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ORIGINAL ARTICLE

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Parents' knowledge, attitude, and practice on children's screen time at home and the implications for nurses in promoting health: a cross-sectional study

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ABSTRACT

Introduction: The present study investigated the parent's knowledge, attitude, practice, and experience of the screen time spent by their children at home aged below 5 years old, identifying the common screen-based devices used, content type, and level of screen time spent by the children.

Methods: A cross-sectional survey of parents having children aged 0 to 4 years old attending the Maternal and Child Health Care Clinics in four districts in Brunei Darussalam was conducted. A questionnaire was developed through the Qualtrics platform. Data were analyzed using R Studio Desktop version 1.2.1335. The statistical analyses included descriptive statistics and Fisher's exact test.

Results: Parents' knowledge, attitude, and practice of screen time spent by their children are generally positive; parents who correctly answered the knowledge section overall average of 30.1% (n=34). Children studied (<2 years old and 3 to 4 years old) were found to spend more time watching television. A statistically significant association was observed between children of both age groups with time spent on tablet device (p=0.037) and (p=<0.001). Also, a significant association between parents' knowledge, attitude and practice with gender of the parents, household income, and total number of children was reported.

Conclusions: We conclude that the children in our study exceeded the recommended guidelines on screen time behavior and the parents' health knowledge with regard to screen time was poor which emphasized the need for improvement and further study.

Keywords: screen time, children, parent's knowledge, parent's attitude, parent's practices

Introduction

'Screen time' is defined by the World Health Organization (WHO) as the amount of sedentary time spent passively on screen-based devices without active physical activity (World Health Organization, 2020). WHO (2020) has released a WHO 24-hour movement guidelines recommending that children aged 2-4 years should have less than one hour of screen time per day while limiting to none for infants below 2 years of age (WHO, 2020). However, given the rapid pace of technological change nowadays whereby ownership of technological devices has been made easier, children growing up with technology has increased rapidly, thus raising concern on the negative impacts it brings to their overall aspect of health that could hinder their optimal growth and well-being (Bennetts et al., 2016).

The evolution of screen devices gives rise to several access to educational applications and programs that facilitate children's development in many different ways, especially in teaching and parenting (LeBlanc et al., 2017). Screen devices through games and other educational applications promote interactive learning and stimulate cognitive development (Ponti, 2023). These include early literacy, numeracy, and problem-solving skills (Tatar et al., 2023). By contrast, excessive screen time may pose several limitations that can lead to physical inactivity, sleep disturbances, and delayed language development. Dependence on screen devices may limit face-to-face social interactions, impacting children's social development (Canadian Paediatric Society, 2017; Carson et al., 2010). Numerous research has also indicated that excessive screen time negatively contributes to addiction to the screen devices, causing behavioral and attention issues (Garmy et al., 2018). Overall, monitoring and limiting screen time are not without challenges to the parents which may lead to conflicts in relationships with their children (Chandra et al., 2016 Chandra; Hale et al., 2018). It may be inferred that while screen devices offer educational and entertainment benefits for young children, it's crucial to use them with caution and in moderation to mitigate adverse impacts on children's development (WHO, 2020).

In Brunei, there are no known published local articles about the level of engagement the Bruneian children spend with screen-based devices that have been publicly disclosed or made possible to access. In view of this, it is the researcher's interest to investigate parents' knowledge, attitude and practice on their children's screen time and the level of screen time spent by the children at home to obtain insight into Brunei's current situation.

Table 1: Demographic characteristics of the sample (n=113)

Characteristics	n	(%)
Parents		
Mother	103	(91.2)
Father	10	(8.8)
District		
Brunei-Muara	99	(87.6)
Tutong	9	(8.0)
Belait	2	(1.8)
Temburong	3	(2.7)
Ethnicity		
Melayu-Brunei	89	(78.8)
Tutong	4	(3.5)
Dusun	2	(1.8)
Belait	2	(1.8)
Kedayan	5	(4.4)
Murut	0	(0)
Bisaya	0	(0)
Others	11	(9.8)
Income		
0-500	21	(18.6)
501-1000	26	(23.0)
1001-2000	28	(24.8)
2002-3000	15	(13.3)
3001-4000	8	(7.1)
4001-5000	7	(6.2)
More than 5000	8	(7.1)
No. of children		
1	40	(35.4)
2	65	(57.5)
3	8	(7.1)
Children		
Gender		
Male	101	(52.1)
Female	93	(47.9)
Age		
1	79	(40.7)
2	43	(22.2)
3	48	(24.7)
4	24	(12.4)
Nursery/Daycare		
Yes	33	(17.0)
No	161	(83.0)
No. of household screen-based devices		
1 to 3	45	(39.8)
4 to 6	40	(35.4)
More than 7	28	(24.8)
Screen-based devices types		
Television	113	(37.7)
Computer/Laptop	43	(14.3)
Tablet device	31	(10.3)
Smartphone	113	(37.7)

Materials and Methods

Study design and settings

A cross-sectional study using self-administered questionnaire was employed. The parents of children aged 0 to 4 years old attending the Maternal and Child Health Care Clinics in four districts in Brunei Darussalam were invited to participate in this study. The study sites were the primary services that solely provide supportive care to mothers and children with adequate healthcare facilities for maternal and child healthcare.

Table 2. Pearson correlation between CKD – SBI symptom dimensions and KDQOL -36 subscales (N = 320)

	<2 years old (n=17)		**3-4 years old (n=16)**		**Total**		
Nursery/daycare day (for children attending nursery and/or daycare only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Television							0.617
None	5	(29.4)	5	(31.3)	10	(30.3)	
Less than 30 minutes	7	(41.2)	4	(25.0)	11	(33.3)	
Between 30 minutes to 1 hour	2	(11.8)	4	(25.0)	6	(18.2)	
Between 1 hour to 2 hours	3	(17.6)	2	(12.5)	5	(15.2)	
More than 2 hours	0	(0.0)	1	(6.3)	1	(3.0)	
Computer/Laptop							0.571
None	14	(82.4)	15	(93.8)	29	(87.9)	
Less than 30 minutes	1	(5.9)	0	(0.0)	1	(3.0)	
Between 30 minutes to 1 hour	1	(5.9)	1	(6.3)	2	(6.1)	
Between 1 hour to 2 hours	1	(5.9)	0	(0.0)	1	(3.0)	
More than 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
Tablet Device							0.098
None	15	(88.2)	12	(75.0)	27	(81.8)	
Less than 30 minutes	2	(11.8)	0	(0.0)	2	(6.1)	
Between 30 minutes to 1 hour	0	(0.0)	3	(18.8)	3	(9.1)	
Between 1 hour to 2 hours	0	(0.0)	1	(6.3)	1	(3.0)	
More than 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
Smartphone							0.500
None	13	(76.4)	9	(56.3)	22	(66.7)	
Less than 30 minutes	2	(11.8)	2	(12.5)	4	(12.1)	
Between 30 minutes to 1 hour	2	(11.8)	4	(25.0)	6	(18.2)	
Between 1 hour to 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
More than 2 hours	0	(0.0)	1	(6.3)	1	(3.0)	
Non-nursery/daycare day (for children attending nursery and/or daycare only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Television							0.724
None	3	(17.6)	1	(6.3)	4	(12.1)	
Less than 30 minutes	5	(29.4)	3	(18.8)	8	(24.2)	
Between 30 minutes to 1 hour	3	(17.6)	5	(31.3)	8	(24.2)	
Between 1 hour to 2 hours	5	(29.4)	6	(37.5)	11	(33.3)	
More than 2 hours	1	(5.9)	1	(6.3)	2	(6.1)	
Computer/Laptop							0.719
None	13	(76.4)	14	(87.5)	27	(81.8)	
Less than 30 minutes	2	(11.8)	1	(6.3)	3	(9.1)	
Between 30 minutes to 1 hour	0	(0.0)	0	(0.0)	0	(0.0)	
Between 1 hour to 2 hours	1	(5.9)	0	(0.0)	1	(3.0)	
More than 2 hours	1	(5.9)	1	(6.3)	2	(6.1)	
Tablet Device							0.450
None	12	(75.0)	10	(62.5)	22	(66.7)	
Less than 30 minutes	3	(17.6)	2	(12.5)	5	(15.1)	
Between 30 minutes to 1 hour	1	(5.9)	2	(12.5)	3	(9.1)	
Between 1 hour to 2 hours	1	(5.9)	0	(0.0)	1	(3.0)	
More than 2 hours	0	(0.0)	2	(12.5)	2	(6.1)	
Smartphone							0.462
None	9	(52.9)	6	(37.5)	15	(45.5)	
Less than 30 minutes	4	(23.5)	4	(25.0)	8	(24.2)	
Between 30 minutes to 1 hour	4	(23.5)	4	(25.0)	8	(24.2)	
Between 1 hour to 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
More than 2 hours	0	(0.0)	2	(12.5)	2	(6.1)	
Public holiday (for children attending nursery and/or daycare only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Television							0.290
None	2	(11.8)	1	(6.3)	3	(9.1)	
Less than 30 minutes	6	(35.3)	2	(12.5)	8	(24.2)	
Between 30 minutes to 1 hour	3	(17.6)	3	(18.8)	6	(18.2)	
Between 1 hour to 2 hours	1	(5.9)	5	(31.3)	6	(18.2)	
More than 2 hours	5	(29.4)	5	(31.3)	10	(30.3)	
Computer/Laptop							0.512
None	14	(82.4)	14	(87.5)	28	(84.9)	
Less than 30 minutes	1	(5.9)	0	(0.0)	1	(3.0)	
Between 30 minutes to 1 hour	1	(5.9)	0	(0.0)	1	(3.0)	
Between 1 hour to 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
More than 2 hours	1	(5.9)	2	(12.5)	3	(9.1)	
Tablet Device							0.480
None	12	(70.6)	10	(62.5)	22	(66.6)	
Less than 30 minutes	3	(17.6)	1	(6.3)	4	(12.1)	
Between 30 minutes to 1 hour	1	(5.9)	1	(6.3)	2	(6.1)	
Between 1 hour to 2 hours	1	(5.9)	2	(12.5)	3	(9.1)	
More than 2 hours	0	(0.0)	2	(12.5)	2	(6.1)	

Less than 30 minutes	2	(11.8)	3	(31.3)	5	(15.2)	
Between 30 minutes to 1 hour	3	(17.6)	5	(31.3)	8	(24.2)	
Between 1 hour to 2 hours	1	(5.9)	2	(12.5)	3	(9.1)	
More than 2 hours	0	(0.0)	2	(12.5)	2	(6.1)	
	>2 years old (n=105)		3-4 years old (n=56)		Total		
Weekdays and weekends (for children not attending nursery and/or daycare only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Television							0.094
None	21	(20.0)	6	(10.7)	27	(16.8)	
Less than 30 minutes	30	(28.6)	12	(21.4)	42	(26.1)	
Between 30 minutes to 1 hour	24	(22.9)	15	(26.8)	39	(24.2)	
Between 1 hour to 2 hours	15	(14.3)	17	(30.4)	32	(19.9)	
More than 2 hours	15	(14.3)	6	(10.7)	21	(13.0)	
Computer/Laptop							0.703
None	93	(88.6)	52	(92.9)	145	(90.1)	
Less than 30 minutes	7	(6.7)	3	(5.4)	10	(6.2)	
Between 30 minutes to 1 hour	2	(1.9)	0	(0.0)	2	(1.2)	
Between 1 hour to 2 hours	0	(0.0)	0	(0.0)	0	(0.0)	
More than 2 hours	3	(2.9)	1	(1.8)	4	(2.5)	
Tablet Device							0.037
None	83	(79.0)	35	(62.5)	118	(73.3)	
Less than 30 minutes	9	(8.6)	3	(5.4)	12	(7.5)	
Between 30 minutes to 1 hour	7	(6.7)	12	(21.4)	19	(11.8)	
Between 1 hour to 2 hours	3	(2.9)	2	(3.6)	5	(3.1)	
More than 2 hours	3	(2.9)	4	(7.1)	7	(4.3)	
Smartphone							<0.001
None	57	(54.3)	17	(30.4)	74	(46.0)	
Less than 30 minutes	27	(25.7)	9	(16.1)	36	(22.4)	
Between 30 minutes to 1 hour	12	(11.4)	15	(26.8)	27	(16.8)	
Between 1 hour to 2 hours	3	(2.9)	11	(19.6)	14	(8.7)	
More than 2 hours	6	(5.7)	4	(7.1)	10	(6.2)	
Content type					n	(%)	
Interactive					104	(50.0)	
Educational					45	(21.6)	
Passive					41	(19.7)	
Others					18	(8.7)	

Note: ^{a} Fisher's exact test

Population and sample

The target population is parents having children aged 0 to 4 years old attending the Maternal and Child Health Care Clinics in four districts in Brunei Darussalam. The inclusion criteria were (1) Parents who have responsibility for a child, such as a mother or a father, (2) have children they cared for with age ranging from 0 to 4 years and (3) the parents also needed to have sufficient literacy to read in either English or Malay language, whereas exclusion criteria include: (1) Parents who have children aged 5 years and above or have no children, (2) parents who present difficulty to access the online questionnaire through Qualtrics link (e.g. internet problem) and (3) parents who have problem reading both in English and Malay language.

Research instrument

A self-reported questionnaire was designed from a review of the literature on salient areas of concern with regard to screen time (e.g. Chandra et al., 2016; Duch et al., 2013). The questionnaire was developed by the research team who comprised a student nurse, a pediatrician, a children's nurse, and academics specialized in children's nursing, biostatistics and Community Health Nursing. The questionnaire consisted of three sections namely; (1) Sociodemographic, (2) Screen-Based Devices accessible to the children and Screen Time Spent by Children at Home and (3) Parents' Knowledge, Attitude and Practice of Screen Time Spent at Home. This questionnaire has been modified after pre-testing with five mothers having the same inclusion criteria to ensure that the questions are well-defined and clearly understood between one parent and another. All research team members approved the final version of the questionnaire.

Statistical analysis

Data were analyzed using R Studio Desktop version 1.2.1335. The statistical analyses included descriptive statistics and Fisher's exact test to determine the parents' level of knowledge, attitude and practice of the screen time spent by their children at home as well as determining common screen-based devices used, content type and level of screen time spent by their children. All statistical tests are two-sided and a p-value less than 0.05 is considered significant. However, we also emphasize the importance of considering any assumptions made when using the Fisher's exact test, particularly when dealing with small sample sizes for some cells.

Ethical consideration

The research received full approval from the Joint Research Ethics Committee of Pengiran Anak Puteri Rashidah Sa'adatul Bolkiah Institute of Health Sciences Research Ethics Committee (IHSREC) and Medical and Health Research Ethics Committee of the Ministry of Health, Brunei Darussalam (UBD/PAPRSBIIHSREC/2020/56). The research is also approved by the University Research Ethics Committee (UREC), Universiti Brunei Darussalam. Participation was voluntary by clicking the "I agree" button prior to proceeding with completing the survey. Participants were informed that they could withdraw from the study at any time before clicking the 'submit' button. They were also explained that, once responses were submitted, the anonymous nature of the study would hinder retrieval of participant data for withdrawal.

Results

Either one or both parents could participate in the study. The final sample included 113 parents of which 91.2% were mothers. The participants were predominantly of the Melayu-Brunei ethnicity (78.8%) and about 57.5% of parents having at least two children aged <4 years old. An overall total of 194 children was gathered whereby approximately 52.1% were male, the majority were below the age of 2 years old (62.9%) and about 83% did not attend a nursery and/or daycare services. In terms of household screen-based devices, most parents reported having fewer than six devices (75.2%) available at their home and each had at least a television and a smartphone. The descriptive characteristics of the study sample and their children are as displayed in Table 1.

Table 2 presents descriptive characteristics of the children's total time spent on each screen-based device by gender. When examining the total screen time spent by all children in the study, regardless of whether they are attending a nursery and/or daycare service, it was found that the television was the most commonly used screen-based device among the children of both groups aged <2 years old groups compared to other screen-based devices, The majority of children aged <2 years old (70.6%) who attended nursery and/or daycare service spent more time watching television (between <30 minutes to >2 hours). Similar time spent for watching television was also observed during non-nursery and/or daycare days and during public holiday for children aged <2 years old (82.3% and 88.2%, respectively). It was also found that children aged <2 years old (47%) spent more time on a smartphone between less than 30 minutes to 1 hour during non-nursery and/or daycare day compared to nursery and/or daycare day (23.6%). Likewise, increment in the number of children aged 3 to 4 years old engaging in television-viewing of >1 hour during nursery and/or daycare day (18.8%), non-nursery and/or daycare day (43.8) and public holiday (62.6%) was observed. However, no significant difference was reported in children of both age groups attending the nursery and/or daycare day with total screen time spent on each screen-based device at home during nursery and/or daycare day, non-nursery and/or daycare day and public holiday.

For children not attending the nursery and/or daycare service, there is a significant association observed between the age of children and their total screen time spent on a tablet device (p=0.037) and smartphones (p≤0.001). No other significant differences were detected. Furthermore, interactive form of screen time was the common content type of screen-based activities mostly spent by the children (50%) compared to educational (21.6%) and passive (19.7%) forms of screen time content.

Table 3 illustrates the parents' knowledge, attitude and practice based on their scoring of 'correct' and 'agree' only. Analysis revealed that there is no significant difference between parents and knowledge but it was observed that there was on average less than 50% of both mothers and fathers who answered correctly on the knowledge of screen time. A significant association was observed between parents' attitudes and the time spent by children on their screen time. It was observed that both mother and father significantly agreed to have the responsibility of controlling their children's screen time and the appropriateness of the activity (p=0.035) and that children's use of screen time interferes with family quality time (p=0.030). Next, both parents generally scored higher on practice and there is a significant association found between parents with practice (p=0.008).

Table 4 demonstrates the association between parents' knowledge and practice based on 'correct' and 'agree' scores with demographic factors, highlighting the effects of parents' income and their total number of children. Analysis revealed that there is no significant difference between parents and practice, thus it will not be reported in our findings. First, the analysis revealed that there is a significant association between the income of less than BND$2000 and parents' knowledge on screen-time associated sleep problems (Q2, p=0.033), screen-time-associated emotional, mental and behavioral

Table 3. Parents' knowledge, attitude and practice based on 'correct' and 'agree' scores

	Mother (n=103)		Father (n=10)		Total (n=113)		
Knowledge (correct only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Q1	37	(35.9)	1	(10.0)	38	(33.6)	0.098
Q2	41	(39.8)	3	(30.0)	44	(39.0)	0.158
Q3	17	(16.5)	1	(10.0)	18	(15.9)	0.390
Q4	15	(14.6)	1	(10.0)	16	(14.2)	0.924
Q5	29	(28.2)	4	(40.0)	33	(29.2)	0.672
Q6	49	(47.6)	3	(3.0)	52	(46.0)	0.199
Attitude (Agree only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Q1	94	(91.2)	8	(80.0)	102	(90.3)	0.035
Q2	8	(7.8)	2	(20.0)	10	(8.6)	0.424
Q3	44	(42.7)	2	(20.0)	46	(40.7)	0.272
Q4	41	(39.8)	5	(50.0)	46	(40.7)	0.821
Q5	31	(30.1)	4	(40.0)	35	(31.0)	0.070
Q6	71	(68.9)	7	(70.0)	78	(69.0)	0.176
Q7	69	(70.0)	5	(50.0)	74	(65.5)	0.030
Q8	64	(62.1)	5	(50.0)	69	(61.1)	0.322
Practice (Agree only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**P=value**
Q1	86	(83.5)	8	(80.0)	94	(83.1)	0.872
Q2	87	(84.5)	8	(80.0)	95	(84.1)	0.008
Q3	77	(74.8)	7	(70.0)	84	(74.3)	0.668
Q4	41	(39.8)	5	(50.0)	46	(40.7)	0.715
Q5	77	(74.8)	9	(90.0)	86	(76.1)	0.537
Q6	34	(33.0)	5	(50.0)	39	(34.5)	0.534
Q7	64	(62.1)	8	(80.0)	72	(63.7)	0.481

Note: [a] Fisher's exact test

Knowledge

Q1 Increase in children's screen time is likely to decrease their effort in physical activity.
Q2 Children's sleep pattern and quality can be disrupted by increase in their screen time.
Q3 Increased children's screen time may increase risk of the children being overweight/obesity
Q4 Increased children screen time is more likely to increase consumption of soft drinks and snacks.
Q5 Children that spend more screen time are at risk of emotional, mental and behavioral problems.
Q6 Uncontrolled children's screen time can lead to addiction to the devices.

