This means family caregivers of adults living with schizophrenia, where the person given the diagnosis is an adult aged 18 years and above. They may be experiencing first episode of schizophrenia or enduring schizophrenia. For this systematic review, family caregivers are defined as family members related either biologically, such as parents, children, siblings, and grandparents; or nonbiologically, such as spouses, and friends [34]. Relatives must be adults of 18 years and above.

(ii) Intervention: This means studies evaluating the use of face-to-face psychoeducational programs delivered to family caregivers. Studies were included if most of the psychoeducation sessions were delivered to family caregivers (family caregivers focused). Studies were also included if the content of the psychoeducational program aimed to improve the family caregivers' experience of care and reduce their burden. To qualify as a psychoeducational intervention program, the program's design must include an educational component that impacts knowledge and provides information on schizophrenia and its management.

(iii) Comparator/control: This include family caregivers who received routine care.

(iv) Outcome: This means caregiving-related outcome (caregivers' burden).

(v) Study type: Randomised controlled trial (RCT) studies were included.

Studies were excluded from the review if they did not meet the inclusion criteria.

2.2. Primary Outcome.
The primary outcome of interest of the review is family caregivers' burden measured pre- and postintervention and compared to the control group, using a tool that measured family burdens. As identified earlier, several tools were devised to explore family burden. In this instance, research using the Family Burden Interview Schedule (FBIS) [16] was selected over other family caregivers' burden assessment tools because

(i) The Family Burden Interview Schedule (FBIS) specifically assesses burden experienced by family caregivers of adults living with schizophrenia.

(ii) The FBIS has proven validity and reliability with Cronbach's α of 0.90.

(iii) The FBIS measures both objective and subjective burdens.

(iv) The FBIS has been used in both community and inpatient settings.

(v) The FBIS has a broad international base of studies and is the most widely used tool in research and literature.

(vi) The Zarit Caregiver Burden Interview [15] has not been assessed for internal consistency (Cronbach' α). In addition, the tool was initially developed to

assess the burden experienced by family caregivers of older adults living with dementia.

(vii) The Perceived Family Burden Scale (PFBS) [35] and the Family Burden Scale (FBS) [36] have not had wide use, and it was not possible to extract comparable data from these tools.

2.3. Search and Selection Strategy. In May 2021, electronic searches of five databases, Applied Social Sciences Index and Abstracts (ASSIA), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, MEDLINE EBSCO, and PsycINFO, were conducted from the date of inception to May 2021 by the first author. Firstly, scoping reviews were searched using databases thesauri in MEDLINE EBSCO, CINAHL, Embase, ASSIA, and PsycINFO. The keywords were selected based on the elements of PICOS (population, interventions, comparator/control, outcome, and study design). The keywords include "family caregivers," "schizophrenia," "burden," "psychoeducation," and "adults." In order not to unintentionally exclude relevant articles, the comparator/control and study design elements were not included in the keywords.

Following that, keywords contained in the title, abstract, and subject terms used to describe the articles retrieved during the scoping searches were analysed and used in the main search. A search string was developed to maximise the validity of the review. Each concept (population, intervention, and outcome) was searched individually, using the keywords and the MeSH terms combined with the Boolean operator "OR." In the end, the different concepts were combined using the Boolean operator "AND."

This search strategy was initially developed for MEDLINE EBSCO and then adapted for all other searched databases using the keywords and database-specific subject headings. No limitations were applied. This was to ensure that all relevant articles were captured.

Grey literature online search was conducted on Cochrane Library (https://www.cochranelibrary.com/); Lenus, the Irish Health Repository (https://www.lenus.ie/hse/); and Open Grey (https://opengrey.eu/). Web-based review of European Fedaration of Families of People with Mental Illness (EUFAMI) was conducted. Conference proceedings of relevant conferences were also examined.

Searches of the reference lists of the articles selected for inclusion in the review were conducted. In addition, the reference list for the Cochrane review of family intervention for schizophrenia [37] was also reviewed for relevant papers.

Table 1 is a search strategy result using MEDLINE EBSCO database retrieved on 19 May 2021.

2.4. Study Selection. Covidence (https://www.covidence.org/) was used in managing the review's screening and selection process. Citations retrieved from the search were uploaded to Covidence. The selection process was conducted in 2 stages. Articles were initially screened on the title and abstract. For stage 2, potential eligible articles were screened for full text. Any article that did not meet the inclusion criteria of this review, articles not written in English, or articles not empirically researched were excluded. The initial screening and selection process was conducted by the first author and then checked by the second author.

3. Results of the Search and Selection Process

The electronic database search yielded a total of 143 citations. MEDLINE EBSCO yielded 35 articles, CINAHL: 18, Embase: 20, ASSIA: 40, and PsycINFO: 30 articles. All the articles were saved in EndNote and uploaded to Covidence for screening. The search on Cochrane Library (https://www.cochranelibrary.com/) yielded ten citations. Lenus, the Irish Health Repository (https://www.lenus.ie/hse/), yielded three citations and Open Grey (https://opengrey.eu/) yielded a further three articles; none were relevant to the review. Furthermore, reference lists of selected articles yielded two citations. Only one was included in the review [26]. Two citations were retrieved from the reference list for the Cochrane review of family intervention for schizophrenia [37]. A search of conference proceedings did not yield any citation relevant to the review. In total, 163 citations were screened using Covidence.

Of the 163, 104 citations were removed, as they were identified as duplicates, leaving 59 citations. Following the title and abstract screening, 41 citations were excluded as they were not relevant for the review as psychoeducation was not used as an intervention. Full-text papers of the remaining 18 citations were obtained and reviewed for eligibility. Of these 18 citations, one was excluded because the full text was not written in English [38]. Six studies were removed as they did not meet the inclusion criteria; intervention was not family caregivers-focused as caregivers did not have their psychoeducational sessions without their relatives living with schizophrenia present [39–44]. Two of the studies were not randomised controlled trial studies [45, 46]. Four studies were excluded as they did not measure their outcome data with Family Burden Interview Schedule [11–13, 25]. Five studies were identified to be suitable for inclusion in this review [9, 22–24, 26]. Table 2 presents the excluded studies.

Figure 1 provides a visual representation of the review's search and selection strategy using the PRISMA framework.

3.1. Data Extraction. A data extraction form based on a template from the authors' affiliated institution was adapted to extract data from all included studies. The form was piloted in one study before being used in the rest of the included studies. Data extracted included the study design, setting, participants, inclusion and exclusion criteria, description of the intervention, comparisons, any reported data related to the reviews' outcome (continuous data), and participants' sociodemographic characteristics. As one of the objectives of this review is to evaluate the essential factors that facilitate reported outcomes, relevant data on duration, format, and teaching methods of psychoeducational programs were also extracted and presented in narrative format.

TABLE 1: Medline search strategy and results.

#	Query	Limiters/expander	Results
S16	S11 AND S12 AND S13 AND S14 AND S15	Search mode: Boolean/phrase	35
S15	S5 OR S10	Search mode: Boolean/phrase	6,054,920
S14	S4 OR S9	Search mode: Boolean/phrase	282,813
S13	S3 OR S8	Search mode: Boolean/phrase	1,235,724
S12	S2 OR S7	Search mode: Boolean/phrase	2,350,020
S11	S1 OR S6	Search mode: Boolean/phrase	160,225
S10	("MH Adult*") OR (MH "young adult") OR (MH "adult children*")	Search mode: Boolean/phrase	6,034,941
S9	("MH caregiver burden") OR (MH "burden*") OR (MH "exhaustion*") OR (MH "burnout*")	Search mode: Boolean/phrase	272,813
S8	(MH "schizophrenia") OR (MH "schizophrenia disorganized") OR (MH "schizophrenia paranoid") OR (MH "schizophrenia catatonic") (MH "schizophrenia spectrum") OR (MH "mental Disorders+")	Search mode: Boolean/phrase	1,228,120
S7	(MH "caregivers") OR (MH "caregiving") OR (MH "family intervention") OR (MH "family") OR (MH "family relations") OR (MH "family conflict") OR (MH "nuclear family+") OR (MH "parents+")	Search mode: Boolean/phrase	2, 300,035
S6	(MH "psychoeducation") OR (MH "education"+) OR (MH "teaching") (MH "models, educational")	Search mode: Boolean/phrase	90,810
S5	TI (adult* OR "young adult*") OR AB (adult*") OR "young adult*")	Search mode: Boolean/phrase	6,034941
S4	TI ("caregiver burden" OR "burden*" OR "exhaustion*" OR "burnout") OR AB ("caregiver burden" OR "burden*" OR "exhaustion*" OR "burnout")	Search mode: Boolean/phrase	262,813
S3	TI ("schizophrenia*" OR "psychosis*" OR "psychotic illness*" OR "schizophrenic disorders*" OR "mental disorder*") OR AB ("schizophrenia*" OR "psychosis*" OR "psychotic illness*" OR "schizophrenic disorders*" OR "mental disorder*")	Search mode: Boolean/phrase	148,138
S2	TI ("family caregiver*" OR "caregiver*" OR "caregiver*" OR "informal caregiver*" OR "unpaid family caregiver*" OR "informal carer*" OR "carer*" OR "home nursing*" OR "relative care*" "couples"* OR "daughter"* OR "family"* OR "father"* OR "friend"* OR "husband"* OR "marital"* OR "mother"* or "multifamily"* OR "neighbour*" OR "next of kin*" OR "friend*" OR "niece*" OR "nephew*"OR "parent*" OR "partner*" OR "relative*" OR sibling*" OR "significant other*" OR "spouse*" OR "son*" OR "step relationship*" OR "wife*" OR AB ("family caregiver*" OR caregiver*" "informal caregiver*" OR "unpaid family caregiver*" OR "informal carer*" OR "carer*" OR "home nursing*" OR "relative care*" "couples"* OR "daughter"* OR "family"* OR "father"* OR "friend"* OR "husband"* OR "marital"* OR "mother"* OR "multifamily"* OR "neighbour*" OR "next of kin*" OR "friend*" OR "niece*" OR "nephew*" OR "parent*" OR "partner*" OR "relative*" OR "sibling*" OR "significant other*" OR "spouse*" OR "son*" OR "step relationship*" OR "wife*"	Search mode: Boolean/phrase	2,224,035
S1	TI ("psychoeducation*" OR "psycho-education*" OR "psychoeducational program*" OR "workshop*" OR "training program*" OR "educational activity*" OR "face-to face" OR "group session*" OR "group intervention*" OR "education*" OR "instruction*" OR teaching*" OR AB ("psychoeducation*" OR "psycho-education"* "psychoeducational program*" "workshop"* OR "training program*" OR "educational activity*" "face-to-face" OR "group session*" OR "group intervention*" OR "education*" OR "instruction*" OR "teaching*")	Search mode: Boolean/phrase	80,300

Authors of published articles were contacted to retrieve relevant information about their study that was either not reported or unclear from the published article. The first author independently extracted the data from the selected studies. The second author verified the extracted data.

3.2. Quality Assessment. The quality of all included articles was assessed using the Cochrane risk of bias tool. Cochrane risk of bias was used because it promotes transparency in the systematic review by assessing the risk that may affect the study's validity rather than assigning score to different items in a scale [33]. The quality assessment was performed independently by the two authors. Differences were resolved through discussion.

3.3. Narrative Result of the Quality Assessments of the Included Studies

3.3.1. Random Sequence Generation (Selection Bias). Cheng and Chan [22] and Fallahi Khoshknab et al. [26] had a low risk of bias on random sequence generation due to using drawing lots and block randomisation, respectively. Risk of bias was unclear in the study by Chien et al. [24], Chien and Wong [23], and Koolaee and Etemadi [9] due to a lack of insufficient information to make a "low" or "high" risk judgment.

3.3.2. Allocation Concealment (Selection Bias). Fallahi Khoshknab et al. [26] had a low risk of allocation

TABLE 2: Studies excluded from the review.

| Study	Reason for exclusion
Kane et al. [45]	Non-RCT
Birchwood et al. [46]	Non-RCT
[38]	Not written in English
Das et al. [39]	Intervention not carer-focused (no carer, only sessions)
Gutiérrez-Maldonado and Caqueo-Urízar [25]	Did not measure burden with FBIS
Kulhara et al. [40]	Intervention not carer-focused (no carer, only sessions)
Gonzalez-Blanch et al. [41]	Intervention not carer-focused (no carer, only sessions)
Fiorillo et al. [42]	Intervention not carer-focused (no carer, only sessions)
Palli et al. [11]	Did not measure burden with FBIS
Bulut et al. [44]	Intervention not carer-focused (no carer, only sessions)
Purba and Bukit [43]	Intervention not carer-focused (no carer, only sessions)
Tabeleão et al. [12]	Did not measure burden with FBIS
Thimmajja and Lazarus Rathinasamy [13]	Did not measure burden with FBIS
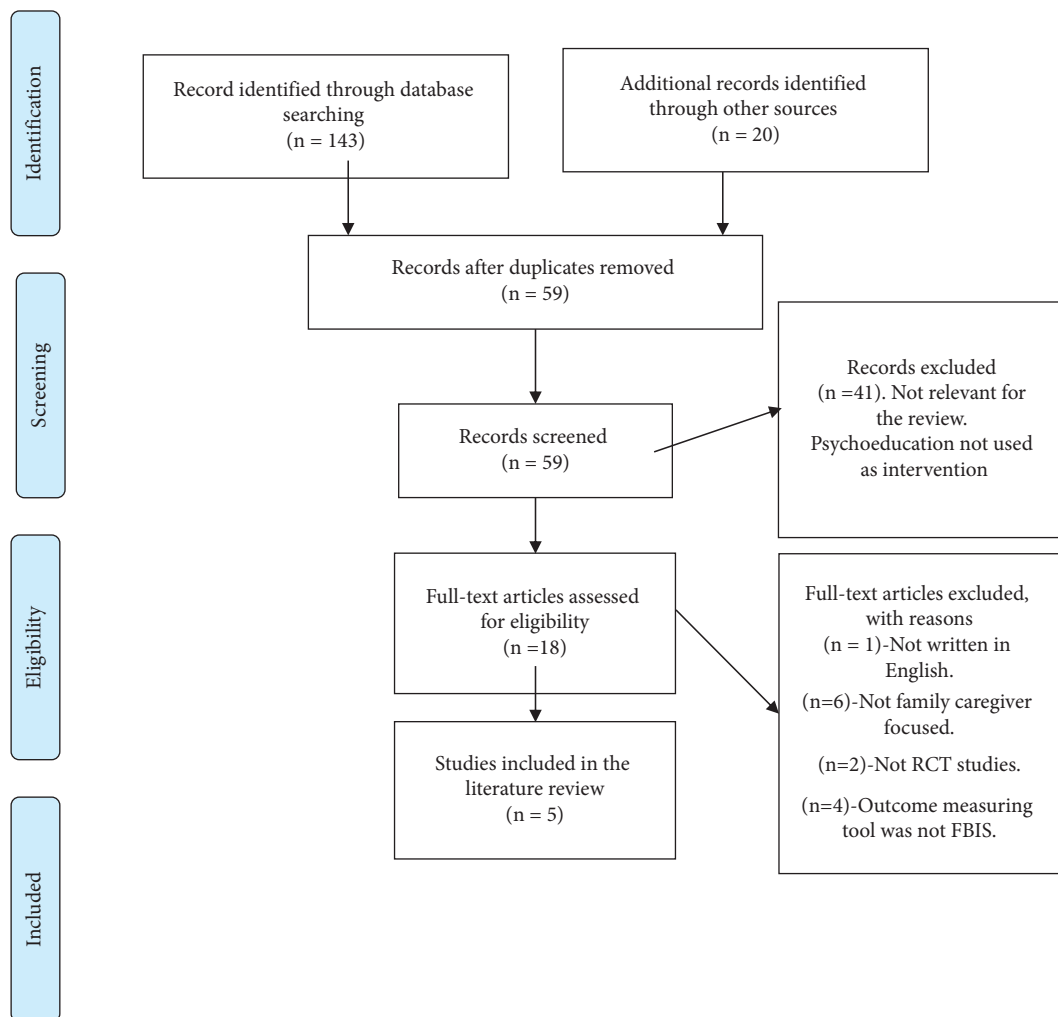
FIGURE 1: PRISMA flow chart. Source: from Liberati et al. 2009, the PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of Clinical Epidemiology* **62** 1–34.

concealment bias as opaque sealed envelopes were used. The risk of bias was unclear in the remaining four studies; the method of concealment was not described in sufficient detail to allow "low risk" or "high risk" judgment.

3.3.3. Blinding of Participants and Personnel (Performance Bias). The study by Chien and Wong [23] was judged as having a low risk of bias as they reported that one researcher was blinded to the participant's allocation. The other four

studies' risk of bias was assessed as unclear due to insufficient information to permit judgment of "low risk" or "high risk."

3.3.4. Blinding of Outcome Assessment (Detection Bias).
The risk of bias on this criterion was assessed as a low risk in the study by Chien and Wong [23]. This is because one of the researchers administered the pretest and post-test was blinded. Cheng and Chan [22], Chien et al. [24], Koolaee and Etemadi [9], and Fallahi Khoshknab et al. [26] did not provide enough information to judge the detection bias as "low risk" or "high risk"; therefore was assessed as unclear.

3.3.5. Incomplete Outcome Data (Attrition Bias).
All five studies were assessed and judged as low risk in this criterion because all studies reported a low attrition rate. However, only one study (Chien et al. [24]) performed an intention-to-treat analysis of the results.

3.3.6. Selective Reporting (Reporting Bias).
All studies were assessed and judged as having a low risk of bias on selective reporting as all prespecified outcomes were reported.

3.3.7. Other Bias.
Of all the five studies, only the study by Koolaee and Etemadi [9] was assessed and judged as unclear. This is because of insufficient information to assess whether any significant risk of bias exists. The remaining four studies were assessed as low risk of bias to other sources of bias. Figures 2 and 3 illustrate the overall quality assessment of the included studies using the risk of bias graph and risk of bias summary.

Figures 2 and 3 illustrate the overall quality assessment of the included studies using the risk of bias graph and the risk of bias summary, respectively.

4. Data Synthesis

Data synthesis in this review was achieved through meta-analysis, as there were similarities among the included studies.

  (i) The randomised controlled trial studies included in this systematic review have similar populations

  (ii) The included studies compare similar interventions and comparators

  (iii) The included studies report similar outcomes either as primary or secondary outcomes

  (iv) The findings of the included randomised control trial studies report similar results; that is, the studies determined that one intervention is better than another or there was no difference between the interventions

The following time points grouped the outcome data: immediately after the intervention, one week after intervention (follow-up), six months, and 12 months after intervention. Those that could not be grouped were reported

narratively. The common essential factors which may facilitate a positive outcome were analysed narratively.

The data analysis was carried out using the review manager (RevMan 5.4).

For each time point group, for example, studies grouped for one week after intervention, the mean, standard deviation, and a total number of participants of both the intervention and the control groups, as reported in the studies, were inputted into RevMan 5.4.

The mean and standard deviation of studies were inputted in RevMan 5.4 because the outcome measure for this review was the continuous data (burden of caregivers of adults living with schizophrenia). The mean difference (MD) with a 95 percent confidence interval (CI) was calculated. The mean difference was used because all included studies for this review measured their outcome with the same measurement tool (Family Burden Interview Schedule). After that, forest graphs were plotted for each of the grouped time points. Heterogeneity was assessed in this systematic review. The statistical test used to assess heterogeneity is the I squared (I^2) statistic, which was automatically calculated in RevMan during meta-analysis.

4.1. Description of Included Studies.
A total of 320 participants were involved in this review. All five included studies reported the primary outcome for this review, which is the burden experienced by family caregivers of adults living with schizophrenia. The psychoeducational programs delivered in all five studies were focused on family caregivers. In 4 studies, Cheng and Chan [22], Chien et al. [24], Koolaee and Etemadi [9], and Fallahi Khoshknab et al. [26], relatives living with schizophrenia did not attend any sessions. In one study (Chen and Wong [23]) family caregivers' adult relatives living with schizophrenia attended only 6 out of 18 psychoeducational sessions, which were focused on education about schizophrenia, its symptoms, management, and the effects of medications.

All five studies measured family caregivers' burden using Family Burden Interview Schedule. All five studies measured their reported outcome using continuous data. They all reported the primary outcome for this review, which is the burden experienced by caregivers of adults living with schizophrenia. However, they measured their reported outcome at different time points. Of the five studies, only two studies, Cheng and Chan [22] and Fallahi Khoshknab et al. [26], reported their measured outcomes immediately after the intervention. Chien et al. [24] and Chien and Wong [23] reported their measured outcomes one week after the intervention. At time point one month, only one study, Fallahi Khoshknab et al. [26], reported their measured outcome. In a similar vein, only one study, Koolaee and Etemadi [9], reported their measured outcome after three months postintervention. Two of the included studies reported their measured outcome six months postintervention [9, 24]. At 12 months postintervention, two studies, Chien et al. [24] and Chien and Wong [23], reported their measured outcome.
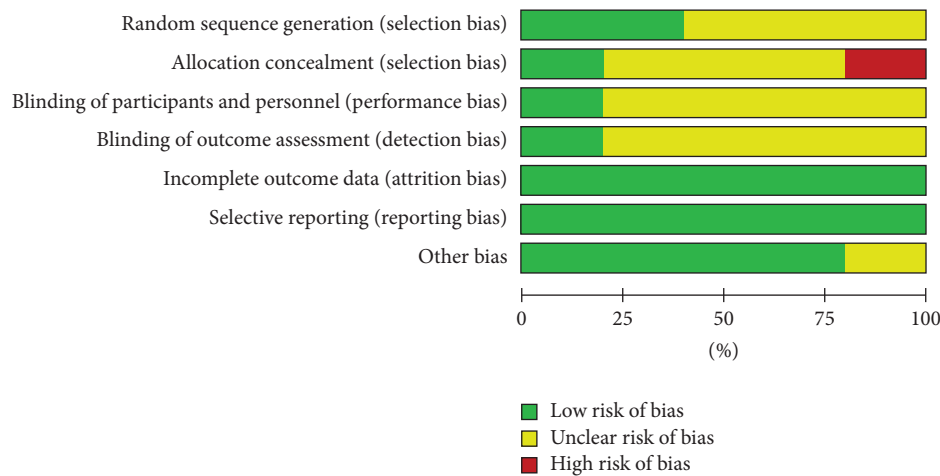
FIGURE 2: Risk of bias graph using cochrane risk of bias tool [33].

FIGURE 3: Risk of bias summary using cochrane risk of bias tool [33]. ?? Yellow indicates unclear. + Green indicates low risk. - Red indicates high risk.

Two studies had two arms of intervention; Chien et al. [24] compared psychoeducation $n = 33$, mutual support $n = 32$, and routine care $n = 31$ and Koolaee and Etemadi [9] compared psychoeducation $n = 19$, behavioural group therapy $n = 18$, and routine care = 18. However, for this review, only data related to psychoeducation intervention and routine care data were extracted.

Table 3 illustrates the summary characteristics of the included studies.

5. Meta-Analysis

5.1. Main Outcome-Caregivers' Burden. In total, five studies were analysed. One study was reported in t value and p value, and the remaining four studies were pooled. All studies indicated a decrease in caregivers' burden after the delivery of psychoeducational programs, when measured with the Family Burden Interview Schedule (FBIS) at different time points.

5.2. Effect of Intervention Immediately after the Intervention. Two studies, Cheng and Chan [22] and Fallahi Khoshknab et al. [26], assessed the effect of psychoeducation immediately after intervention. Reporting narratively on the result of Cheng and Chan [22], the psychoeducation group ($n = 32$) had a pretest reading of 18.78 and posttest reading of 11.06 compared to the control group ($n = 32$) that had a pretest reading of 17.03 and posttest reading of 16.28. The reported t value was 5.25 and p value was 000. This result indicates that family caregivers received psychoeducation experienced less burden immediately after the intervention. The reported p value is less than 0.01 (<0.01), indicating that the result is statistically significant using an alpha cut-off level of $p = 0.05$.