Attitude

Q1 I have the responsibility to control our child(ren)'s screen time by paying close attention on the appropriateness of the screen time activities.
Q2 I should not be concerned about our child(ren)'s screen time and they can engage for as long as they want.
Q3 It is challenging to manage our child(ren)'s screen time when there is a lot of screen-based devices available in out household.
Q4 It is difficult to constantly supervise our child(ren)'s screen time activity when there is increase household and/or work demand.
Q5 I would not consider my child(ren)'s level of screen time to be a serious matter if he/she/they is/are active, healthy and well-behaved.
Q6 I am aware that our child(ren) engagement with screen time is influenced by our use of screen-based devices and/or by others (e.g. siblings and/or friends).
Q7 I observed that our child(ren)'s use of screen device interferes with our family quality time.
Q8 I am concerned about our child(ren)'s unhealthy food intake when engaging in screen-based activity.

Practice

Q1 I encourage my child(ren) to play with toys or talk face-to-face rather than spending time every waking hour, using mobile phone, watching TV/video, and on laptop.
Q2 I ensure that I take away my child(ren) screen-based devices at home when they play or have social activities.
Q3 I try to limit or not use screen-based devices whenever I am with my child(ren).
Q4 I give screen-based devices to my child(ren) to keep them temporarily occupied and be quiet especially in time when I am busy and when he/she get fussy or moody.
Q5 I usually stop my child(ren)'s screen time at least an hour before bedtime to get him/her to fall asleep.
Q6 I offer screen-time to my child(ren) as a reward for good behavior and removing it as a punishment for bad behavior.
Q7 I do not allow my child(ren) to have any kinds of screen-based devices during family time (e.g. meal time) or in his/her/their bedroom.

problems (Q5, p=0.038) and screen time addiction (Q6, p=0.042) than those who have an income more than BND$2000. Additionally, parents with at least two children demonstrated more knowledge on associated emotional, mental and behavioral problems (Q5, p=0.014) than those parents with one child or more than two children. Furthermore, there is a significant association between parents' attitude (Q4) and income as well as the total number of children reported in the analysis, whereby it was observed that parents with an income between 1000 to 3000 (p=0.009) and having at least two children (p=0.037) were found to significantly give screen-based devices to their children to keep them temporarily occupied in busy times or when their children get fussy or moody. No significant differences were detected in other factors.

Discussions

The findings indicated that all parents have television at their home and watching television was the most commonly used sedentary screen-based activity among the children with smartphones being the second regardless of whether they are attending the nursery and/or daycare service or not. This finding supported earlier research conducted in

Table 4: Factors associated with parents' knowledge, attitude and practice scores (n=119)

	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8	
Knowledge (correct only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Income																
0-500	11	(29.0)	14	(31.8)	5	(27.7)	2	(12.5)	9	(27.3)	17	(32.7)				
501-1000	9	(23.6)	10	(22.7)	3	(16.7)	3	(18.7)	8	(24.2)	11	(21.1)				
1001-2000	8	(21.0)	9	(20.4)	5	(27.7)	5	(31.3)	9	(27.3)	10	(19.2)				
2001-3000	2	(5.3)	3	(6.8)	1	(5.6)	1	(6.3)	1	(3.0)	3	(5.8)				
3001-4000	2	(5.3)	2	(4.6)	1	(5.6)	2	(12.5)	1	(3.0)	3	(5.8)				
4001-5000	2	(5.3)	2	(4.6)	1	(5.6)	0	(0.0)	2	(6.1)	3	(5.8)				
More than 5000	4	(10.5)	4	(9.1)	2	(11.1)	3	(18.7)	3	(9.1)	5	(9.6)				
P=value	0.070		0.033		0.310		0.174		0.038		0.043					
No. of children <4 years of age																
1	8	(20.0)	15	(37.5)	5	(12.5)	4	(10.0)	8	(20.0)	16	(40.0)				
2	28	(70.0)	23	(57.5)	24	(60.0)	27	(67.5)	24	(60.0)	22	(55.0)				
3	4	(10.0)	2	(5.0)	11	(27.5)	9	(22.5)	8	(20.0)	2	(5.0)				
P=value	0.150		0.353		0.421		0.476		0.014		0.422					
Attitude (agree only)	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Income																
0-500	21	(20.5)	2	(20.0)	10	(21.7)	5	(10.9)	6	(17.1)	18	(23.1)	16	(21.6)	17	(24.6)
501-1000	21	(20.5)	1	(10.0)	7	(15.2)	6	(13.0)	10	(28.6)	15	(19.2)	14	(18.9)	16	(23.2)
1001-2000	25	(24.5)	4	(40.0)	11	(23.9)	11	(23.9)	10	(28.6)	17	(21.8)	18	(24.3)	13	(18.8)
2001-3000	14	(13.7)	1	(10.0)	10	(21.7)	11	(23.9)	2	(5.7)	10	(12.8)	12	(16.2)	9	(13.0)
3001-4000	7	(6.6)	0	(0.0)	3	(6.5)	4	(8.7)	1	(2.9)	5	(6.4)	4	(5.4)	3	(4.4)
4001-5000	7	(6.6)	1	(0.0)	2	(4.4)	6	(13.0)	3	(8.6)	7	(9.0)	5	(6.8)	6	(8.7)
More than 5000	7	(6.6)	1	(10.0)	3	(6.5)	3	(6.5)	3	(8.6)	6	(7.7)	5	(6.8)	5	(7.3)
P=value	0.642		0.497		0.303		0.009		0.227		0.440		0.596		0.285	
No. of children <4 years of age																
1	32	(31.4)	1	(10.0)	12	(26.1)	10	(21.7)	13	(37.1)	27	(34.6)	24	(32.4)	21	(30.4)
2	62	(60.8)	8	(80.0)	29	(63.0)	30	(65.2)	20	(57.1)	44	(56.4)	43	(58.1)	41	(59.4)
3	8	(7.8)	1	(10.0)	5	(10.9)	6	(13.0)	2	(5.7)	7	(9.0)	7	(9.5)	7	(10.1)
P=value	0.082		0.137		0.188		0.037		0.590		0.675		0.415		0.361	

Note: ^{a} Fisher's exact test

Korea, whereby television and smartphones are the most popular devices among the children sample (Lissak, 2018). This shows that, despite the growing technological advancement whereby devices with screens become more sophisticated and accessible, television has remained an important medium in the family time since its introduction in the 1950s (Poulain et al., 2019) which could potentially explain the reported finding. Children's sedentary television viewing can be an outcome of co-viewing with their parents due to its perceived benefits as an educational medium and early learning (Robinson et al., 2017).

However, the finding obtained showed that 50% of children are exposed to an interactive form of screen time content compared to educational (21.6%) and passive (19.7%); this shows that the concept of giving screen time is leaning more toward recreational basis rather than learning. In Brunei, it has become a culture seen in parents' ways of parenting to give screen time to their children as a source of entertainment or distraction tool, which was on par with the finding in our study whereby 40.7% of parents practiced the idea of giving screen-based devices to keep their children temporarily occupied when they are busy or when the children get fussy or moody. Parents' screen time behavior can be a potential causal factor contributing to the children's television viewing as 69% of the parents reported that they are aware that their use of screen-based devices influenced their children's sedentary screen time behavior, which supported earlier research stating that children learned the behavior of their parents' use of screen-based devices as an indicative sign that encourages them to maximally fulfill their screen time as means of personal interest, just like their parents (Bennetts et al., 2016). However, we are unable to confirm this assumption as information on the nature of parents' screen time behavior is not available. Hence, this finding should serve as a baseline to further expand current findings targeting the association between parents' screen time and children's level of screen time, thus, contributing to existing literature.

Secondly, our findings reported that 70.6% of children aged <2 years old spent more time watching television (between <30 minutes to >2 hours) during nursery and/or daycare day as well as during non-nursery and/or daycare day and on public holiday of 82.3% and 88.2%, respectively. Our study also reported that 47% of children aged <2 years old spent more time on a smartphone of <1 hour during non-nursery and/or daycare day compared to nursery and/or daycare day of only 23.6%. Also, 18.8%, 43.8% and 62.6% of children aged 3 to 4 years old are found to engage in television viewing of >1 hour during nursery and/or daycare day, non-nursery and/or daycare day and public holiday, respectively. To compare these findings with the recommended guidelines for time spent on screen as according to WHO stating that children aged 2 to 4 years should have <1 hour of screen time/day while screen time is not recommended for infants below 2 years of age, it can be concluded that the most children in our study have exceeded the advised screen time recommendation (Ansari, 2019). This finding is consistent with other research whereby 60.8% of children of 1.5 years old had screen time <2 hours daily, with about 40% having >2 hours spent on screen time/day (Robinson et al., 2017). Additionally, 96.1% of 259 infants sampled were exposed as early as the age of 6 months with a mean total screen time of 152.7 minutes/day. Furthermore, a study conducted in Thailand found that 68% of the 200 pre-school children had screen time spent >1 hour/day whilst 28% of them had screen time spent >2 hours/day (Sigmundová et al., 2016).

For children not attending the nursery and/or daycare service, there is a significant association observed between the age of children (aged <2 years and 3 to 4 years) and their total screen time spent on a tablet device (p=0.037) and very strong association on smartphones (p=<0.001). This shows that children as young as <2 years old have access to smartphones and tablet devices which is in line with our finding whereby all the parents reported having smartphones. This is consistent with other earlier study conducted in Philadelphia, whereby out of the sample of families having children <4 years old being investigated, 83% owned a tablet device, 77% owned a smartphone and almost all of the children (96.6%) had used these devices even before turning 1 year old (Song et al., 2020). This clearly indicates that touch devices use is getting more prevalent among the children in Brunei. Interestingly, our findings observed notable increments in children total screen time of both age groups during nursery and/or daycare day/weekdays, non-nursery and/or daycare day/weekends and on public holiday and we postulated that every additional hour of free time is associated with an increase in screen time spent on screen-based devices. This is congruent with other research stating that pre-school children spent more time on weekends on average of less than one hour whereas children on weekends spent an average of more than 78 minutes (Tambalis et al., 2018). A study conducted in Korea also reported that 39% of the children sample involved in sedentary behavior of watching television almost on daily basis and during weekends the children watched television of >1 hour (Robinson et al., 2017).

Lastly, a statistically significant association is observed between parents' socioeconomic status (income <2000) and their knowledge on screen time-associated sleep problems (p=0.033), emotional, mental and behavioral problems (p=0.038) and screen time addiction (p=0.042). This association is noteworthy as it may reflect that the lower the household income, it increases the children's sedentary screen time. This assumption is consistent with earlier research which reported that excessive screen time is more prevalent among low-income children rather than high-income children (Twenge & Campbell, 2018; Twenge et al., 2019). Additionally, parents of two children were found to have statistically significant knowledge on emotional, mental and behavioral risks of screen time (p=0.014) and, to the best of the author's knowledge, this area of association has not been studied previously. Moreover, a significant association between parent's income between 1000 to 3000 (p=0.009), having at least two children (p=0.037) with an attitude of parents giving screen time to their children to keep them temporarily occupied in time of busy hour was noted in the finding. This could reflect the idea of increasing workload and increased responsibility in childcare significantly contributes to increasing time spent on screen. However, the association between socioeconomic status, having siblings and total sedentary screen time is not well-characterized as there are studies which identified that they found no significant and/or unclear association (Tambalis et al., 2018; Twenge et al., 2019). Therefore, further investigation is warranted to explore the role of socioeconomic status and the presence of siblings on children's sedentary screen time to help in future interventions. The parents' level of knowledge on screen may help to understand these findings. The majority of parents being significantly aware of the responsibility in controlling their children's screen time and its appropriateness (p=0.035) and believing that children's use of screen time interferes with their family quality time (p=0.030) which further constitutes their practice on taking over their screen-based devices when they play or have social activities (p=0.008), shows that they are aware of the importance of limiting their children's screen time; however, the reported low number of parents who answered correctly on the knowledge of screen time (<50%) remains concerning given the association of screen time with the other medical, emotional and behavioral risks it imposes and may explain the greater prevalence of excess screen time reported in findings.

Implications for nurses' roles in promoting health

The prevalence of excessive screen time has become a concerning problem worldwide and findings suggest that majority of the children aged <4 years old in Brunei also exceed the recommended maximum limit of screen time, which requires immediate attention. The incidence of poor screen time knowledge among parents also calls for intervention strategies. These findings should serve as a baseline to provide ground discussion for collaboration between professional healthcare practitioners and possibly coordinated school health committees to liaise in promoting healthy screen time behavior at all healthcare facilities and at schools that accommodate service to children and/or the parents in guiding and education in the importance of practicing screen time behavior in moderation. These may include workshops, school programs and parental education sessions. Evidence of health risks impact of screen time faced by the children in Brunei is lacking, thus, more prospective studies are warranted to bring substantial benefits to the community in providing evidence for health education and consultations necessary to support the child's overall health and well-being. Moreover, whether parents' media use, the influence of socioeconomic factors and the presence of siblings have a significant relationship with a child's sedentary screen time should be investigated.

Limitations

The study sample size was small. Future studies should aim for a larger, more diverse sample size. The external generalizability of these findings is potentially restricted to children age <4 years old only and not beyond. The parent-reported nature of the questionnaire could be subject to response bias which may not provide an accurate overall representation of important variables due to the fact of the possibility of inaccurate and misclassification of information (Wang & Cheng, 2020). A potential way to counteract this in the future study should include such as cross-checking with electronic logs.

Conclusion

To summarize, the parents' attitudes of screen time spent by their children are generally positive; however, the practice on screen time was found to exceed the maximum recommended time of the WHO (2020). This study also demonstrated that less than 50% of the parents have correct knowledge on screen time. It is suggested from the evidence that the majority of the children studied significantly spent more time on television, exceeding the recommended guidelines on screen time behavior, which correlates with the trend worldwide. Further health promotion activities are recommended that include developing understanding through monitoring prospective studies on the association of parental media use, socioeconomic factor and presence of siblings for their effect on children's sedentary screen time which could provide insight into strategies emphasizing healthy screen time behavior and improving parental efficacy. This may include workshops, school programs and parental education sessions.

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ORIGINAL ARTICLE

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The development of a wellness tourism program in Thailand: a community-based participatory action research approach with an empowerment theoretical framework

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ABSTRACT

Introduction: Thailand has not had a comprehensive effort to collaborate on a wellness tourism regional program for foreign travelers. The purpose of the study was exploring the key components necessary for a wellness tourism program in the lower northern region in Thailand.

Methods: This is a qualitative, community-based, participatory action research guided by the empowerment theory. A descriptive qualitative approach to data collection and analysis was used to explore stakeholders' perspectives on the development of a wellness tourism program. A total of 40 key stakeholders from nine provinces in the lower north region of Thailand participated in two phases of the study's data collection. Individual and focus groups interviews were conducted and analyzed thematically. The purposive sample included semi-structured questionnaires among community leaders, village health volunteers, and workers from various occupations who lived in the communities.

Results: Four themes emerged from the qualitative interviews and focus groups: 1) honoring local wisdom as the heart of a regional wellness tourism program; 2) the integration of historical traditions and regional lifestyles into a wellness tourism program; 3) the need for government supportive policies that help to fund community wellness initiatives to boost the local economy and tourism ;and 4) attention needed to improve the quality of life for the local communities while promoting wellness tourism in the region.

Conclusion: This community-based participatory action research approach created a synergy among stakeholders from multiple provinces in the lower north region of Thailand. Preliminary steps are underway to continue with the development and implementation of a wellness tourism initiative that can showcase the unique cultural, historical, and environmental attributes related to the health and wellbeing within this region.

Keywords: wellness tourism, participatory action research, empowerment

Introduction

Wellness tourism is a broader concept than the earlier notion of medical tourism or medical travel, which referred to seeking medical services or procedures that promote physical or mental health while traveling in other countries. While wellness tourism may also include such services, it is now generally conceptualized as travel to other countries to seek opportunities to promote physical and mental health and to enhance overall wellbeing (Kemppainen, et al., 2021; Majeed and Gon Kim, 2023). Wellness tourism focuses on a wide range of opportunities to enhance wellbeing within a given location that go well beyond the typical spa, yoga, alternative therapy, herbal or meditation centers. Unique historical sites, cultural traditions and traditional foods are showcased as well as natural resources such as hot springs, beaches, rivers, mountains, or unusual native animals.

Wellness tourism contributes significantly to the economy of Thailand. A recent systematic literature review on the re-emergence of wellness tourism in Thailand revealed seven components that constitute the concept: destination environment; travel and tourism policy; infrastructure; man-made and cultural resources; wellness strategy and structure; innovation potential and collaborative and proactive marketing (Phutong et al., 2021;2022). Covid-19 severely impacted not only the wellness tourism businesses in Thailand and other middle-income countries in Asia but also affected many people's ability to find work to support their families. This also compounded other potential effects of the pandemic related to physical or mental wellbeing such as isolation, depression, anxiety, grieving over the death of loved ones, or physical illness from the virus. A recent study comparing seven middle-income countries in Asia reported that Thailand had the highest scores related to the negative impact of Covid on mental health – as measured by the Impact-Event Scale (IES-R) and had the highest stress, anxiety and depression levels as measured by the DASS-21 (Wang et al., 2021). Informal workers were particularly adversely affected during the pandemic (Li, Wang and Shen, 2022). They generally have less job security and work for marginal wages. Informal workers contribute significantly to the economy of Thailand, and they represent slightly more 50% of the non-agricultural workers in Thailand. The lower northern part is a developing area for prosperity and hub, happiness, creative economy and smart and innovative city termed as MICE: Meeting, Incentive, Convention, and Exhibition. Empowerment is the process of building autonomy, power, confidence, and capacity which enhance the developmental process in this area (Thailand National Statistics Office, 2019).

In order to address the economic, mental and physical effects from the Covid-19 pandemic, the Thai government implemented a new campaign in 2022 entitled "Amazing Thailand New Chapter." This is managed by the Ministry of Tourism and Sports (Sangian and Thadafrom, 2022). While some regions of Thailand have embarked on recent wellness tourism initiatives (Muenchan et al., 2018; Puntien et al., 2022). the lower north region of Thailand has not had a comprehensive effort to collaborate on a wellness tourism regional program for foreign travelers. This could improve not only the local economy and wellbeing of Thai people in this region but also serve to promote health for those who journey to Thailand based on the empowerment theory.

Materials and Methods

Research design

We conducted a descriptive qualitative study using a community-based participatory action model based on the empowerment theory. We utilized Creswell and Poth's. (2018) steps for the purposive sampling, data collection, study protocols and data analyses using a thematic approach.

Community-based participatory action research (CBPAR) is referred to as a method, a framework and sometimes, an epistemology, that is - a philosophy or knowledge about the way that the research should be conducted. Fine and Torre. (2021) define it as "a framework for engaging research with communities interested un documenting, challenging, and transforming conditions of social injustice." CBPAR is an inclusive process that includes researchers and key informants that seeks to transform an outcome that is based in inequity in the community of concern (Fine and Torre, 2021).

The concept of empowerment is an integral component of CBPAR as it speaks to the transformation of the root causes of social injustice being examined. A critical review of the empowerment theory by Joseph (2021) revealed that there is agreement within the literature on the definition of empowerment. The key characteristics include that it is a transformative process which supports disenfranchised people to take action to mobilize their own strengths in order to change the dynamics of unequal power in which they are situated. Fawcett et al. (1995) proposed a model using empowerment theory decades ago to establish collaborative partnerships targeting community health and development in the US. The three dimensions in their model were integrated in our study: person or group factors, environmental factors and empowerment capacity and outcomes. We sought to include the voices of multiple stakeholders from various levels of Thai society in our deliberations which focused on social, cultural, health promoting and environmental factors that can contribute to wellness tourism. The goal of our program development process is to ultimately impact the outcomes of Thai people's economic status, wellbeing as well as the health and wellbeing of our visitors. See Figure 1 for our Conceptual Model of Empowerment using a CBPAR Approach.

We first engaged the community stakeholders though direct calls and use of our contacts in each province to invite them to participate in this project. We sent summaries of our CBPAR goals and objectives and proposed methods. We sought to empower the people in the lower north of Thailand through interviews with leaders in the communities as well as common laborers. We used individual interviews and focus group interviews to gather data with the aim of identifying the key elements needed in a lower north regional wellness tourism program. All interviews were audio-recorded and later transcribed. Field notes were taken at all interviews which included observations and reflective notes about the process of the study. These notes were taken into consideration during the analysis phase.

Sampling method

The sampling for the interviews and focus groups was a purposive sampling method for the first stage of 90 interviews with a quota sampling strategy to ensure that each group was represented by at least some community leaders, some entrepreneurs/business leaders and some non-managerial workers including farmers and from other sectors of the economy. The participants in the subsequent workshop were drawn from the original group of 90 and were invited purposively to again ensure there was representation from various types of stakeholders.

Study protocol

The data were collected between 16 August 2021 to 15 August 2022. This article reflects the first four steps in this process which included: Step 1. Gaining access to the community of interest; Step 2. Interviewing 90 people who were considered key informants within each of the nine provinces. Step 3. Conducting a critical reflection workshop using focus groups with 40 invited participants from the earlier interviews. 4. Determining recommendations for a proposed wellness program based on the workshop outcomes. Implementing and evaluating the wellness tourism program will be the two final steps. The implementation phase is underway, and it is anticipated that an evaluation of the outcome of the program will be conducted within two years of its initiation. Ethical approval for the study was obtained from the Naresuan University Institutional Review Board (IRB No. P2-0153/2564, COA No. 368/2021), Naresuan University, Thailand, dated on August 14, 2021, until August 14, 2022. All participants who were interviewed signed an informed consent after the researchers thoroughly explained the purpose of the study, its methods, and protections related to the participants' autonomy and privacy.

Data analysis

We used Creswell and Poth's (2018) steps in data analysis which included: ensuring security of all data files; taking field notes throughout – pre, during and post interviews; continually summarizing field notes; working with words - reading recorded transcripts line by line; identifying codes; reducing codes to themes; relating themes to the literature; creating a point of view; and final report of data.

Standards of validation

Bradbury et al. (2019) suggested seven indicators of quality that researchers should address in action research. They include articulation of objectives; partnership and participation; contribution to action research theory and practice; clear methods and process; actionability; reflexivity and significance. A limitation of our paper is that we have not yet reached the stage of actionability as this was the first stage of the process of development of a wellness tourism program in lower north Thailand. However, we articulated our objectives and processes in this paper in order to contribute to the practice and policies of other potential CBPAR collaborations in Thailand and Southeast Asia. We established protocols so that our process was transparent. Reflexivity throughout all phases of this study was emphasized through field notes by researchers and reflective discussions within the key informants in the focus groups during the second stage of data collection. The potential significance of the process has been identified but the outcome of this CBPAR project is still to be determined.

Results

Ninety key stakeholders participated in this study. After access to the community was obtained with the support of the community leaders, the next phase of the study involved recruitment of 90 people which consisted of ten people from nine provinces in the lower north region of Thailand. Each of the nine groups included representatives from community leaders (n=3), business leaders/entrepreneurs (n=3) and workers from various other sectors of the economy as an employee (n=4). The focus of their interviews was on the feasibility of a regional wellness tourism program.

Table 1. Demographic Description of study participants

Characteristic	First Phase of Data Collection N=90	Second Phase of Data Collection N= 40 (selected from first phase of data collection)
Age		
Mean and SD	42.6 (4.55)	38.4 (6.75)
Range	22-70	22-65
Sex		
Male n (%)	52	22
Female n (%)	38	18
Family Income per Month (USD)		
Mean	318	318
Range	705-225 USD	705-225 US
Highest Education Level Attained n (%)		
Primary school		
Secondary high school or Vocation	18	8
Bachelor's degree or Equivalent	35	15
Higher than bachelor's degree	25	13
	12	4
Occupation/Community Role		
Community leader or Policymaker	16	4
Farmer	22	12
Worker in other industries	38	20
Unemployed or retired	14	4

A sub-sample of 40 participants was later selected from the group of 90 participants as a focus group to attend a critical reflection workshop to further an actual program development of a wellness tourism model for the region. This group of forty participants were from the provinces of Sukhothai, Phetchabun, Phitsanulok, and Uttaradit. They lived in both rural and urban areas. The age range was 24 to 65 years old. The average income was 10,000 Bahts per month which is a medium income. The majority were married (60%) and half had attained a college degree. Forty percent were farmers and the remainder held jobs in other industries. Most reported chronic diseases were such as diabetes, high blood pressure (40%) and hyperlipidemia (30%). None reported current smoking; however, many acknowledged they sometimes drink alcohol during festival times or at parties. See Table 1 for a demographic description of both entire sample of 90 study participants and the sub-sample selected for the workshop.

Results from the critical reflection workshop

Four themes emerged from the workshop data. They were descriptive of themes related to key components in the development of a wellness tourism program for this region. They included as follow 1) Honoring local wisdom as the heart of a regional wellness tourism program; 2) The integration of historical traditions and regional lifestyles into a wellness tourism program; 3) The need for government supportive policies that help to fund community wellness initiatives to boost the local economy and tourism; and 4) Attention needed to improve the quality of life for the local communities while promoting wellness tourism in the region. Each theme had supporting quotes including the following examples:

Honoring local wisdom as the heart of the program

The participants in this study realized the importance of local wisdom in the development of wellness tourism. They sought to create a unique program that had a distinctive identity. For example, types of massage and also food preparation and local food choices are considered part of the local wisdom in terms of what types of massage are offered or what foods have been chosen to be farmed or caught in the local waters. Food choices and availability were considered a cornerstone of tourism development in each area – most of which are quite unique. Several commented on the idea of respecting local wisdom.

"*Where now there is a boom in health tourism…. but if we don't put our local wisdom into it, it's all the same. Visitors can travel anywhere. They don't have to come to our communities or our hotels*." (Entrepreneur no 1, 56 years old)

"*Nowadays, local wisdom is regarded as the key point that makes us stand out from the rest. Otherwise, Thailand, especially most of the northern region, is similar. If we are going to focus on tourism for good health, it must be our local wisdom. Our food, our massage is like no other since the generation of our great-grandparents. We must make it different, so people will come*." (Entrepreneur no 1, 64 years old)

Integration of historical traditions and regional lifestyles

The participants shared stories that reflected the long and treasured history of the provinces. In addition the varied customs and ways of life within each community can be integrated into a wellness tourism program. This would help to market the notion that the provinces each have unique characteristics to attract both Thais and foreign travelers. Two participants who were entrepreneurs in the business world shared:

"*To allow health tourism for all ages, it must be diverse and highlight the history of the northern region. Not only ancient cities but also old temples have to be combined with the way of life of the communities. As a result, the wellness tourism is welcome to adults, children, and foreign tourists for studying our history*." (Entrepreneur no 2, 58 years old).

"*The wellness tourism must do blends. Otherwise, it won't last long. We must do it, so it will not crash because it doesn't suit us, like fired straw which creates temporary interest and is forgotten quickly. If it is good for anyone to come, it must merge into a homogeneous one for it to be good to survive. The wellness tourism is not an established tourism, and then it ends soon due to a temporary interested topic*." (Entrepreneur no 1, 62 years old).

Need for government supportive policies

The key stakeholders who participated in this study identified the importance of government policy and support, which is the current key mechanism in driving the economy and upgrading health tourism in the lower northern region to be sustainable and concrete. They acknowledged how the Covid-19 disease outbreak has caused the interruption of Thai tourism. They recognized that to stimulate and conduct wellness tourism, the community requires concrete economic and sustainable policies with government support. Three participants shared their thoughts on this theme:

"*The Thai government must issue policies to support health tourism. Due to coronavirus disease outbreak, if the government does not help us - what shall we do? Who will come to visit? Even if our tourism program is excellent and service is good, if no one travels here... so, there is no money, and we cannot operate our tourism. Government must help us*." (Employee no 1, 24 years old).

"*Policies and support from government and agencies are very important. Anything that can go on must be guided by government. We are trying to help ourselves. But if government supports us, it would be very good. Consequently, we will have people be able to travel, have jobs, have income, and we can operate it by ourselves*." (Community leader no.3, 61 years old).

"*We can operate the wellness tourism, but it's not as good as government support. Policies must be beneficial in the long run. If only us... we can do the wellness tourism. However, it is not sustainable. Currently, the government must enhance us as well. Government and communities must help each other, so we can survive*." (Employee no 2, 32 years old).

Attention needed to improve the quality of life for the local communities while promoting wellness tourism in the region

The participants explained in their interviews about the importance of health and wellness tourism in improving the quality of life. They spoke of quality of life in terms of physical, mental, emotional, social, and spiritual dimensions. The wellness tourism must be consistent with the context, lifestyle, and characteristics of the community in the lower northern region, such as eating local healthy food, and exercise in accordance with the local lifestyle. Three workers shared their thoughts on this theme:

"*According to reading from the internet, the wellness tourism is good as well. But to improve the quality of life, it must be developed with the way of life of those communities or groups. For example, whoever comes to eat vegetables all the time is not, but we know how to eat things that don't change many lives, such as Khao Pan vegetable which is a heathy food. If we eat good food and exercise, it should be better.*" (Employee no 3, 35 years old).

"*How can we operate the wellness tourism? If we prefer to improve our life quality, the wellness tourism should be adjusted to the life way of communities and tourist groups. The wellness tourism should not enhance the life way of communities in a short way, so the end of project is nothing*." (Employee no 3, 49 years old).

"*I have worked for a long time; however, the wellness tourism must be in the middle way and can be adjusted to everybody. It should not emphasize too much health. If the wellness tourism does like that, we do not have money to afford. In other words, it should be suitable for us as well.*" (Employee no 4, 42 years old).

Discussions

This study was the first to address the needs of the lower northern section of Thailand which encompasses nine provinces as social needs about the wellness tourism. It was developed by the public health and nursing faculty at a public university in the lower north region of Thailand in alignment with a goal to stimulate innovate programs and entrepreneurship within the region. Using a participatory action approach to the formation of a regional cluster of wellness tourism has been reported in Australia (Bradbury et al., 2019). In Thailand, Puntien et al. (2022) developed a provincial level of a wellness tourism but did not frame it as a participatory action approach despite following many of its principles. Other reports have identified the role of the university as a leader in community participatory action research initiatives as well (Perkins, 2021). Our program development differed from another recent wellness tourism model from Ranong province (Puntien et al., 2022) in that it is based on a cultural attraction with three basic elements, which are tourism attraction potential, supporting tourism and the potential to support tourism management (Puntien et al., 2022). Component 1: Tourism attractiveness means attracting attention or having artistic and cultural value that can impress and delight tourists. Component 2: The capacity to support tourism refers to the elements that contribute to enhancing the cultural resources to be important and suitable for tourism management. Component 3: Management refers to the ability to control, supervise, operate, and manage tourist attractions.

Health tourism covers travel activities of tourists related to improving one's health. The person who travels for the primary motivation of health seeks to improve his/her physical, mental, and spiritual, health through medical and wellness-based activities. In terms of health tourism of the lower north, t these are a group of provinces that stand out in history and natural culture including Dharma tourism, which is based on the lifestyles, Thai culture, Thai context, religion and spiritual as a Dharma tourist attraction. Also, it is an outstanding historical and cultural attraction as a World Heritage site, with a beautiful natural attraction, local wisdom tourist attraction, and health tourism, beauty, and Thai traditional medicine are located in these areas. As a result, the wellness tourism can be connected to intra-regional tourism and links with the Mekong sub-region which are sister cities and potential cities such as in China, India, Europe, America, and international countries. Particularly, travel grouping, such as Dharma, historical, cultural, natural, ecological tourism, and tourism related to community way of life, elderly people, and healthcare has a special feature as the North-South economic corridors are integrated networks of infrastructure such as highways, rails, roads, and ports within a geographical area designed to stimulate economic development. The East-West Economic Corridor and the other economic corridors can cooperate with Thailand, Mekong sub-region countries, and a group of countries with potential in trade, investment, education, public health, agriculture, and tourism with convenient transportation (Buddhabhumbhitak et al., 2019; Somnuke et al., 2023).

In addition, these areas are centers for meetings and cooperation between the lower northern provinces, related provinces, and related countries (Nonsiri and Choesawan, 2020). If considering the tourism resources of the five lower northern provinces, it is found that there are possibilities conducive to supporting health tourists; however, there are many differences, especially the availability of natural resources as an important part of health-promoting tourism (Strategy Development Unit: Northern Province, 2021; Thaihealth, 2022).The wellness tourism in Thailand is part of the application of wisdom based on traditional healthcare science as part of health services. As a result, health services in Thailand are diverse and outstanding. In other words, the wellness tourism is accepted and known by health tourists around the world. The wellness tourism in Thailand includes a holistic healthcare approach, Thai Hermit Datton Massage, rejuvenation of mind and body along with healthcare, detoxification, and caring for food according to the household elements; thus, the wellness tourism services have a specific context that can support the needs of all levels, from high-end to general users. Therefore, the wellness tourism can be included as part of the group's guided tours and package tours, or additional services of accommodation, such as spa, resorts, and retreats, etc. (Panyaatisin and Prasitthrathsint, 2021). For the wellness tourism operation, important factors which make tourists choose to use health tourism in Thailand are as follows (Lee-Anant, 2022). The first point is service standards consisting of the quality of personnel, equipment, facilities, communication technology, and advanced medical technology, as well as the matter of prices that can be selected according to a variety of budgets. With the promotion and efficient supervision from government, the wellness tourism can provide the highest level of safety to service users. The second point is that the good atmosphere and surroundings of the landscape make service users feel comfortable and relaxed. The third point is that Thailand is a country that can offer healthcare services along with other tourism sectors, with treatment costs that are less expensive than international treatment standards; therefore, after treatment, tourists can still afford to travel more than to other countries (Bureau of Sanatorium and Art of Healing, 2021; Suksri and Samkhuntod, 2021; Panyanak, Chaisaengpratheep and Masuak, 2022; Klangnurak and Jaronenwisan, 2023).

In addition to the themes identified related to the development of a wellness tourism program, the participants in the workshop developed a preliminary one- and two-day exemplar of a travel plan for tourists. This will need additional fine tuning, but it included the following highlights shown in Table 2.

Challenges faced during this study included the data can be used as information for the development of the area and a model for development guidelines for other areas in the lower northern region for sub-district health promotion hospitals, sub-district administrative organizations, and private sectors in these areas; therefore, they can extend the development of a health promotion model program for health tourism. The data can be used to develop principles of the health promotion for community leaders, people, entrepreneurs, and other stakeholders in these areas.

Limitations of this study included length of time to conduct the stages of the study which was often impacted by the continued pandemic. The group of 40 for the workshop could not represent all sectors of the workforce that were present in the larger group of 90 participants so the transferability of their findings may not hold true for all sectors of the workforce.

Another limitation is the lack of funding at this stage to support marketing experts and advertising campaigns to move the wellness program forward.

Conclusions

In conclusion, the development of a wellness tourism program was deemed feasible by key stakeholders from nine provinces in lower north Thailand. A community-based participatory action framework that integrated the critical aspects of empowerment theory allowed a group of Thai people to engage in collective action to overcome the economic and health related negative impacts of Covid-19. Rather than wait for government action, they were able to take charge of their local situation and move forward with a plan that outlined the key characteristics that would be required for a successful wellness tourism program in their region. More work needs to be done in terms of developing and implementing a cohesive a marketing strategy to promote the plan and to receive targeted government financial support to further develop the program. This is to ensure that the social and economic inequities caused by Covid-19 are addressed in a manner that promotes health and reduces disparities among the Thai people in these provinces. Future recommendations include continued partnering with the stakeholders and securing government grants to aid in this evolving process. Future research needs to include an evaluation of the wellness program after two years – using follow up interviews with key stakeholders and comparing quantitative economic and tourism data per-pandemic, during pandemic years and after implementation of the wellness tourism program during the ongoing pandemic era

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Conflict of Interest

All authors have no conflict of interest related to this study.

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ORIGINAL ARTICLE

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An exploration of the reception and expectations of medical information among hospitalized elderly patients and their primary caregivers in Taiwan: a mixed-methods study

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ABSTRACT

Introduction: Adults older are increasing in Taiwan. The receipt of information and expectations related to informational messages provided to hospitalized elders have not been studied. The study aim is to explore the status of receipt of information and expectations among hospitalized elders and their care providers in Taiwan.

Methods: A descriptive, cross-sectional and mixed-methods study design was used in in a geriatric ward in a medical center. The participants were 60 patients of 65 years and their care providers were obtained by convenience sampling. The data were collected using a semi-structured questionnaire and checklists. Physician messages and the data for each participant were collected in one regular ward round.

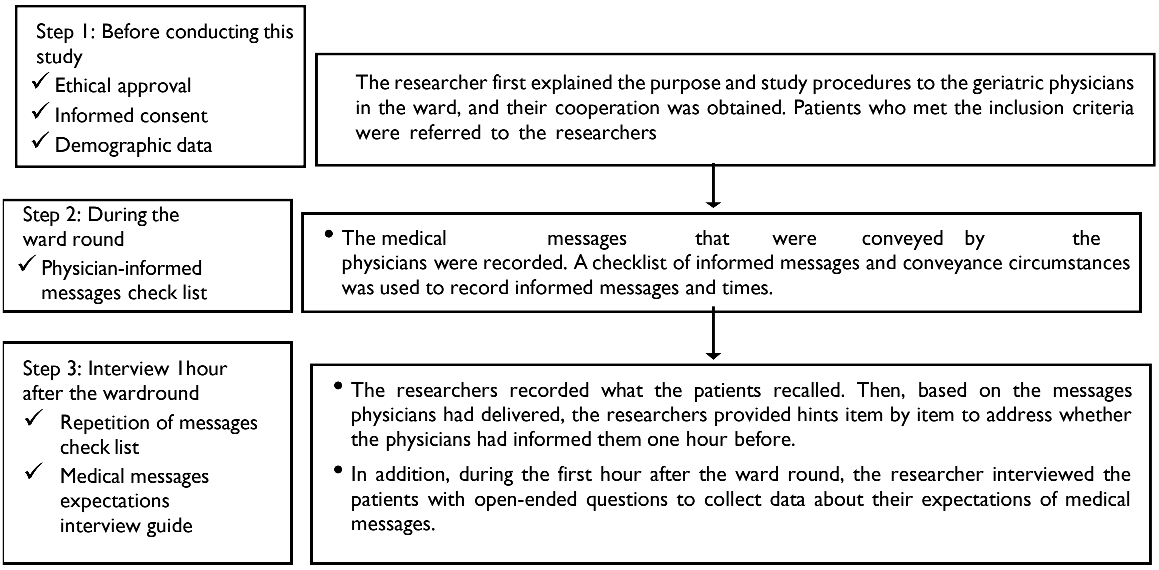
Results: Twenty-eight patients (46.7%) could not repeat the messages. The message repetition rate was 21.9% the first hour and was 62.9% after hinting. The total message repetition rate of the main care providers was 36.0% and was 80.3% after hinting. “Desire to know the reasons for discomfort” and “discharge date” were the messages most expected by the patients. “None,” “conditions associated with the progress of the illness,” “discharge date” and “relevant information of examination results” were the messages most expected by their care providers.

Conclusions: The majority of the hospitalized elderly and their care providers could not repeat medical messages conveyed by the physicians. The informed messages should be sorting, and the reminder should be repeated within a short time. Medical professionals should be aware of the patients’ real concerns before providing medical information.

Keywords: receipt of information, expectation, hospitalized elders, care providers, Taiwan

Introduction

Adults older than 65 years have increased rapidly in Taiwan. Taiwan has become an aged society (14%) in 2018 and is predicted to become a super-aged society in 2025 (Ministry of the Interior, 2018). A Taiwan elderly population health survey found that more than half



Step 1: Before conducting this study
- ✓ Ethical approval
- ✓ Informed consent
- ✓ Demographic data

The researcher first explained the purpose and study procedures to the geriatric physicians in the ward, and their cooperation was obtained. Patients who met the inclusion criteria were referred to the researchers

Step 2: During the ward round
- ✓ Physician-informed messages check list

- The medical messages that were conveyed by the physicians were recorded. A checklist of informed messages and conveyance circumstances was used to record informed messages and times.

Step 3: Interview 1hour after the wardround
- ✓ Repetition of messages check list
- ✓ Medical messages expectations interview guide

- The researchers recorded what the patients recalled. Then, based on the messages physicians had delivered, the researchers provided hints item by item to address whether the physicians had informed them one hour before.
- In addition, during the first hour after the ward round, the researcher interviewed the patients with open-ended questions to collect data about their expectations of medical messages.