Fallahi Khoshknab et al. [26] reported a mean score of 27.87 and a standard deviation score of ±2.9 for the intervention group ($n = 36$) compared to the mean score of 37.82 and standard deviation of ±2.78 for the control group ($n = 35$). The reported p value was <0.01. This indicates that family caregivers who received psychoeducation had better outcomes than those who received routine care. Based on the p value that is <0.01, using an alpha cut-off level of $p = 0.05$, the result is statistically significant.

5.3. Effect of Intervention One Week after Intervention. Two studies were included in this meta-analysis (Chien and Wong [23] and Chien et al. [24]) with a total number of 148 participants. The overall result showed a decrease in the

TABLE 3: Summary characteristics of included studies for systematic review (methodological table).

Study number	Author, year, and country	Population	Intervention, duration, and format	Comparator	Study design	Tools	Follow-up	Drop out/reason	Gender of caregiver	Mean age of caregivers (years)
1	Cheng and Chan [22], China	64 Intervention $n = 32$ control = 32	Face-to-face psychoeducation. Group. 10 sessions × 2 hours	Routine care (RC)	RCT	Family Burden Interview Schedule (FBIS)	No follow	None Reason: not provided	F-40 M-24	Not reported
2	Chien et al. [24] China	64 Intervention $n = 33$ control $n = 31$	Psychoeducation. Group. 12 sessions × 2 hours	RC	RCT	FBIS	6,12, 18 months	3 from intervention group 2 from control group Reason: long distance	F-19 M-45	45
3	Chien and Wong [23], China	84 Intervention $n = 42$ control $n = 42$	Psychoeducation. Group. 18 sessions × 2 hours	RC	RCT	FBIS	One week, 12 months	3 from intervention group 4 from control group Reason: not provided	F-56 M-28	41
4	Fallahi Khoshknab et al. [26], Iran	71 Intervention $n = 36$ control $n = 35$	Psychoeducation. Group. 4 sessions × 2 hours weekly	RC	RCT	FBIS	One month	5 from intervention group during follow-up Reason: not provided	F- 60 M-11	54
5	Koolaee and Etemadi [9], Iran	37 Intervention $n = 19$ control $n = 18$	Psychoeducation. Group. 12 sessions × 2 hours Weekly	RC	RCT	FBIS	3, 6 months	2 from intervention group 2 from control group Reason: unavailable to attend	F-37 mothers M-0	55

burden experienced by family caregivers in the psycho-education group compared to the control group after one week of delivering psychoeducation (Figure 4). The result was statistically significant (2 RCTs, $n = 148$, MD: 3.87, Cl: -6.06 to -1.70, I^2: 44%). Among the two studies included, Chen and Wong [23] contributed more to the information with the weight of 76.4%. This could be because a greater number of participants were included in the study. Fixed effect model was used as the heterogeneity (I^2) was less than 50 percent Figure 4.

5.4. Effect of Intervention after One Month.
Reporting narratively on the results from Fallahi Khoshknab et al. [26], the mean score for the intervention group was 21.3 and standard deviation was ±2.78 compared to a mean score of 37.3 and standard deviation of ±2.81 in the control group with reported p value < 0.01. This showed a lower score of burden in the intervention group compared to the control group. The result was statistically significant.

5.5. Effect of Intervention after Three Months.
Reporting narratively on the results from Koolaee and Etemadi [9], the mean score for the intervention group was 25.84 and standard deviation of ±9.10 with nineteen participants compared to the mean score of 45.11 and a standard deviation of ±9.47 in the control group with eighteen participants, with a reported p value < 0.01. The result showed a lower score of family caregivers' burden in the intervention group compared to the control group. The result was statistically significant.

5.6. Effect of Intervention after Six Months.
Two studies were grouped in this meta-analysis (Chien et al. [24] and Koolaee and Etemadi [9]) with 101 participants based on analysis six months postintervention. The overall result showed that psychoeducation had a significant positive effect in reducing burden six months postintervention when compared with routine care.

The result was statistically significant (2 RCTs, $n = 101$, MD: -8.76, Cl: -12.38 to -5.13, and $I^2 = 95\%$) (Figure 5).

Of note, the heterogeneity of the two studies was high, (95%). Hence, random effect model meta-analysis was also completed in RevMan 5.4, which also revealed a high heterogeneity of $I^2 = 95\%$ (Figure 6) for the random effect model forest plot.

5.7. Effect of Intervention after Twelve Months.
Two studies, Chien and Wong [23] and Chien et al. [24], with 148 participants assessed the effect of psychoeducation on family caregivers' burden 12 months after delivery. The result of the meta-analysis indicated a decrease in family caregivers' burden after 12 months compared to those that received routine care. The result is statistically significant (2 RCTs, $n = 148$, MD: -7.38, Cl: -9.85 to -4.91, and $I^2 = 70\%$) (Figure 7).

5.8. Common Essential Intervention Factors Which Facilitated Positive Outcome.
The duration of the psychoeducational interventions reported by the five studies included studies ranged from four sessions to eighteen sessions; that is, duration was either brief or long. Regarding format, all included studies used a group format. Multimodal teaching methods were used in the five studies, such as group discussion, problem-solving skills, and teaching. Chien et al. [24], Chien and Wong [23], and Koolaee and Etemadi [9] used some strategies to facilitate the participants' attendance, such as advanced reminders, repeating sessions on weekends, regular telephone follow-up, and running sessions at convenient locations. Mental health professionals facilitated psychoeducational programs in all five studies. Table 4 summaries the common essential factors which facilitated positive outcomes in terms of their duration (brief (four weeks) vs. long (≥ ten weeks) programs), delivery format, teaching methods used, and factors/strategies that facilitated the attendance of participants.

6. Discussion

The overall finding of this meta-analysis showed that psychoeducational programs aimed at family caregivers of adults living with schizophrenia were effective in alleviating their burden compared to routine care. This finding is similar to the findings of other systematic reviews [26–30]. Despite the methodological difference in their respective reviews, their findings demonstrated burden reduction in the family caregivers that received psychoeducational programs compared to the family caregivers that received routine care. However, this systematic review differs, as it represents a meta-analysis of 320 participants from five RCTs explicitly focused on family caregivers' burden measured using the Family Burden Interview Schedule (FBIS).

Of the five studies included in this systematic review, three of the included studies [22–24] reported that family caregivers experienced moderate burden at baseline. Two studies, Koolaee and Etemadi [9] and Fallahi Khoshknab et al. [26], reported that at baseline, family caregivers experienced severe burden. Fallahi Khoshknab et al. [26] reported a total burden score of over 40 on a scale of 0–48 of the Family Burden Interview Schedule (FBIS), indicating severe burden; the higher the score of the total burden on the FBIS, the more severe the burden experienced.

This review identified the burden experienced by family caregivers at different time points after receiving psychoeducation; four of the studies, [9, 23, 24], and [26], showed a lowered mean score, while one study [22] showed a lowered post-test score after the delivery of psychoeducational program (see Section 5).

Two studies [22, 26] measured their outcome immediately after delivering their psychoeducational program. In two studies, Chien et al. [24] and Chien and Wong [23] measured the burden outcome one week postintervention. The burden was also measured at one month [26], three months [9], six months [9, 24], and one year [23, 24] after
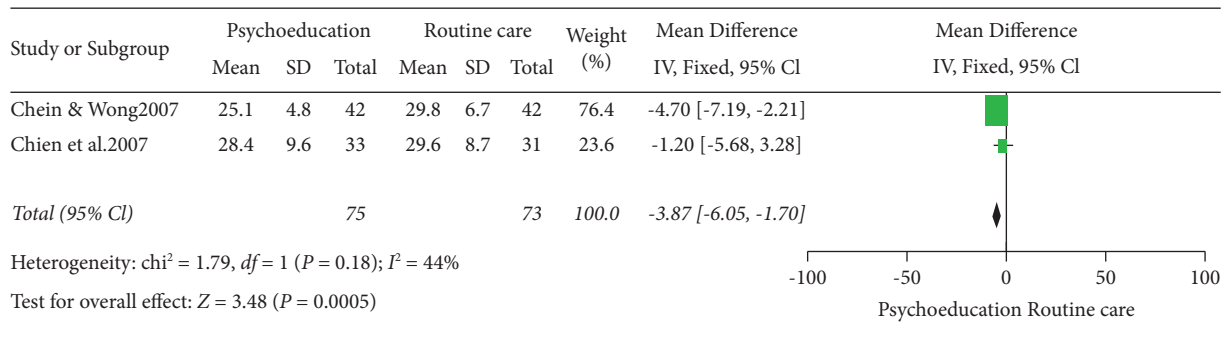
Study or Subgroup	Psychoeducation			Routine care			Weight (%)	Mean Difference IV, Fixed, 95% Cl	Mean Difference IV, Fixed, 95% Cl
	Mean	SD	Total	Mean	SD	Total			
Chein & Wong2007	25.1	4.8	42	29.8	6.7	42	76.4	-4.70 [-7.19, -2.21]	
Chien et al.2007	28.4	9.6	33	29.6	8.7	31	23.6	-1.20 [-5.68, 3.28]	
Total (95% Cl)			75			73	100.0	-3.87 [-6.05, -1.70]	

Heterogeneity: chi² = 1.79, df = 1 (P = 0.18); I^2 = 44%

Test for overall effect: Z = 3.48 (P = 0.0005)

FIGURE 4: Fixed effect model forest plot one week after intervention.

Study or Subgroup	Psychoeducation			Routine care			Weight (%)	Mean Difference IV, Fixed, 95% Cl	Mean Difference IV, Fixed, 95% Cl
	Mean	SD	Total	Mean	SD	Total			
Chien et al.2007	27.3	9.8	33	29.9	8.9	31	62.6	-2.60 [-7.18, 1.98]	
Koolaee 2010	26.27	9.15	19	45.33	9.24	18	37.4	-19.06 [-24.99, -13.13]	
Total (95% Cl)			52			49	100.0	-8.76 [-12.38, -5.13]	

Heterogeneity: chi² = 18.54, df = 1 (P < 0.0001); I^2 = 95%

Test for overall effect: Z = 4.73 (P < 0.00001)
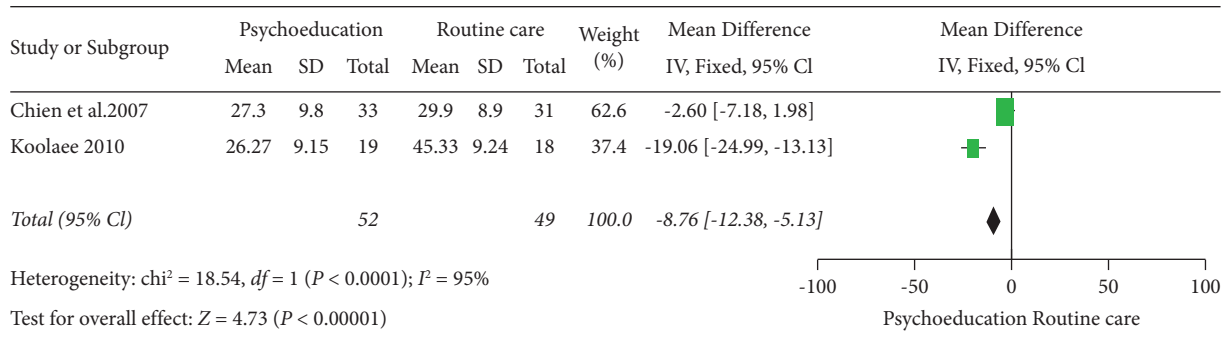
FIGURE 5: Fixed effect model forest plot 6 months after the intervention.

Study or Subgroup	Psychoeducation			Routine care			Weight (%)	Mean Difference IV, Random, 95% Cl	Mean Difference IV, Random, 95% Cl
	Mean	SD	Total	Mean	SD	Total			
Chien et al.2007	27.3	9.8	33	29.9	8.9	31	50.7	-2.60 [-7.18, 1.98]	
Koolaee 2010	26.27	9.15	19	45.33	9.24	18	49.3	-19.06 [-24.99, -13.13]	
Total (95% Cl)			52			49	100.0	-10.72 [-26.85, 5.41]	

Heterogeneity: tau² = 128.16, chi² = 18.54, df = 1 (P < 0.0001); I^2 = 95%

Test for overall effect: Z = 1.30 (P = 0.19)
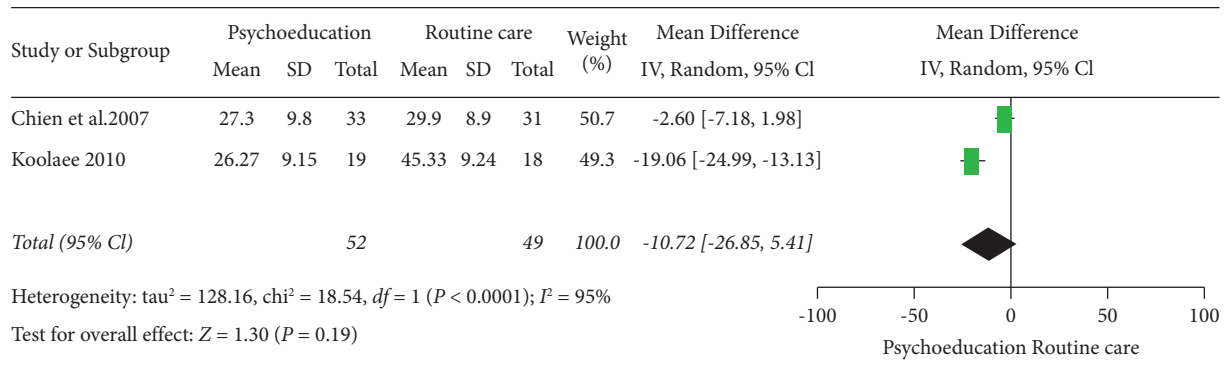
FIGURE 6: Random effect model forest plot 6 months after intervention.

Study or Subgroup	psychoeducation			Routine care			Weight (%)	Mean Difference IV, Fixed, 95% Cl	Mean Difference IV, Fixed, 95% Cl
	Mean	SD	Total	Mean	SD	Total			
Chein & Wong2007	21.4	6	42	30.2	7.5	42	72.2	-8.80 [-11.70, -5.90]	
Chien et al.2007	26.8	10	33	30.5	9.1	31	27.8	-3.70 [-8.38, 0.98]	
Total (95% Cl)			75			73	100.0	-7.38 [-9.85, -4.91]	

Heterogeneity: chi² = 3.29, df = 1 (P = 0.07); I^2 = 70%

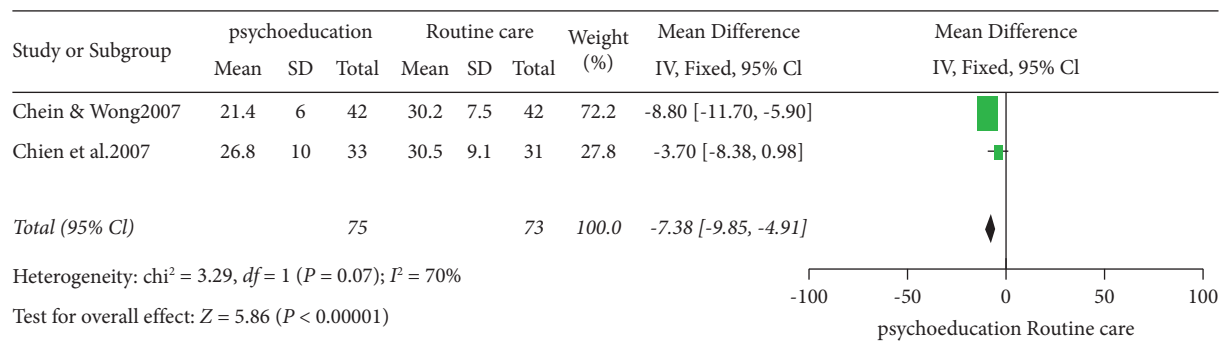Test for overall effect: Z = 5.86 (P < 0.00001)

FIGURE 7: Fixed effect forest plot model twelve months after intervention.

TABLE 4: Common essential factors which facilitated positive outcome.

Study	Format	Psychoeducation delivered by/setting	Factors that facilitated attendance	Duration of psychoeducation	Teaching methods	Contents of psychoeducational programs
[22]	Group face-to-face	Mental health nurse inpatients	Advanced reminders Repeated sessions per weekend	Long program	Teaching and group discussion	Aetiology, symptoms and management of schizophrenia problem-solving skills, communication skills, and information on available local resources
Chien et al. [24]	Group face-to-face	Mental health nurse outpatients	Regular telephone follow-up	Long program	Group discussion and teaching	Aetiology, symptoms and management of schizophrenia Problem-solving skills, and communication skills
[23]	Group face-to-face	Mental health nurse outpatients	Running sessions at a convenient community setting	Long program	Group discussion, workshop, and teaching	Aetiology, symptoms, and management of schizophrenia Problem-solving skills, and communication skills
[26]	Group face-to-face	Mental health nurse. Inpatients	Not reported	Brief program	Group discussion, provision of handout, and teaching	Aetiology and symptoms and management of schizophrenia Information on available local resources
[9]	Group face-to-face	Mental health nurse. Outpatients	Not reported	Long program	Group discussion, provision of handout, and teaching	Aetiology and symptoms and management of schizophrenia Problem-solving skills, communication skills, and information on available local resources

providing psychoeducation to family caregivers. The finding from this systematic review, aligns with those of earlier studies that identified positive effects of psychoeducation on the burden experienced by family caregivers of adults living with schizophrenia when measured at different time points. Sharif et al. [10] measured the burden experienced by 70 family caregivers one month after they had received psychoeducation. In Greece, Palli et al. [11] used a waiting-list control study design to identify reduced levels of burden in family caregivers immediately after and one year post-receiving a psychoeducational program.

Furthermore, Thimmajja and Lazarus Rathinasamy [13] identified reduction in family caregivers' burden after one month and three months they had engaged in a psycho-educational program. This indicates that psychoeducational programs aimed at family caregivers of adults living with schizophrenia are effective immediately after it is delivered; effectiveness can be sustained up to one year after. Family caregivers were likely practicing the skills gained during the intervention, resulting in reduced burden. Cheng and Chan [22] and Fallahi Khoshknab et al. [26] identified that the effectiveness of psychoeducation provided for family caregivers gets better over time. However, ongoing psychoeducation may be required to maintain the learned skills [34, 47].

The duration of the psychoeducational programs reported by the five studies included in this systematic review ranged from four sessions [26] to eighteen sessions [9, 22–24]. According to Zhao et al. [48], any psychoeducational program with less than ten sessions is considered a brief psychoeducational program. This shows that short and long psychoeducational programs can effectively reduce the burden experienced by family caregivers. This finding supports the finding of an earlier study by Worakul et al. [49] who aimed to evaluate the effectiveness of brief psychoeducation on the knowledge and attitude of family caregivers. They provided a 1-day intense psychoeducational program to 91 family caregivers of adults living with schizophrenia.

Their findings showed improved knowledge of schizophrenia and positive attitude. The effectiveness of brief psychoeducation was further intensified by Thimmajja and Lazarus Rathinasamy's [13] RCT prepost control group design study. They noticed that the mean burden score of family caregivers reduced from 82.37 to 49.13 after one month and 40.86 three after months postpsychoeducation program. This indicated that brief psychoeducation was effective in the reduction of family caregivers' perceived burden.

Furthermore, Sota et al. [50], in their dose-response design, identified that the positive effect of psychoeducational programs depended not only on the duration of psychoeducational program provided but on the content of the program and teaching methods.

The contents of psychoeducational programs in all the five studies included in this review reported education about schizophrenia and its management as their cardinal element. Their psychoeducational programs content tended to be delivered in a modular design, as the topics were spread out over their various duration. According to Hughes and Quinn [51], programs designed in modular format are more effective than traditional teaching design in the teaching and learning process. Programs designed in modular format enable adult learners to learn at their pace. It also provides an opportunity for learners to practice; this encourages motivation and promotes active participation. Cheng and Chan [22] and Gutiérrez-Maldonado and Caqueo-Urízar [25] suggested that the participants' cultural backgrounds should be considered when planning and designing psychoeducational programs. This is because mental health difficulties are understood and interpreted differently across different ethnicity and culture [27]. This is supported by Hughes and Quinn [51] who recommended that the design of any educational program and its information content should suit the diverse needs of adult learners. The common topics/contents learned by family caregivers as reported by the five included studies in this review include the aetiology, symptoms, and management of schizophrenia. In addition, problem-solving skills, communication skills, and information on available local resources were also delivered.

The learning experience was beneficial in improving family caregivers' skills to communicate with their relatives and deal with caregiving challenges more effectively [22]. This could explain the improvement identified in some categories of the FBIS, such as disruption of routine family activities, disruption of family leisure, and disruption of family interaction [22, 26]. This supports Ewers et al. [52], Tabeleão et al. [12], and Thimmajja and Lazarus Rathinasamy [13]; they highlighted that a better understanding of the nature of schizophrenia, its symptoms, and its effect on their relatives' behaviour would likely result in a change of attitude. Family caregivers may have a new perspective on the caregiving experience and change their cognitive appraisal [22]. In addition, Thimmajja and Lazarus Rathinasamy [13] suggested that information provided in the psychoeducational programs would enable family caregivers to recognise their relatives' behavioural deficits as negative symptoms of schizophrenia instead of referring to their relatives as being lazy; as a result, experience fewer burden [22]. It could be said that family caregivers experienced reduced financial burdens due to increased use of services as a result of increased knowledge of available resources [9]. This shows that the content of psychoeducational programs could be said to be one of the essential factors that facilitated positive outcomes in the family caregivers in the psychoeducational group.

Other essential factors that may have facilitated the positive outcome in this review include the use of a face-to-face group format, the various teaching methods, and the engagement strategies used. All the five included studies in this review delivered their psychoeducational program through a face-to-face group format. This enabled the use of teaching methods such as group discussion in all the included studies [9, 22–24] and Fallahi Khoshknab et al. [26] and role-play [22, 24].

The use of a group discussion teaching method in a face-to face group format could have given family caregivers in the psychoeducation group the opportunity to share and

learn from others' personal experiences. This supports Copper et al. [53] and Bengo [54]; they highlighted that group activities promote active learning by allowing adult learners to contribute their different ideas and experiences to the group. This provided social support for the family caregivers; as they realised that they are not alone and that other family caregivers face similar issues [22, 24]. This is supported by Sin and Norman's [27] mixed method systematic review. Their qualitative analysis indicates that family caregivers that received their psychoeducational program in a group format reported experiencing peer support and a reduced sense of isolation. In addition, the group discussion in the group format helped to normalise their caring experience and boosted their self-efficacy; as a result, it reduced the caregiving burden they were experiencing.

The use of strategies such as reminding participants a day before scheduled sessions, repeating sessions, and running sessions at convenient community settings to encourage attendance could have also contributed to the positive outcome of the psychoeducational programs, as low dropout rates were reported [22–24].

This systematic review identified that psychoeducation could be delivered in inpatient and outpatient settings. However, only two of the included studies in this review [22, 26] provided their psychoeducational program in inpatient settings. This is similar to the findings of earlier studies by Nilsen et al. [55], Petrakis and Laxton [34], and Nolan and Petrakis [56]. In their respective qualitative studies, Nilsen et al. [55], Petrakis and Laxton [34], and Nolan and Petrakis [56] identified that fewer psychoeducational programs for family caregivers are provided in the inpatient settings. This is attributed to insufficient time by staff working in the inpatient setting. Hence, the emphasis is on more inpatient psychoeducational programs for family caregivers; especially those whose adult relatives are experiencing first episode of schizophrenia [56].