Figure 1: Research design flow chart

(64.88%) of the population 65 years and older experience chronic or serious diseases (Ministry of Health and Welfare, 2018). Furthermore, research has shown that elderly patients have more multiple comorbidities, medication requirements, and psychosocial and emotional distress than the general adult patient population in Taiwan (Tsai, Lu, & Zhang, 2015). The degenerative physical conditions, such as physical (e.g. visual and audio perception), cognition (e.g. memory, judgement, and comprehension), psychological (e.g. low mood) and social (e.g. pleasing receivers) disadvantages of older adults may result in difficulties in communication during hospitalization. Difficulty to understand medical terminology and lacking communication of critical medical information may place elderly patients at a high risk of becoming incapable of making decisions (Lin, Huang, Chiang, & Chen, 2013; Lin, Pang, & Chen, 2013). If the phenomenon in clinical practice cannot be explored deeply it is difficult to improve the effectiveness of communication of elders in communicating or messages delivering process. In addition, the informed consent procedure may not fulfill its purpose of respecting patient autonomy.

The researchers (Evans et al., 2012) explored the attitudes and experiences related to communicating with physicians among elderly patients who were older than 60 years and in the end-of-life stage of progressive cancer in Britain, the Netherlands, and Belgium. The results showed that these elderly patients were unable to express their wishes or to fully understand the content of communications. Furthermore, the study indicated that the conditions of communication preferences were highly individualized. In a qualitative study, 60 elderly residents living at a holistic care center in the United States were interviewed to explore their willingness to discuss their medical conditions. The study concluded that physicians should not guess the preferences of patients, and that they should assess the actual concerns of patients before discussing their disease with them. Patients might not want to know or discuss their disease (Ahalt et al., 2012). However, studies related to the communication barriers and needs among hospitalized elderly patients are still lacking.

A clinical study conducted in Taiwan on the miscommunication rate between surgical ward patients and their physicians showed that the average rate of miscommunication was 66% between patients/families (Chou, Chen, & Lee, 2010). Medical care is highly specialized. The reasoning and judgment behind treatment regimens and strategies that are performed by healthcare professionals are difficult for laypersons to understand, let alone hospitalized elderly patients with poor memory and comprehension abilities. Regarding expectations, qualitative study (Yen, Chen, & Chou, 2002) using a grounded theory method generated six aspects of patient concerns based on the results of the study. The hospitalization experience was depicted as a search for specific aspects of healthcare needs when giving service and their responsibilities, food preparation, environment, and medical expenses including physical condition, promptness and effectiveness of nursing services, health professionals' attitudes related to care (Yen et al., 2002). However, the above discussion and research targeted adult and cancer patients. More studies are needed to understand the contexts in which patient/families and medical professional communication occur, especially patients' perceptions and expectations of medical information. Therefore, the aim of this study is to explore the current status of the receipt of medical messages and the expectations of hospitalized elderly patients and their care providers in Taiwan.

Materials and Methods

Study design and sample

This was a descriptive study with a cross-sectional, mixed-methods research design. Convenience sampling was applied, and the research was conducted in a geriatric ward in a medical center in southern Taiwan. Using participant observation, the researcher accompanied physicians daily at a regular time in the morning as they visited every participant to observe and to record the informed medical messages delivered from physicians to patients and recommended care providers. A checklist of message conveyance circumstances was used to record the times and the behaviors of the patients and the physicians during communication. On the basis of the information content, the researcher marked a checklist that categorized medical messages into 12 different types. During the first hours after the ward round, the researcher asked the participants to recall the messages that were communicated by the physician in the morning ward round.

Patients who met the following inclusion criteria were recruited: hospitalized elders had to be at least 65 years and older and had to be able to communicate with researchers. The exclusion criteria included difficulty with cognitive expression or a critical health condition. The inclusion criteria for the recommended care provider included a person who was recommended by the hospitalized elder who could stay with the patient during hospitalization. This person could be hired or could be a relative and had to be able to communicate with the researchers. If the patient's primary care provider was unwilling to participate in the study, the patient was still admitted as long as the patient agreed to participate.

Data collection

The researcher first explained the purpose and study procedures to the geriatric physicians in the ward, and their cooperation was obtained. Four geriatric physicians were involved in this study. During the data collection period, patients who met the inclusion criteria were referred to the researchers by these physicians. In addition, the recommended care providers were recommended by the patients and met the inclusion criteria. The person who was recommended by the hospitalized elder was able to stay with the patient during hospitalization. An information sheet was provided to all the participants. The participants provided written consent forms before data collection. Ethical approval was granted by the institutional review board of a medical center in southern Taiwan (Ethical approval number: B-ER-104-086).

Demographic information was obtained from medical records, including age, genders, marital status, educational level, economic status, and occupation. The researcher accompanied the physicians daily at a regular time in the morning as they visited every participant to observe and to record the medical messages delivered by the physicians to the patients and recommended care providers. It was ensured that the medical messages conveyed by the physicians were received and understood by the patients and the recommended care providers, and the messages were recorded. On the basis of the information content, the researcher marked the physician-informed messages checklist (Table 3 and Table 4). This checklist contained 12 items representing different types of medical messages.

For each participant, data were collected in one regular ward round. One hour after the ward round, patients and the recommended care providers who were with the patients during the physicians' ward round were asked to recall the messages communicated by the physician in the ward round. Then, based on the messages delivered by the physicians, the researchers provided item by item hints and asked the recommended care providers to address whether the physicians had informed them an hour before. If they answered "yes," the researcher asked them to repeat the message. The repetition of messages checklist (Table 3) was used to record the correct answers that the number of messages physician gave to patients/ recommended care providers. At the end of the interview, the researcher asked the patients and the recommended care providers open-ended questions "What do you expect from information disclosure of physician?", "Is the disclosed information helpful? important? meaningful?" to collect data about their expectations related to the delivery of medical messages. If the recommended care providers could not stay until the interview time, the data were collected via a telephone interview. The data collection procedure is summarized in Figure 1.

Table 1. Demographic characteristics of patients (N=60)

Characteristics	Participant n=60		
	M (SD)	n	(%)
Age	79.07 (±8.521)		
Gender			
Male		27	45.0
Female		33	55.0
Marital status			
Married		28	46.7
Single		1	1.7
Divorce or widowed		31	51.7
Educational level			
Illiterate		19	31.7
Elementary school		26	43.3
Junior high school		7	11.7
Senior High school		4	6.7
College		1	1.7
University		3	5.0
Economic status			
Independent		20	33.3
Dependent		39	65.0
Low income, health insurance		1	1.7
Occupation			
No		55	91.7
Yes		5	8.3

Table 2. Demographic Characteristics of Recommended Care Providers (N=33)

Characteristics	Participant n=33		
	M (SD)	n	%
Age	58.48 (±12.52)		
Gender			
Male		13	39.4
Female		20	60.6
Marital status			
Married		13	78.8
Single		20	21.2
Educational level			
Illiterate		2	6.1
Elementary school		7	21.2
Junior high school		4	12.1
Senior High school		7	21.2
College		4	12.1
University		8	24.2
Declined to respond		1	3.0
Occupation			
No		17	51.5
Yes		16	48.5
Relationship with the patient			
Spouse		10	30.3
Children		20	60.6
Relatives		3	9.1

The researcher was responsible for data collection, organizing and interviewing to ensure the integrity and correctness of the collected data. The responses of the participants were recorded in the questionnaire immediately. The status of the accompanying caregivers was also documented. Two of the nurses who had assisted in validating the data collection process also participated in validating the content analysis process with advisors to ensure the integrity of the content analysis. One of the nurses was a doctoral student with a psychiatric nursing specialty, and the other was a geriatric nursing specialist working in the ward. Any disagreements between the researcher and these two nurses were discussed until a consensus was reached.

Instruments

The research instruments used in this study were developed by the researcher in the pilot study (Chen, Chang, Chen, & Huang, 2018). The content validity of the questionnaire was determined by 2 geriatric physicians and 2 nursing specialists. The questionnaire included the demographic data which included basic demographic data (Table 1 and Table 2) and physician- informed messages, message conveyance circumstances, and the repetition of messages from patients during the first hours after the ward round. The physician-informed messages checklist (Table 3 and Table 4) comprised diagnosis, symptoms, treatment, therapeutic purposes, prognosis, treatment costs, resources or available services, effects on daily living, the results of the consultation, the results of tests, and the results of special examinations and treatments. Any information that could not be classified according to the preceding items was also recorded. The prognosis conveyed by the physicians comprised the expected results after diagnoses such as complications, recovery rate, discharged day, and mortality. Furthermore, any assistive devices used, the time required to convey the information, the distance, posture, and perspective of the physician on the part of the patient, were recorded as the message conveyance circumstances in the physician-informed messages checklist. The repetition of messages checklist also comprised the 12 items listed in the physician-informed messages checklist. The medical messages expectations interview guide included questions such as “Do you remember that the physician was here 1 hour ago?” “Could you please tell me what the physician said?” “What did you expect from the information disclosure of the physician?” and “Was the disclosed information helpful, important, and meaningful?”

Data analysis

IBM SPSS Statistics 17.0 (SPSS/IBM Inc., Chicago, IL, USA) was used for all analyses. Demographic characteristics and questionnaire data, such as percentage, mean, and standard deviation, were summarized using descriptive statistics. Qualitative data were analyzed using a thematic analysis (Guest, MacQueen, & Namey, 2011) to examine the interview responses concerning the expectations of medical information informing during hospitalization. The descriptions of all the participants were read several times to gain an overall perspective, and statements

Table 3. Message Categories and Message Repetitions of Patients (N=237)

Message Categories	Physicians'message		Repetition before hinting		Repetition afterhinting	
	n	%	n	%	n	%
Diagnosis	3	1.3	0	0.0	2	66.7
Symptom	48	20.3	12	50.0	27	56.3
Treatment methods	54	22.8	16	29.6	37	68.5
Treatment purpose	31	13.1	5	16.1	16	51.6
Prognosis	39	16.5	9	23.1	28	71.8
Cost	4	1.7	0	0.0	1	25.0
Resources or services available	1	0.4	0	0.0	1	100.0
Effect of daily living	20	8.4	3	15.0	11	55.0
Consultation results	4	1.7	0	0.0	2	50.0
Examination results	13	5.5	1	7.7	9	69.2
Special examinations and treatment results	7	3.0	1	14.3	4	57.1
Others	13	5.5	5	38.5	11	84.6
Total	237		52	21.9	149	62.9

Note: * % = Number of physician messages (n) / total messages conveyed by the physician

that related directly to their expectations were extracted from each description. As the analysis moved from a concrete level to an abstract level of understanding, meanings were formulated into clusters of similar ideas. Thus, the essence of the expectations began to emerge. The researcher then created a statement that reflected as complete a description as possible of the expectations of medical messages.

Results

Data were collected from April 18, 2017 to March 23, 2018. In total, 68 patients were approached. Seven patients were excluded due to their being in a critical condition and for personal reasons. One patient declined to participate because of a second hospitalization. Ultimately, 60 patients agreed to participate. Fifty-four patient care providers agreed to participate and 33 of them were able to accompany the patients during the delivery of the medical messages. Among the 33 participants, two were interviewed by phone because they could not stay until the interview time.

Characteristics of the patients and primary care providers (Table 1 and Table 2)

Demographic characteristics of patients are shown in Table 1. The age of patients ranged from 65 to 96 years (mean=79.07, SD=8.52). Twenty-seven (45.0%) were male, 33 (55.0%) were female, and 28 (46.7%) were married. Nineteen patients (31.7%) were illiterate; 40 (66.6%) were financially dependent, and 55 (91.7%) were unemployed (Table 1). Moreover, there were seven patient care patterns including: families- full-term (16.7%), families + hired care provider full-term (3.7%), families + friends/relative taking turns (40.7%), families + hired care provider taking turns (1.9%), families + friends/relatives + hired care provider taking turns (7.4%), families by convenience (0.34%) and families by convenience + hired care provider full-term (22.2%). Lengths of hospitalization on the data collection date ranged from 2 to 61 days, with an average of 7.05 days. Patients used 1-20 types of medicines during hospitalization (mean=8.37, SD=3.84), with thirteen (21.7%) patients using ten types of medicine and eight (13.3%) using three or more types. Regarding other physical conditions, eye conditions were the most prevalent, with 54 patients (90.0%) stating that they experienced presbyopia. Eight patients (13.3%) had hearing loss (unilateral or bilateral), and five (8.3%) had hand discomfort or were disabled in terms of writing.

The patients' care providers included spouse (16.7%), daughter-in-law (5.6%), children (42.6%), other relatives (1.9%), friends (1.9%) and hired care providers (31.5%). Demographic characteristics of recommended care providers are shown in Table 2. The age of the 33 primary care providers who were able to accompany patients during the delivery of medical messages ranged from 37 to 90 years (mean=58.48, SD=12.52). Thirteen (39.4%) were male; 20 (60.6%) were female, and 26 (78.8%) were married. Nearly 60% were educated above elementary school, and 17 (51.5%) were employed. Twenty (60.6%) of them were patients' children.

Circumstances of conveying medical information

Regarding the physicians, it was observed that while conveying medical information, all four of the physicians engaged in nonverbal communication techniques such as maintaining an arm's distance and maintaining eye contact with the patients. The communication took between 2 and 20 minutes, for a total of 367 minutes (mean=6.12, SD=3.81, median=5.00, mode =3.00) per patient, to complete the communication of medical information, and the physicians did not use any assistive devices during this process. Regarding the patients and recommended care providers, while the physician informed the patients of their conditions, none of the patients or recommended care providers wore glasses or used a pen and paper to take notes. In addition, neither patients nor their recommended care providers took the initiative to ask questions.

The number of messages conveyed to patients from physicians during a single ward round ranged from two (n=7, 11.7%) to eight (n=1, 1.7%), with four messages conveyed the most commonly (n=19, 31.7%). The number of messages conveyed to the recommended care providers from physicians during a single ward round ranged from two (n=3, 9%) to eight (n=1.3%), with four messages conveyed the most commonly (n=13, 39.3%).

Message categories and message repetitions of patients (Table 3)

In terms of the message categories, the physicians conveyed medical information in 12 categories with 237 discrete messages. Messages related to treatment method were the largest single category, with 54 participant counts comprising 22.8% of the total messages. The next largest category was explanation of symptoms, with 48 participant counts comprising 20.3% of the total messages. Only one participant was informed of resources or services available. With regard to message repetition, among the 237 messages, the total number of repeated items before hinting one hour after the ward round was 52 (21.9%). The total number of repeated items after hinting one hour after the ward round increased from 52 (21.9%) to 149 (62.9%). No messages related to the diagnosis, treatment purposes, cost, resources or services available, or consultation results could be repeated by the participants (Table 3). One patient made incorrect repetitions, one of whom mentioned information that the physician had not mentioned. During the first hour after the ward round, no single participant could entirely and correctly repeat all of the messages communicated during the informing process.

Message categories and message repetitions of primary care providers (Table 4)

In terms of the message categories, the physicians conveyed medical information to care providers in 11 categories with 147 discrete messages. Messages related to treatment method were the largest single category, with 31 participant counts comprising 21.1% of the total messages. The next largest category was explanation of symptoms, with 30 participant counts comprising 20.4% of the total messages. With regard to message repetition, among the 147 messages, the total number of repeated items before hinting the first hour after the ward round was 54 (36.7%). The total number of repeated items after hinting the first hour after the ward round increased from 54 (36.3%) to 118 (80.3%).

The most repeated messages was in the "treatment method" category (n=15), and the next was "prognosis" (n=13). Messages classified as "others" were all associated with asking care providers to contact another key person involved in the provision of medical messages. Six care providers received this message, and one care provider (16.7%) could repeat the message before hinting the first hour after the ward round, which represented the highest rate of message repetition. "Treatment method" and "prognosis" comprised 48.4% and 61.9%, respectively. No message related to the diagnosis could be repeated by the care providers.

Number of items repetition of patients

Before hinting, twenty-eight patients (46.7%) could not repeat any of the messages; sixteen (26.7%) could repeat one message, and thirteen could repeat two messages. Two patients could repeat three, and one

Table 4. Message categories and message repetitions of primary care providers (N=147)

Message Categories	Physician'message		Repetition before hinting		Repetition afterhinting	
	n	%*	n	%**	n	%**
Diagnosis	3	2.0	0	0.0	3	100.0
Symptom explanation	30	20.4	11	36.7	25	83.3
Treatment methods	31	21.1	15	48.4	28	90.3
Treatment Purpose	20	13.6	3	15.0	16	80.0
Prognosis	21	14.3	13	61.9	17	81.0
Cost	4	2.7	1	25.0	2	50.0
Resources or services available	0	0.0	0	0.0	0	0.0
Effect of daily living	15	10.2	5	33.3	12	80.0
Consultation results	4	2.7	1	25.0	3	75.0
Examination results	8	5.4	3	37.5	6	75.0
Special examinations and treatment results	5	3.4	1	20.0	4	80.0
Others (ask contacting someone)	6	4.1	1	16.7	5	83.3
Total	147		54	36.7	118	80.3

Note: * % = Number of physician messages (n) / total messages conveyed by the physician (participant counts, 147). ** % = Number of participants who could repeat the item/ number of participants informed of the item by the physician.

patient could repeat four messages, respectively. No patient could repeat five messages or more. However, the patients who were unable to repeat any of the messages decreased to twelve, where two patients (3.3%) could repeat five messages; four patients (6.7%) could repeat six messages; two patients (3.3%) could repeat five messages; four patients (6.7%) could repeat six messages, and one patient (1.7%) could repeat seven messages after hinting. The most repeated messages were in the "treatment method" category (n= 37), and the next was "symptom explanation" (n=28). Messages classified as "others" were all associated with asking patients to contact another key person involved in the provision of medical information. Thirteen patients received this message, and five participants (38.5%) could repeat the message before hinting during the first hour after the ward round, which represented the highest rate of message repetition. "Treatment method" and "Symptom"comprised 29.6% and 50%, respectively.

Numbers of item repetitions of care providers

All care providers could remember the physician visit the first hour after the ward round. Before hinting, four care providers (12.1%) could not repeat any of the messages; thirteen (39.4%) could repeat one message, and eleven could repeat two messages. Three care providers could repeat three messages, and one care provider could repeat four messages, respectively. No care providers could repeat five messages. Only one care provider could repeat six messages. After hinting, the number of patients who could not repeat any of the messages decreased to two, where eleven care providers (33.3%) could repeat four messages; three care providers (9.1%) could repeat five messages; four care providers (6.7%) could repeat six messages, and two care providers (3.3%) could repeat seven messages after hinting.

Expectations regarding messages

Patients reported the importance and necessity of physicians' conveying the medical messages. "Desire to know the reasons for discomfort," and "discharge date," were the messages most expected by the patients. "None", "conditions associate with the progress of the illness", "discharge date" and "examination result relevant information" were the messages most expected by their care providers. All of the patients mentioned that physicians providing medical messages that were necessary and very important. Of patients' expectations of the physician in medical information disclosure, three themes were evident: "none," "desire to know the reasons for discomfort," and "discharge date,". The first theme: none. Thirty-three patients reported that they had no expectation of the physician during regular visiting. Among these thirty-three patients, 26 simply stated no expectation, one stated that they did not know what to expect, and one stated that she would not dare to question the physician. The second theme: desire to know the reasons for discomfort. "Desire to know the reasons for discomfort" was stated by eight patients. Their responses included "want to know the reason for discomfort" (Participant 4: P4, P8), "want to know the source of body discomfort" (P13), and "want to know the reason for cough" (P9, P50). The third theme: discharge date. Six patients were categorized under the theme "discharge date." Their statements were as follows: "want to know when I can go home" (P6, 7, 22) and "want to know when I can leave the hospital" (P44).

All of the recommended care providers mentioned that physicians providing medical messages that were necessary and very important. Of recommended care providers' expectations of the physician in medical messages disclosure, four themes were evident: "none", "conditions associated with the progress of the illness", "discharge date" and "examination result relevant information." Twenty-four recommended care providers reported that they had no expectation of the physician during regular visiting. Among these, 20 simply stated no expectation, four stated that they did not know what to expect, and one stated that she would not dare to question the physician. "Desire to know the reasons for discomfort" was stated by 12 recommended care providers. Their responses included "want to know the reason for discomfort (P6, P8)," "want to know the source of body discomfort (P15)," and "want to know the reason for pain (P22). "Two recommended care providers were categorized under the theme "discharge date." Their statements were as follows: "want to know when I can leave the hospital" (P36, P9)." The last theme was "examination result relevant information" stated by four recommended care providers. Their statements were: "How are bacteria produced?", "(after confirming a tumor biopsy)…want to ask (patient's) long-term survival rate due to caregiving considerations" (P18), ("after confirming a kidney examination)…Can one drink more water with kidney stones?" (P14). In addition, either patients or recommended care providers did not ask questions even when they had exceptions on medical messages informing after the ward round.

Discussions

The medical message repetition rates of elderly patients

This research, an innovative study in Taiwan, examined the medical message repetition rates of elderly patients after a ward round and obtained the expectations of these patients concerning medical information disclosure. The three geriatricians who participated in this study had received training in geriatric care and communication and showed proper communication skills when delivering medical messages. Nonetheless, no single patient could repeat all of the messages after the ward round even though most of the participants had been given a small number (two to three) of messages. Over half of the patients (n = 60, 46.7%) could not repeat any of the messages they had been given during the first hour after receipt. In addition, the patients' message repetition number was low (21.9%). This result was consistent with the finding of a low message repetition number (17.8%) in Chen et al.'s (2018) study. Previous literature in both the gerontological and psychological fields indicates that the aging process may degrade memory capacity (Carter & Frith, 2011; Tsai et al., 2015; Wei, Peng, Zou, & Yang, 1997), and the unfamiliarity of the hospital environment may further exacerbate the memory problems of elderly patients.

It was also found in this study that "symptom explanation," "treatment methods," and "prognosis" were the most repeated items, for which there were a total of two repeated messages for each participant. This result was consistent with the findings in Chen et al.'s (2018) study. Past research in effective communication has focused primarily on the importance of communication skills training and has largely ignored the fact that elderly people may have memory deficits or may be unwilling or even may not be able to understand the messages provided to them about their medical conditions. However, after hinting, the repetition rate of patients increased from 21.94% to 62.86%, and the repetition rate of care providers increased from 36.73 to 80.27%. The findings suggest that, in the case of important medical messages, if healthcare professionals could remind patients and care providers within a short period of time, this would potentially aid in their ability to remember the messages.

In this study, most of the patients had presbyopia (93.3%), and half were illiterate. However, none of the participants wore glasses or used a pen and paper to take notes while the physicians conveyed medical messages. This result is similar to that in a previous pilot study (Chen et al., 2018). Based on the literature (Tsai et al., 2015) patients of advanced age, with their limited sensory ability and listening comprehension, may be incapable of receiving medical information. This may hinder their motivation in participating in such communication. Compared with the patients, the care providers were much younger and had higher education levels. However, they exhibited the degree of passivity as the patients. None of them took notes during the message informing process. Although the message repetition rate for the care providers was higher than that of the patients, it was still low (36.73%). Care providers may assume that they can remember the messages, or they may be just like the elderly patients and may not understand the messages. Further research is needed to explore the real meaning of this passive attitude during the message informing process.

Interestingly, all of the participants recalled that a physician had visited them, and all responded that physicians' medical messages were necessary and important although most could not repeat any of the information that was communicated to them. As suggested in Lin, Kan, and Chen's study (2012) on the experience of making a surgical decision among elective surgery patients in Taiwan, the concern of participants in this study was not about whether the information provided by the medical professionals was comprehensive but whether they perceived the care and attention of medical professionals at all. However, most of patients indicated that their sons or daughters could help them understand medical messages. This may decrease the number of message repetitions.

The medical message repetition rates of primary care providers

Most of the participants (83.3%) had different care providers by their side at the time of the ward round and during the first hour after the ward round. The number of message repetitions of recommended care providers was low (36.7%). The number of repeated messages for each care provider was two items, which was same as that of the patients. In this study, the majority of care providers (91%) were given more than two messages by physicians. Nearly 40% of the care providers received four messages from the physicians. To avoid deviations in the content of received medical messages, written information may be required.

Expectations regarding the provision of medical messages

Research on the expectations of hospitalized elderly patients and their care providers related to medical message communication is scarce. Three themes of patients' expectations regarding the receipt of medical message included: 1) ”none,” 2) “desire to know the reasons for discomfort” and 3)”discharge date.” These results were consistent with the findings in Chen et al.'s (2018) study. These patients and recommended care providers included some who were illiterate and some whose education ended at the university level. This suggested that both the patients and their recommended care providers were a “passive message receiving” mode and “non-equivalence status” mode. Based on the communication theory, both of these modes influence recalling.

Lin et al. (2013) studied patient perceptions of the meaning of family involvement in elective surgery decision-making in Taiwan, and suggested that patients and families may be too afraid of appearing to question the authority of physicians to ask questions of them directly. However, other studies (Chen & Chen, 2014) have suggested that the encouragement of medical professionals may enhance the active participation of elderly patients in their care. Another possible reason for a passive attitude toward healthcare among hospitalized patients in Taiwan, as indicated by Lin et al. (2012), is that patients may choose their physicians or hospital carefully before admission. Once admitted, patients may rely on the physician or family members to make decisions on their behalf. Liang, Wang, Hwang, Lin, and Pan (2013) suggest that the physician-patient relationship may also discourage patients from actively participating in their own healthcare.

Among those patients who voiced their expectations, eight participants (13.3%) stated that they expected to know the reason for their discomfort, and six (10%) expected to be informed of their date of discharge. Among the recommended care providers who voiced their expectations, 12 participants (22.2%) stated that they expected to know the conditions associated with the progress of the illness; four (7.4%) stated that they expected to obtain relevant information related to the examination results, and two (3.7%) expected to be informed of the date of discharge. It is possible that elderly patients may either rely totally on medical professionals for care or simply expect the physicians to ease their discomfort and to get them home as soon as possible. Items on which patients are legally obliged (by the Physicians Act of 2012 and the Medical Care Act of 2014) to be informed, such as the disease diagnosis, treatment principles, treatment, medication, prognosis, and possible unfavorable reactions, were not mentioned by the participants. As healthcare professionals, we may have responsibilities regulated by law, but it is also our mission to provide quality of care that patients need.

The literature indicates that communication involves information exchange between message senders and receivers. It is two-way communication. Moreover, it is a process through which two or more people use verbal or nonverbal messages to provide, deliver, and exchange information and opinions. Based on these research findings, the medical message informing process is prone to being a one-way, passive form of receiving communication. Without proper medical knowledge, patients and care providers may not perceive themselves to be on an equivalent status by which to engage in two-way communication. This research presents the current physicians-patient communication situation in a hospital. Patients and care providers need a bridge to achieve two-way communication in hospitals (Lin et al., 2012).

It is also noted in this study that expectations of message content are different for patients and care providers. For those who reported expectations, patients and care providers' both indicated that they expect physicians to provide messages related to “conditions associated with the progress of the illness” and “discharge date.” However, care providers were more focused on understanding the conditions associated with the progress of the illness; they reported “relevant information related to examination results” as their expectation. This result pinpoints the different concerns that exist among patients and care providers.

Number of message repetitions and expectations

Based on our findings, expectation may not have influenced the memory. In this sample, only one patient's expectation affected the number of repetitions. Even among the care providers, only three persons' expectations affected the number of repeated messages. Because of limited sample size of this study, no conclusions could be drawn on the relationship between message repetition and expectations. However, our findings did indicate an issue that deserves attention. Over 60% of the patients and care providers reported no expectations at all. It seems that the majority of participants do not know what to expect during the medical message informing process. Medicine is a highly specialized profession, where patients and care providers may rely on the authority and knowledge of healthcare professionals to help them understand the meaning of medical messages. Liao et al.

(2000a) showed that nearly half of the studied psychiatric patients reported had medium-to-marked difficulties in understanding diagnosis, treatment, and physician-patient communication. Without proper medical knowledge, patients and care providers become passive participants during the medical informing process. Currently, among the team of clinical healthcare professionals in Taiwan, nurse practitioners may be considered the appropriate person to bridge the communication among physicians, patients, and their care providers. Although in our study, limited participants reported their expectations, healthcare professionals should still recognize individual needs in the medical informing process (Ahalt et al., 2012). As to the consistency between participant expectations and physician messages, our finding showed that regardless of whether participants could repeat the messages, the physicians' messages covered more than half of the participants' expectations. Healthcare professionals may need more education to recognize the needs of patients and care providers during the provision of medical messages.

Status of care providers and care patterns of patients

The physical, psychological, and social disadvantages of older adults may result in difficulties in communication during hospitalization (Tsai et al., 2015). They may rely on their care providers to be advocators who preserve their rights and interests when communicating with physicians in order to receive the best treatment options (Lin et al., 2012, 2013). However, the results of this study showed that the status of care providers varied and that the care patterns were also diversified. Most of the patients had different people supporting them at the time of the ward round. This result was consistent with the findings of a previous pilot study (Chen et al., 2018) indicating that 86.6% of primary caregivers may not always stay with the patient during message informing. Message transmission may thus become complicated and difficult among care providers. Without a clear understanding of how medical information is being delivered to these elderly patients and to their primary care providers, medical professionals may not be able to provide quality healthcare. More studies are needed to explore the contexts in which medical messages are transmitted, especially from the perspectives of the patients and primary care providers. Studies examining the effects of message transmission on quality of care during hospitalization and after discharged are also needed.

This research involved a limited number of participants, and data were collected in one regular ward round for each participant. Therefore, the inferences of the findings of this study should be taken with caution. Expanding of the research samples and regions is recommended. The researcher did not separate patients and their care providers while recording the messages, which may have resulted in overestimation of the care providers' number of message repetitions. With these limitations in mind, the findings of this study should not be overlooked. However, this is an initial study providing research evidence on message repetition among patients and care providers.

Conclusions

The majority of the hospitalized elderly and their care providers could not repeat medical messages conveyed from their physicians. The informed messages should be sorted and the reminder should be repeated within a short time. Written materials and the involvement of principal care givers in the medical informing process may be necessary. Both the patients' and the recommended care providers' expressed concern about "conditions associated with the progress of the illness" and "discharge date." In addition, the recommended care providers were also concerned about "examination results relevant information." Before providing medical information, medical professionals should determine their patients' real concerns.

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The relationship between knowledge, self-efficacy, and nursing spiritual care behaviors in school-age children in pediatric room

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ABSTRACT

Introduction: Spiritual care for children is important in the care provided by nurses so that children do not feel guilty when being treated in the hospital. It is important for nurses to understand that the process of providing nursing care is bio-psycho-social and spiritual based. This study aimed to find out the relationship between knowledge, self-efficacy, and nurse behavior in the provision of spiritual care for school-age children in hospitals.

Methods: This study used a cross-sectional approach with a purposive sampling technique followed by 102 nurses who cared for school-age children in a pediatric nursing room. Knowledge was measured using the Spiritual Care-Giving Scale, Self-Efficacy was measured by Burkhart Spiritual Care Inventory (BCI), and Nurse Spiritual Care Therapeutic Scale (NSCTS) to measure behavior. The data were analyzed using the Kolmogorov-Smirnov test, and Spearman correlation test.

Results: There was no significant correlation between knowledge and behavior ($p = 0.181$; $r = 0.133$); however, there was a significant correlation of nurse behavior with self-efficacy ($p = 0.027$; $r = 0.219$), age ($p = 0.015$; $r = 0.240$), length of work ($p = 0.021$; $r = 0.228$), and spiritual care training ($p = 0.001$).

Conclusion: Knowledge does not have a significant relationship with behavior. However self-efficacy, age, length of work, and spiritual care training significantly affects the nurse's behavior in providing spiritual care to school-age children in the hospital.

Keywords: self-efficacy, behavior, nurse, spiritual care, pediatric ward

Introduction

Approximately 60% to 80% of children hospitalized feel lost, anxious, lack self-confidence, feel guilty, and want to get closer to God and 37 % of school-age children who are hospitalized need spiritual care because when they are treated at the hospital they already understand the meaning of separation and understand the illness they are experiencing (Nascimento et al 2016; Oberholzer 2016). Meanwhile, according to Bull and Gillies (2007), spiritual care is the treatment needed for children to reduce the impact of separation on school-age children.

Research conducted by Mashar and Nurihsan (2017) with school-age children treated at the hospital in Yogyakarta found a child who prays diligently is more able to accept his illness. Nurses' knowledge about spiritual care is important to know to provide the spiritual care needs of hospitalized children. Factors that influence children's nurses in the fulfillment of spiritual care for school-age children are the characteristics of the child, the environment, the interaction between the child and the nurse and the spiritual intelligence of the nurse herself (Glanz et al., 2015).

Based on the results of research done on nurses in Turkey using the spiritual care giving scale instrument, it was found that 46.7% of nurses did not understand part of spiritual care and 52.8% did not understand the definition of spiritual care and other factors related to the fulfillment of spiritual care by nurses in the understanding of spiritual care and nurses' experience in providing spiritual care (Çoban et al., 2015). The research in Indonesia by Sujana et al. (2017) shows that 84.2 % of nurses have good control over providing spiritual care to children. Even though the nurse's knowledge is in a good category, this treatment has not been carried out properly (Kieft et al., 2014).

Research support conducted by Kurniawati et al. (2019) in several hospitals in Central Java from 2016 to 2017 was found that 50% did not know how to provide spiritual care and lacked cooperation between multidisciplinary services to provide spiritual care. Apart from knowledge, self-efficacy is required to provide spiritual care in children. The research finds that 86.26 % of nurses had poor self-efficacy because the nurses between patients had different beliefs. Lack of this knowledge can affect nurses' behavior in providing spiritual care (Anderson et al., 2019; Frouzandeh et al., 2015).

Behavior is a reaction that arises as a result of knowledge and self-efficacy that comes from the environment or oneself. It is known that only 46.1 % of nurses can provide good spiritual care (Mamier & Taylor, 2015). This is supported by qualitative research by Alvarenga et al. (2017) explaining nurse challenges in spiritual care for children provided in culture, work time, and nurse experiences in dealing with patients' death. Previous research on the role of nurses in spiritual fulfillment in the ward room of Dr. Sardjito Hospital amounted to 63% of nurses sometimes and only 27% stated that they often prepare calm conditions to be able to pray (Nurinto, 2007). The results of the interviews when conducting clinical practice in the pediatric care room of RSUP Dr. Sardjito Yogyakarta found spiritual care is rarely done, usually given if there is a request by parents who have sick school-age children to pray and be brought in by clergy according to the patient's religion. Based on the description above, there has never been a study on spiritual care fulfillment behavior related to the knowledge and self-efficacy of nurses in the childcare room, so researchers are interested in conducting research on the relationship between knowledge and self-efficacy of nurses about spiritual care fulfillment in school-age children treated at Dr. Sardjito Hospital Yogyakarta. This study aimed to determine the relationship between knowledge and self-efficacy in the nurse's behavior in providing spiritual care in a pediatric nursing room. The research can be an additional reference for nursing education in enhancing about spiritual care to increase the knowledge and skill to implementation spiritual care to patients in providing pediatric nurses especially as one the achievements of childcare competencies by nurses.

Materials and Methods

Research Design

This study was a descriptive correlation analysis with a cross-sectional design approach intended to determine the relationship between the independent variables in this study which were knowledge and self-efficacy by the nurse and the dependent variable was behavior by the nurse providing spiritual care for pediatric patient.

Place, time population and sample

The setting of the study was conducted in May to June 2020 at RSUP Dr. Sardjito Yogyakarta. The study population in this study were 115 nurses who served in the pediatric care unit and intensive care unit. The sampling technique was carried out by purposive sampling, which was selected from each pediatric nursing room and pediatric intensive care room. The inclusion criteria were a nurse who works as a permanent employee in the childcare room for at least three months, agrees to participate in the research and signs the research agreement. The exclusion criteria were nurses working in intensive care for neonates, and perinatal care who are on leave or not on whole duty or are incarcerated during the study. Samples that met the criteria obtained as many as 102 pediatric nurses.

Instrument and data collection

The characteristics of respondents contained questions regarding the name (initial), age, gender, length of work, and the nurse education were then interpreted using distribution table frequency by displaying the frequency and percentage of each data.

Nurse knowledge about spiritual care was measured using the Spiritual Care-Giving Scale (SCGS) of 40 items consisting of five factors about spiritual care, an attribute, perspective, definition, attitude, and value of spiritual care using a Likert scale of SD

Table 1. Characteristics of respondents in pediatric nursing room (n: 102)

Characteristics of respondents	n	%	Median	Min-max
Age (years)				
17-25	7	6.9	35.00	21.0-58.0
26-35	49	48.0		
36-45	26	25.5		
46-59	20	19.6		
Gender				
Man	2	2.0	2.00	1.00-2.00
Woman	100	98.0		
Education				
Associate	69	67.6	1.00	1.00-3.00
Bachelor	32	31.4		
Master	1	1.0		
Length of work (years)				
<5	8	7.9	3.00	1.00-5.00
5-10	40	39.2		
11-15	19	18.6		
16-20	14	13.7		
>20	21	20.6		
Nurse Position				
Associate nurse	87	85.3	1.00	1.00-3.00
Head nurse	4	3.9		
Primary nurse	11	10.8		
Spiritual care training				
Ever	16	15.7	2.00	1.00-2.00
Has never had	85	84.3		
Knowledge about Spiritual Care				
Good	102	100	96.60	86 – 100
Self-Efficacy				
High	79	77.5	49.00	43 – 62
Medium	23	225		
Nurse Behavior				
Good	81	79.4	54.00	28 – 64
Enough	18	17.6		
Less	3	0.02		

(Strongly Disagree), D (Disagree), MD (Middle Disagree), MA (Middle Agree), A (Agree), SA (Strongly Agree) with 1 and 6 values the smallest value by 1 x 40 = 40 and the highest by 6 x 40 = 240. In this study, for the SCGS questionnaire researchers did back translation because there are cultural and linguistic differences from previous researchers. In back translation, the first researcher makes an initial translation, and this is given to two translators using the original language to the language for which the questionnaire will be used So that it can be seen I the differences in words that are more ambiguous in than the questionnaire using the original language. Then word selection is carried out then the bad ones are t discussed again with the translator. The second stage is synthesis of the translations and stage involves the original questionnaire version of the first translation (T1) and the translator's second (T2) This translation synthesis was first performed and produced one general translation (T-12), with a written report that carefully documents the synthesis process, every problem handled, and how items are completed. The next steps are completed with the T-12 version of the questionnaire. The third stage is the questionnaire T1 T2 version being translated by translators who do not know the original questionnaire then translate the questionnaire and return it to reflect the original language version. The fourth stage is that an expert committee reviews all translation and reaches consensus on any difference. The last stage of the adaptation process is the pretest.

Field tests of this questionnaire to use the initial version, the subjects or target sample of ideally between 30 and 40 people should be tested. The results strongly agree that interpretation is good knowledge of nurses (Tiew & Creedy, 2012). After that, the researcher did a content validity test use Aiken's V, which for this questionnaire is 0.77 – 1. Furthermore, the researcher carried out the research with 30 pediatric nurses in another hospital with Cronbach's alpha 0.911

Nurse self-efficacy was measured with Burkhart Spiritual Inventory Scale Indonesian version to assess the nurse's confidence level for providing spiritual care in the domains of magnitude and strength according to Bandura. This has 16 items using the Likert scale measurement on the original questionnaire by which a score will be assigned to answers that are (4) Very Agree (SS), (3) Agree (S), (2) Disagree (TS), (1) Strongly Disagree (STS). Self-efficacy scores are compiled using normal distributions with mean and standard deviation with values of 1 and 5 with the smallest value 1 x 17 = 17 and the highest score of 5 x 17 = 85 with the interpretation that more nurses answered strongly in agreement on each item of nurse self-efficacy about spiritual care, with higher nurse's self-efficacy about Spiritual Care for the Fulfillment of Spiritual Care with validity value r = 0.645 - 0.697. Cronbach's alpha value > r table = 0.891> 0.333.

The nurse behavior was measured using the Indonesian version of the Nurse Spiritual Care Therapeutic Scale (NSCTS) questionnaire with a total of 16 items measured using a Likert scale with the highest value of 64 and the lowest score of 16. The valid value obtained was r = 0.444 - 0.893 and Cronbach's alpha value of s the sample of 33 nurses was 0.909.

Ethical approval

This study began by giving an informed consent form to respondents to respect the principle of autonomy, then researchers guaranteed the confidentiality of information by means of respondents only filling in their initials, not their real names. This study did not provide harm to respondents and as a form of gratitude researchers gave souvenirs. During the study, researchers continued to accompany nurses regardless of status and background by the respondent. This research received ethical approval from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada (FK-KMK UGM) Indonesia with the number KE/FK/0291/EC/2020.