Furthermore, this review shows that members of the multidisciplinary team can conduct psychoeducational programs. It also showed that mental health nurses are well-positioned to facilitate psychoeducation. This is because mental health nurses have regular contact with family caregivers and, most times, comprehend their needs [22]. In this review, four of the included studies [22–24, 26] reported that mental health nurses conducted their psychoeducational programs. However, Higgins et al. [57] suggested involving family caregivers as cofacilitators. This will give the family caregivers a chance to interact and learn from those that have lived the experience [24].

This systematic review identified that most of the family caregivers that participated in the included studies were female gender ($n = 212$), 66.25 percent. This indicates the female gender is mostly the primary family caregivers of their adult relatives living with schizophrenia; hence, it could be said that they experience more caregiving-related burdens than males. This is in line with the findings of [58, 18, 25]. To this effect, Gutiérrez-Maldonado and Caqueo-Urízar [25] suggested that gender and family roles should be considered

while developing psychoeducational programs for family caregivers of adults living with schizophrenia.

Despite the positive outcome of psychoeducation on burden identified in this review, face-to-face psychoeducational programs are yet to be implemented regularly in the practice setting for family caregivers due to factors that can impede its implementation. These include transportation and time constraints on the part of the family caregivers [11, 25, 26]. The findings of this systematic review support this. Four of the included studies reported drop out of family caregivers during their respective studies [9, 23, 24, 26]. Only two of the studies, Chien et al. [24] and Koolaee and Etemadi [9], reported reasons for drop out (Table 3). The reasons for these dropouts were that family members had to travel long distances to attend face-to-face psychoeducational programs. The other reason was that family caregivers were not available to attend due to time clashing with other commitments.

In addition, Mottaghipour and Tabatabaee [59] highlighted that shame and stigma due to family caregivers' relatives' mental health difficulties could hinder them from participating in face-to-face psychoeducation. Furthermore, Chien et al. [24] and Coulthard et al. [60] identified that psychoeducation could be expensive to implement as facilitators are paid for facilitating the psychoeducational programs. Therefore, the cost could be a barrier to the successful implementation of psychoeducation in mental health services.

This indicates that lack of easy accessibility to the location of psychoeducational programs, time constraints, shame, stigma, and cost could pose barriers in the implementation of family psychoeducation in the practice setting.

In as much as this review identified that psychoeducational programs are effective in the reduction of burden experienced by family caregivers of adults living with schizophrenia; caution should be taken to interpret the overall result.

6.1. Strengths and limitations. The robustness of the review process is one of this systematic review's strengths. There is obvious evidence of a robust search strategy and thorough literature. In addition, the quality appraisal was conducted independently by two researchers. However, it is essential to note that this study has some limitations. Only studies published in English language were included, potentially introducing publication bias. One reviewer independently extracted the data. This could have introduced data extraction errors. All the included studies were conducted in mental health settings in the Asian population, where healthcare practices are more likely to differ from those in other countries, therefore limiting the generalisability of findings. Hence, there is a need for more studies on family caregivers' burdens to be conducted globally.

The methodological quality of included studies limits this review's findings, as none of the studies were judged as having a low risk of bias overall. Publication bias could have been introduced in this review by excluding studies that did not measure family caregivers' burden with Family Burden

Interview Schedule. Finally, the high heterogeneity identified in the review may have limited the external validity of the findings.

7. Conclusion/Implications for Practice

Although there are limitations in this review, the evidence indicates that psychoeducation has positive effects on the burden experienced by family caregivers at all the time points assessed. It is recommended that assessing the level of caregiving burden experienced should be added to the routine assessment. This review has identified the effectiveness of even brief psychoeducation; as such, it should be included as a routine intervention for family caregivers in acute inpatient mental health settings.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval

The study is a review of existing literature and did not require ethics review.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

Authors' Contributions

AJO conceived the study and conducted a systematic search of the literature. AJO independently extracted the data from selected studies. However, MM verified the extracted data and made corrections when necessary. Studies' quality appraisal was conducted independently by AJO and MM. AJO wrote the manuscript and MM contributed in editing the manuscript.

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Research Article

Psychosocial Problems among Psychiatric Nurses for Caring Patients with Mental Disorders during the COVID-19 Pandemic

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COVID-19 has a negative effect on the psychological well-being of psychiatric nurses. Thus, examining the psychosocial response of nurses is important for preventing more serious mental health problems and disruption of the quality of nursing care. This study aimed to evaluate the psychosocial problems of nurses who provided nursing care to patients with mental health disorders during the COVID-19 pandemic. A quantitative study with a cross-sectional design was conducted. The 101 nurses at Central Mental Health Hospital who provide nursing care to patients with mental health disorders were recruited through consecutive sampling. The instruments used were the demographic questionnaire, the Expanded Nursing Stress Scale, Zung Self-Rating Anxiety Scale, and The Connor–Davidson Resilience Scale 25. Univariate and bivariate analyses were used to process the data. The mean score of 45.1 (±24.3) was obtained for the ENSS; around 97% of nurses have a work stress score below the average, 4.95% have mild-moderate anxiety, and 28.7% have a low level of resilience. Work stress and contact frequency, work stress and gender, anxiety and contact frequency, as well as resilience and contact frequency all correlated significantly (p value <0.05). The Pearson test showed a significant positive correlation between work stress and anxiety (p: 0.002, r: 0.299). However, there was no significant correlation between anxiety and resilience (p: 0.643, r: 0.47), nor between work stress and resilience (p: 0.643; r: 0.47). Psychosocial disorders that psychiatric nurses face include occupational stress, mild-moderate anxiety, and low resilience. The government can create specific infection control guidelines for the mental health setting, and hospital management or ward leaders can also provide support to psychiatric nurses to increase resilience in reducing psychosocial problems.

1. Introduction

The COVID-19 pandemic developed into a global health crisis with a considerable increase in cases and a high death rate worldwide. It is a challenge for health workers, especially nurses. Along with these issues, nurses are prone to internal problems relating to severe workloads, insomnia, conflicts among health workers, moral concern, and professional dilemmas [1, 2]. COVID-19 does not only influence physical health problems but also on psychosocial health. The impact of the COVID-19 pandemic on psychosocial aspects includes symptoms of stress, anxiety, depression, and posttraumatic stress disorder [3]. Psychiatric nurses frequently lack knowledge about infectious disease management and must process a large amount of information about COVID-19 in a short period of time, while also having fears of transmitting the disease to patients, limited personal protective equipment, and conflicts among health workers, which causes psychosocial disorders to nurses [4, 5].

Several research articles have proven that nurses experience high levels of stress and anxiety during COVID-19. Anxiety was assessed in 89.7% of Iranian nurses, as was stress in 54.9% of them [6]. Huang et al. [7] found that out of 1,257 health workers caring for COVID-19 patients in 34

hospitals in China, 50% experienced depressive symptoms and 45% ran into anxiety. Nurses must be resilient to deal with challenging conditions that are riddled with problems and challenges. Since resilience is one of the factors that protect nurses from rising when faced with challenges, emotional tiredness, and job dissatisfaction, it allows nurses to retain healthy and stable psychological functions and adapt to the work environment [8]. Research conducted on 824 nurses in Korea reported that nurses with depression experienced lower resilience and were prone to experiencing higher work stress [9].

Preliminary research was undertaken on psychiatric nurses at Central Mental Health Hospital. Researchers conducted interviews with three psychiatric nurses about psychosocial problems during COVID-19. Based on interviews, they encounter a variety of psychosocial disorders, such as difficulty conditioning patients—for instance, those who perform risky behavior like careless spitting—difficulties communicating with patients as a result of the use of personal protective equipment (PPE), and anxiety when other patients or other nurses are confirmed to be positive for COVID-19. Research on psychological aspects has not been widely conducted concerning work stress, anxiety, and the resilience of psychiatric nurses. Therefore, this study aims to provide information about the psychosocial problems of psychiatric nurses who provided nursing care to patients with mental problems during the COVID-19 pandemic.

2. Methods

2.1. Research Design. This research is a descriptive one that uses a cross-sectional design and a quantitative approach. This research was conducted in June 2022.

2.2. Subjects. The population in this study was psychiatric nurses at the Central Mental Health Hospital in Yogyakarta, Indonesia. Psychiatric nurses are defined as nurses who specialize in psychiatric nursing, caring for patients with mental and behavioral disorders holistically, not only providing physical care but also socializing and communicating with patients to improve their physical and psychosocial well-being. They also provide comprehensive care to individuals, families, groups, and communities. Meanwhile, Bowers et al. [10] define psychiatric nurses as a group of nurses who interact face-to-face with patients in inpatients settings who experience stress and/or frustration at applicable restrictions, which include actions or procedures to maintain security, seclusion, restraint, and enforced medication. Consecutive sampling was used as the sampling method. The inclusion criteria were that the nurses had to have at least a Diploma in Nursing and be willing to participate in the survey. They also had to have provided nursing treatment to patients with mental problems at Mental Health Hospital during the COVID-19 pandemic. Nurses on leave from their employment were excluded from the sample. The total population of nurses who provide nursing care to patients with mental disorders is 122. The

researcher determined the sample size using the Slovin formula with a 50% margin of error (*e*: 0.05), so that the minimum sample size was 94 nurses. A total of 101 nurses were accepted as participants in this study.

2.3. Instruments. The Expanded Nursing Stress Scale (ENSS) is an instrument used to measure the work stress of nurses. There are 27 questions on it, and the results are divided into scores above and below average. The ENSS instrument has a Cronbach's alpha of 0.956 with a reliability coefficient 0.3181. The Zung Self-Rating Anxiety Scale (Z-SAS) measures anxiety levels which are divided into normal/not anxious, mild to moderate, severe, and panic [11]. At Yogyakarta General Hospital, 75 nurses participated in a construct validity test using the Z-SAS instrument. The results were *r count* >0.3 and Cronbach's alpha 0.658.

The Connor–Davidson Resilience Scale 25 (CD-RISC 25), which contains 25 statements to measure participant resilience. The data were categorized into low, medium, and high resilience levels [12]. The researcher conducted a construct validity test at Yogyakarta General Hospital and Surakarta Regional Mental Hospital and obtained a reliability coefficient of 0.281–0.766 and Cronbach's alpha 0.917.

2.4. Data Collection. This research was conducted at the Central Mental Health Hospital in Yogyakarta for psychiatric nurses. Questionnaires were given in printed form and digital form via links which contained data on participant characteristics and research instruments.

2.5. Data Analysis. Participants' answers were analyzed using univariate and bivariate analyses. The independent *T*-Test, Mann–Whitney, and Kruskal–Wallis tests were used to compare the work stress levels of the participants' using the ENSS instrument. The Mann–Whitney test was utilized to examine data from the Z-SAS, while the chi-Square and Fisher tests were used to examine the CD-RISC25 instrument. The correlation between work stress and anxiety as well as the correlation between work stress and resilience were examined using the Pearson product-moment correlation test. Furthermore, the correlation between anxiety and resilience was examined using Spearman's rank correlation test.

2.6. Ethical Considerations. This research was approved by the Ethics Commission of FK-KMK UGM with number KE-FK-0044-EC-2022.

3. Results

3.1. Sample Characteristics. A total of 101 nurses participated in this study. A total of 4 questionnaires were given to all participants. The instruments we provided included demographic data, ENSS, Z-SAS, and CD-RISC 25. The researchers gave questionnaires and explained how to fill them out to all participants and they agreed to consent and

completed all questionnaires. Table 1 shows that characteristics are dominated by those between the ages of 41–65 (56.4%). Most of the nurses were female (67.3%) and married (96%). The proportion of nurses who worked more than 15 years is 71.3%, and most participants contacted patients >5 times (57.4%) each shift. Additional demographic characteristics at baseline of the study sample are shown in Table 1.

3.2. Level of Work Stress, Anxiety, and Resilience. Based on the data, the work stress score was 45.1 (SD = 24.3). The prevalence of psychiatric nurses who experienced work stress with a lower than average score is 97% and only 3% have a score higher than average. Most nurses do not experience anxiety or have normal anxiety (95.05%), and only 4.95% of nurses experience mild anxiety. Meanwhile, 51.5% of nurses have moderate resilience, 28.7% still have poor resilience, and just 19.8% have high resilience (see Table 2).

3.3. Differences between Work Stress, Anxiety, and Resilience with Demographics. Table 3 shows there were significant results for gender characteristics ($p = 0.013$) and contact frequency ($p = 0.002$) on the work stress variable. However, there was no significant difference in the correlation between work stress and age, marital status, level of education, and the length of work experience. Nurses with higher stress scores were aged 19–40 (45.77 ± 22.84), married (45.54 ± 23.22), worked ≤15 years ($47.9 \pm 23, 82$), female, and had contact with the patient more than five times.

3.4. The Domains of ENSS, Z-SAS, and CD-RISC 25. The ENSS is reported to be made up of nine domains (see Table 4). The highest average scores were uncertainty concerning treatment (25.91 ± 15.33), followed by problems with patients (24.07 ± 10.77). In the Z-SAS instrument, the domain of affective symptoms has the highest median value. The hardiness aspect has the highest median resilience score of all other factors.

3.5. Correlation between Work Stress, Anxiety, and Resilience. Pearson product-moment test results showed a significant association between work stress and anxiety (p value <0.05). The r value of 0.299 indicates a positive relationship between work stress and anxiety (see Table 5). Spearman's rank test stated that there was no significant correlation between anxiety and resilience (p value <0.643, r 0.47). Work stress and resilience had no significant correlation (p value: 0.643, r: 0.76).

4. Discussion

4.1. Levels of Work Stress, Anxiety, and Resilience in Nurses. In this current study, most psychiatric nurses during the COVID-19 pandemic had work stress lower than the average score (<45.1). Research by Mo et al. [13] showed that 22.2% of nurses had scores >50, with the average work stress experienced by nurses of 39.91 points. Meanwhile, Baye et al. [14] stated that 90% of nurses in psychiatric wards are less

TABLE 1: Demographic characteristics ($n = 101$).

Demographics	Sample	Percentage (%)
Age		
19–40 years	44	43.6
41–65 years	57	56.4
Gender		
Male	33	32.7
Female	68	67.3
Marital status		
Married	97	96
Single/divorced	4	4
Education background		
Diploma	80	79.2
Bachelor	21	20.8
Working experience		
≤15 years	29	28.7
>15 years	72	71.3
Contact frequency		
≤5 times	43	42.6
>5 times	58	57.4

likely to experience work stress than nurses working in outpatient care. The low level of work stress for health workers during the pandemic proves that they show professional devotion and altruism [15]. In line with the study by Ko et al. [16] in Taiwan, many nursing staff were dedicated to their work under the professional responsibility of caring for patients, even volunteering to be involved on the front lines during the SARS pandemic. However, these findings contradict the findings of Alnazly et al. [17], who discovered that 35% of nurses who handled patients with COVID-19 suffered severe stress.

In some mental health hospitals, inpatient psychiatric patients are placed in wards with many other patients. This condition makes social distancing hard to implement in inpatient wards because the rooms occupied by several patients are cramped and crowded. This suggests maintaining a social distance of 2 meters is less applicable and impractical for proper infection control in inpatient wards [18]. Furthermore, nurses tolerate aggressive behavior exhibited by patients, such as breaking protective glasses, tearing masks, and even spitting. The lack of preparedness in dealing with the COVID-19 pandemic has become a major source of stress for nurses. Foye et al. [18] stated that the use of PPE is a real challenge in emergencies; for example, the act of restraining a patient, where nurses may not have time to wear PPE or even PPE that pose a risk to nurses. So, devotion to the use of PPE guidelines as infection control is not maximally done. There is a need for further attention, guidance, and support for nursing staff in trying to manage the challenges of using PPE on the wards of patients at risk of suicide and keeping patients and staff safe. Many of them also have conflicts with professional ideals, such as feeling sad for not being able to treat patients as well as nurses in the ICU and dread spreading the virus to family members [4]. The stressors above significantly increase work stress for nurses.

Normal anxiety was assessed in 95.05% of participants, and none of them experienced severe anxiety or panic. Similar to the study of Neupane et al. [19] which found that

TABLE 2: Distribution levels of work stress, anxiety, and resilience of nurses ($n = 101$).

Variable	Mean ± SD	Median	Min–max	Sample	(%)
Work stress					
Score	45.1 ± 24.3				
Score lower than average				98	97
Score higher than average				3	3
Anxiety					
Score		26	20–39		
Normal/Not anxious				96	95.1
Mild-moderate				5	4.9
Severe				0	0
Panic				0	0
Resilience					
Score		81	69–100		
Low				29	28.7
Moderate				52	51.5
High				20	19.8

TABLE 3: Different tests of work stress, anxiety, and resilience based on the demographic characteristics of nurses ($n = 101$).

Demographics	Work stress			Anxiety		Resilience			
	Median (min–max)	Mean ± SD	p value	Median (min–max)	p value	Low (%)	Moderate (%)	High (%)	p value
Age									
19–40 years		45.77 ± 22.84	0.808[a]	26 (20–39)	0.205[b]	27	52.7	20.3	0.606[d]
41–65 years		44.58 ± 25.55		24 (20–39)		33.3	48.2	18.5	
Gender									
Male	29 (11–127)		0.013*[b]	24 (20–39)	0.335[b]	15.2	66.6	18.2	0.229[d]
Female	47 (5–87)			26 (20–39)		35.3	44.1	20.6	
Marital status									
Married		45.54 ± 23.22	0.376[a]	26 (20–39)	0.847[b]	29.9	50.5	19.6	0.322[e]
Single/divorced		34.5 ± 27.33		25.5 (20–39)		0	75	25	
Education background									
Diploma		43.96 ± 23.17	0.361[a]	26 (20–39)	0.146[b]	30	48.7	21.3	0.964[d]
Bachelor		49.43 ± 28.39		23 (20–39)		23.8	61.9	14.3	
Work experience									
≤15 years		47.9 ± 23.82	0.465[a]	26 (20–39)	0.608[b]	31	55.2	13.8	0.444[d]
>15 years		43.97 ± 24.56		26 (20–39)		27.8	50	22.2	
Contact frequency									
≤5 times	53 (5–105)		0.002*[c]	28 (20–39)	0.000*[b]	34.9	58.1	7	0.019*[d]
>5 times	61 (11–117)			24 (20–39)		24.1	46.6	29.3	

Notes: (a) independent T-test, (b) Mann–Whitney, (c) Kruskal–Wallis, (d) chi-square, and (e) Fischer test. *Significant ($p < 0.05$).

88.4% of nurses experienced normal anxiety and another 10.5% reported mild to moderate levels of anxiety. A survey in China revealed that less than half of healthcare personnel, notably female nurses caring for patients, exhibit signs of anxiety [2]. The findings of this study contrast with those of a meta-analysis performed by Al Maqbali et al. [20]; which revealed that 37% of nurses reported having anxiety across all 93 journals examined.

After all, the COVID-19 pandemic has been going on for more than two years. The Indonesian Ministry of Health set guidelines for the prevention and control of COVID-19 infection in 2020, whereby all health services are no exception to implementing these regulations including the use of PPE, infectious zones, flow of services, and so on. However, these guidelines often confuse nurses because they are hard to apply in psychiatric hospitals where the patients

there have different criteria from other general patients. Meanwhile, the first COVID-19 vaccine for health workers began in early 2021. Until these data were collected, psychiatric nurses had received three doses of the vaccine. PCR swabs are carried out if the nurse shows symptoms or has contact with a COVID-19 patient. The Central Mental Health Hospital already follows the guidelines, which helps them reduce the level of anxiety among the nurses there. This supports the results of other studies by Hennein et al. [21] and Yeung et al. [22] that the absence of COVID-19 control guidelines in hospitals correlates with higher symptoms of anxiety.

The resilience level of nurses is mostly in the moderate category. Moderate resilience means that nurses have demonstrated a positive adaptation function in dealing with adversity during a pandemic. Nurses with higher resilience

TABLE 4: Score on work stress, anxiety, and resilience of nurses based on domain on the ENSS, Z-SAS, and CD-RISC 25.

Domain	Mean ± SD	Median	Min–max
Work stress (ENSS)			
Death and dying	22.81 ± 12.19		0–60.71
Conflict with doctors	17.67 ± 12.64		0–60.00
Inadequate optional preparation	19.97 ± 14.44		0–58.33
Problems with peer support	13.2 ± 12.31		0–50.00
Problems with supervisors	16.55 ± 13.36		0–57.14
Uncertainty concerning treatment	25.91 ± 15.33		0–72.22
Problem with patients	24.07 ± 10.77		6.25–62.50
Workload	20.65 ± 11.96		0–63.89
Discrimination	4.29 ± 9.17		0–41.67
Anxiety (Z-SAS)			
Affective symptoms		6	5–10
Somatic symptoms		4	3–9
Cardiovascular system		2	2–5
Respiratory system		4	4–8
Gastrointerstinal system		1	1–3
Genitourinary system		1	1–3
Skin		3	2–6
Central nervous system		2	2–5
Resilience (CD-RISC 25)			
Hardiness		23	17–28
Coping		16	9–20
Adaptibility/flexibility		10	6–12
Meaningfulness/purpose		13	9–16
Optimism		6	3–6
Redulation of emotion and coping		6	4–8
Self-efficacy		6	6–8

TABLE 5: The correlation test between work stress, anxiety, and resilience in nurses.

Variables	Median (min–max)	Mean ± SD	R	p value
Work stress score		45.1 ± 24.3	0.299	0.002* (a)
Anxiety score	26 (30–39)			
Anxiety score	26 (30–39)		0.47	0.643(b)
Resilience score	81 (69–100)			
Works stress score		45.1 ± 24.3	0.76	0.643(a)
Resilience score	81 (69–100)			

Notes: *Significant ($p < 0.05$); (a) Pearson's test, (b) Spearman's rank test; r, coefficient correlation.

may be able to adapt to the difficulties of working during a pandemic and are less at risk of experiencing symptoms of trauma and disruption at work [23]. However, some nurses in this study lacked resilience (28.7%). Low resilience may be a sign that one needs to develop coping and adaptive skills to deal with adversity [12].

4.2. Differences in Work Stress, Anxiety, and Resilience in Nurses Based on Demographic Characteristics.

Significant results were found regarding the difference between work stress and gender. Women have higher work stress scores than men. This is in line with the findings of Tsegaw et al. [24] in their research which revealed that one of the factors is the higher role of women in the family and society. Therefore, there is a significant difference in contact frequency and work stress. Nurses who interact with patients more than five times each shift typically experience significant levels of stress. In this study, it was found that it is common for nurses to interact with patients more than ten times in a shift. According to Kisely et al. [25], the more frequently nurses contact patients, the more vulnerable they are to experience stress disorders, especially during a pandemic because nurses contact confirmed patients more often.

Participants aged less than 40 years showed a higher average stress score. Senior nurses can adopt healthy stress-coping strategies because they are more aware of the possibility of a pandemic and are more responsive to patients [26]. Kuo et al. [27] in their research found no relationship between work stress and education level. They continued by explaining that this occurred because the pandemic produced new issues that had never been encountered before, causing nurses with high and low educational levels to experience the same psychological effects.

Anxiety has a significant relationship with contact frequency. Tang et al. [28] reported that the correlation between contact frequency and traumatic stress experiences can make nurses more anxious. In this study, the more often nurses contacted patients, the lower the anxiety score. Higher anxiety scores occur in the age group under 40 years. This study is in contrast to the findings of Wang et al. [29], which stated that at age above 40, anxiety is 0.4 times higher than at age below. This indicates that as experience increases, the ability to regulate psychology will increase.

In this study, work experience did not significantly affect resilience either, but groups with >15 years of work experience showed higher levels of resilience. The results of this study are different from studies by Foster et al. [30] on mental health nurses in Australia which show a significant relationship between resilience and length of service. According to research by Wu et al. [31], nurses with more than 15 years of experience were more resilient. About 31% of the nurses in this study with fewer than 15 years of experience reported having low resilience. Nurses struggle to handle pressure, the risk of infection, the increased workload, and the risk of mental health disorders since they are less skilled at their professions [32].