Data analysis

The univariate analysis describes data on the dependent, independent, and external variables in the form of a proportion and frequency distribution table. Bivariate analysis is used to determine the relationship between each independent variable (knowledge and self-efficacy), and external variables (age, gender, length of work, education, employment status, and spiritual nursing training). The data uses the Spearman correlation because the independent variable and dependent variable use interval scale and mean Whitney test for categorical variables (gender, education, employment status, and spiritual nursing training) for analysis with the dependent variable of nurse behavior using a numeric scale.

Each variable that uses a numerical scale then determines the type of test to be used; a data normality test is carried out for respondents who are more than 50 using the Kolmogorov Smirnov test. If the data are normally distributed, then the test used is the Pearson correlation test, but if the data are not normally distributed, then the test used is the Spearman correlation test. The normality test results for each variable that uses a numerical scale are $p<0.05$.

Results

Respondent characteristics

Most of the respondents were women (98.0%) and their average age was 26–35 years old, with an educational level of bachelor nurse (31.4%), and length of work of average of 4–10 years old. All respondents indicated they had never been in spiritual care nursing training (84.3%) and all respondents had a good knowledge about spiritual care (100%), a high self-efficacy of 77% and good behavior for providing spiritual care at pediatric ward (Table 1).

The relationship between knowledge, self-efficacy, characteristics of nurses with nurses' behavior in providing spiritual care in the pediatric nursing room

The bivariate analysis showed that each variable was associated with knowledge, self-efficacy, and characteristics of the respondent with nurses' behavior in providing spiritual care in a pediatric nursing room with a value of $p > 0.05$ using Spearman rank correlation for numeric variables. Categorical to numeric data used the Mann-Whitney (gender, education, length of work, training in spiritual care) against bound nurse behavior. Table 3. Description of Knowledge, Self-efficacy, and Characteristic of Nurses with Nurses Behavior of Respondents (n = 102).

Table 2. Description of knowledge, self-efficacy, and behavior of respondent (n 102)

Variable	Median	Min	Max	*p KS*
Knowledge	96.60	86	100	0.00
Self-efficacy	49.00	43	62	0.00
Nurse Behavior	54.00	28	64	0.01

Discussions

Table 1 shows that the majority of the respondents are women (98.0%) and the average pediatric nurse is 26 – 36 years old. Koenig also found that females are more likely to have a good knowledge of spiritual care. At age 26 – 35 , one has figured out the concepts of right and wrong, using the beliefs, morals, religions, and ethics that were the basis of planning life, evaluating according to trust and values spirituality (Koenig, 2012).Table 3 shows that knowledge variable and behavior have a positive correlation with r value = 0.133 but fall under the correlation category very weak because it ranges from 0 – 0.199. This explains that the greater the knowledge score, the nurse's behavior score is also increasing in providing spiritual care. Table 2 shows majority knowledge average score is 86 – 100, in contrast to research by Alvarenga et al. (2017b) that spiritual care is not only provided in the near-time premature but hospitalized school-aged children require treatment to provide inner calm during treatment. Research by Hassanian et al. (2014) also says that nurses have the need of developing, and responsibilities on the basis of professionals in applying knowledge in providing spiritual care to the patient. in contrast, long-serving nurses at categories 5–10 years and spiritual nursing training obtained that nurse more than once attended training related to spiritual care due to the basis of

Table 3. Description of knowledge, self-efficacy, and characteristic of nurses with nurses behavior of respondents (n = 102)

Variable	Behavior	
	Coefficient correlation (r)	p
Knowledge	0.133	0.181
Self-efficacy	0.219	0.027
Age	0.240	0.015*
Gender	-	0.885
Education	0.130	0.194
Length of work	0.228	0.021*
Employed	0.194	0.051
Spiritual Care Training	-	0.001*

**Mann-Whitney test*

service nursing is caring. Nursing still provides service on a comprehensive basis that is, bio-psycho-social-spiritual.

Based on the results of statistical analysis of the study, it was found that there was no relationship between knowledge and behavior in 102 pediatric nurse respondents at RSUP Dr. Sardjito Yogyakarta. This is supported by statistical test results using the Spearman correlation test with a p value of 0.181 (p value > 0.05) which means that there is no meaningful relationship between both knowledge variables and behavior variables. Results of the Spearman correlation test coefficient correlation value r and the variables of knowledge and behavior show a positive correlation with the value of R =0.133 but belong to the very weak correlation category because it is in the range 0 – 0.199 This explains that the greater the knowledge score, the nurse's behavior score is also increasing in giving spiritual care.

These results support Burns et al. (2017) who found that when a child is hospitalized it requires spiritual care because it is important for nurses to have good knowledge and understanding about spiritual care in children (Burns et al., 2017). Based on Table 1, it obtained that 69 respondents (67.6%) have a good degree of knowledge of nurses with an associate degree in nursing and working as managing nurses, 87 respondents (85.3%). This result is supported by O'Shea et al. (2019) that the higher level of education is not a factor for a person to have good knowledge. Table 3 explains that there is a significant relationship between the self-efficacy variable and the nurse behavior variable in fulfilling spiritual care for children in the pediatric nursing room with p-value <0.05 and a weak positive correlation.

Even though it has a positive correlation value, the strength of the correlation is weak because of the factors that influence nurses to increase the confidence of nurses to provide spiritual care, namely differences in the beliefs of nurses and patients, and researchers also accidentally meet the patient's parents when outside the room. It is found that religious matters are family matters. The pediatric nurse also said this spiritual treatment is usually provided by religious leaders from the patient's family. Due to the Covid-19 pandemic, religious leaders did not visit the patient. Based on the results of the analysis of the knowledge variable on the behavior variable, the value was not significantly different and the results of the relationship test between the variable self-efficacy and the behavior variable showed a significant relationship. This can occur because knowledge determines someone to do something or show behavior, but before the behavior is formed, it can shape the nurse's behavior in providing spiritual care for patients. Other research explains that nurses with the knowledge of spiritual care can provide effective spiritual care, which can increase nurses' self-efficacy to form good behavior in providing spiritual care to patients (Burns et al., 2017; Frouzandeh et al., 2015).

Social cognitive theory supports this because behavior can be formed starting from the cognitive-motivational process and experiences to make a behavior (Bandura, 1997). This is supported by the knowledge and good self-efficacy needed by nurses to fulfill spiritual care needs. When conducting spiritual care nursing interventions, the support of good knowledge that can be obtained not only from education but at work, where there is a desire to learn to solve problems when dealing with child patients with different conditions; this can help form a high self-efficacy that is needed by nurses and can have a positive impact on their psychological condition (Harrad et al., 2019). Nurse behavior is an activity performed that can be on a basis directly and observed to show care to patients within certain constraints–limits (Alligood & Tomey, 2010). Behavior-based on care theory means nurses have an important role in providing nursing care to patients. A cure is a patient receiving nursing care from nurses, and bio-psycho-social-spiritual, spiritual and core aspects are the essence of nursing care. That is, the essence of the patient itself is receiving nursing care (Gonzalo, 2021). The study by Leeuwen and Schep-Akkerman (2015) explains good behavior is formed from nurses' perceptions of spiritual care and spiritual care competence as well as experience in increasing nurses' behavior in gifting spiritual care to children. Research supported by data at the time of the research mentions spiritual care relates to patient beliefs by providing patients with opportunities to pray together.

Conclusions

There is no significant relationship between knowledge and nurse behavior in providing spiritual care for school age children. Self-efficacy and spiritual care training are significantly related to nurses' behavior in providing spiritual care in the pediatric nursing room. Future research with the hope of parental involvement can assess the behavior of nurses providing spiritual care in the pediatric nursing room.

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Conflict of Interest

All authors have no conflict of interest related to this study.

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ORIGINAL ARTICLE

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Psychometric testing of the indonesian version of beck depression inventory-II among Indonesian floods survivors

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ABSTRACT

Introduction: Indonesia is a multi-linguistic country using the official language of Bahasa Indonesia. It is important to use formal language to collect research data without misinterpretation of study outcome and intervention effect with high accuracy. Therefore, this study aimed to analyze whether the Beck Depression Inventory-II (BDI-II) instrument translated into the Indonesian version was reliable and valid for measuring depression in floods-affected communities.

Methods: The forward-backward translation was used to translate the BDI-II from English to Indonesian version. We tested the reliability and validity including content and construct validity through exploratory factor analysis (EFA) with varimax rotation and confirmatory factor analysis (CFA). We recruited 107 annual flood survivors in West Java, Indonesia as participants to test the psychometric testing.

Results: The structures shown by the EFA are two factors, with Factor 1 representing negative cognitive-attitude domains and somatic symptom items consisting of Factor 2. The CFA concludes that the general factor model best fits the data on the basis Goodness-of-Fit Index (GFI)= 0.8; Root Mean Square Error of Approximation (RMSEA)= 0.09; Standard Root-Mean-Square Residual (SRMSR)); Comparative Fit Index (CFI)= 0.81; Tucker–Lewis Index (TLI)= 0.79; and p-value $\chi 2 = < 0.01$, $\chi 2/df$: 1.82).

Conclusions: The results showed that the BDI-II Indonesian version has good reliability and validity and can be used to measure depression status among people who suffer floods in community setting. Future studies need to be validated within multiple socio-cultural groups.

Keywords: bahasa Indonesia, community, depression instrument, floods disaster, reliability and validity

Introduction

Indonesia was ranked 37th out of 180 countries most at risk of experiencing disasters in 2019 based on the World Risk Index. One of the major disasters in Indonesia is flooding, which recurs from year to year. Referring to data from the Indonesian National Disaster Management Agency (2023), throughout 2022, of the eight types of natural disasters in Indonesia, floods are among the most frequent. Floods are the most common of the eight types of events by 1520 times. Flood is a natural force that occurs and causes many positive and negative impacts; the negative impacts are often fatal. The adverse effect often pushed on mental health is depression compared to post traumatic stress disorder and anxiety (TellesSingh and Joshi, 2009; Mason, Andrews and Upton, 2010; Wind et al., 2013; Zhong et al., 2018).

Previous studies have confirmed that when depression occurs, it will not be immediately obvious and is not treated correctly (Cacheda et al., 2019). A review study by Penninx et al. (2013) concluded that depression could cause somatic disorders in a person, namely metabolic syndrome, inflammation up-regulations, and hypercortisolemia. In addition, a meta-analysis study showed that depression might increase the risk of coronary heart disease (CHD) (Gan et al., 2014). In the social aspect, depression can be more sensitive to social rejection, acceptance, and negative social interaction problems (Steger and Kashdan, 2009). Considering the high risk of depression, we need a valid and reliable measurement tool for early detection to measure the severity of depression in various settings, including community settings affected by flooding.

In the past few decades, the Beck Depression Inventory-II (BDI-II) has become one of the most commonly used measures to assess the symptoms and severity of depression in adolescents and adults. A comprehensive review by Wang and Gorenstein (2013) of 118 articles translated into 17 languages have been used in various countries in Europe, the Middle East, Asia, and Latin America in three setting samples, namely non-clinical (n = 47), psychiatric/ institutionalized (n = 37); and medical samples (n = 34). However, none of them mentioned the conversion of BDI-II into Indonesian. While many studies have established the psychometric properties of BDI-II worldwide, we have not found yet studies which have investigated its validity and reliability in Indonesia (Wang and Gorenstein, 2013). Apart from this review, Ginting et al. (2013) conducted a study to test the validity and determined the cut-off point for the BDI-II from the English to Bahasa Indonesia version among Indonesians. Unfortunately, the test was conducted on generally healthy participants, CHD, and depressed patients. Few published studies have been conducted in Indonesia using the BDI-II to measure depression in the community; however, they did not include flood victims in specific areas or mention a translation version of the Bahasa Indonesia with proper reliability and validity testing (Bei et al., 2013).

Nevertheless, Indonesia is a multi-linguistic country using the official language of Bahasa Indonesia. Therefore, more people can understand the meaning of questionnaire content without misinterpretations. Also, research result needs to be accurate with the results of depression experienced by the participants and this will help to minimize an erroneous treatment of depression. Consequently, the Indonesian version of the BDI-II is needed after going through the critical measurement stages so that it is understandable and easy to fill in and can be used as a measuring tool for the right level of depression. In addition, for Indonesia's population, which ranks fourth in the world and is spread all over the world, it is significant to do a translation of the Indonesian version, which can be not only applied in the Indonesia community itself but also to immigrants around the world who can use it because of the floods. Indeed, the cultural background is still a limitation to be used as a generalization and is always an exciting topic in the discussion section (Ghassemzadeh et al., 2005; Wang and Gorenstein, 2013; González, Reséndiz and Reyes-Lagunes, 2015).

Indonesia has a diverse culture that remains rooted in local wisdom in coping with natural disasters, including the psychological aftermath (Kadiyono and Harding, 2017; Agusintadewi, 2019; Samson et al., 2021). Also, data show the largest annual floods occur in the Java Island (BNPB, 2023). Cultural diversity is more dominant to Sundanese, Javanese, etc. The Sundanese community has a custom of "Balai" which consists of three elements, namely Larangan (custom), Paharaman (religion) and Harim (state) to prepare themselves from natural disasters (Samson et al., 2021). However, there is a gap in the standardized depression measurement scale and traditional methods on accuracy of depression diagnosis and also instruments are user friendly for healthcare professional and the victims. Therefore, this study aimed to analyze whether the instrument translated into the Indonesian version was reliable and valid for measuring depression in flood-affected communities. There were two main goals of this study.

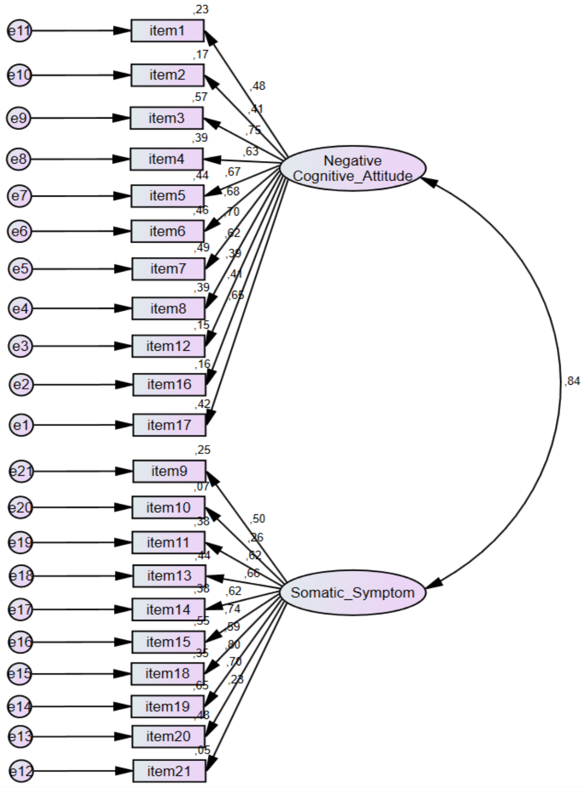

Figure 1. Schematic representation of two-factor model based on the CFA analysis of the BDI-II-Indonesian version
Note: p-value $\chi2$ = < 0.01, $\chi2$/df: 1.82, GFI= 0.8, RMSEA= 0.09, SRMR= 0.07, AGFI= 0.72, TLI= 0.79), IFI= 0.82, NFI= 0.67, CFI= 0.81, PNFI= 0.72, PGFI= 0.63

First, this study addressed to translate the BDI-II English version into Indonesian. The second aim was psychometric testing of the translation.

Materials and Methods

Instrument

The BDI– Second Edition is a 21-item measure of depression that was revised to include DSM-IV symptoms of depression—equivalent to DSM-5 symptoms—and different cognitive symptoms of depression (Ghassemzadeh et al., 2005; Ginting et al., 2013). Furthermore, the BDI-II is a 21-item self-report questionnaire for measuring the severity of depression in adolescents and adults, but not as a diagnostic tool. The BDI-II was revised in 1996 to be more consistent with DSM-IV criteria for depression. Individuals may rate their responses to items on a 0-3 scale, and the total scores range from 0-63 with the following cut-offs: 0-13: minimally depressed; 14-19: mildly depressed; 20-28: moderately depressed; and 29-63: severely depressed.

Forward and Backward BDI-II Translation

Before we carried out the BDI-II translation process, we asked permission to the developer by email to translate the instrument into an Indonesian version. The translation process consists of three stages including: 1) an independent professional English translator translated the original BDI-II into Indonesian, 2) another professional translator from a language institution translated back the Indonesian version into English, 3) an expert in Mental Health Nursing compared the translated English version with the original and reviewed the translation to ensure the accuracy of the Indonesian language structure that was easy to understand by Indonesian participants. The research team continuously followed up and maintain progress of the discussion the during translation process to ensure consistency.

Psychometric testing of the BDI-II Indonesian version

Participant and recruitment procedure

After obtaining approval from the Health Research Ethics Committee, University of Muhammadiyah Malang (No.E.5. a/094/KEPK-UMM/V/2021), we recruited 107 people who speak Bahasa Indonesia and live in areas with continuous annual floods in West Java, Indonesia, using the 5:1 subject-to-item ratio sample size criterion (Gorsuch, 1988) to test the reliability of the BDI-II Indonesian version through a personal approach. Then, people who had the potential to become respondents provided their contact numbers as a tool to communicate during data collection. Participants were briefed about the purpose of the study and what they needed to do. Meanwhile, we explained the benefits and possibilities of what is experienced after filling the inventory because this survey deals with psychological problems. Participants were explained as to what symptoms needed to be reported and how to apply the anxiety management protocol provided by the researcher. If the level of anxiety increased, then they could consult the closest mental health professional to get treatment. Finally, survey participants would receive a free voucher compensation on their cell phones. We excluded respondents who had lived less than three years at the research site, were not able to fill out the BDI-II through the Google application form or could not complete it.

Reliability testing

We tested internal consistency by using Cronbach's alpha to test the reliability of the Indonesian version of the BDI-II scale. Cronbach's alpha value greater than 0.90 indicates excellent reliability, and a value ≥ 0.70 indicates adequate internal consistency. Meanwhile, we tested three aspects of validity: content validity, convergent, and discriminant validity. Additionally, we also tested the inter-item correlation and item-total correlation. Kellar and Kelvin (2013) mentioned that 0.3-0.7 inter-item correlations were acceptable, while item-to-total correlations greater than 0.50 were considered satisfactory (Nawi et al., 2020).

Content validity testing

Researchers started testing content validity through the following steps: we asked eight Mental Health Nursing experts with more than five years of work experience, either as Mental Health Practitioners or lecturers in Indonesia, to assess the BDI-II Indonesian version for content validity, including relevance and clarity of the 21 questions. To assess the item relevancy, the eight experts were asked to rate each item using a four-point scale: not relevant (1), somewhat relevant (2), quite relevant (3), and highly relevant (4). Meanwhile, they used a three-point scale for clarity: very clear (3), item needs some revision (2), and not clear (1).

Then, we calculated the Item level of content validity index (I-CVI) for each item as the number of experts giving a rating of either 4 or 3 divided by the number of experts—the proportion in agreement about relevance and clarity. The values can range from 0 to 1, where an I-CVI> 0.79 indicates the item is relevant, an I-CVI between 0.70 and 0.79 indicates the item needs to be revised, and an I-CVI below 0.70 indicates the item should be eliminated (Rodrigues et al., 2017). Meanwhile, we computed the scale level of the content validity index (S-CVI) using two methods: the universal agreement (UA) among experts (S-CVI/UA) and the average content validity index (S-CVI/Ave). The S-CVI/UA was calculated by summing all items with I-CVI equal to 1 divided by the number of items, whereas the S-CVI/Ave was calculated by dividing the total I-CVI by the number of items. S-CVI/UA ≥ 0.8 and S-CVI/Ave ≥ 0.9 indicate that the items have excellent content validity (Zamanzadeh et al., 2015).

Table 1. Demographic characteristics of participants

Characteristics	Participant n=107	
	M (SD)	**n (%)**
Age	32.19(±13.86)	
Gender		
Male		35(32.71)
Female		72(67.29)
Marital status		
Married		83(77.57)
Single		22(20.56)
Divorced		2(1.87)
Employment status		
Employee		16(14.95)
Worker		15(14.01)
Unemployed		76(71.03)
Education		
Lower Secondary		39(36.45)
Upper Secondary		61(57)
Tertiary		7(6.54)
Level of Depression		
Low		
Normal ups and down		64 (59.8)
Mild mood disturbance		29 (27.1)
Moderate		
Borderline clinical depression		1 (9)
Moderate depression		7 (6.5)
Significant		
Severe depression		5 (4.7)
Extreme depression		1 (0.9)

Construct validity testing

We tested construct validity using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Since the normal distribution was violated and following the recommendation from El-Den et al. (2018), we used the principal factorial axis (PFA) extraction method and varimax as the rotation method in the EFA. Varimax was the most popular orthogonal factor rotation method for simplifying the columns of the factor matrix and was generally considered better than others (Hair Jr., 2009). Furthermore, factor structure refers to the overall fit of the two-factor solution (Cognitive-Affective and Somatic) reported in the BDI-II manual (Beck, Steer and Brown, 1996). We used factor loadings greater than 0.30 to indicate whether an item represents its factor, discarded communalities where variance was insufficient and required no fewer than three items for each factor (Handal and Lace, 2017). The Kaiser-Meyer-Olkin (KMO) supports the use of factor analysis for the data, while Bartlett's test of sphericity is used to evaluate whether a correlation matrix is suitable for factor analysis by testing the hypothesis. The good KMO correlation is above 0.60-0.70 (Netemeyer, Bearden and Sharma, 2003; Taherdoost, Sahibuddin and Jalaliyoon, 2022), and the significance p-value of Bartlett's test of sphericity is (p<.05) (Taherdoost, Sahibuddin and Jalaliyoon, 2022).

In order to evaluate the convergent validity of the Indonesian version of the BDI-II scale, we used composite reliability (CR) and average variance extracted (AVE). A CR > 0.70 should be considered acceptable, as should an AVE > 0.50 (El-Den et al., 2018; Muslih et al., 2021). Additionally, correlations between factors or constructs were used to test discriminant validity. We applied the Fornell and Larcker (FL) criterion and the Heterotrait-Monotrait (HTMT) correlation ratio to test discriminant validity. The Fornell-Larcker criterion suggests that each construct's AVE should have a greater value than the correlation with other latent constructs, whereas some authors suggest a threshold of < 0.85 or < 0.90 indicates good discriminant validity (HamidSami and Sidek, 2017). Furthermore, as per Plichta and Kelvin (2013), interim correlations between 0.3-0.7 and item-to-total correlations greater than 0.50 are acceptable (Nawi et al., 2020).

We used the CFA to evaluate the model fit of the Indonesia version BDI-II scale. The quality of fit was examined with the following indices: absolute fit measures are [χ2/df, goodness-of-fit index (GFI), root mean square error of approximation (RMSEA), standard root-mean-square residual (SRMR)], additional fit measures are adjusted GFI (AGFI), Tucker–Lewis Index (TLI), incremental fit index (IFI), normal fit index (NFI), comparative fit index (CFI)], I and parsimonious fit measures [Parsimony NFI (PNFI), Parsimony GFI (PGFI)].

In detail, for model fit indices, the acceptable fit value for CFI, IFI, TLI, and NFI was > 0.90; χ2/df < 3.0; RMSEA and SRMR < 0.08; GFI and AGFI between 0.80 and 0.90; PNFI and PGFI > 0.50. Hair et al. (2009) recommended selecting GFI that meets at least one incremental and absolute fit measure.

Results

Demographic characteristics of samples

The sample for this study was local urban residents who are suffered from floods every year who were contacted through the district government and the East Java Provincial Political and National Unity Agency, and the Baleendah-Dayeuhkolot community health center in Bandung, West Java, Indonesia. A potential participant who withdrew from the start after stating his/her ability due to personal reasons was excluded from the further analysis process, leaving 107, of whom 67.29% were female. Ages ranged from 13 to 64 with a mean (SD of 32.19 (±13.86). The majority were single (77.57%) and 71.03% of respondents were unemployed. Table 1 shows about demographic characteristics of participants.

Reliability testing

Before conducting the reliability and validity test, we evaluated whether the data could proceed in the next step using the data normality test. The normality test for BDI-II showed a p-value of <0.001, which means that the

Table 2. Item-total correlation, Cronbach's alpha if item deleted, Cronbach's alpha, and validity

Item	Item-total correlation	Cronbach's alpha if item deleted	Validity
1. Sadness	0.47	0.89	Content validity:
2. Pessimism	0.38	0.89	CVI: 0.97
3. Past failures	0.62	0.89	S-CVI: 0.98
4. Losing pleasure	0.55	0.89	
5. Feeling of guilt	0.64	0.89	
6. Feeling of punishment	0.61	0.89	Convergent validity
7. Disliking myself	0.62	0.89	AVE (overall): 0.31; CR: 0.90
8. Self-criticism	0.64	0.89	AVE (factor 1): 0.32; CR: 0.83
9. Suicidal thoughts or desires	0.43	0.89	AVE (factor 2): 0.30; CR: 0.81
10. Crying	0.29	0.90	
11. Agitation	0.57	0.89	Discriminant validity:
12. Losing interest	0.36	0.89	HTMT: 0.86
13. Doubts	0.60	0.89	FL: Square root of AVE: (0.56 and 0.54) < correlation of latent construct (0.72)
14. Uselessness	0.62	0.89	
15. Loss of energy	0.63	0.89	
16. Changes in sleep patterns	0.39	0.89	
17. Offended	0.57	0.89	
18. Changes in appetite	0.53	0.89	
19. Difficulty in concentrating	0.72	0.89	
20. Fatigue	0.63	0.89	
21. Losing interest in sex	0.21	0.90	
Cronbach's alpha		0.89 (overall); 0.85 (factor 1); 0.81 (factor 2)	
Range of item-total correlation	0.21 to 0.72		

Note: CVI= Content Validity Index, S-CVI= Scale-level CVI, AVE= Average Variance Extracted, HTMT= Heterotrait-Monotrait, FL= Fornell & Larcker able 3. Factor pattern loadings of 21 items of EFA analysis of the BDI-II-Indonesian version

Item	Factor Loading	
	Factor 1 (Negative Cognitive-Attitude)	Factor 2 (Somatic Symptom)
1. Sadness	0.38	-
2. Pessimism	0.65	-
3. Past failures	0.74	-
4. Losing pleasure	0.61	-
5. Feeling of guilt	0.49	-
6. Feeling of punishment	0.72	-
7. Disliking myself	0.61	-
8. Self-criticism	0.30	-
9. Suicidal thoughts or desires	-	0.39
10. Crying	-	0.57
11. Agitation	-	0.60
12. Losing interest	0.54	-
13. Doubts	-	0.58
14. Uselessness	-	0.54
15. Loss of energy	-	0.58
16. Changes in sleep patterns	0.39	-
17. Offended	0.64	-
18. Changes in appetite	-	0.51
19. Difficulty in concentrating	-	0.51
20. Fatigue	-	0.68
21. Losing interest in sex	-	0.49
KMO and Bartlett's test of sphericity	0.857; p-value < 0.001	
Eigen value	7.53	1.51
% of variance	35.86%	7.19%
Cumulative % of the variance	35.86%	43.05%

Note: CVI= Content Validity Index, S-CVI= Scale-level CVI, AVE= Average Variance Extracted, HTMT= Heterotrait-Monotrait, FL= Fornell & Larcker

data did not have a normal distribution. We checked the Mahalanobis d-squared in CFA output and compared it with the χ2 table (α= 0.001) to find the outlier data. The χ2 table value with df: 21 (observed variable) is 113.56 since the Mahalanobis d-squared values were < 113.56, thus no outlier data.

This study used Cronbach's alpha coefficient to assess the internal consistency of each factor and the general scale. The Cronbach's alpha coefficient of the overall IDN-BDI-II scale was 0.89. The Cronbach's alpha coefficient of each factor was 0.85 for the "Negative Cognitive-Attitude" 0.81 for "Somatic Symptom." Item-to-item correlation coefficients of the Indonesian BDI-II scale test showed an acceptable calculation for all subjects ranging from 0.19 (item-21 and item-2) to 0.67 (item-9 and item-15) (Appendix I). All subject's analyses generated results with item-to-total correlation ranging from 0.21 to 0.72 (Table 2).

Content Validity testing

We calculated the content validity through the I-CVI and S-CVI tests for the BDI-II scale, and the value of the I-CVI was 0.97, indicating that the item was relevant. On the other hand, the value of S-CVI was 0.98, indicating that the items had excellent content validity. Whereas CR tested the convergent validity, the result of the CR test overall was 0.90, and the values for "Negative Cognitive–Attitude" and "Somatic Symptom" were 0.83 and 0.81, respectively. The appropriate overall AVE values were 0.31 and values 0.32, and 0.30 for each factor, respectively. The value of HTMT was 0.86, and the square root of AVE was 0.72, indicating good discriminant validity. All reliability and validity results tested are reported in Table 2.

Construct validity testing

We used SPSS Version 22 to evaluate the EFA, and AMOS version 23.0 software to perform CFA.

Exploratory factor analysis

Factor pattern loadings of 21 items are presented in Table 3. Generated factors based on an eigenvalue score greater than one indicates that the factor structure is considered to be maintained from these two factors (F1= 7.53 and F2=1.51). The KMO measure was 0.86, and Bartlett's test of sphericity was significant with a p-value < 0.001. The main components in this inventory were analyzed using varimax rotation and showed that the factor rotation value rotated on BDI-II for all items was greater than 0.30. Factor 1 (F1) covered symptoms belonging to the "Negative Cognitive-Attitude" domains (NCA), with symptoms such as past failures (0.74), feeling of punishment (0.72), pessimism (0.65), offended (0.64), disliking myself (0.61), losing pleasure (0.61), losing of interest (0.54), feeling guilty (0.49), changes in sleep pattern (0.39) sadness (0.38) and self-criticism (0.30) fulfilled standard factor loading on this factor. Factor 2 (F2) represented mainly "Somatic Symptoms" domains (SS), including fatigue (0.68), agitation (0.60), loss of energy (0.58), doubt (0.58), crying (0.57), uselessness (0.54), changes in appetite (0.51), difficulty in concentrating (0.51) and losing interest in sex (0.49) and suicidal desires (0.39) (Table 3).

Confirmatory factor analysis

The model achieved good on all goodness-of-fit indicators, χ2 (χ2/df = 1.82), p value <0.01, CFI = 0.81, IFI = 0.82, TLI = 0.79, NFI = 0.67, RMSEA = 0.09, SRMR = 0.07, GFI = 0.8, AGFI = 0.72, PNFI = 0.72, PGFI = 0.63. Standardized regression weight and model fit in CFA for BDI-II are presented in Figure 1.

Discussions

This study explored the possibility of adapting the BDI-II for use in Indonesian populations in specific flood-suffered communities; several tests have been carried out using the backward-and-forward translation process, which can prove its applicability. This study found overall good internal consistency (Cronbach's alpha = 0.89) and the adaptability of BDI-II Indonesian version. Further, to fulfill the BDI-II level of depression in the original BDI-II version, the results show a more detailed picture of each level. The level of depression was at "normal ups and downs," with 59.8% ranging from the top position of all participants, and mild mood disturbance was in the second position, namely 27.1%. This finding is consistent with the results of Woody et al.'s (2017) study, which demonstrated excellent internal consistency and validity with Cronbach's alpha 0.94, on 51 women of the 2011 Binghamton floods sufferers.

Concerning current results, the EFA sample (n = 107) met the 5:1 subject-to-item ratio sample size criterion (Gorsuch, 1988). As with sample size estimation for EFA, our finding also met standard sample size recommendations for CFA, ranging between 100 and 200 subjects (Gagne and Hancock, 2006). Moreover, our KMO test results yielded 0.86, which indicates that the correlation in the BDI-II-Indonesian is above 0.60-0.70, which is considered sufficient to move toward factor analysis (Netemeyer, Bearden and Sharma, 2003; Taherdoost, Sahibuddin and Jalaliyoon, 2022).

At the same time, the participants showed borderline, moderately severe, and extreme, respectively. When referring to Gebrie's (2020) analysis of BDI-II, the depression level of the participants was mild depression. These results indicate that this scale can describe depression on specific demographic characteristics, namely: appropriate for the female gender as the majority of the sample in several countries: Mexico, Brazil, and Iran (Gebrie, 2020G). Also, after validation, we found that major differences from two domains including "Negative- Cognitive Attitude" and "Somatic Symptom" original BDI-II with three domains.

This study used CFA to measure construct validity. At the same time, CR and AVE are used to measure convergent validity. Our study provides evidence that the BDI-II has sufficient validity. Several fit indices have been used to test data compatibility so that the found model structure can be tested. We kept items 10 and 21 with a loading factor of 0.26 and 0.23, respectively, because the overall goodness-of-fit model was still met. In addition, because crying (item 10) and losing interest in sex (item 21) are important indicators of depression. In general, all BDI-II scales factors indicated adequate factors. The 21st item on "Losing interest in sex" is closely related to cultural variables. Most Indonesians, especially conservative people, are still shy and even taboo in talking about "sex"(Hanifah, 2020) . Therefore, it should be recommended to make the term "sex" more acceptable to all groups according to Indonesian culture and it is recommended to conduct more research on this area.

The inter-item correlations showed the result that the range of CR of factor 1 was 0.83 and CR factor 2 was 0.81 with an overall CR of 0.90, also indicating that the items were not redundant (no item had a high correlation (r greater than 0.7) each other) were satisfactory (Nawi et al., 2020).

This validation version of BDI-II in Bahasa Indonesia can be the right choice for particular specific population of flood survivors in the community setting. These results can generalize and answer the research questionnaire related to depression after disaster incidence by healthcare professionals and victims themselves, which is the strength of this study. We tried to implement a proper solution to minimize the gap of language barrier with the internationally published BDI-II version. However, this study has some limitations. The small number of samples affects the results in determining several loading factors. Thus, we recommend future research using a larger sample and multiple socio-cultural groups. Moreover, the public healthcare and mental health nurses' association and education can encourage using the BDI-II Indonesian version to screen depression severity properly for floods victims to test further reliability and validity. Nowadays digitalization of instrument is more common and easy to access. Therefore, after finishing all the psychometric testing within the Indonesia context, we would recommend to create a downloadable version of BDI-II.

Conclusions

This study illustrated the BDI-II Indonesian version with good validity and reliability and could be used to measure depression in the Indonesian community with Bahasa Indonesia, particularly in those who suffer from floods disasters. This version was validated mainly using Sundanese population. Further study needs to be validated using different social-cultural groups such as Minangkabau, Madurese, and Padangese to strengthen this psychometric property. Moreover, it should be tested with other provinces and states with multiple disaster incidences. Future study needs to be validated with different demographic factors such as age, gender and education as well as healthcare professionals. It is important to notice development of an internet version of BDI-II for easy accessibility in the current digital era.

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Conflict of Interest

This study illustrated that the BDI-II Indonesian version had good validity and reliability; it indicated that the BDI-II Indonesian version was a good tool and could be used in measuring depression in the Indonesian community, particularly in those who suffer from floods disasters.

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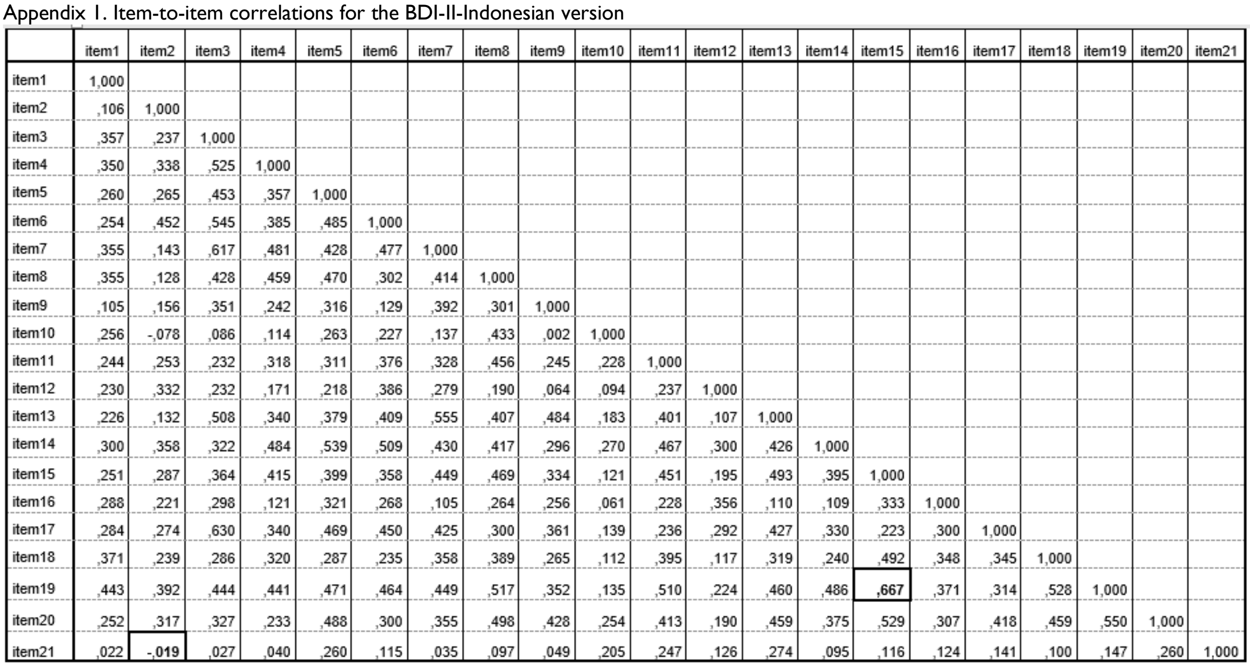
Appendix 1. Item-to-item correlations for the BDI-II-Indonesian version



	item1	item2	item3	item4	item5	item6	item7	item8	item9	item10	item11	item12	item13	item14	item15	item16	item17	item18	item19	item20	item21
item1	1,000																				
item2	,106	1,000																			
item3	,357	,237	1,000																		
item4	,350	,338	,525	1,000																	
item5	,260	,265	,453	,357	1,000																
item6	,254	,452	,545	,385	,485	1,000															
item7	,355	,143	,617	,481	,428	,477	1,000														
item8	,355	,128	,428	,459	,470	,302	,414	1,000													
item9	,105	,156	,351	,242	,316	,129	,392	,301	1,000												
item10	,256	-,078	,086	,114	,263	,227	,137	,433	,002	1,000											
item11	,244	,253	,232	,318	,311	,376	,328	,456	,245	,228	1,000										
item12	,230	,332	,232	,171	,218	,386	,279	,190	,064	,094	,237	1,000									
item13	,226	,132	,508	,340	,379	,409	,555	,407	,484	,183	,401	,107	1,000								
item14	,300	,358	,322	,484	,539	,509	,430	,417	,296	,270	,467	,300	,426	1,000							
item15	,251	,287	,364	,415	,399	,358	,449	,469	,334	,121	,451	,195	,493	,395	1,000						
item16	,288	,221	,298	,121	,321	,268	,105	,264	,256	,061	,228	,356	,110	,109	,333	1,000					
item17	,284	,274	,630	,340	,469	,450	,425	,300	,361	,139	,236	,292	,427	,330	,223	,300	1,000				
item18	,371	,239	,286	,320	,287	,235	,358	,389	,265	,112	,395	,117	,319	,240	,492	,348	,345	1,000			
item19	,443	,392	,444	,441	,471	,464	,449	,517	,352	,135	,510	,224	,460	,486	,667	,371	,314	,528	1,000		
item20	,252	,317	,327	,233	,488	,300	,355	,498	,428	,254	,413	,190	,459	,375	,529	,307	,418	,459	,550	1,000	
item21	,022	-,019	,027	,040	,260	,115	,035	,097	,049	,205	,247	,126	,274	,095	,116	,124	,141	,100	,147	,260	1,000

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ORIGINAL ARTICLE

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Behavioral risk factors and maternal nutrition as predictors of pre-eclampsia among pregnant women in rural areas: cross-sectional study

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ABSTRACT

Introduction: The behavior of pregnant women in caring for pregnancy is influenced by the environment, culture, and lifestyle of the community. This study aimed to analyze the behavior of pregnant women and their nutritional status during pregnancy contributes to the incidence of pre-eclampsia in rural areas.

Methods: This study used a cross-sectional approach to 210 pregnant women who visited a community health center in East Java, Indonesia, in the period June 2020-February 2022. Potential risk factors, including maternal behavior in care during pregnancy, and obesity were evaluated as determinants of pre-eclampsia and its subtypes. The assessment instrument uses a structured questionnaire and has been tested for validity and reliability. Logistic regression analysis was used to determine potential risk factors. Odds ratios with 95% confidence intervals (CI) were calculated to estimate the effects of individual factors. All statistical analyses were performed with SPSS version 22.0 with a p-value < 0.05 considered significant.