Nurses who come with a diploma degree have lower resilience levels than those with a bachelor's degree. The difference between a diploma degree and a nursing bachelor's degree in Indonesia is that a diploma degree, also called vocational education, is more focused on practice and takes three years. Meanwhile, a bachelor's in nursing takes four years, focusing more on understanding theory and critical thinking.

Also, nursing bachelors who will work in hospitals must go through clinical stages as an implementation of theory and practice in the field. The findings of Afshari et al. [33] on 387 nurses diverge from this result in that resilience and education level differed significantly. According to Ang et al. [34] and Jamebozorgi et al. [35], nurses have greater resilience with more education. The higher nurses' education level, the more efficiently they use social resources, such as learning to access resources and increasing their use, resulting in greater resilience. As stated by Afshari et al. [33], training is required for nurses to strengthen their skills and knowledge in dealing with the COVID-19 pandemic.

The previous study stated that males generally have a higher level of resilience than females [36, 37]. The same finding is found in this study that females have lower resilience. Male and female nurses differ in their resilience due to variances in coping methods in a cultural setting where women are responsible for the home and job while men are more focused as nurses [36].

4.3. The Domain of Work Stress, Anxiety, and Nurse Resilience Instruments. In this study, the first rank of work stress in the ENSS domain is uncertainty concerning therapy. The doctor's absence during a medical emergency, exposure to workplace safety and health, insufficient information from the doctor regarding the patient's medical state, and insufficient time to perform nursing assignments are all factors that could have an impact. The second is the problem with the patient domain. Nurses' work stress is increased by the patient's unreasonable requests and inappropriate behavior, which is typically verbal [5]. There are many psychiatric wards where patients are free to move around and interact with other patients. Nurses had difficulty isolating patients with behavioral deregulation from symptoms of mania and active psychosis during the COVID-19 pandemic. They also have difficulty explaining the risk of COVID-19 infection to patients and convincing them to follow quarantine guidelines such as wearing masks and protective clothing, and performing COVID-19 tests [38, 39].

Affective symptoms of anxiety, such as fear, nervousness, and restlessness are associated with an increased risk of migraines, headaches, and muscle tension. In the current study, nurses have the highest median value on the hardiness aspect of the CD-RISC 25. According to Maramis and Cong [40], hardiness is a personality trait that has a defense function, so that when someone faces problems and workloads, they can do things that are considered appropriate to solve them. The results of this study indicate that nurses have low self-confidence, emotional regulation, and self-efficacy. A nurse needs to increase confidence in their abilities and control when facing a crisis or difficulty [41]. Characteristics such as self-control, expectations, and self-efficacy are significant contributors to nurse resilience [36, 41].

4.4. The Correlation between Work Stress and Anxiety, Resilience with Anxiety, and Work Stress with Resilience. These results support research in China and Turkey which shows that there is a significant relationship between work stress and anxiety; a positive value means that the higher the

work stress, the higher the anxiety felt [13, 42]. Nurses who feel higher stress and anxiety will feel dissatisfied with their lives; besides that they experience physical and psychological exhaustion. Anxiety is an unpleasant emotional response to stress resulting from threats characterized by feelings of worry [43].

Pearson's correlation test showed no significant relationship between work stress and resilience. These results are different from those of the research by Hong et al. [9] in Korea. This happened because the nurses' work stress score in this study was below the average, while the research in Korea was conducted at the beginning of the pandemic, so it showed different results. Resilience is an adaptive coping strategy that can help reduce work stress and mental burden on health workers in response to treating patients infected with COVID-19 and preventing them from being infected with the virus during a pandemic [9].

Resilience is proven to have an important role in overcoming work pressure. In this study, there was no significant relationship between anxiety and resilience. According to studies conducted in Israel by Mosheva et al. [32], anxiety and resilience have a negative correlation. This implies that a nurse's resilience will be reduced the more anxious they are. This discrepancy in results came about because, in this study, most nurses did not experience anxiety.

5. Conclusions and Recommendations

This study provides information on the impact of COVID-19 on the psychosocial problems of psychiatric nurses. Nurses who provided nursing care to patients with mental disorders at the Central Mental Health Hospital during the COVID-19 pandemic had lower work stress scores than the average, experienced normal anxiety, and had moderate resilience scores. Work stress differs significantly depending on gender and contact frequency. Anxiety and contact frequency are significantly different, as are resilience and contact frequency. Work stress and anxiety have a considerable positive correlation. However, it should be noted that the sample was less diverse, and the number of participants was small. This study also presents the perspective of a psychiatric nurse.

We emphasize the findings in this study that psychiatric nurses need infection control guidance on infectious diseases such as COVID-19 inward service settings in mental health hospitals because patients and nurses have the right to safety and comfort from disease transmission. Also, when a pandemic occurs, the nurses do not need a long time to adapt to the illness, so the well-being of patients with mental disorders is not disturbed. Even though the results show moderate work stress and normal anxiety, they also need local support from ward leaders or hospital management in increasing their mental resilience and overcoming their psychosocial problems during a pandemic.

Future research should consider demographic variations, larger sample sizes, and government policies regarding infectious outbreak guidelines. Apart from that, the psychosocial problems of psychiatric nurses can also be further investigated when there is no pandemic.

Data Availability

The authors declare that the data supporting the findings of this study are available within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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Research Article

Clinical Competence of Nurses and the Associated Factors in Public Hospitals of Gamo Zone, Southern Ethiopia: A Cross-Sectional Study

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Introduction. Nursing competency is an essential component for improving the quality of care in the healthcare system. However, assessing competency solely on the dimensions of skills and knowledge does not provide complete picture of a nurse ability to provide quality patient care. This is because it lacks focus on the nurse's attitudes and values, which are also important determinants of clinical competence. Therefore, this study aimed to assess the comprehensive clinical competence of nurses and its associated factors in public hospitals of Gamo Zone, Southern Ethiopia. *Materials and Methods.* A cross-sectional study was conducted using a census method to collect information from nurses through self-administered questionnaires. The data were entered into EpiData version 3.1 and exported to Stata version 15 for analysis. A linear regression model was used to identify factors associated with clinical competence. *Results.* In this study, the average clinical competence of nurses was 177.32, with a standard deviation of 19.19, and 31.2% of the respondents had a high level of clinical competence. Associated factors identified with clinical competence include gender, age, marital status, qualification, position, work experience, unit, interest in their profession, critical thinking disposition, clinical self-efficacy, and emotional intelligence. *Conclusions.* The overall level of clinical competence among nurses in this study was moderate. As such, nurses improve their clinical competence by receiving training and development opportunities that focus on critical thinking, clinical self-efficacy, and emotional intelligence; working in a supportive work environment that encourages them to take risks and learn from their mistakes; and being monitored and coached on a regular basis.

1. Introduction

Clinical competence in nursing refers to the knowledge, skills, attitudes, and values that nurses need to provide safe and effective care to patients [1, 2]. It is essential for improving the quality of care, increasing patient satisfaction, and promoting nursing as a profession [1, 3].

Nurses play a vital role in achieving the Sustainable Development Goal (SDG) 3 of reducing maternal and neonatal mortality by 2030. They are part of an integrated team of professionals in maternal and newborn health (MNH), and their unique skills and knowledge are essential for providing high-quality care to mothers and newborns [4, 5]. The United Nations International Children's Emergency Fund (UNICEF) and the World Health Organization (WHO) recognize the importance of nurses in MNH. They have stated that nurses are "instrumental in influencing patient outcomes" [5]. This is because nurses have a deep understanding of the needs of mothers and newborns, and they are able to provide individualized care that is tailored to each patient's specific situation [4]. In addition to their technical skills, nurses also bring a set of core values to their work. These values include compassion, respect, and commitment to quality care [6]. Nurses are dedicated to

providing the best possible care to their patients, and they are always striving to improve their skills and knowledge [4]. By working together with other healthcare professionals, nurses can make a real difference in the lives of mothers and newborns. They can help to reduce maternal and neonatal mortality, and they can ensure that all mothers and newborns have access to the care they need [4, 5].

Continuing competency is essential for nurses to maintain their professional growth, confidence in the workplace, and ability to provide safe and positive care to patients. Nurses with higher clinical competency are more likely to establish empathetic relationships with patients and utilize their skills effectively in clinical settings [7–9]. On the other hand, burnout is negatively associated with clinical competency, meaning that nurses who are more burned out are less likely to be clinically competent [10].

Studies have shown that nurses' clinical competence varies depending on the setting and the specific components of competence being assessed. For example, a study in Iran found that nurses had the highest level of clinical competency in knowledge and the lowest level in skills [11]. However, a study in China found that nurses had the highest level of clinical competency in attitudes and the lowest level in practice [12]. The mean score of nurses' clinical competence has also been shown to vary depending on the setting. For example, a study of nurses in critical care settings found that the mean score was 174.4, while a study of nurses in primary care settings found that the mean score was 2.7 [13, 14]. In pocket studies, which are small-scale studies that are conducted in a clinical setting, the mean scores of nurses' clinical competence have been shown to be above average [15–17]. For example, a pocket study of nurses in emergency departments found that the mean score was 104.2 [18]. The components of clinical competence that have been studied most often include knowledge, skills, attitudes, and practice. However, other components of clinical competence have also been studied, such as quality assurance [19], job responsibility [20], caring ability [21], and research ability [22]. Other components of clinical competence include managing situations and work [15], critical thinking, and research attitude [23].

Nurses' clinical competence is influenced by a variety of factors, including their background, training, and experience [24, 25]. Other factors that have been associated with nurses' clinical competence include attitudes, personality, evaluation of the quality of nursing care [26], emotional intelligence, self-efficacy [27], critical thinking [28], job satisfaction [29], the autonomy of nurses [25], and prudence [28]. Studies conducted in Korea and Iran have also found that nurses with high compassion satisfaction (CS) and low compassion fatigue (CF) (burnout (BO) and secondary traumatic stress) tend to have higher clinical competence [24, 30]. Raising nurses' professional quality of life (ProQOL) levels can also help improve their clinical competence [24].

Assessing clinical competence solely on the basis of skills and knowledge does not provide a comprehensive picture of a nurse's ability to deliver quality patient care [24]. Nurses' clinical competence is a key component of patient care that requires regular and thorough evaluation to ensure the best possible outcomes for patients. However, this area is often overlooked, and nurses' competence does not receive the recognition it deserves in the healthcare system. Therefore, this study aimed to assess the comprehensive clinical competence of nurses and its associated factors in public hospitals of Gamo Zone, Southern Ethiopia.

2. Materials and Methods

2.1. Study Design and Period of the Study. The study adopted a cross-sectional study design and was conducted in public hospitals in Gamo Zone, Southern Ethiopia, from January 1 to 20, 2022.

2.2. Study Setting. Gamo Zone is an administrative zone in the Southern Ethiopia. Gamo Zone has one general hospital and five primary hospitals which include Arba Minch General Hospital, Dilfana Primary Hospital, Chencha Primary Hospital, Kamba Primary Hospital, Gerese Primary Hospital, and Selamber Primary Hospital.

2.3. Study Population. Nurses working in a neonatal intensive care unit, operating room, pediatric, surgical, and medical wards, and emergency units were chosen for the study.

2.4. Eligibility. All nurses who completed the probation period in each hospital were recruited in this study, and those on annual leave at the time of data collection were excluded.

2.5. Sample Size Determination and Sampling Procedure. Cochran's formula was used to determine the sample size. The assumptions were mean score and standard deviation (2.82 ± 0.53) of nurses' clinical competence from the study conducted in Iran among 230 nurses [25], a 95% level of confidence, and a 15% nonresponse rate. Based on the stated assumptions, the calculated sample size for this study was 359. Nevertheless, to increase the power and precision of the study, all the nurses who worked in the respective wards in each hospital were involved. Census method was used to involve study participants in this study.

2.6. Data Collection Tool. A structured self-administered survey tool was adapted from different works of literature and used to collect the data. The tool consists of eight parts that include the following:

(i) Socio-demographic and professional characteristics.

(ii) Clinical competence was assessed using the Competency Inventory for Registered Nurses (CIRN). The CIRN is a 55-item tool with seven dimensions: clinical care, leadership, interpersonal relations, legal/ethical practice, professional development, teaching/coaching, and research aptitude/critical thinking. It was scored

by using the five-point Likert scale ranging from 0 to 4 and the highest score represented better clinical competence for each subdimension [24, 31, 32].

(iii) Practice environment was measured with the Nursing Work Index-Revised (NWI-R) which contains 12 items composed of three dimensions. It was measured by using a 4-point Likert scale and the higher score represented that the nursing practice environment tends to be autonomous, supportive, and collaborative [32–35].

(iv) Critical thinking disposition was measured using a 35-item tool with eight dimensions. It was measured by using a 5-point Likert scale and the higher score represented a higher critical thinking disposition [32, 36].

(v) Professional quality of life was measured using a 30-item tool with three dimensions. Each dimension was measured by using a 5-point Likert scale and the higher score represented a higher professional quality of life [37].

(vi) Clinical self-efficacy was measured using the Self-Efficacy in Clinical Performance (SECP) questionnaire. The SECP is a 37-item tool with five dimensions. It was measured by using a 4-point Likert scale and the higher score represented good clinical self-efficacy [38–40].

(vii) Personality traits were measured using the 10-item version of the Big Five-Factor Inventory. It was measured by using a 5-point Likert scale and the higher score represented good personality traits [41–44].

(viii) Emotional intelligence was measured using the Schutte Self Report Emotional Intelligence Test (SSEIT-33). The SSEIT-33 is a 33-item tool with three dimensions and additional uncategorized groups. It was measured by using a 5-point Likert scale and the higher score represented good emotional intelligence [44–46].

The data were collected by twelve data collectors who had bachelor's degree in nursing and were supervised by four supervisors who had a master's degree in nursing. Both the data collectors and supervisors were trained before starting data collection. The data collectors were given information about the study's aim before providing the self-administered questionnaire to the study participants. The questionnaire was offered to the nurses when they were not busy with patient management and comfortable in a private room to fill it out freely.

2.7. Study Variables. The dependent variable was the nurses' clinical competence. Background and professional-related characteristics, practice environment, critical thinking, professional quality of life, personality and emotional intelligence, and clinical self-efficacy were the independent variables for this study.

2.8. Data Quality Control. To ensure the consistency and standardization of data collection techniques, the data collection tool was pretested and the data collectors received extensive training. The content, face, and construct validity of the tool were checked, and the interclass correlation coefficients (ICC) of all the tools were greater than 0.7 to ensure the reliability.

2.9. Data Processing and Analysis. The data were coded, cleaned, edited, and entered into EpiData version 3.1. They were then exported to Stata version 15 for analysis. Univariate analysis was performed to calculate proportions, percentages, and summary statistics. The normality distribution was examined using a scatter plot, kurtosis, and skewness. A multiple linear regression model was used to identify factors associated with clinical competence. All variables with a P value less than 0.25 in the simple linear regression and variables that were significant in previous studies were included in the final model to control for all possible confounders. The goodness of fit was tested using the R-squared (R^2) value. A multicollinearity test was performed to check for correlation between the independent variables. A variance inflation factor (VIF) of greater than 10 and a tolerance value of less than 0.1 were considered to be indicative of multicollinearity. A crude and adjusted beta (β) coefficient with a 95% confidence interval (CI) was estimated to identify the factors affecting nurses' clinical competence. In this study, a P value less than 0.05 was considered to be statistically significant. The results were presented using simple frequencies, summary measures, tables, and figures.

3. Results

3.1. Background and Professional Characteristics. In this study, 404 nurses were involved, and the mean and standard deviation of the age were 33.39 ± 6.34. Two hundred and sixty one (64.6%) were females and 240 (59.4%) were Orthodox religion followers. Of the participants, 260 (64.4%) were married and 252 (62.4%) were qualified for BSc. Regarding job title/position, 375 (92.8%) were staff nurses, 18 (4.5%) had focal persons, and 11 (2.7%) had nursing managers/directors (Table 1).

3.2. Practice Environment. The mean and standard deviation of the overall practice environment among nurses in this study was 32.94 ± 10.07. Regarding dimensions, the adequate staffing and resources dimension had a mean and standard deviation of 11.50 ± 3.97, autonomy 13.58 ± 4.40, and nurse-physician collaboration 7.86 ± 2.89.

3.3. Critical Thinking Disposition. This study reported the mean and standard deviation of the critical thinking disposition was 130.71 ± 14.25. Of the dimensions, intellectual integrity had a mean and standard deviation of 23.45 ± 3.71 (Figure 1).

TABLE 1: Background and professional characteristics of the nurses in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).

Variables	Frequency	Percentage
Gender		
Female	261	64.6
Male	143	35.4
Age (in a year)		
25–30	149	36.9
31–35	133	32.9
36–40	86	21.3
≥41	36	8.9
Marital status		
Single	124	30.7
Married	260	64.4
Widowed	20	5.0
Religion		
Orthodox	240	59.4
Protestant	164	40.6
Work experience (in a year)		
1–5	89	22.0
6–10	125	30.9
11–15	136	33.7
≥16	54	13.4
Qualification		
BSc	252	62.4
Diploma	152	37.6
Current working unit		
Medical ward	88	21.8
Surgical ward	115	28.5
Pediatric ward	73	18.1
NICU	58	14.4
Emergency unit	40	9.9
OR	30	7.4
Training in nursing care		
Yes	164	40.6
No	240	59.4
Interest in the nursing profession		
Poor	39	9.7
Fair	65	16.1
Good	300	74.3

3.4. Professional Quality of Life. The mean and standard deviation of professional quality of life was 111.09 ± 15.82. Out of the dimensions, compassion satisfaction had a mean and standard deviation of 42.10 ± 5.34, burnout had 36.49 ± 7.43, and secondary traumatic stress had 32.51 ± 8.99.

3.5. Clinical Self-Efficacy. Findings from this study indicated the mean and standard deviation of the overall clinical self-efficacy was 100.62 ± 11.37. Of the dimensions, the assessment had a mean and standard deviation of 33.76 ± 3.44 (Figure 2).

3.6. Personality Traits and Emotional Intelligence. The mean and standard deviations of personal traits and emotional intelligence were 34.94 ± 5.2 and 131.89 ± 8.59.

3.7. Clinical Competence of Nurses. Findings from this study indicated the mean and standard deviation of the overall clinical competence of nurses was 177.32 ± 19.19. One

hundred and twenty six (31.2%) had high level of clinical competence (Figure 3). Of the dimensions, clinical care had a mean and standard deviation of 33.98 ± 4.7 (Figure 4).

3.8. Factors Associated with the Clinical Competence of Nurses

3.8.1. Simple Linear Regression. In the bivariate model, gender, age, qualification, position/title, ward/unit, training in nursing care, interest in the nursing profession, practice environment, critical thinking disposition, professional quality of life, clinical self-efficacy, personal traits, and emotional intelligence were significantly associated with clinical competence of nurses. Fifteen variables were inputted in the bivariate model and candidates for the final model (Table 2).

3.8.2. Multiple Linear Regression. In this study, gender, age, marital status, educational status, position, work experience, ward, interest in the nursing profession, critical thinking disposition, clinical self-efficacy, and emotional intelligence were significantly associated with the clinical competence of the nurses in the final model.

Being male increased the clinical competence of the nurse by 0.19 units ($\beta = 0.19$, 95% CI: 0.09, 0.28), and a unit increase in age of the participant decreased the clinical competence of the nurses by 0.66 units ($\beta = -0.66$, 95% CI: −0.81, −0.51). The clinical competence of the nurses decreased by 0.31 units ($\beta = -0.31$, 95% CI: −0.54, −0.08) for being a single, increased by 0.26 units ($\beta = 0.26$, 95% CI: 0.18, 0.33) for the qualification of the BSc, and increased by 0.12 units ($\beta = 0.12$, 95% CI: 0.05, 0.19) for being a ward head/focal person. A unit increase in work experience increased the clinical competence of the nurses by 0.43 units ($\beta = 0.43$, 95% CI: 0.29, 0.56), and working in the medical ward and emergency unit decreased the clinical competence by 0.29 ($\beta = -0.29$, 95% CI: −0.39, −0.18) and 0.15 ($\beta = -0.15$, 95% CI: −0.24, −0.06) units, respectively. A unit increase in the interest of the nurses in profession fairly increased the clinical competence of the nurses by 0.25 ($\beta = 0.25$, 95% CI: 0.13, 0.37) and 0.17 ($\beta = 0.17$, 95% CI: 0.05, 0.28) units, and a unit increase in critical thinking disposition increased the clinical competence of the nurses by 0.35 units ($\beta = 0.35$, 95% CI: 0.27, 0.44). The clinical competence of the nurses increased by 0.11 units ($\beta = 0.11$, 95% CI: 0.03, 0.19) for a unit increase in clinical self-efficacy and by 0.14 units ($\beta = 0.14$, 95% CI: 0.06, 0.22) for a unit increase in emotional intelligence (Table 3).

4. Discussion

Quality nursing care is essential to improve patient outcomes, develop the profession, and increase satisfaction for patients, families, and nurses. However, nurses are often undervalued and seen as subordinates to physicians. Evaluating nurses' clinical competence is a key component of assessing the quality of nursing care. However, there is a lack of recent and updated studies on this topic in Ethiopia.
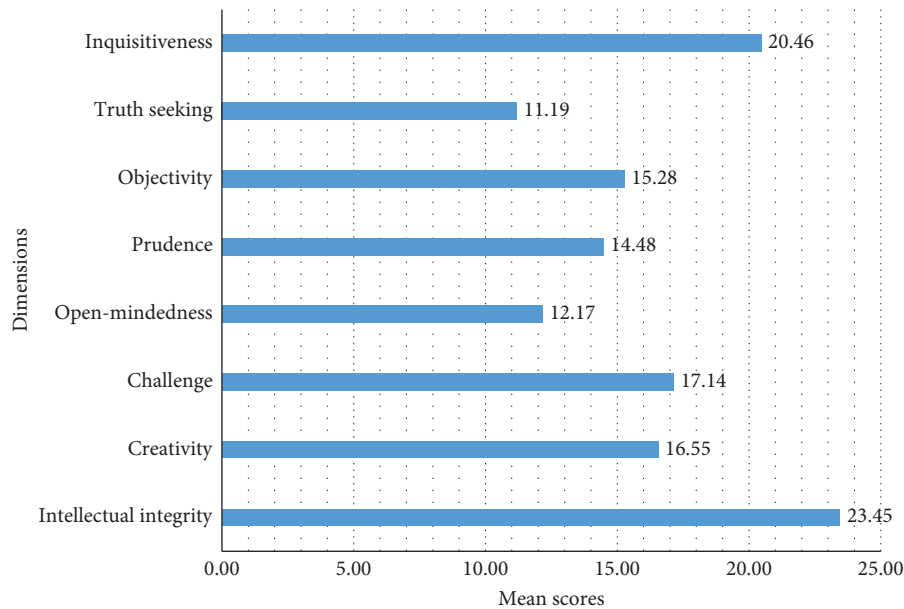
FIGURE 1: Mean scores for the dimensions of the critical thinking disposition in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).
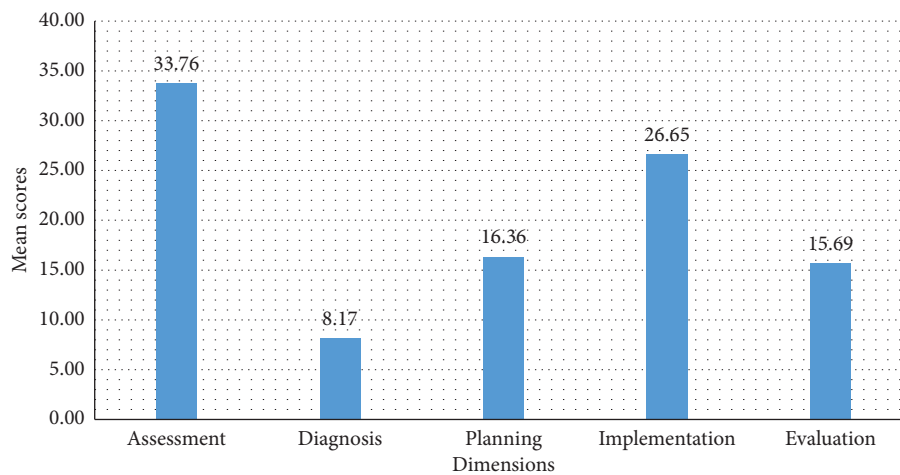

FIGURE 2: Mean scores for the dimensions of clinical self-efficacy in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).

The mean score of nurses' clinical competence was above average, which is consistent with studies conducted in Ethiopia [47], Iran [48], Taiwan [49], Finland [50], and Korea [24]. Nurses scored the highest mean in the clinical care, leadership, and interpersonal relations dimensions. They scored moderately in the legal/ethical practice and research aptitude/critical thinking dimensions and lowest in the professional development and teaching-coaching dimensions. This is also consistent with studies conducted elsewhere [44, 51]. A study from Ethiopia found that participants had higher competence scores on the legal/ethical dimension and lower competence scores on the teaching-coaching dimension [47]. However, a study from Iran found that 92.3% had good critical thinking and research attitude, 65.8% had moderate clinical care, and 73.5% had moderate leadershipþ [52]. Another study found that clinical competence was highest in areas relating to team collaboration and ethics and lowest in areas relating to professional development and direct clinical practice [53]. The discrepancy between these studies may be due to differences in the measurement of the constructs, study setting, health care system, and the nature of the clinical service delivery.

This study found that male nurse was significantly associated with higher clinical competence. This finding is inconsistent with studies conducted in Ethiopia [47] and Iran [54–56], which found no association between gender and clinical competence. The reason for this discrepancy may be that male nurses are more likely to perform clinical examinations and procedures than female nurses [57, 58], and they are also more confident in their abilities [59]. Additionally, the proportion of male nurses with more work experience was higher in this study.

Age was also found to be significantly associated with clinical competence in this study. However, the relationship
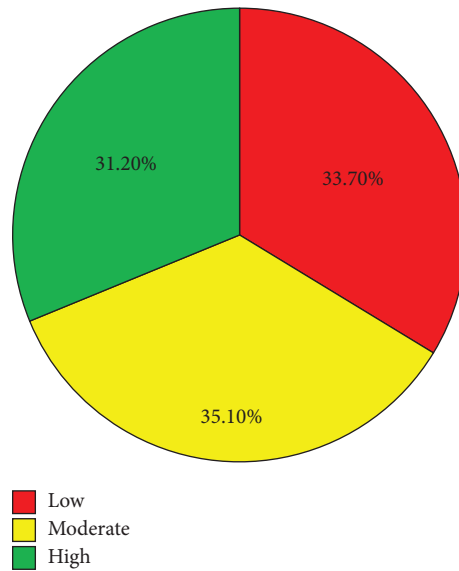
FIGURE 3: Level of clinical competence of the nurses in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).
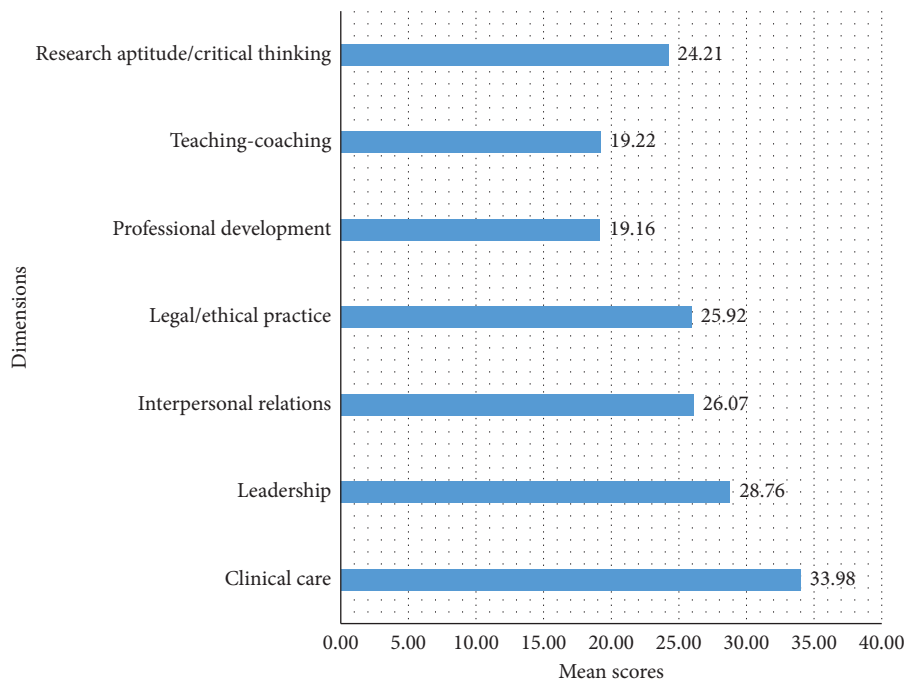

FIGURE 4: Mean scores for the dimensions of clinical competence of the nurses in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).

was inverse meaning a unit increase in age decreases the clinical competence. This may be because older nurses are more resistant to change, they may be more fatigued, and they may not be as up-to-date on the latest clinical practices [60, 61]. The study found that marital status was a significant predictor of clinical competence. Single nurses had lower clinical competence than widowed nurses. This may be because widowed nurses have more experience and are more likely to have had to take on additional responsibilities after the death of their spouse. Additionally, widowed nurses may

have more social support, which can help them to cope with the demands of the job.

A bachelor degree in nursing was significantly associated with the clinical competence. This was consistent with studies conducted in Ethiopia [47], Finland [62–64], Korea [65], and Taiwan [66]. Nurses with a bachelor's degree in nursing were expected to have better skills and knowledge because of the required competencies in the curriculum. This finding supports the current thinking that a degree adds value to competence [67]. Current position was also

TABLE 2: Simple linear regression for the factors associated with the clinical competence of nurses in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).

Variables	Standardized coefficients, β	t	P value	95% CI of β	R^2	Adjusted R^2
Gender (male)	0.25	5.18	<0.001*	(0.16, 0.35)	0.06	0.06
Age	−0.27	−5.63	<0.001*	(−0.37, −0.18)	0.07	0.07
Marital status						
Single	0.03	0.58	0.56	(0.56, −0.07)	0.001	−0.002
Married	0.04	0.83	0.41	(−0.06, 0.14)	0.002	−0.001
Qualification (BSc)	0.37	7.87	<0.001*	(0.27, 0.46)	0.13	0.13
Position/title						
Focal person	0.10	2.02	0.04*	(0.003, 0.19)	0.01	0.01
Nursing director	0.10	2.05	0.04*	(0.004, 0.19)	0.01	0.01
Work experience	−0.07	−1.34	0.18	(−0.17, 0.03)	0.004	0.002
Ward/unit						
Medical ward	−0.25	−5.19	<0.001*	(−0.35, −0.16)	0.06	0.06
Surgical ward	0.43	9.59	<0.001*	(0.34, 0.52)	0.19	0.18
Pediatric ward	−0.05	−1.02	0.31	(−0.15, 0.05)	0.003	0.00
NICU	−0.001	−0.02	0.98	(−0.09, 0.09)	0.00	−0.002
Emergency unit	−0.17	−3.55	<0.001*	(−0.27, −0.07)	0.03	0.03
Training in nursing care	0.25	5.07	<0.001*	(0.15, 0.34)	0.06	0.06
Interest in the nursing profession						
Fair	0.12	2.38	0.02*	(0.02, 0.22)	0.01	0.01
Good	0.07	1.37	0.17	(−0.03, 0.17)	0.005	0.002
Practice environment	0.49	11.39	<0.001*	(0.41, 0.58)	0.24	0.24
Critical thinking disposition	0.47	10.54	<0.001*	(0.38, 0.55)	0.22	0.22
Professional quality of life	0.51	11.73	<0.001*	(0.42, 0.59)	0.26	0.25
Clinical self-efficacy	0.30	6.37	<0.001*	(0.21, 0.39)	0.09	0.09
Personal traits	0.34	7.13	<0.001*	(0.24, 0.43)	0.11	0.11
Emotional intelligence	0.39	8.57	<0.001*	(0.30, 0.48)	0.15	0.15

*Significant at P value <0.05.

TABLE 3: Multiple linear regression for the factors associated with the clinical competence of nurses in hospitals of Gamo Zone, Southern Ethiopia, 2022 ($n = 404$).

Variables	Standardized coefficients, β	t	P value	95% CI of β
Gender (male)	0.19	4.07	<0.001*	(0.09, 0.28)
Age	−0.66	−8.72	<0.001*	(−0.81, −0.51)
Marital status				
Single	−0.31	−2.69	0.007*	(−0.54, −0.08)
Married	−0.16	−1.55	0.12	(−0.37, 0.04)
Qualification (BSc)	0.26	6.91	<0.001*	(0.18, 0.33)
Position/title				
Focal person	0.12	3.24	0.001*	(0.05, 0.19)
Nursing director	0.02	0.57	0.57	(−0.05, 0.09)
Work experience	0.43	6.38	<0.001*	(0.29, 0.56)
Ward/unit				
Medical ward	−0.29	−5.26	<0.001*	(−0.39, −0.18)
Surgical ward	−0.07	−1.02	0.31	(−0.19, 0.06)
Pediatric ward	−0.07	−1.21	0.23	(−0.18, 0.04)
NICU	−0.06	−1.01	0.31	(−0.18, 0.06)
Emergency unit	−0.15	−3.34	0.001*	(−0.24, −0.06)
Training in nursing care	0.05	1.09	0.28	(−0.04, 0.13)
Interest in the nursing profession				
Fair	0.25	4.07	<0.001*	(0.13, 0.37)
Good	0.17	2.83	0.005*	(0.05, 0.28)
Practice environment	0.10	1.60	0.11	(−0.02, 0.23)
Critical thinking disposition	0.35	7.97	<0.001*	(0.27, 0.44)
Professional quality of life	−0.04	−0.86	0.39	(−0.13, 0.05)
Clinical self-efficacy	0.11	2.82	0.005*	(0.03, 0.19)
Personal traits	0.01	0.38	0.71	(−0.06, 0.09)
Emotional intelligence	0.14	3.61	<0.001*	(0.06, 0.22)

*Significant at P value <0.05, $R^2 = 0.70$, and adjusted $R^2 = 0.69$.

significantly associated with the clinical competence of the nurses. This was consistent with studies conducted in Korea [65], Taiwan [66], China [68], Iran [55], and Ethiopia [47]. Nurses in more senior positions, such as head nurses and clinical instructors, were more likely to have higher clinical competence. This may be because they have more experience and responsibility, and they are also more likely to have received additional training. Work experience showed a significant association with clinical competence. This was consistent with studies conducted in Ethiopia [47], Taiwan [66], Iran [31, 54], and Finland [62, 63]. Nurses with more work experience were more likely to have higher clinical competence. This may be because they have had more exposure to different patients and situations, and they have also had the opportunity to learn from their mistakes [47].

Studies from China [68] and Iran [55] found that working unit was a significant predictor of nurses' competence in practice. This study also supported this finding. However, nurses working in the medical and emergency unit had lower clinical competence than nurses working in other units. This may be because the proportion of diploma nurses in the medical and emergency unit was higher than in other units. Diploma nurses have lower levels of education and training than bachelor's degree nurses, and they are therefore less likely to have the skills and knowledge necessary for providing high-quality care in the medical and emergency units. This study also found that interest in the nursing profession was significantly associated with nurses' clinical competence. Nurses who were interested in the nursing profession were more likely to have higher clinical competence. This may be because they were more motivated to learn and develop their skills, and they were also more likely to be confident in their abilities.

Critical thinking disposition was found to be a predictor of clinical competence in studies conducted in Korea [24], Iran [25], and Taiwan [49]. This means that nurses who have a strong critical thinking disposition are more likely to have higher clinical competence. Critical thinking is the ability to think clearly and rationally, and it is an essential skill for nurses. Nurses who are able to think critically are better able to assess patients, make decisions, and provide safe and effective care. This study also reported that nurses who had higher levels of critical thinking disposition, such as intellectual integrity, creativity, challenge, open-mindedness, prudence, objectivity, truth-seeking, and inquisitiveness, also had higher levels of clinical competence. This suggests that critical thinking disposition is an important factor in clinical competence. Therefore, it is essential to develop nurses' critical thinking disposition through in-service education and short- and long-term training.

This study found that clinical self-efficacy had a significant effect on nurses' clinical competence. This is consistent with findings from studies conducted in Iran [69] and Taiwan [70]. Clinical competence and self-efficacy (another name for the nursing process) are highly correlated. Therefore, nurses who are competent in applying the nursing process to their patients in the clinical setting will also have high clinical competence, as these two concepts are two sides of the same coin. The study found that emotional

intelligence is significantly associated with nurses' clinical competence. This is consistent with findings from studies conducted in Iran [71, 72]. Emotional intelligence is the ability to understand and manage one's own emotions as well as the emotions of others. It is essential for nurses, as they need to be able to build relationships with patients and colleagues and to manage stressful situations [73].

4.1. Implication of the Study. The importance of this study is paramount, as nurses' clinical competence is essential to maintaining the nursing profession as a profession that provides quality nursing care and improves patient outcomes. The findings of this study provide recent evidence of the status of nurses' clinical competence and the factors that influence it. This information is valuable for policymakers, program planners, and other scholars who are interested in conducting interventional studies to improve nurses' clinical competence. Additionally, the findings of this study can be used by scholars, nursing associations, and other concerned bodies who are working to improve the quality of nursing care.

4.2. Strength and Limitation of the Study. The main strengths of this study were its use of a multidimensional approach to measuring factors that affect clinical competence and its use of updated and validated tools to measure the outcome and its constructs. However, there were also some limitations to the study. The findings were subject to recall bias and social desirability bias, as the responses only included self-reported data. Additionally, it was difficult to show the temporal relationship between the factors that were studied and clinical competence. These limitations should be kept in mind when interpreting the findings of the study.

5. Conclusions

The overall level of clinical competence among nurses in this study was moderate. However, there was a significant variation among nurses. The following factors were significantly associated with clinical competence: gender, age, marital status, educational status, position, work experience, ward, interest in the nursing profession, critical thinking disposition, clinical self-efficacy, and emotional intelligence. The findings of this study add to the existing knowledge about clinical competence by providing new insights into the factors that contribute to it. The findings can also be used to reconcile the disparities between different clinical competence studies because they were assessed using a validated and reliable tool. This makes the findings more convincing and credible. Based on the findings of this study, there are a number of ways to improve the clinical competence of nurses. These include providing training and development opportunities that focus on critical thinking, clinical self-efficacy, and emotional intelligence; creating a supportive work environment that encourages nurses to take risks and learn from their mistakes; and monitoring the clinical competence of nurses on a regular basis and providing feedback and coaching as needed.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Ethical Approval

Ethical clearance was obtained from Arba Minch University, College of Medicine and Health Sciences, Institutional Research Ethics Review Board (IRB), with the reference number IRB/1027/21.

Consent

An explanation about the purpose of the study and a letter of support was given to the administrative bodies of the hospitals. All the study participants were informed about the purpose of the study, and written and signed voluntary consent was obtained. The anonymity of the participants was respected via the use of codes rather than the names of the participants.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

Authors' Contributions

SS designed the study, collected and analyzed the data, interpreted the results, and drafted the paper. ZA, MK, AB, and AM assisted with the study design, proposal development, data collection, data analysis, and manuscript revision. All authors read and approved the final manuscript.

Acknowledgments

Supplementary Materials

Supplementary file 1: English version questionnaire (Word). (*Supplementary Materials*)

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Review Article

The Relationship between Metacognitive Beliefs with Clinical Belongingness and Resilience among Novice Nurses in Neonatal Intensive Care Units

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Background. The neonatal intensive care unit (NICU) is a sensitive ward for nurses. However, the low nurse-to-patient ratio has led to the hiring of novice nurses into the critical areas such as NICUs. These nurses are in need of help in the clinical environment as they have no much experience caring the neonates in the real clinical setting. Therefore, it is necessary to address the individual and psychological capacities with the help of which a person can overcome the difficult situations. This study aimed to investigate the relationship between metacognitions, clinical belongingness, and resilience of novice nursing staff in NICU wards. *Method.* This study is a descriptive-analytical study, and the research samples were composed of 78 novice nursing staff of Neonatal Intensive Care Units from teaching hospitals. Samples were selected via a purposive sampling method. Research tools included demographic, Wells and Hatton metacognitive beliefs, Jones Levitt belonging, and Connor–Davidson resilience questionnaires. SPSS 22 software was used for data analysis. *Results.* The mean score of metacognitive beliefs in novice nursing staff was 92.67 ± 13.69, and it was 116.69 ± 19.11 for belongingness and 78.78 ± 14.73 for resilience. There is positive and significant relationship between metacognitive beliefs and belongingness ($p < 0.019$, $r = 0.265$). In addition, the relationship between metacognitive beliefs and resilience in novice nursing staff was positive and significant ($p < 0.001$, $r = 0.359$). *Conclusion.* There is a positive relationship between metacognitive beliefs with belongingness and resilience of novice nurses; nursing managers can consider educational metacognition workshops to enhance the sense of belongingness and resilience of novice nursing staff leading to improve their clinical performance in neonatal care.

1. Introduction

Nurses are the first to recognize the risks and critical situations of infants and take action to address them in the Neonatal Intensive Care Units [1]. Nurses are one of the largest health care providers [2], but nursing shortage has led to the use of novice nurses in the health care system, who often enter real situations early, and caused job and environmental stress and reduced their satisfaction [1, 3]. In one study, the average ratio of nurses to infants in the Neonatal Intensive Care Unit in Tehran, the capital of Iran, one nurse for more than 4 babies, was reported [1]. Novice nurses have

many problems in context, including having difficulty in concentrating, lacking focused attention, and failing to maintain moment-to-moment awareness. Novice nurses in clinical settings need help and do not know what is expected of them in real settings [4, 5]. In this way, they are not able to understand their situation and solve problems effectively [6]. However, novice nurses, in order to creatively solve problems, need skills that can help them in the proper and correct use of their information [7]. The novice nurses' past experiences acquired through their academic studies include factors to enhance them, and one factor is metacognition or having the talent or skill of metacognitive ability, which

helps novice nurses use these experiences in new situations [8]. Metacognition is a multifaceted concept that includes beliefs (knowledge), processes, and strategies that evaluate, monitor, or control cognition [9]. This knowledge is beliefs and theories held by people about their thinking, such as beliefs about the meaning of certain types of thoughts, the efficiency of memory, and cognitive control, and they are responsible for controlling healthy and unhealthy thoughts [10]. The results of some studies have shown that meta-cognitions are effective factors in the state of mental health. We can improve the situation by changing the meta-cognitions that increase the maladaptive ways of negative thoughts or increase the general negative beliefs [11, 12]. Thus, we can help people to structure their thinking and prepare themselves to accept their future roles [13]. Moreover, maintaining meaningful relationships with others is a permanent desire in humans, and people tend to communicate with each other for optimal performance [14].

The sense of belonging is one of the basic human needs that creates a sense of security and comfort. In general, people are trying to be accepted by others because the lack of communication with others has many cognitive, emotional, and behavioral consequences [15]. One nursing concept analysis defines the sense of belonging as the experience of a person's involvement in a system or environment so that a person feels that she is an integral part of that system or environment [16]. The absence of a sense of belonging can lead to problems such as low self-esteem and satisfaction, anxiety, depression, high level of stress, and increased tension in clinical practice [17, 18]. Belongingness is an important effect factor in workplace satisfaction, and this type of satisfaction is one of the main factors that determine nurses' resilience in difficult situation [19].

Resilience is one of the main abilities of humans enabling them to resist difficult conditions and mental pressures through effective adaptation to changes and stressful factors [20]. Warelo and Edward stated that 21st-century nurses need to skillfully develop their resilience to face professional challenges and ensure their mental health because resilience and resilient behaviors potentially help individuals to overcome negative experiences and turn these experiences into positive experiences [21].

Considering the annual employment of a large number of novice nursing staff in the medical care system and their predefined problems, it is necessary to provide solutions to improve their skills. The role of metacognition in solving problems, attitude towards problems, resilience against them, and clinical relevance in the path of gaining experiences and lack of research on the role of metacognition necessitates determining the role of each of these variables and in case of the presence of effective role to design programs to improve them. The lack of research studies that has investigated the relationship between metacognitive beliefs, belongingness, and resilience, especially in novice nurses, caused that this study was conducted to investigate the relationship between metacognition, belongingness, and resilience in novice nursing staff in Neonatal Intensive Care Units (NICUs).

2. Methods

The present study was a descriptive correlational study. The samples included 78 novice nursing staff working in Neonatal Intensive Care Units of three hospitals affiliated to Shiraz University of Medical Sciences. After obtaining permission from the Ethics Committee and Vice Chancellor for Research of Shiraz University of Medical Sciences, the researcher referred to the mentioned hospitals and selected the novice nursing staff who were eligible to enter the study by the purposive sampling method. It was decided that nurses with less than one year of work experience in NICU wards through the purposive sampling method entered the study. Other inclusion criteria for this study were as follows: having at least a bachelor's or master's degree in nursing or midwifery, working in the Neonatal Intensive Care Units of mentioned hospitals, and signing the informed consent form.

After obtaining informed consent from the samples, researcher provided the relevant questionnaires to novice nurses to complete. The ethics code of this research (IR.SUMS.REC.1400.217) was obtained from the Ethics Committee of Shiraz University of Medical Sciences.

In order to achieve the objectives of this study, demographic characteristic questionnaires, Wells and Hatton metacognitive beliefs, Jones Levitt belonging, and Connor–Davidson resilience questionnaires were used:

(1) *Demographic Information Questionnaire.* This questionnaire contains questions such as age, sex, marital status, field of study, and type of ward; the face validity of which has been approved by several professors and experts in neonatal nursing field.

(2) *Wells and Cartwright-Hatton Metacognitive Beliefs Questionnaire.* This questionnaire was designed in 2004 and has 30 questions in which each person answers four-choice questions (disagree, slightly agree, relatively agree, and strongly agree). These options are scored 1, 2, 3, and 4, respectively. This questionnaire has 5 subscales: cognitive conflict measures positive beliefs, cognitive self-awareness, uncontrollability, and the danger of thoughts and the need to control thoughts. A high score on this scale indicates a strong level of metacognition in the individual. A score between 30 and 60 indicates a weak level of metacognition, a score between 60 and 90 indicates an average level of metacognition, and a score between 90 and 120 indicates a strong level of metacognition in a person. Hatton and Wells have reported the Cronbach's alpha coefficient of this questionnaire and its components in the range of 0.72 to 0.93 and its retest reliability coefficient (with an interval of one month) of 0.73 [22]. Osoli et al. reported an internal consistency coefficient of 0.86 for this questionnaire [23]. Gharayeli and Saberi calculated the reliability of the tool using Cronbach's alpha test, which was 0.79, 0.77, 0.81, 0.80, and 0.83 for positive beliefs about worry, cognitive confidence, cognitive self-awareness, negative beliefs

about the uncontrollability of thoughts, and beliefs about the need to control thoughts, respectively [24].

(3) *Levett–Jones Belongingness Questionnaire.* This questionnaire was developed by Levett–Jones and Lathlean in Australia in 2008. The questionnaire has 34 items and three subscales of self-esteem, continuity, and efficiency in the Likert scale with 5 options (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always) [25]. A higher score indicates a greater degree of belongingness of the respondent to the clinical environment. The self-esteem subscale items include items 1, 3, 4, 7, 9, 10, 14, 17, 21, 23, 24, 27, and 33, and the subscale attachment includes items 8, 13, 15, 16, 25, 26, 28, 29, 30, and 34, and the subscale efficiency includes items 2, 5, 11, 18, 19, 20, 31, and 32. Items 6 and 12 do not include any subscales. The minimum and maximum scores are 32 and 160. This questionnaire has been translated and validated by Ashktorab et al. in Iran for the optimal use of other researchers. The stability of the tool was checked with the help of a test-retest, after two weeks and by completing the questionnaire by 25 nursing students and the internal consistency method using Cronbach's alpha method. The reliability of the tool was obtained by the test-retest repeatability method, $r = 0.70$. Cronbach's alpha for the whole tool was 0.90 and it was 0.88, 0.75, and 0.84 for the subscales of self-esteem, coherence, and efficiency, respectively. In the Persian version, the terms 26 and 10 were removed from the dimension of attachment and self-esteem according to the results of the factor analysis and are not included in the analysis of the results [26]. This questionnaire has been translated and validated by Mohammad et al. in Malaysia for the optimal use by other researchers. Twenty items from the original tool to measure the participants' belongingness experiences with colleagues, twelve similar items to measure the participants' belongingness experiences with other members of the health care team at work, and eight items were created through a literature review of previous studies on nursing and organization. Then, the content validity of the final questionnaire was tested and evaluated by a group of nursing personnel from two different hospitals. The revised scale has a Cronbach's alpha value of 0.93, and in further analysis, it was (0.89), (0.83), and (80/0) for 20 items on colleagues, 12 items on other members of the health care team, and 8 items on the organization [27].

(4) *Connor–Davidson Resilience Scale.* This scale was developed by Connor–Davidson in 2003. This scale includes 25 items based on factor analysis; five subscales including individual competence and adequacy (8 items), tolerance of negative effects and strength against stress (7 items), positive acceptance of change (5 items), self-control (3 phrases), and spiritual effects (2 phrases) are assigned. Scoring is also based on the

Likert scale between completely incorrect = 0 and always true = 5. The maximum score is 100 and the minimum score is 0. For Connor–Davidson Resilience 25 questions, Normah in Iran showed that Cronbach's alpha coefficient of all questions is 0.88. The questions have good consistency with 8 questions which were 0.81 and 0.76, respectively, and Cronbach's alpha reliability coefficients for the subscales of stubbornness, belief, and optimism were reported to be 0.60, 0.55, and 0.36, respectively [28]. Javadian and Fathi reported the reliability of the resilience scale using Cronbach's alpha method as 0.86 [29]. Regarding its validity, using the factor analysis method, the calculation of each score with the total score showed that, except for the three questions that were higher, the coefficients of the other questions were between 0.51 and 0.61 [30].

2.1. Ethical Considerations. Ethical approval was obtained from the Local Research Ethics Committee of Shiraz University of Medical Sciences, Iran (Approval No. IR.SUMS.REC.1400.217). In the beginning, a verbal description of the study objectives was provided for novice staff and after the assurance of the confidentiality of their information, the written informed consent was obtained from participants.

3. Results

From 78 novice nursing staff working in Neonatal Intensive Care Units (NICUs), 43.6% of the staff are working in internal wards of NICUs with 93.5% of the novice nursing staff aged less than 31 years. All novice nursing staff in NICUs were female (no male nurses have worked in the Neonatal Intensive Care Units during this study) and 55.1% of them are single. The majority of these staff (97.4%) had a bachelor's degree (Table 1).

The lowest score recorded for metacognition in novice nursing staff was 63 and the highest score was 125 with an average of 92.67, which indicated the high score of metacognitions. The lowest recorded score for the belongingness in novice nursing staff was 46 and the highest score was 141 with an average of 116.69, which indicated high belongingness in novice nursing staff. The lowest score of resilience in novice nursing staff was 14 and the highest score was 95 with an average of 72.87, which indicated high resilience in novice nursing staff (Table 2).

Given the quantitative nature of the two indicators, Pearson's correlation test was used to determine the relationship between metacognition and belongingness. Pearson correlation coefficient of 0.265 shows a positive relationship between metacognition and belongingness. The significance level of Table 3 ($p < 0.05$) shows the significance of this correlation coefficient at the 5% error level. In general, the results show that there is a relationship between metacognition and the belongingness of novice nursing staff in NICUs. Also, given the quantitative nature of the two

TABLE 1: Demographic characteristics among novice nursing staff of neonatal intensive care units.

Variables	Category	Frequency	Percentage
Age (years)	20–25	26	33.3
	26–60	47	60.2
	31–35	5	6.4
Gender	Female	78	100
	Male	0	0
Marital status	Single	43	55.1
	Married	35	44.9
Education	Bachelor	76	97.4
	Master or PhD	2	2.6
Total		78	78	100

TABLE 2: The means and standard deviations of metacognition, belongingness, and resilience among novice nursing staff in NICUs.

Variables	N	Min. Score	Max. Score	Mean	SD
Metacognition	78	63	125	92.67	13.69
Belongingness	78	46	141	116.69	19.11
Resilience	78	14	95	72.87	14.73

TABLE 3: The relationship between metacognition with belongingness and resilience among novice nursing staff in NICUs.

Variables	Description	Belongingness	Resilience
Metacognition	Correlation coefficient	0.265*	0.359
	Significance level	0.019	0.001
	No.		78

*Pearson correlation coefficient test.

indicators, Pearson's correlation test was used to determine the relationship between metacognition and resilience. Pearson correlation coefficient of 0.359 shows a positive relationship between metacognition and resilience. The significance level of the above table ($p < 0.001$) shows the significance of this correlation coefficient at the 5% error level. In general, the results show that there is a relationship between metacognition and the resilience of novice nursing staff in NICUs (Table 3).

According to the correlation coefficient ($r = 0.265$), the relationship between metacognition and belongingness is positive and significant (Figure 1).

According to the correlation coefficient ($r = 0.359$), the relationship between metacognition and resilience is positive and significant (Figure 2).

4. Discussion

This study examined the relationship between metacognition with belongingness and resilience in novice nursing staff in Neonatal Intensive Care Units in three hospitals. The results showed that there was a significant relationship between metacognition and belongingness. The results of this research are consistent with the study of Mousavi and Alvani [31] and Chamanabad et al. [32]. In fact, nurses involved in difficult issues and problems need to
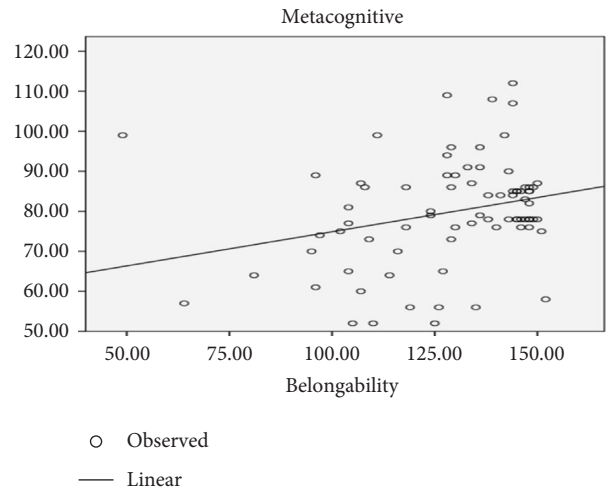

FIGURE 1: The relationship between metacognition with belongingness among novice nursing staff in NICUs.
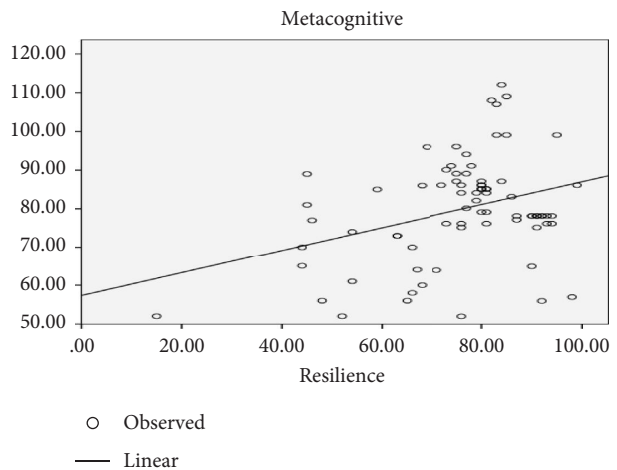

FIGURE 2: The relationship between metacognition with resilience among novice nursing staff in NICUs.

simultaneously use metacognition to understand concepts, find creative solutions, and make the decision, as well as belongingness to increase clinical skills. Both of the abovementioned variables will help nurses in difficult situations; thus, the two skills will help to solve problems more favorably. Some studies have shown that cognitive skills and knowledge enable people to understand concepts, solve problems, and make decisions [33, 34]. In other words, through metacognition, novice nursing staff can solve their problems when problems arise and cause confusion. This power in solving problems and overcoming problems increases the sense of belonging as an important factor in clinical learning.

The results showed that there was a significant relationship between metacognition with resilience. In a study by Han in Korea, a significant relationship was established among metacognition, shared leadership, and resilience [35]. This study was consistent with the results of Hasani's study [36] and the study of Yoosefi and Karimipoor [37].

In explaining these findings, it can be said that belief and awareness of individual abilities and inabilities, which are considered to be part of the characteristics of the meta-cognition system, strengthen motivation, and initiate a series of actions to win the task. Before a person chooses a job and starts his or her efforts, she/he first collects and evaluates information about his or her capacities and abilities in that particular case. Doing this step allows him/her to consciously review themselves, whether she/he can adapt to perform a certain behavior in the face of problems or not. Also, it is also specified that how much she/he will try despite the existing problems and how long she/he will continue efforts in the specific field. In these conditions, people will achieve sufficient self-efficacy (characteristic of resilience) and will be able to cope with unpleasant or complex events more effectively, and finally, optimism and positive thinking will become active in the resilience process. By achieving resilience, people are more steadfast in their efforts, they have more confidence in their abilities, they do not drown in the waves of their doubts, they persevere in doing their tasks, and often the result of their performance is at a high level. Also, the activation of positive metacognition makes people less tense. It should be noted that the experience of tension in people causes them to engage in incompatible coping strategies (avoidance and suppression of thoughts) and the use of these strategies intensifies stress and negative emotions. This process makes people overestimate environmental threats and not have the ability to deal with problems, and this leads to a decrease in their resilience; therefore, it can be concluded that having metacognition knowledge can increase resilience.

The main limitation of this research is that the results cannot be generalized due to the small number of samples and hospitals.

5. Conclusion

This study showed that there is a significant relationship between metacognitive beliefs with clinical belongingness and resilience of novice nursing staff in NICU wards. In other words, the more metacognition a novice nurse has in the clinical environment, the better her/his belongingness and resilience. This also increases the belongingness to the clinical environment and increases the motivation of novice nursing staff to learn at the clinic. Therefore, it is suggested that health professionals improve the clinical belongingness and resilience of novice nursing staff in NICUs by developing training programs for novice nurses to increase the quality of care for neonates through the increasing of belongingness and resilience in nurses.

Data Availability

Data used and analyzed to support the findings of this study are available from the corresponding author upon request.

Disclosure

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

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Hindawi

Review Article

Purulent Skin and Soft Tissue Infections, Challenging the Practice of Incision and Drainage: A Scoping Review

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Aim. To generate a landscape of the current knowledge in the interventional management and outcomes of purulent skin and soft tissue infections. *Design*. This study is a scoping review. *Methods*. Electronic searches were undertaken using CINAHL, Medline, Cochrane Library, British Nursing Index, Science Direct, the National Health Service knowledge and library hub, ClinicalTrials.gov, and MedNar. The population, concept, context framework, and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews were utilised, supporting a rigorous appraisal and synthesis of literature. *Data Sources*. The initial search and synthesis of literature were completed in January 2022 with repeat searches completed in March 2022 and July 2023. There were no imposed chronological parameters placed on the returned literature. *Results*. Nineteen papers were reviewed. Incision and drainage with primary closure, needle aspiration, loop drainage, catheter drainage, and suction drainage are viable adjuncts or alternatives to the traditional surgical management of skin and soft tissue abscesses. *Conclusion*. Despite the empirically favourable alternatives to the incision and drainage technique demonstrated, this does not appear to be driving a change in clinical practice. Future research must now look to mixed and qualitative evidence to understand the causative mechanisms of incision and drainage and its ritualistic practice. *Implications*. Ritual surgical practices must be challenged if nurses are to improve the treatment and management of this patient group. This will lead to further practice innovation. *Impact*: This study explored the challenges posed to patients, clinicians, nurses, and stakeholders, resulting from the ritualistic practice of the incision and drainage technique in purulent skin or soft tissue abscesses. Empirically and holistically viable alternatives were identified, impacting all identified entities and recommending a wider holistic study. *Reporting Method*. Adherence to EQUATOR guidance was achieved through the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews.

1. Background

Acute purulent skin and soft tissue infections (SSTIs) also referred to as cutaneous abscesses or type II SSTIs [1] are a common global health complaint, accounting for a third of the most common admissions to the emergency department in the developing world, behind cardiac and respiratory complaints [2, 3].

SSTIs are most prevalent in the male working-age population with other risk factors including obesity, smoking, immunosuppression, anatomical areas of heavy hair growth, and a sedentary lifestyle [2]. SSTIs are considered an urgent surgical presentation requiring prompt intervention [4, 5].

SSTIs are generally caused by an invasion of *β*-haemolytic streptococci, *Staphylococcus aureus*, or community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) within the cutaneous layers of the body, generating a localised cycle of pathogen vs immune response [6].

This cycle within the macroenvironment causes localised inflammation, tissue destruction, and a resulting cavity comprised of pus which is a composition of live and expired neutrophils, bacteria, and debris [7, 8]. Symptoms can range wildly between patients and anatomical locations from localised pain to systemic sepsis and even death in the comorbid individual [9, 10].

In England alone, emergency presentations with SSTIs trebled between 1989 and 2004 from 23,884 to 74,447 admissions per 100,000 population [11, 12]. Treatment failure, concomitant with the rise of CA-MRSA, is now a pivotal issue in this patient group and is a direct causative mechanism in the empirical failure of incision and drainage through proliferation of wound beds and persistent cellular damage [13]. Studies from the United States of America (USA) quote a 47%–94% range of CA-MRSA prevalence within the SSTI patient population [14, 15] with a dearth of contemporary research into this aspect in the United Kingdom (UK).

The problem, and thereby the opportunity for research, arises when one considers that, since the Hippocratic era, the technique of incision and drainage has been the dominating preference of clinicians to achieve infective source control in this patient group [16, 17].

Generally, the standard SSTI treatment pathway generates an admittance into a hospital bed, an acute operating demand, and general anaesthetic to facilitate the incision and drainage procedure, followed by an intensive regime of postoperative wound packing to facilitate healing by secondary intent [4, 16].

The driving premise is offered that the formulaic familiarity with this surgical dogma has blinded clinicians and nurses to the intervention's progressive failure. The efficacy of incision and drainage has been exclusively justified by the narrow scope of empirical infective resolution [18]. While this without doubt should be accepted as an essential outcome for any SSTI intervention, the efficiency of incision and drainage continues to wane [18, 19], likely secondary to the epidemic rise of CA-MRSA [14, 15]. Since 2010, there has been a concern that the technique is no longer sufficient within the contemporary treatment population [20]. And yet, evidence suggests that the technique is practiced in over 90% of cases [21]. Furthermore, when one considers beyond empirical outcomes, there is speculation that wider implications of incision and drainage experienced by the patient, clinicians, and National Health Service (NHS) have, up until now, been vastly overlooked. It is argued that workforce demands, institutional resources and, perhaps most importantly, the physical, psychological, and financial challenges imposed upon the recipient of the surgical intervention reveal an undertow of treatment failure [22, 23].

While the surgical practice of incision and drainage has historic connotations for the medically trained clinician, surgically advanced clinical practitioners now have a contemporary role in performing this intervention [24]. One postulates that the increasing concern and speculation about incision and drainage and its wider causative mechanisms have blossomed through the addition of diverse professions and philosophical outlooks now contributing to and exploring this phenomenon [25, 26].

2. The Review

2.1. Aim.
The aim of this study is to provide a focused landscape of the current interventional management pathway and outcomes in purulent skin and soft tissue infections and to understand why incision and drainage have remained practiced without contemplation or challenge.

This scoping review does not aim to answer a specific question, but rather, to provide an overview of the current knowledge in the SSTI phenomenon. This was rationalised due to the speculation that empirical infective resolution of a SSTI exclusively populates the mainstream of this research landscape [15, 19]. The driving force behind this research is to explore beyond the empirical [25]. Seeking to address the postulation, there are unrecognised holistic mechanisms at play, distorting the empirical perception of success, relative to the management of this condition. This acknowledgment raised several objectives to be explored:

(1) Why is I&D practiced without contemplation or challenge?

(2) What are the interventional alternatives?

(3) How is the success of SSTI management defined in the research?

(4) Are there any decision-making processes to direct treatment away from I&D?

(5) Is there SSTI research acknowledging levels of reality beyond the immediate outcome of infective source control?

It was supposed that there would be a wealth of available research evidence examining variable clinical treatment methods and outcomes for SSTIs and the resulting wounds following intervention. It was further considered that the philosophical stance of critical realism [25], with a supportive underlying nursing philosophy [26] would drive a review of not only the empirical (person) but also the actual (health and nursing) and real (health, nursing, and environmental) affects that current SSTI treatment practices and outcomes generate.

2.2. Design.
An evidenced and repeatable approach to the scoping review was chosen, as this supports the key aspects of rigor and appraisal as with the systematic review design [27]. The population, concept, context framework tool (PCC) was chosen in line with guidance from the Joanna Briggs Institute (JBI) for conducting scoping reviews [28–30]. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) [31] was also utilised to demonstrate a repeatable appraisal and synthesis of the available evidence throughout the review.

2.3. Search Methods.
Keywords were explored to identify an acceptable saturation of any relevant literature. Through the identification of seminal research papers [15, 32, 33], a multitude of keywords with Boolean operators and truncation [34] were tested to identify a focused return of available literature. Following six searches with keywords in multiple orders, the researchers identified an efficient combination, settling on search term seven (Tables 1 and 2): Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure).

TABLE 1: Database results.

Sources	Platforms	Search terms	Returned results
Database	Medline (EBSCO host)	Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure)	90
Database	CINAHL (EBSCO host)	Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure)	123
Database	Cochrane Library	Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure)	268
Database	British Nursing Index	Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure)	15
Database	Science Direct	Abscess AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR negative pressure)	316
Grey literature	NHS knowledge and library hub	Abscess* AND (skin infection OR soft tissue infection) AND (Treatment OR therapy) AND (Drainage OR antibiotics OR aspiration OR suction OR negative pressure)	229
Grey literature	ClinicalTrials.gov	Abscess of skin AND skin infection OR soft tissue infection AND Treatment OR therapy AND Drainage OR antibiotics OR aspiration OR suction OR negative pressure	75
Grey literature	MedNar	Abscess* AND skin infection OR soft tissue infection AND Treatment OR therapy AND Drainage OR antibiotics OR aspiration OR suction OR negative pressure	695

TABLE 2: Final exclusions.

Author and year	Study title	Web link/doi	Comments	Focus of the study	Test intervention reported efficiency in SSTI resolution
Winstead, 2012 [71]	Evaluating and Managing Uncomplicated Skin and Soft Tissue Infections Associated with Community-Associated Methicillin-Resistant *Staphylococcus aureus* for Outpatients: A Review of the Literature	https://doi.org/10.1891/1939-2095.5.2.98	For final inclusion	Traditional I&D	Not Documented
Llera et al., 1984 [68]	Cutaneous Abscesses: Natural History and Management in an Outpatient Facility	https://doi.org/10.1016/0736-4679(84)90002-7	For final inclusion	Traditional I&D	73%
Singer and Talan, 2014 [72]	Management of Skin Abscesses in the Era of Methicillin-Resistant *Staphylococcus aureus*	https://doi.org/10.1056/NEJMra1212788	For final inclusion	Traditional I&D	80%
Alder et al.,, 2011 [64]	A comparison of Traditional Incision and Drainage versus Catheter Drainage of Soft Tissue Abscesses in Children	https://doi.org/10.1016/j.jpedsurg.2011.05.025	For final inclusion	Catheter drainage	75%
Mahida et al. 2015 [74]	Using Quality Improvement Methods to Change Surgical Practice: A Case Example of Pediatric Soft Tissue Abscesses	https://doi.org/10.1097/QMH.0000000000000054	For final inclusion	Catheter drainage	75%
Yang et al., 2017 [33]	A High-Vacuum Wound Drainage System Reduces Pain and Length of Treatment for Pediatric Soft Tissue Abscesses	https://doi.org/10.1007/s00431-016-2835-2	For final inclusion	Suction drainage	96%
Zihmin et al. 2020 [77]	Therapeutic effect of Topical Negative Pressure Therapy/Vacuum-Associated Closure Therapy on Cephalic Facial Skin Abscess	https://doi.org/10.1089/sur.2019.184	For final inclusion	Suction drainage	10–12 days
Tsoraides et al., 2010 [70]	Incision and Loop Drainage: A Minimally Invasive Technique for Subcutaneouse Abscess Management in Children	https://doi.org/10.1016/j.jpedsurg.2009.06.013	For final inclusion	Loop drainage	94.50%
Schechter-Perkins, 2020 [21]	Loop Drainage Is Noninferior to Traditional Incision and Drainage of Cutaneous Abscesses in the Emergency Department	https://doi.org/10.1111/acem.13981	For final inclusion	Loop drainage	88%
Ozturan et al., 2009 [75]	Comparison of Loop and Primary Incision and Drainage Techniques in the Emergency Department	https://doi.org/10.1016/j.ajem.2017.01.036	For final inclusion	Loop drainage	87%
McNamara et al., 2011 [65]	An Alternative to Open Incision and Drainage for Community-Acquired Soft Tissue Abscesses in Children	https://doi.org/10.1016/j.jpedsurg.2010.08.019	For final inclusion	Loop drainage	100%
Gottlieb et al., 2021 [57]	Comparison of the Loop Technique with Incision and Drainage for Skin and Soft Tissue Abscesses: A Systematic Review and Meta-Analysis	https://doi.org/10.1111/acem.14151	For final inclusion	Loop drainage	91.73%

TABLE 2: Continued.

Author and year	Study title	Web link/doi	Comments	Focus of the study	Test intervention reported efficiency in SSTI resolution
Ladde et al., 2015 [73]	The Loop Technique: A Novel Incision and Drainage Technique in the Treatment of Skin Abscesses in a Pediatric ED	https://doi.org/10.1016/j.ajem.2014.10.014	For final inclusion	Loop drainage	98.60%
Long and Apiril, 2019 [76]	Is Loop Drainage Technique More Effective for Treatment of Soft Tissue Abscess Compared with Conventional Incision and Drainage?	https://doi.org/10.1016/j.annemergmed.2018.02.006	For final inclusion	Loop drainage	95.9%
Rencher et al., 2016 [66]	Comparison of Loop Drainage versus Incision and Drainage for Abscesses in Children	https://doi.org/10.1097/PEC.0000000000001732	For final inclusion	Loop drainage	92.7%
Eryilmaz et al., 2005 [69]	Management of Lactational Breast Abscesses	https://doi.org/10.1016/j.breast.2004.12.001	For final inclusion	Needle aspiration	41%
Gaspari et al., 2011 [19]	A Randomised Controlled Trial of Incision and Drainage versus Ultrasonographically Guided Needle Aspiration for Skin Abscesses and the Effect of Methicillin-Resistant *Staphylococcus aureus*	https://doi.org/10.1016/j.annemergmed.2010.11.021	For final inclusion	Needle aspiration	26%
Lasithiotakis et al., 2018 [32]	Aspiration for Acute Pilonidal Abscess: A Cohort Study	https://doi.org/10.1016/j.jss.2017.09.051	For final inclusion	Needle aspiration	83%
Singer et al., 2011 [67]	Primary Closure of Cutaneous Abscesses: A Systematic Review	https://doi.org/10.1016/j.ajem.2009.10.004	For final inclusion	I&D with primary closure	92.4%
Kotlářová et al., 2021 [42]	Antibiotic Therapy in the Treatment of Skin Abscess Meta-Analysis	https://doi.org/10.33699/PIS.2021.100.7.325-329	Excluded: the effects of antibiotics following traditional I&D		N/A
Talan, 2016 [15]	Trimethoprim-Sulfamethoxazole versus Placebo for Uncomplicated Skin Abscess	https://doi.org/10.1056/NEJMoa1507476	Excluded: the effects of antibiotics following traditional I&D		N/A
Daum et al., 2017 [14]	A Placebo-Controlled Trial of Antibiotics for Smaller Skin Abscesses	https://doi.org/10.1056/NEJMoa1607033	Excluded: the effects of antibiotics following traditional I&D		N/A
Duong et al., 2010 [37]	Randomised, Controlled Trial of Antibiotics in the Management of Community-Acquired Skin Abscesses in the Pediatric Patient	https://doi.org/10.1016/j.annemergmed.2009.03.014	Excluded: the effects of antibiotics following traditional I&D		N/A
Cenizal et al., 2007 [35]	Trimethoprim-Sulfamethoxazole or Doxycycline for Skin and Soft Tissue Infections	https://doi.org/10.1128/aac.00206-07	Excluded: the effects of antibiotics following traditional I&D		N/A
Daum et al. 2016 [36]	Clindamycin versus Trimethoprim-Sulfamethoxazole versus Placebo for Uncomplicated Skin and Soft Tissue Abscesses	https://doi.org/10.1093/ofid/ofw194.111	Excluded: the effects of antibiotics following traditional I&D		N/A

TABLE 2: Continued.

Author and year	Study title	Web link/doi	Comments	Focus of the study	Test intervention reported efficiency in SSTI resolution
Elliott et al., 2009 [38]	Empiric Antimicrobial Therapy for Pediatric Skin and Soft Tissue Infections in the Era of Methicillin-Resistant *Staphylococcus aureus*	https://doi.org/10.1542/peds. 2008-2428	Excluded: the effects of antibiotics following traditional I&D		N/A
Gottlieb, 2017 [40]	Comparison of Trimethoprim-Sulfamethoxazole Versus Placebo for Uncomplicated Skin Abscesses	https://doi.org/10.1017/cem. 2016.367	Excluded: the effects of antibiotics following traditional I&D		N/A
Lee et al., 2004 [43]	Management and Outcome of Children with Skin and Soft Tissue Abscesses Caused by Community-Acquired Methicillin-Resistant *Staphylococcus aureus*	https://doi.org/10.1097/01.inf. 0000109288.06912.21	Excluded: the effects of antibiotics following traditional I&D		N/A
López et al., 2018 [44]	Comparative Study of Drainage and Antibiotics versus Drainage Only in the Management of Primary Subcutaneous Abscesses	https://doi.org/10.1089/sur. 2017.225	Excluded: the effects of antibiotics following traditional I&D		N/A
Powers, 1991 [46]	Soft Tissue Infections in the Emergency Department: The Case for the Use of 'Simple' Antibiotics	https://doi.org/10.1097/ 00007611-199111000-00005	Excluded: the effects of antibiotics following traditional I&D		N/A
Talan, 2018 [47]	Subgroup Analysis of Antibiotic Treatment for Skin Abscesses	https://doi.org/10.1016/j. annemergmed.2017.07.483	Excluded: the effects of antibiotics following traditional I&D		N/A
Vermandere et al., 2018 [48]	Antibiotics after Incision and Drainage for Uncomplicated Skin Abscesses: A Clinical Practice Guideline	https://doi.org/10.1136/bmj. k243	Excluded: the effects of antibiotics following traditional I&D		N/A
Fahimi et al., 2015 [39]	The Role of Adjunctive Antibiotics in the Treatment of Skin and Soft Tissue Abscesses: A Systematic Review and Meta-Analysis	https://doi.org/10.1017/cem. 2014.52	Excluded: the effects of antibiotics following traditional I&D		N/A
Gottlieb, 2019 [41]	Systemic Antibiotics for the Treatment of Skin and Soft Tissue Abscesses: A Systematic Review and Meta-Analysis	https://doi.org/10.1016/j. annemergmed.2018.02.011	Excluded: the effects of antibiotics following traditional I&D		N/A
Mistry et al., 2014 [45]	Clinical Management of Skin and Soft Tissue Infections in the U.S. Emergency Departments	https://doi.org/10.5811/ westjem.2014.4.20583	Excluded: the effects of antibiotics following traditional I&D		N/A
Schmitz et al., 2010 [20]	Randomised Controlled Trial of Trimethoprim-Sulfamethoxazole for Uncomplicated Skin Abscesses in Patients at Risk for Community-Associated Methicillin-Resistant *Staphylococcus aureus* Infection	https://doi.org/10.1016/j. annemergmed.2010.03.002	Excluded: the effects of antibiotics following traditional I&D		N/A

TABLE 2: Continued.

Author and year	Study title	Web link/doi	Comments	Focus of the study	Test intervention reported efficiency in SSTI resolution
Uknown	Outcomes of a Novel Technique of Mini-Incision and Self-Express (Mise) for Breast Abscess	https://beta.clinicaltrials.gov/study/NCT05762016	Excluded: this is a protocol		N/A
Gulack, 2023 [54]	Conservative Management of Cutaneous Abscess	https://beta.clinicaltrials.gov/study/NCT05461053	Excluded: this is a protocol		N/A
Miller, 2023 [53]	Short- and Long-Term Outcomes of Doxycycline versus Trimethoprim-Sulfamethoxazole for Skin and Soft Tissue Infections Treatment	https://clinicaltrials.gov/show/NCT03637400	Excluded: this is a protocol		N/A
Koehler and Nakayama, 2009 [49]	Treatment of Cutaneous Abscesses without Postoperative Dressing Changes	https://doi.org/10.1016/j.aorn.2009.04.026	Excluded: I&D with or without packing		N/A
Washington University School of Medicine [80]	Abscess Packing versus Wick Placement after Incision and Drainage	https://clinicaltrials.gov/show/NCT01281930	Excluded: I&D with or without packing		N/A
O'Malley et al., 2009 [50]	Routine Packing of Simple Cutaneous Abscesses is Painful and Probably Unnecessary	https://doi.org/10.1111/j.1553-2712.2009.00409.x	Excluded: I&D with/without packing		N/A
Oehme et al., 2020 [3]	Simple Wound Irrigation in the Postoperative Treatment for Surgically Drained Spontaneous Soft Tissue Abscesses: A Prospective, Randomised Controlled Trial	https://doi.org/10.1007/s00268-020-05738-1	Excluded: wound irrigation not intervention		N/A
Rühle, 2021 [55]	International Survey Evaluating Treatment of Primary Superficial Skin Abscesses	https://doi.org/10.1007/s00068-019-01279-y	Excluded: no study of intervention and survey of surgeons		N/A
Brody et al. 2019 [59]	A Novel Silicon Device for the Packing of Cutaneous Abscesses	https://doi.org/10.1016/j.jemermed.2018.12.009	Excluded: serious conflicts of interest		N/A
Gottlieb and Peksa, 2018 [56]	Comparison of the Loop Technique with Incision and Drainage for Soft Tissue Abscesses: A Systematic Review and Meta-Analysis	https://doi.org/10.1016/j.ajem.2017.09.007	Excluded: older version of updated study		N/A
Long and Gottlieb, 2022 [58]	Diagnosis and Management of Cellulitis and Abscess in the Emergency Department Setting: An Evidence-Based Review	https://doi.org/10.1016/j.jemermed.2021.09.015	Excluded: Not specific to type II SSTIs		N/A

In January 2022, five databases were searched with the addition of three grey literature sources. Repeat searches were concluded in March 2022 and July 2023, ensuring the most up-to-date and relevant information. The only exclusions applied to the search in support of the scoping view methodology were studies expressed in languages other than English and animal studies. The advancing searches were focused towards identifying terms cited within the title, abstract, or subject term dependent upon the options offered through each database and grey literature source (Tables 1 and 2).

There were no chronological restrictions placed upon the return of potential articles for review. This decision was taken as we speculated that there were viable yet under-researched and unadopted alternative SSTI management practices explored in both a historic and contemporary context. Therefore, to provide a competent and complete landscape of SSTI management knowledge in this scoping review, time of publication was not considered a restriction.

When considering the types of studies eligible for review, the critical realist stance supported the inclusion of all possible study types [25]. The PCC tool was utilised as the recommended framework to acknowledge the intended concepts and postulated outcomes of this scoping review process [30] (Table 3).

2.4. Search Outcomes. Adopting a systematic approach, the PRISMA tool [31] was used to identify research of relevance (Figure 1). A total of 1,811 results were obtained through all searches across all predefined platforms. The Microsoft™ program EndNote™ was used to correlate the search returns into a designated library. Subgroups were created to correspond with the results from each database. A total of 287 duplicates were removed by the EndNote™ application. A human review of the initial results removed a further 43 duplications and excluded an additional 45 studies due to the predefined exclusion criteria (not written in the English language, $n = 40$; animal studies, $n = 5$). This left 1,428 items available for screening of titles and abstracts.

There were a further 430 papers excluded as the titles or abstracts were found to be at odds with the predefined PCC [30]. There were also nine studies which were removed as they were either terminated ($n = 5$) or withdrawn before completion ($n = 4$). This left 120 papers which were sought for full retrieval and exploration for eligibility.

Of the 120 papers, 27 papers were researching the effects of SSTI diagnostic modality, choice, or duration of treatments in SSTI such as antibiotics, contrasting the PCC [30]. There were 21 studies which turned out to be nonspecific to purulent type II SSTIs or studying complex SSTIs [1]. There were 15 studies which turned out to be personal reviews, commentary on a published study, or abstract/poster references to a published study. Seven papers were in fact clinical trial registrations, two papers were specifically focused on CA-MRSA, and a final study was excluded due to the main body not being written in the English language.

TABLE 3: PCC outcomes.

PCC elements	Definitions
POPULATION	Human participants between the ages of 0–100 with an acute, simple, skin, or soft tissue abscess
CONCEPT	(i) Simple purulent skin and soft tissue infections (ii) The incision and drainage surgical intervention and alternative interventional management practices (iii) All study methodologies and methods to be considered (iv) Empirical treatment outcomes, infection, pain, aesthetics, quality of life, holistic experience
CONTEXT	(i) Nonspecific to region, gender, ethnicity, religion, culture, or sexual orientation (ii) English language (iii) Hospital and community setting (iv) Interventional/surgical management

The remaining 47 articles were then screened throughout the full text and assessed for eligibility amongst two authors, with the third available to resolve any generated conflicts.

It was identified that seventeen ($n = 17$) of the fully reviewed papers were specifically focusing on the outcomes of antibiotic treatment following SSTI management [14, 15, 20, 35–48].

Antibiotic therapy is highly researched within the SSTI phenomenon and has become an integral part of contemporary management due to the rise of CA-MRSA [15, 19]. It is, therefore, an important search term to include in this review. However, the driving aim was to acknowledge and landscape the surgical and interventional practices of SSTI management. It was therefore concluded that research explicitly examining the choice of antibiotic therapy post-surgical intervention was unsuitable for final inclusion.

A further four studies were found to be focused towards either the irrigation or dressing of a SSTI wound [3, 49–51] and therefore would not contribute to furthering knowledge relevant to the aims of this review.

Three further returns were found to be clinical trial protocols of studies yet to be undertaken and questionable in their relevance to this review [52–54]. As there was no experimentation or findings to examine, these clinical trial protocols were excluded.

One study was found to be a survey of surgical opinion in traditional SSTI management and therefore would not contribute to new knowledge within this review [55]. A study by Gottlieb and Peksa [56] was identified as an older version of an updated study included in this review [57]. A third study by Long and Gottlieb [58] was found not to be specific in its aims to type II SSTIs [1], and it was felt that any findings from this study could not be generalised to type II SSTI management outcomes nor be utilised in support of any recommendations generated from this review. A final excluded study [59] demonstrated a poor study design with ambiguous results. It is likely that this was due to a serious conflict of interest, in that the primary investigator received
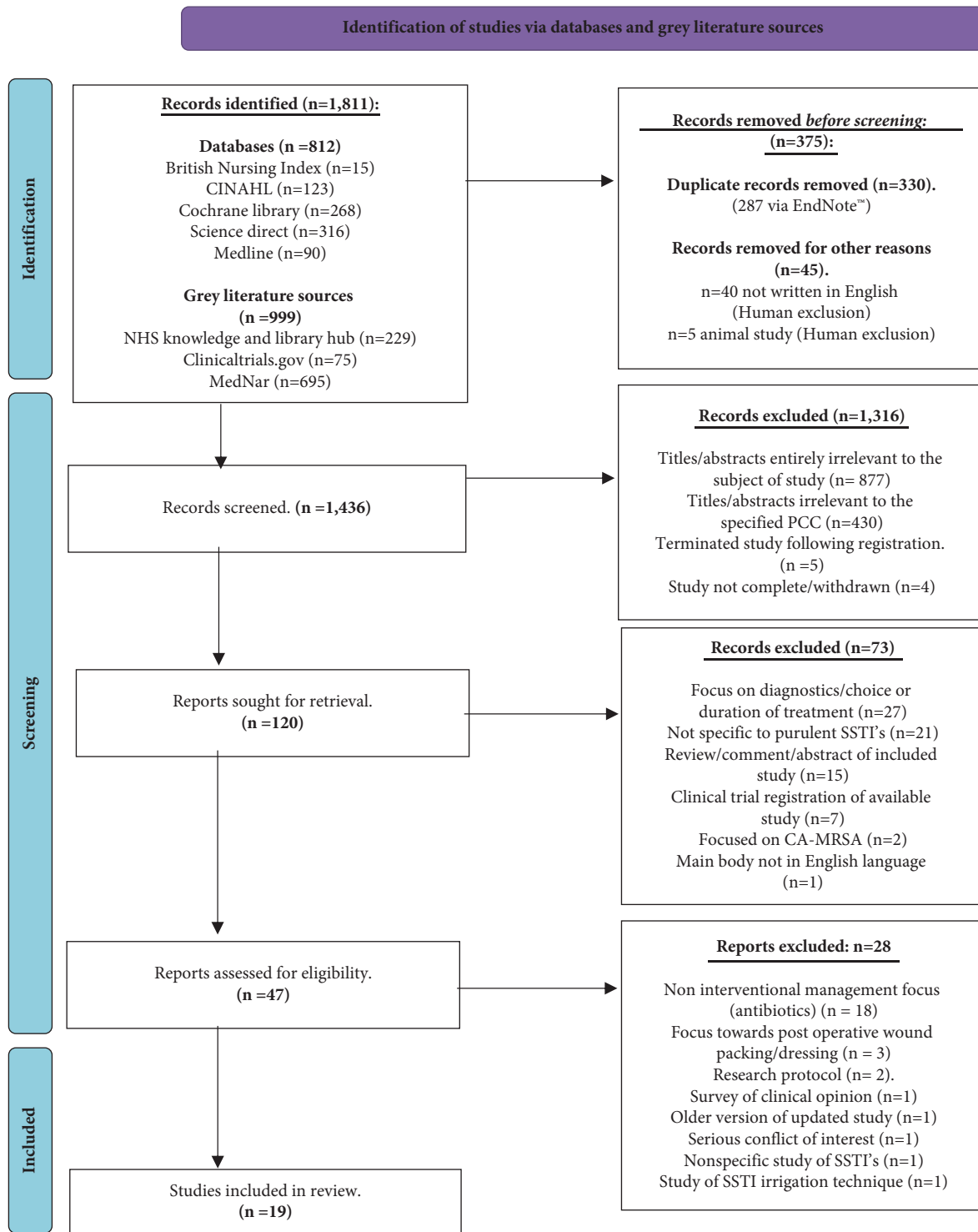
FIGURE 1: PRISMA-ScR flow diagram [31].

a salary and funding from the medical device company whose equipment was used to conduct the study. It was contested that any results from the work of Brody et al. [59] would be tenuous and would add very little to the landscaping of SSTI treatment. With the exclusion of this research, this left final 19 papers to be included within this review. Details of all searches and extractions can be provided by the lead author upon reasonable request.

2.5. Quality Appraisal. Although not a stipulation within the framework of a scoping review [60], it was felt necessary to clarify the academic quality of the research papers to be reviewed within the main body of this chapter. This was performed to demonstrate that high-quality rigorous studies had not been favoured in isolation in support of this research, providing a clarity of clinical impact within each research paper examined and

informing the reader with a deeper context when summarising the findings of this review. In addition, as this review was being generated in partial fulfilment of a doctoral research qualification, the guidance provided at this level of study demands that a systematic and rigorous appraisal be demonstrated [61].

The Hawker appraisal tool [62] was designed specifically for assessing a wide range of literature from a broad research question of both a quantitative and qualitative nature. When considering the philosophy driving this work, the Hawker tool supports the critical realist perspective to acknowledge all possible levels of reality [25]. The tool seeks to classify each research paper through its relevance to a subject, data extraction, methodological rigor, and findings which are then correlated and expressed numerically out of a possible score of 36 [62]. Whilst credit should be afforded to Hawker et al. [62] for this recognition of healthcare study beyond the empirical, Williams et al. [63] argue that laboriously applying a positivist standard of rigor within a qualitative paradigm is counterproductive, given the polarising epistemologies of the two methods. It could further be argued that a conclusion of trustworthiness within a qualitative study is subjective, generated through the openness of interpretation in the absence of a framework. The Hawker tool addresses this argument by including open-ended, descriptive evaluation in tandem with quantitative dimensions. It was for these reasons that this tool was utilised for the anticipated wide-ranging literature. As per advice from the JBI [28–30], two authors undertook the appraisal process with the third available to resolve any conflicts.

2.6. Data Abstraction. The nineteen studies reviewed were almost entirely of an empirical nature, with a focus on the study of SSTI interventional management relative to infective resolution ($n = 16$). Six studies incorporated some quantitative measurements of lived experiences such as pain, daily activities, procedural satisfaction, and experiences with antibiotics [32, 33, 64–67].

The studies were expressed as a collective relative to the geographical focus of study/location, Hawker score [62], intervention, sample size, study design and duration, outcome measurements, and authors conclusions (Table 4). The data was extracted by the lead author and reviewed by the supporting authors as the review progressed.

2.7. Synthesis. The identification, categorisation, and expressions of the reviewed studies were performed to generate a narrative relative to the aims and objectives of this scoping review. The synthesis of the evidence was also performed to identify gaps in the current SSTI knowledge.

3. Results

Nineteen studies qualified for this review based on the PCC[30]. The studies were conducted within a focus of several geographical locations: $n = 12$ USA [19, 21, 57, 64–66, 68, 70–74], $n = 2$ Turkey [69, 75], $n = 2$ China [33, 77], $n = 2$ International

[67, 76], $n = 1$ UK [32]. The studies were also comprised of several methodologies and methods: $n = 8$ cohort studies [32, 64, 65, 68–70, 73, 77], $n = 5$ randomised controlled trials [19, 21, 33, 66, 75], $n = 2$ literature review articles [71, 72], $n = 2$ systematic literature review and meta-analysis [57, 67], $n = 1$ quality improvement study [74], and $n = 1$ meta-analysis [76].

The studies identified ranged in chronology from 1984 [68] to 2021 [57] and studied both adults and children with a simple purulent SSTI [1]. As anticipated, there were several alternative SSTI interventional strategies under scrutiny within the collective literature examined:

(1) Traditional incision and drainage [68, 71, 72].

(2) Traditional incision and drainage with primary closure [67].

(3) Needle aspiration technique [19, 32, 69].

(4) Loop drainage technique [21, 57, 65, 66, 70, 73, 75, 76].

(5) Modified incision and drainage with indwelling catheter placement [64, 74].

(6) Modified incision and drainage with primary closure and suction therapy [33, 77].

Pertinent information synthesised from the literature examined was then developed and expressed in visualisation formats (Tables 4–6; Figure 2).

3.1. Efficiency of SSTI Management. The variability of the papers reviewed revealed a comprehensive collection of alternative SSTI management practices with evidenced empirical outcome measurements.

A 75% empirical success rate of the traditional incision and drainage procedure in the resolution of SSTI infection was accepted based on the median historic and contemporary evidence [18, 19, 68, 72]. Taking the median percentile, where available across the relative studies, the empirical efficiency of each SSTI management option can be ranked as follows:

(1) Modified incision and drainage with primary closure and suction therapy: 96% [33, 77].

(2) Loop drainage: 93.6% [21, 57, 65, 70, 73, 75, 76].

(3) Traditional incision and drainage: 75% [68, 72].

(4) Traditional incision and drainage with primary closure: 75% [67].

(5) Modified incision and drainage with a straight catheter: 75% [64, 74].

(6) Needle aspiration: 54.5% [19, 32, 69].

3.2. Themes. Across the literature reviewed, the following themes were identified for discussion:

(1) Defining SSTIs

(2) Defining SSTI treatment failure

(3) Patient outcomes

(4) Clinician outcomes

(5) Nursing outcomes

TABLE 4: General data extraction for scoping review [30].

Author/date/region of study	Hawker score/36	Intervention(s) of study	Study population sample size	Methods	Duration of study	Outcome measurements	Findings
Llera et al. [68], USA	22	Incision and drainage	Adult 78	Observational study	3 months	Patient characteristics, outcomes/complications of incision and drainage	27% recurrence rate following incision and drainage, concluded as the treatment of choice, and study concluded the use of antibiotics were not beneficial in their patient group
Eryilmaz et al. [69], Turkey	26	Needle aspiration vs incision and drainage	Adults 45	Prospective cohort study	3.5 years	Cure rate; Healing time	Aspiration group failed to demonstrate resolution; Improved healing time with aspiration ($P = <0.001$)
Tsoraides et al. [70], USA	25	Loop drainage	Children 115	Retrospective cohort study	5 years 9 months	Complications; Length of stay	Successful loop drainage in 94.5% of cases. The mean length of stay 3 days
McNamara et al. [65], USA	32	Loop drainage vs incision and drainage	Children 219	Retrospective cohort study	7 months	Complications; Length of stay; Wound care, cosmetics, pain	Reduced complication rate (0 vs 4 cases); Length of stay not significant ($P = 1.000$); Reduced community wound care. (51.5% vs 0%- $P = <000.1$)
Alder et al. [64], USA	27	Catheter drainage vs incision and drainage	Children 400	Intention to treat cohort study	1.5 years	Treatment failure; Complications; Length of stay; Postoperative wound care, pain, follow-up	Treatment failure not significant ($P = 0.188$). Significant reduction length of stay ($P = 0.001$). Catheter drainage group required more clinical follow-up ($P = <0.001$). Significant reduction in wound packing ($P = <0.001$)
Gaspari et al. [19], USA	29	Needle aspiration vs incision and drainage	Adults 101	Randomised controlled trial	15 months	Treatment failure	Increased treatment failure with needle aspiration (74% vs. 20%) 47% increased failure rate in patients with CA-MRSA who underwent needle aspiration
Singer et al. [67], international	34	Incision and drainage with primary closure	915 participants across seven studies	Systematic literature review and meta-analysis	Unclear	Time to healing recurrence rates, return to work	Primary closure reduced wound healing time (7.8 days vs 15 days) and allowed for an earlier return to work (4.1 days vs 14.6 days). Similar complication and recurrence rates

TABLE 4: Continued.

Author/date/region of study	Hawker score/36	Intervention(s) of study	Study population sample size	Methods	Duration of study	Outcome measurements	Findings
Winstead [71], USA	24	Management of uncomplicated skin and soft tissue infections caused by *Staphylococcus aureus*	N/A	Literature review	Unclear	Relevant published literature 2003–2008	Recommendations for incision and drainage only for the treatment of uncomplicated SSTIs in low-risk patients. Incision and drainage combined with antibiotic therapy should be used to manage all high-risk patients
Singer and Talan [72], USA	24	Incision and drainage	N/A	Literature review article	Unclear	Diagnosis, treatment, irrigation, packing, primary vs secondary closure, antibiotics, MRSA	Advocates ultrasound diagnosis, traditional incision and drainage as the mainstay treatment option, routine wound packing unnecessary, alternative practices to be considered in 'appropriate cases. Limiting antibiotics and wound culture practices
Ladde et al. [73], USA	34	Loop drainage *vs* incision and drainage	Children 142	Retrospective study	12 months	Treatment failure	Incision and drainage group 17% vs loop drainage group 4% ($P = 0.03$)
Mahida et al. [74], USA	27	Straight drain vs loop drain	Children 681	Intention to treat quality improvement study	2 years 1 month	Uptake of straight drain, treatment failure, outpatient follow-up demand, clinical, and nursing education	78% uptake in favour of straight drainage ($P = 0.001$) Nonsignificant decrease in treatment failure $P = 0.51$ Significant reduction in outpatient follow-up $P = 0.001$
Rencher et al. [66], USA	31	Loop drainage *vs* incision and drainage	Children 81	Prospective, nonblinded, randomised controlled trial	18 months	Treatment failure, wound appearance, parent satisfaction	Demonstrated noninferiority of the loop drainage technique Treatment failure (7.3% loop vs 7.5%) Cosmetic appearance at day 14 (6 vs. 6 $P = 0.43$) Parent satisfaction rates (86.1% of the loop arm vs 88.2% of the standard arm $P = 1.00$) Pain reduction after procedures was similar ($P = 0.43$)

TABLE 4: Continued.

Author/date/region of study	Hawker score/36	Intervention (s) of study	Study population sample size	Methods	Duration of study	Outcome measurements	Findings
Lasithotakis et al. [32], UK	31	Needle aspiration	Adults 100	Prospective cohort study	4 years	Treatment failure Pain, aesthetics, procedural satisfaction	Successful aspiration in 83% of patient group High level of aesthetic satisfaction (9/10) Improved pain postaspiration (9/10 to 5.5/10)
Özturan et al. [75], Turkey	28	Loop drainage vs incision and drainage	Adults 46	Randomised controlled trial	1 year 10 months	SSTI resolution Adverse events aesthetics, antibiotics	Resolution rate not significant ($P = 0.090$) Nonsignificance in secondary outcomes
Yang et al. [33], China	33	Suction drainage vs incision and drainage	Children 1430	Randomised controlled trial	4 years	Pain Length of stay Treatment failure Wound care, pain	Statistically significant reduction in pain $P < 0.001$ No statistically significant difference in length of stay Significant improvement in treatment time to resolution $P = < 0.001$
Long and April [76], international	19	Loop drainage vs incision and drainage	460 participants across four studies	Meta-analysis	Unclear	Treatment failure	Incision and drainage failed in 9.43% of cases of cases compared with the loop drainage technique in 4.10% of cases
Schechter-Perkins et al. [21], USA	32	Loop drainage vs incision and drainage	Adults and children 238	Randomised controlled trial	3 years 7 months	Clinical resolution complications, antibiotics	Clinical resolution not significant $P = < 0.0035$ Reduced additional emergency department attendances (1.3 days vs 1.8 days) Lower complication rate (9.3% vs. 24.6%) Significant reduction in antibiotic requirements (1.3% vs 12.3% ($P = 0.01$))
Zhimin et al. [77], China	23	Suction drainage vs incision and drainage	Adults 47	Cohort study	1 year	Wound healing time Recurrence Wound care	Statistically significant in wound healing time $P < 0.05$ No statistical significance in abscess recurrence Reduced number of wound care requirements $P = < 0.05$
Gottlieb [57], USA	34	Loop drainage vs incision and drainage	910 participants across eight studies	Systematic review and meta-analysis	Unclear	Treatment failure	Incision and drainage group 14.7% vs loop drainage group 8.27% (95% CI)

TABLE 5: Authors' professions in SSTI research over time.

Year	Retrieved studies	Profession of lead author (s)	Profession of supporting author (s)
1984	Llera et al. [68]	Emergency physician x1	Physician x1 Microbiologist x1
2005	Eryilmaz et al. [69]	Surgeon x1	Surgeon x3
2009	Tsoraides et al. [70]	Surgeon x1	Surgeon x1 Paediatric surgeon x2 Nurse x1
2010	McNamara et al. [65]	Surgeon x1	Surgeon x2 Paediatric surgeon x3
2011	Alder et al. [64]	Paediatric surgeon x1	Paediatric surgeon x3 Nurse practitioner x1 Nurse x1
2011	Gaspari et al. [19]	Emergency physician x1	Emergency physician x4
2011	Singer et al. [67]	Emergency physician x1	Associate professor of emergency medicine x1 Professor of emergency medicine x1 Emergency physician x2
2012	Winstead [71]	Nurse x1	No supporting authors
2014	Singer and Talan [72]	Emergency physician x2	No supporting authors
2015	Ladde et al. [73]	Emergency physician x1	Emergency physician x2 Research physician x1
2015	Mahida et al. [74]	Surgeon x1	Surgeon x5 Emergency physician x1 Research scientist x1
2016	Rencher et al. [66]	Paediatric physician x1	Emergency physician x2 Paediatric physician x1
2017	Yang et al. [33]	Paediatric surgeon x1	Paediatric surgery team (not otherwise described) x4 Professor (not otherwise described) x1 Physician x2 Research assistant x1
2017	Özturan et al. [75]	Emergency physician x1	Emergency physician x6
2017	Lasithotakis et al. [32]	Surgeon x1	Surgeon x3 Emergency physician x1
2019	Long and April [76]	Emergency physician x2	No supporting authors
2020	Schechter-Perkins et al. [21]	Emergency physician x1	Emergency physician x1 Medical physician x1 Nurse x1 Research professor x1 Unknown x3
2020	Zhimin et al. [77]	Emergency physician x1	Emergency physician x1 Unknown x3
2021	Gottlieb et al. [57]	Emergency physician x1	Emergency physician x2

3.3. *Defining SSTIs*. Throughout the reviewed literature, there were several reoccurring characteristics which were expressed as a diagnostic interpretation of an SSTI. Figure 3 demonstrates the repeating terms used and how many studies these descriptors were cited in when defining an SSTI.

Interestingly, the presence of a "visible or palpable mass" was one of the least used descriptors, utilised only in the earliest studies reviewed [68, 69]. One could argue that a palpable mass is of unique importance for confirming the presence of a purulent SSTI as opposed to the most used descriptors of "pain" and "induration" which could be seen as rather nonspecific. The term "fluctuance" was a common theme throughout the studies which could be

accepted as a clinical indication of purulence, potentially demonstrating an advancement in descriptive terms over time from the generic term "mass". Of further interest was the use of the terms, "erythema" and "redness" which were frequently used throughout the literature. Whilst one can assume that such presentations are easily observable in lighter skin tones, this has been a speculated causative mechanism in this review, leading to insufficient diagnosis and determination of SSTI progression for individuals with darker skin tones [37, 78]. Finally, although diagnostic criteria were evident throughout this review, twelve out of the nineteen papers made no attempt to define a diagnosis of an SSTI in their studies [21, 32, 57, 64, 65, 67, 70, 71, 73–76].

TABLE 6: SSTI definitions over time.

| Author (s)	Definition of an acute SSTI	Definition of SSTI treatment failure
Llera et al. [68]	"Heat (calor), pain (dolor), redness (rubor), and swelling (tumor)"	Return of SSTI in the same anatomical location within 12 months
Eryilmaz et al. [69]	"Redness, warmth, tenderness, induration, palpable mass"	SSTI recurrence
Tsoraides et al. [70]	Not described	Continuing cellulitis and purulent drainage
McNamara et al. [65]	Not described	Fever, cellulitis, pain
Gaspari et al. [19]	Superficial, fluctuance, and induration	Sonographic and clinical variables, not otherwise described
Alder et al. [64]	Not described	Not described
Singer et al. [67]	Not described	Not described
Winstead [71]	Not described	Not described
Singer and Talan [72]	"A swollen, red, tender, and fluctuant mass, often with surrounding cellulitis"	Not described
Ladde et al. [73]	Not described	Not described
Mahida et al. [74]	Not described	Not described
Rencher et al. [66]	"Erythema, induration or fluctuance, and tenderness"	"Worsening erythema, tenderness, induration, and/or fluctuance or patients demonstrating persistent fever and systemic illness"
Lasithotakis et al. [32]	Not described	Not described
Özturan et al. [75]	Not described	Pain and cellulitis
Yang et al. [33]	"Confirm via ultrasound or fine needle aspiration", fever, and cellulitis	Pain, fever, and cellulitis
Long and April [76]	Not described	Reduction in cellulitis
Schechter-Perkins et al. [21]	Not described	Erythema, warmth, tenderness, induration, fluctuance, purulence
Zhimin et al. [77]	"Redness, discomfort, swelling, and pain"	Not described
Gottlieb et al. [57]	Not described	Not described
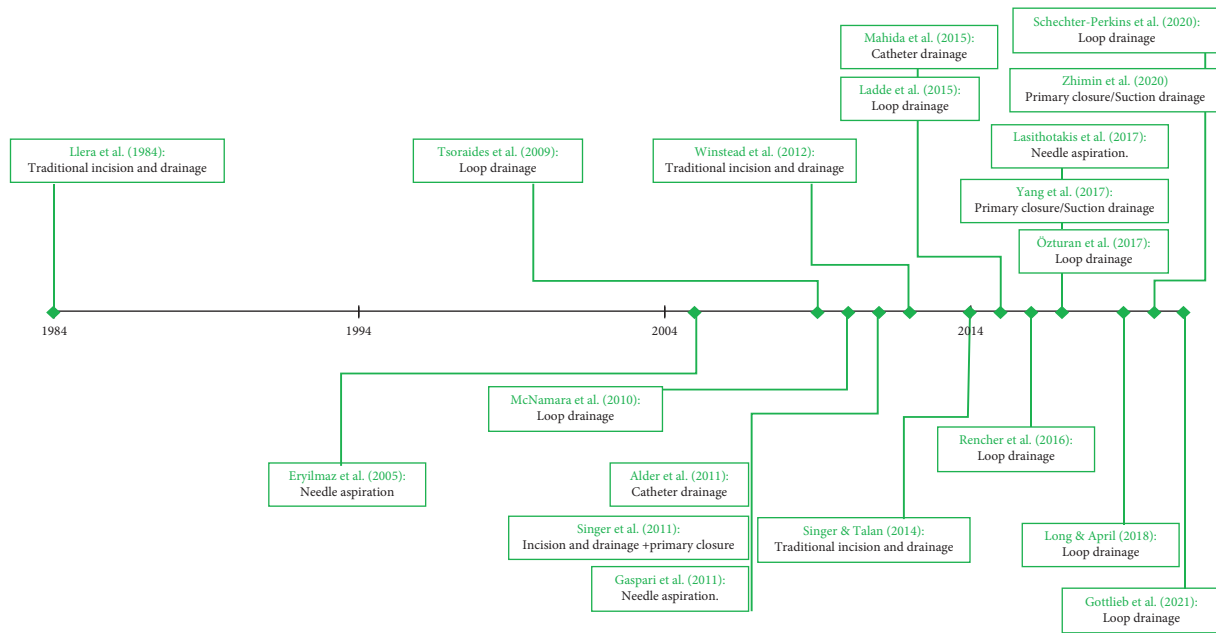
Figure 2: Evolution of SSTI management over time.
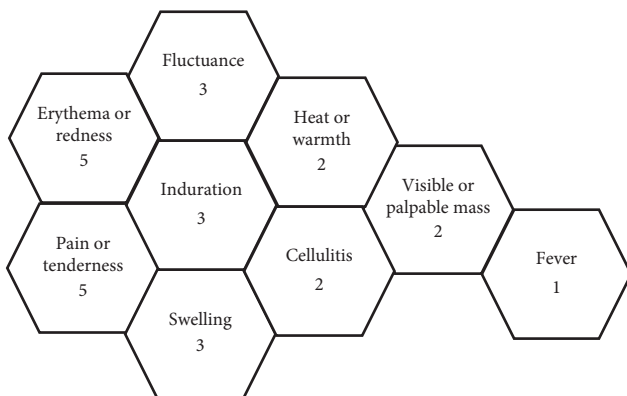
Figure 3: Variables in defining an SSTI.

3.4. Defining SSTI Treatment Failure. This review identified several common themes of descriptive terms used to classify the failure of an SSTI intervention (Figure 4).

One of the least utilised descriptive terms for treatment failure was "SSTI recurrence." Two research teams [68, 69] classified a repeat SSTI at the original site of intervention or within less than five centimetres of the initial SSTI as a treatment failure. Whilst this may seem sensible, this term lacks the required specifics, like the challenges analysed in the SSTI definition. Interestingly, the most common descriptors used to define treatment failure were the presence of "pain or tenderness" and "cellulitis". It is countered that these terms could be seen as nonspecific to the recurrence of a purulent SSTI but potentially support the speculation of descriptive progression over time. It is noted that perhaps the most appropriate descriptors of treatment failure would be the presence of "purulence" and "fluctuance". These descriptors were, however, only used in three of the studies examined [21, 66, 70] with nine further research articles

failing to clarify SSTI treatment failure in any capacity [32, 57, 64, 67, 71–74, 77].

3.5. Patient Outcomes. It is clear from this review that little credence was afforded to the patient's lived experience, as the recipient of SSTI interventions, and this is a notable theme throughout the review. Although seven of the nineteen included papers did explore some elements of patient experiences such as pain, aesthetics, and use of antibiotics, this was examined in an entirely quantitative capacity [21, 32, 33, 64–67]. Patient experiences formed part of the primary outcome measurements in only one study [33], otherwise demonstrating a scarcity of research recommendations utilising this paradigm in the progression of SSTI research.

Empirical outcomes dominated the design and implementation of the studies reviewed and demonstrated an overwhelming positivist stance towards the resolution of the SSTI infective process [25]. As there is little information available, one can speculate that the priorities of the patient, relative to their SSTI management, may be in stark contrast to those of empirical infective resolution. For example, pain and quality of life may be valued most by recipients of SSTI interventions [23] which are not exclusively paralleled with the empirical focus of the studies synthesised.

3.6. Clinical Outcomes. Surgical clinicians made up five of the lead authors across the literature examined throughout this review with the remaining studies led by fifteen physicians and only one nurse (Table 5).

The review has identified a theme that despite a recognised need for new diverse treatment options [64, 72], the evolution of SSTI intervention has been slow to progress due to a persistent culture of clinical resistance. Alternative
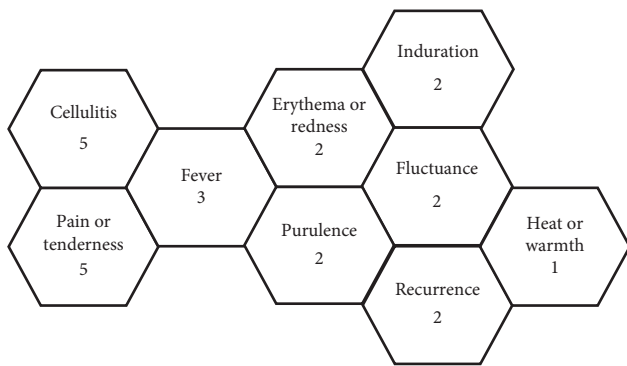
FIGURE 4: Variables in defining SSTI treatment failure.

methods of drainage remain largely unadopted by the surgical community and are a persisting factor in modern research, with 90% of SSTIs still being treated with a traditional incision and drainage technique [21]. When considering why this resistance exists and why almost all SSTI lead researchers have a medical background (95%), the exploration for causative mechanisms and the will to extend knowledge beyond the empirical were severely hampered by a dearth of qualitative or mixed method enquiries. The opinions and values of the surgical team were only acknowledged within one of the studies examined and relative only to an education process during a change to clinical practice [74].

This absence of knowledge often generated a theme of surgical discretion when choosing to undertake a traditional or novel SSTI management practice during research, demonstrating a lack of sociocultural understanding and competent research protocols, outside of randomised controlled trials [64, 70, 74, 75]. When left to the discretion of the surgical clinician, research demonstrated that incision and drainage remained favoured over all treatment methods, despite an available body of evidence [19, 21, 64]. A pertinent demonstration of this was seen in the study by Alder et al. [64] when only 19% of 400 pediatric patients underwent a novel treatment method, having been left to the free choice of an intervening clinician.

3.7. Nursing Outcomes. There was only one nurse who took on the role of the lead author in a nonexperimental SSTI research article [71]. When considering the role of supporting author, limited to four of the nineteen studies examined, only four individuals from the nursing profession were acknowledged out of a total of 89 recognised researchers across the literature [21, 64, 70, 71].

As with the theme of patient outcomes, evidenced experiences of nurses treating or managing SSTIs was barren throughout this review. Mahida et al. [74] were the only research team to undertake some form of investigation into the experiences of nurses within this phenomenon, limited to the education of the nursing team during a period of clinical practice change. When challenging historic or ritualistic surgical practices, the limited evidence synthesised indicated that the affected entities of healthcare professionals and institutions should be consulted, educated, and utilised [74]. There was also a complete absence of enquiry into the

values and opinions of the nursing team undertaking SSTI management which could help in identifying the nursing and institutional [26] gaps in current management practices during a recognised need for change [21].

4. Discussion

While SSTI research has evolved, this has been found to be exclusively in a quantitative capacity. There remains a distinct absence of holistic enquiry despite researchers acknowledging that such studies are required if nurses are to generate new data in the field [32, 64]. This narrow spectrum of SSTI research reflects an overriding realist mentality [25], acknowledging only the empirical aspect of SSTI management and infective resolution. The identified gaps in knowledge generated within this review reveal that empirical outcomes of SSTI management are but a layer of a greater encompassing reality. While empiricism has been the principal focus of SSTI research, the findings of this review have generated a recommendation for a mixed-method or qualitative study, recognising the distinct lack of groundwork previously undertaken when attempting to promote SSTI management innovation.

The findings of this scoping review have revealed that there are many knowledge gaps to address before clinical modernisation in the treatment and management of SSTIs comes to fruition. Without accepting these opportunities, one concedes the likelihood that future research and practice innovation will simply repeat what has gone before, generating the same voids in knowledge and resistance to change that SSTI research needs to explore and address. From the philosophical foundations of nursing [26] and critical realism [25], nurses must now acknowledge and explore evidence-based innovations in SSTI management and utilise the values and opinions of patients, clinical staff, and stakeholders relative to these innovations, addressing the need for qualitative evidence to support alternative SSTI management into clinical practice and professional aceptance. Without these considerations, future SSTI innovation will persist under the theme of empirically constrictive study. Although empirical outcomes are recognised as vital in justifying the efficiency of any SSTI intervention, one counters that we, as nurses, must first acknowledge and direct our innovation in support of the entities directly affected.

From the findings of this scoping review, one could conclude that the healthcare community has a greater understanding of what an SSTI is not, rather than what a SSTI is (Figures 3 and 4). There has been evidence-based focus on the absence of clinical features to determine SSTI resolution rather than actual diagnostic criteria. There remains a varied and sometimes absent consensus within the SSTI research community as to what defines the phenomenon we are exploring. It could be argued further that these variabilities in SSTI description have, collectively, not altered since the first documented incision and drainage procedures in the Hippocratic era [79]. For example, although infrequently used, the terms "erythema" and "redness" appeared to remain a contemporary diagnostic tool in SSTI assessment [21]. Through the critical analysis of the research papers

examined [37], one concludes that within today's multiracial societies, less importance should be placed upon these physiological paradigms [78], and we must gain a consensus that supports the entirety of the SSTI patient group.

The apparent clinical resistance to alternative SSTI management practices could be simply a by-product of historical familiarity and the fact that incision and drainage have always been the primary interventions. Therefore, as described by Wallis [80], because we have always done it this way, why should we change our practice? The resistance of the healthcare professionals evidenced within this review is ultimately denying the improvement of patient care and goes against our ethos as nurses and clinicians [26].

The scoping review has yielded evidence that provides founding principles upon which new management pathways can be evidenced for the inclusion of current alternative SSTI management practices. For example, if an objectively healthy patient presents with a pilonidal SSTI, then evidence suggests that needle aspiration with pro-phylactic antibiotics is a favourable treatment option [32], avoiding the incision and drainage procedure with wound packing. In contrast, there was no evidence found to suggest that needle aspiration would be a suitable option for a patient with a breast abscess [69]. One would therefore consider a more favourable option such as loop drainage [21] or a modified incision and drainage approach with catheter or suction drainage [33, 64]. Evidence also suggests that while an approach using local anaesthetic is a viable option for the adult SSTI population, potentially relieving the institutional demands of historic SSTI practices [25, 26], it is unlikely to be appropriate for pediatric patients [65]. Perhaps surprisingly, the findings from this review suggest that empirical evidence alone does not facilitate a practice change. This recognition has generated some profound unanswered questions which should now be undertaken with clinicians, nurses, patients, and stakeholders to understand why infective resolution and empiricism alone are not driving widespread change in the phenomenon of SSTI treatment and management.

As research continues in its attempts to achieve innovation in SSTI management practices, it is countered, from the perspective of a nurse clinician [26] and a critical realist [25], that the relevant sociocultural groups should be held at the centre of these investigations. Without a deeper context of experiences, one attests that there is no way of understanding the areas of importance and personal value placed upon SSTI management from the required contextual perspectives. For example, infective resolution, ease of use of novel equipment, dexterity, efficiency, training, follow-up demand, and cost effectiveness will all likely play a part in the professional acceptance of alternative SSTIclinical practices. The values and opinions of the patient, however, will likely be in stark contrast and must all be taken into consideration.

If one is to improve upon the interventional management of SSTI patients, it be argued that the act of traditional incision and drainage currently perpetuates failure. There needs to be a definitive change to surgical practice with credence afforded to the unrecognised holistic paradigm in the SSTI phenomenon. It is postulated that only then will contemporary management innovation be achieved and accepted within this field.

4.1. Limitations of This Study. The main limitation of this study is in its methodology as a scoping review and the inherent risk of bias generated through this type of review [60]. However, the work was undertaken using a systematic clear approach to minimise a lack of rigor in the study selection, utilising the PRISMA-ScR and PPC tools [30, 31]. Due to our chosen approach to this review, we speculate that additional relevant literature could have been missed due to the predefined search strategy developed by the authors. We further recognise the limitations upon our synthesis of the evidence both as a collective and within the SSTI intervention subgroupings. The ranging methods, aims, objectives, and patient populations used within each study are recognised as a confounding variable in our findings and recommendations.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Additional Points

Contributions to the Global Clinical Community. (i) Recognising there are empirically and holistically viable alternatives to incision and drainage and the management of purulent skin and soft tissue infections. (ii) Recognising positivist, empirically dominated focus within this phenomenon. (iii) Recommendations for a mixed method or qualitative prospective study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

L S was responsible for the conceptualisation, methodology, writing the original draft, data curation, formal analysis, and visualisation of this work. M S and F H undertook the roles of supervision and project administration and provided support in resources, validation, methodology, data curation, review, and editing. LS and MS made substantial contributions to conception and design, acquisition of data, and analysis and interpretation of data. LS, MS, and FH were involved in drafting the manuscript or revising it critically for important intellectual content. All the authors gave the final approval of the version to be published. Each author has participated sufficiently in the work to take public responsibility for appropriate portions of the content. All the authors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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