Results: There were 65 (31%) pregnant women experiencing pre-eclampsia from 210 samples. Maternal behavior during pregnancy could predict the incidence of pre-eclampsia (p = 0.001; 95% CI 0.121-0.583; OR = 0.266) while obesity was able to predict pre-eclampsia (p = 0.00; 95% CI 1.705-5.209; OR = 3.00). the age of pregnant women p = 0.014; 95% CI 1.143-3,355; OR = 1.959), and history of hypertension p = 0.036; 95% CI 1.053 – 4.550; OR = 2.189).

Conclusions: The behavior and nutritional status of pregnant women have been proven to influence the incidence of pre-eclampsia.

Keywords: behavior risk factor, obesity, pre-eclampsia

Introduction

Pre-eclampsia (PE) is one of the high-risk pregnancies and a leading cause of maternal and fetal death, and disability globally and can be identified after 20 weeks of gestation (Mayrink, Costa and Cecatti, 2018; Rokotyanskaya et al., 2020). In addition, pre-eclampsia is also a cause of prematurity and babies born with low birth weight, especially in low- and middle-income countries (Fox et al., 2019; Lotfy et al., 2019). In low-income countries, a woman has an approximately 300 times higher risk of dying from pre-eclampsia and eclampsia than a woman in high-income countries (Wassie and Anmut, 2021; Yang et al., 2021). Although the exact cause of pre-eclampsia is unknown, several clinical risk have been reported including obesity, history of hypertension, maternal age, and nulliparity, as well as lifestyle associated with food consumption habits (Lopez-Jaramillo et al., 2018; Tyas, Lestari and Aldika Akbar, 2020). The National Institute of Health and Care Excellence (NICE) in the UK discloses its findings on moderate and high-risk factors for pre-eclampsia and recommends prophylaxis in cases with signs of one or more high-risk factors, or two or more moderate (Barrett, 2020; Yang et al., 2021). Several research results regarding unhealthy lifestyles of pregnant women, such as lack of exercise, delaying antenatal visits due to believed myths, and unhealthy nutritional consumption patterns are also predicted to be risk factors contributing to pre-eclampsia (Rana et al., 2019; Lin et al., 2021). Meanwhile, cultural behavior that is still trusted by the public includes choosing to go to traditional services and healers and postponing pregnancy checks before four months of gestation, because the spirit of life has not yet been infused into the fetus. Although there have been research results to develop models for predicting the risk of pre-eclampsia in early pregnancy, research on risk factors for pre-eclampsia in low-income countries needs to be studied more deeply into whether there is a relationship between the lifestyle and cultural behavior of pregnant women.

Data from the World Health Organization (WHO) on the maternal mortality rate (MMR) in 2020 reached 810 per 100,000 live births on a global daily basis due to pregnancy or childbirth complications (Cunningham,et al., 2018; Quan et al., 2018). Data on maternal mortality in developing countries reach 462 per 100,000 live births, while in developed countries it is 11 per 100,000 live births (Shennan, Duhig and Vandermolen, 2018; Lin et al., 2021). When viewed from the factors that cause maternal death due to pre-eclampsia in general, it is reported to reach 25% worldwide, in developing countries the incidence of pre-eclampsia is reported to be seven times higher than in developed countries (Quan et al., 2018) . In Nigeria, pre-eclampsia is a contributor to the maternal mortality rate of 28.3% cases, while data in Indonesia in the period 2018-2019 show 4,226 maternal deaths, of which 1,066 (25%) mothers died from pre-eclampsia and eclampsia (Akeju et al., 2016; Sripad et al., 2019). In developed countries, one of the main factors causing pre-eclampsia is obesity in pregnant women (Singh, Shankar and Singh, 2017; Lopez-Jaramillo et al., 2018). The incidence of obesity tends to increase in alarming conditions and can be a risk factor for pre-eclampsia , which is about three times what occurs in developed and developing countries (Utami and Susilaningrum, 2022). The percentage of women who are obese in developed countries has increased by almost 60% (Roberts et al., 2011; Warriner, 2016).

Pre-eclampsia is an idiopathic disorder of pregnancy characterized by proteinuric hypertension. The Indonesian government has made many efforts to reduce the incidence of pre-eclampsia during pregnancy including free pregnancy checks, providing low-dose aspirin, and providing easy access to referrals if the mother experiences complications, but the incidence of these cases has not shown a significant decrease (Kemenkes RI, 2020). Solutions are needed with community involvement in preventing pre-eclampsia (Khowaja et al., 2016; Petras, Israelashvili and Miller, 2021). The identification of its predisposing factors before and during the early stage of pregnancy will help in reducing mortality (Yeasmin and Uddin, 2017). Although the cause of pre-eclampsia is not yet known, it is important to understand how obesity and other factors are risk factors (Kim, Park and Park, 2016; Lopez-Jaramillo et al., 2018). Clinical and pathological studies show that the process of placental formation is the basis for the pathogenesis of pre-eclampsia (Rana et al., 2019; Kenny et al., 2020). Improper development of the placenta as a result of dysfunctional cell proliferation, migration, and invasion leads to inappropriate dilation of uterine spiral arterioles, decreased placental blood flow, and placental hypoxia (Burton et al., 2019; Fox et al., 2019). In addition, inadequate nutritional consumption factors such as deficits in intake of calcium, vitamins, and essential fatty acids have been shown to play a role in the origin of pre-eclampsia , while obesity as a risk factor for pre-eclampsia is based more on insulin resistance, maternal systemic inflammation, and hyperinsulinism (Robillard et al., 2019; Fogacci et al., 2020). The behavior of mothers in rural communities which is strongly influenced by culture and myths about pregnancy needs to be identified (Salminen, 2014; Kim, Park and Park, 2016). Pregnant women who are not compliant in maintaining their pregnancy include being late in attending ante-natal care visits, lack of maintaining the quality of nutritional consumption, and having unhealthy lifestyles are thought to be risk factors for pre-eclampsia (Sripad et al., 2019; Ni Ketut and Nurul, 2020). Problems regarding risk factors for pre-eclampsia can be identified from the mother's lifestyle during pregnancy in consuming food and prenatal examinations. This study aims to analyze the behavior of pregnant women and how their nutritional status during pregnancy contributes to the incidence of pre-eclampsia in rural areas.

Materials and Methods

Design, population, and sample

This study used a cross-sectional study approach on 210 pregnant women who made antenatal visits to a community health center in East Java, Indonesia in the

Table 1. Characteristics of pregnant women respondents (n= 210)

Variable	n	%
Maternal age		
≤ 20 years	21	10
21– 35 years	99	47
≥ 35 years	90	42
Education		
Elementary	41	19.5
Middle School	73	34.8
High School	96	45.7
Employment		
Not working	122	58.1
Entrepreneur	54	25.7
Farmer	34	16.2
Income		
Less than the regional minimum income	103	49
Same or more than the regional minimum income	107	51
Parity		
Primigravida	91	43.3
Multigravida	119	56.7
Maternal ANC checkup		
Regular	73	34.8
Nonregular	137	65.7
ANC check-up		
Integrated Healthcare Center	134	63.8
Midwife	74	35.2
Healer	3	1
Mother's perception of preeclampsia		
Negative	105	50
Positive	105	50
Pregnancy care behavior		
Negative	119	56.7
Positive	91	43.3
Body mass index /BMI		
Severe	35	16.7
Normal	120	57.1
Obese	55	26.2
History of hypertension		
Yes	63	30
No	147	70
Pre-eclampsia		
Positive	65	31
Negative	145	69

period June 2020-February 2022 by purposive sampling. Sample criterion of pregnant women with more than 20 weeks of gestation who came to the polyclinic for ante natal care (ANC) are included in this study. Potential risk factors obtained through demographic data questionnaires, including maternal age, obesity, parity, history of hypertension, maternal behavior during pregnancy, and adherence to ANC visits were evaluated as determinants for pre-eclampsia and its subtypes. Maternal age was defined as age at pregnancy and was divided into three groups: < 20 years, 21-30 years, and > 30 years. Parity is the condition of the mother's pregnancy, whether it is prime gravida or multigravida.

Data collection tools

The data collection process was carried out on pregnant women who were having their pregnancy checked at the community health center. Data were collected using a modified questionnaire General Health Behavior Scale to assess risk behavior in caring for pregnancy. Behavioral assessments consist of a total of 30 questions that carried out to assess how pregnant women care for their pregnancy in terms of nutrition, personal hygiene, and activities during pregnancy. The conclusion of the behavioral assessment is said to be positive, if the behavior of caring for the pregnancy is by the recommendations of health workers, while negative behavior is that which is not appropriate. Meanwhile, nutritional status assessment is carried out using BMI assessment, namely weight (kg)/height^2 (m). Pregnant women who visit the health center have their weight and height measured, then these are calculated to get the BMI measurement results. There are three categories of BMI measurement in this study, namely underweight (BMI < 18.5 kg/m2), normal weight (BMI 18.5–23.9 kg/m2), overweight/obesity (BMI: 28.0 kg/m^2). The instrument for assessing pre-eclampsia risk factors uses a structured questionnaire consisting of maternal health history and demographic data. All questionnaires have been tested for validity r > 0.5 and Cronbach's alpha reliability > 0.70 on 30 samples.

Data processing and analysis

Logistic regression analysis was used to determine the potential risk factors for pre-eclampsia. Odds ratios with 95% confidence intervals (CI) were calculated to estimate the effects of individual factors. Logistic regression analysis was applied to explore the association between risk factors and the incidence of pre-eclampsia. All statistical analyses were performed with SPSS version 22.0 with a p-value < 0.05 considered significant.

Ethical consideration

This research uses humans as research subjects, the researcher provided an informed consent sheet as approval to participate in the research. To maintain patient confidentiality, coding is used on the questionnaire sheet and anonymity. This study was approved by the Ethics Committee of the Faculty of Health Sciences, Universitas Muhammadiyah Jember (Number: 182/KEPK/FIKES/IX/2020).

Table 2. Logistic regression analysis of predictive factors for pre-eclampsia in pregnant women in rural areas of East Java, Indonesia (n=210)

Independent variable	Preeclampsia		B	p-value	Adjusted OR	95 % CI	
	yes	no				lower	Upper
Maternal Age			0.672	0.014*	1.959	1.143	3.355
≤ 20 years	8	14					
– 35 years	20	78					
> 35 years	38	52					
Parity			0.128	0.719	1.137	0.566	2.283
Primigravida	25	66					
Multigravida	41	78					
ANC checkpoint			0.077	0.832	1.080	0.531	2.197
Integrated Healthcare Center	46	88					
Midwife	20	54					
Healer		2					
Perceptions of preeclampsia			0.337	0.638	1.401	0.672	2.919
Negative	35	70					
Positive	31	74					
			0.783	0.036*	2.189	1.053	4.550
No	42	105					
Yes	24	39					
Pregnancy care behavior			-1.326	0.001*	0.266	0.121	0.583
Negative	50	69					
Positive	16	75					
BMI			1.100	0.001*	3.003	1.705	5.290
Severe	7	28					
Normal	27	93					
Obese	32	32					

*p-value < 0,05

Results

Based on Table 1, the prevalence of pre-eclampsia was 65 pregnant women (31%) from a sample of 210. Based on the logistic regression analysis in Table 2, it was found that maternal behavior in caring for pregnancy P = 0.001 (OR 0.266), and obese P = 0.00 (OR 3.00) can predict pre-eclampsia in the rural area. In addition, the age of the pregnant woman P = 0.014 (OR 1.959), and history of hypertension p = 0.036 (OR 2,189) can affect the occurrence of pre-eclampsia. Meanwhile, parity factors, examination compliance, and perceptions of pre-eclampsia do not affect the incidence of pre-eclampsia. The B or beta value in the results of this study shows that the variables maternal age, parity, ANC checkpoint, perceptions of pre-eclampsia, history of hypertension and BMI have a positive relationship.

Discussions

The results of this study show that maternal behavior in caring for pregnancy and obesity experienced by pregnant women can predict the occurrence of pre-eclampsia. Obesity exerts significant negative effects on pregnancy, directly and indirectly through associated metabolic dysfunction and increased basal inflammatory states. These two conditions can cause various obstetric complications such as gestational diabetes and hypertension, thus becoming the basis for an increased risk of pre-eclampsia (Kim, Park and Park, 2016; Afulani et al., 2019). In line with the role of obesity as a risk factor for pre-eclampsia, lifestyle, and consumption of sweet foods are also major risk factors for pre-eclampsia because they both contribute to increased gestational weight gain (Mayrink, Costa and Cecatti, 2018; Peres, Mariana and Cairrão, 2018). Impaired blood circulation in the placenta can cause irregular blood pressure regulation in the mother (Bakouei et al., 2020; Lin et al., 2021). At the same time, a large number of studies have attempted to identify possible biomarkers that may predict an increased risk of pre-eclampsia. The incidence of several adverse pregnancy outcomes is associated with increased body weight (Birhanu et al., 2020; Billah et al., 2021; Idris et al., 2022).

The NICE 2019 classifies high-risk groups for pre-eclampsia including a history of hypertension in a previous pregnancy, autoimmune disease, diabetes, or chronic hypertension (Al-Rubaie et al., 2020; Barrett, 2020). The classification of moderate risk of pre-eclampsia is nulliparous mother, 40 years old, has a BMI of 35 kg/m, family history of preeclampsia, multifoetal pregnancy, or pregnancy interval of more than 10 years (Robillard et al., 2019; Tyas, Lestari and Aldika Akbar, 2020). In addition, there are clinical factors that significantly increase the risk of pre-eclampsia, including an increase in mean arterial blood pressure before 15 weeks' gestation (Mayrink et al., 2019).

The World Health Organization identified the main risks of pre-eclampsia as obesity, chronic hypertension, diabetes, nulliparity, teenage pregnancy, and eclampsia in previous pregnancies. kidney disease, autoimmune disease, and multiple pregnancies (World Health Organization, 2018). The results of this study indicate that maternal behavior during pregnancy which is strongly influenced by culture and myths can predict the incidence of pre-eclampsia. In addition, mothers who are obese during pregnancy and age can also be at risk of triggering preeclampsia. The relationship between maternal age during pregnancy and adverse complications has mostly been studied, and some explanations include the aging process of blood vessels, arterial stiffness, impaired maternal hemodynamic adaptation, and lower egg quality (Khowaja et al., 2016; Gebreweld and Tsegaye, 2018). Women over 35 years old [Advanced Maternal Age (AMA)] have 4.5 times the risk of developing pre-eclampsia than women younger than 25 years (Allotey et al., 2020; Tyas, Lestari and Aldika Akbar, 2020). Maternal behavior that is inadequate in caring for her pregnancy can harm the development of a fetus. Delays in ANC visits can result in pregnancy complications not being detected early. During pregnancy, pregnant women must carry out regular checks on the condition of the fetus. ANC visits can help mothers find out the progress of their pregnancy and can identify early the possibility of the mother experiencing complications in her pregnancy. Studying the development of maternal pregnancy and its relationship with the behavior of pregnant women is very important to note. Poor maternal behavior during pregnancy may be a significant driver of complications, some unhealthy behaviors in pregnant women that can be risk factors include smoking, poor nutritional intake, avoiding certain foods due to local culture that is believed to be, and low consumption of folic acid, and calcium (Wassie and Anmut, 2021). Research conducted in China provides evidence that high levels of maternal unhealthy behavior during pregnancy have a major impact on children in rural China, including suboptimal fetal development due to exposure to substances, inadequate nutrition, and inadequate antenatal care (Xiao et al., 2014; Lin et al., 2021).

Another factor that is thought to be the cause of pregnancy complications is obesity (Allen et al., 2014; Xiao et al., 2014). Obesity is an epidemic and an increasing trend in developed countries that is currently expanding to developing countries. In America, in the last 30 years, there has been an increase in the number of obese women with a BMI > 30, almost 60% (Singh, Shankar and Singh, 2017; Lopez-Jaramillo et al., 2018). The results of a study conducted in Pistburg, Germany, found a threefold increase in the risk of pre-eclampsia associated with obesity (Singh, Shankar and Singh, 2017). Obesity triggers the occurrence of pre-eclampsia through several mechanisms, namely in the form of superimposed pre-eclampsia, as well as through triggers of metabolites and other micromolecules (Wadhwani et al., 2019). The risk of pre-eclampsia is increased by two times for every increase in body weight of 5-7 kg/m2. In addition, it was found that there was an increased risk of pre-eclampsia with an increase in BMI (Robillard et al., 2019; Wagata et al., 2020a). Clinical and experimental evidence suggests that obesity can affect placental function and perfusion, through metabolic changes associated with obesity namely: hyperleptinemia, hyperinsulinemia, and hyperlipidemia; however, the exact mechanism is unknown (Lopez-Jaramillo et al., 2018). One of the most important conditions of obesity is hyperinsulinemia and insulin resistance. Experimental studies show that hyperinsulinemia results in shallower implantation sites and limited intrauterine growth associated with nitric oxide (NO) synthesis (Lopez-Jaramillo et al., 2018; Wagata et al., 2020b). Hypertriglyceridemia that occurs is related to the pathogenesis of hypertension that occurs during pregnancy. High triglycerides will increase the risk of placental vascular abnormalities which will stimulate endothelial abnormalities, atherosclerosis, and thrombosis. Atherosclerosis in preeclamptic women occurs in the spiral arteries of the placenta (Mayrink et al., 2019).

One solution to prevent the occurrence of pre-eclampsia can be done through cultural negotiations, especially the negative culture that has been embraced by the community (Salminen, 2014). The involvement of community leaders and ulama can be a supporting factor for effective communication in the community (Kim, Park and Park, 2016). Wrong beliefs about pregnancy must be corrected so that the incidence of pre-eclampsia in rural communities with low socioeconomic status can be resolved (Salminen, 2014; Kim, Park and Park, 2016). Most pregnant women are not aware of this condition, leading to a high-risk lifestyle. In addition, gestational diabetes mellitus significantly contributes to the number of high-risk pregnancies that go undetected and are managed sub-optimally. The antenatal care center offers an optimal platform for screening, prevention, and treatment of gestational diabetes mellitus by prioritizing high-risk women (Mdoe et al., 2021).

This research has limitations in that assessing maternal behavior using a questionnaire does not provide complete information, apart from that, a BMI assessment that is not followed by a biomarker test cannot provide a detailed description of the process of influencing obesity on the incidence of pre-eclampsia.

Conclusions

This research has shown that maternal behavior in caring for her pregnancy can predict the incidence of pre-eclampsia. The behavior of pregnant women is based on myths about cultural behavior that society believes can be a predictive factor in the occurrence of pre-eclampsia. Many rural communities still adhere to the culture and beliefs passed down from their ancestors regarding pregnancy. This can affect the sustainability of programs from community health centers in caring for pregnant women. In addition, the incidence of obesity during pregnancy is also increasing and this condition has contributed to increasing the occurrence of pre-eclampsia.

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Conflict of Interest

All authors have no conflict of interest related to this study.

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ORIGINAL ARTICLE

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Factors associated with quality of life among patients undergoing hemodialysis in Indonesia

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ABSTRACT

Introduction: Chronic kidney disease patients will suffer a variety of health issues throughout their lifetimes, particularly with regard to their quality of life, whether they are receiving treatment or undergoing hemodialysis (HD). HD not only affects the patient's physical condition but also psychosocial conditions and their mental health. This study aimed to determine factors associated with QOL among patients undergoing HD in Indonesia.

Methods: A cross-sectional study was conducted in Malang, Indonesia during August to December of 2020. The inclusion criteria were patients undergoing HD two times a week and aged over 18 years old. QOL was measured using the World Health Organization Quality of Life Brief Version (WHOQOL-BREF). Linear regression was used to determine factors associated with QOL.

Results: About 150 participants agreed to join in this study (response rate: 84.4%) with their mean age 52.76 (SD=13.45). The total mean of the QOL in patients undergoing HD was 74.4 ± 27.7 with a range from 10 to 100. The highest mean score was reported for physical health (78.3 ± 24.8) and the lowest score was reported for environmental (72.6 ± 24.3). Linear regression showed that long duration of HD, hemoglobin concentration and blood urea with R2 was 34.6%.

Conclusions: Longer duration of HD, low hemoglobin concentration and high blood urea were factors associated with lower QOL in patients undergoing HD. The results of the above study recommend to nurses and health workers to improve critical thinking skills, including measuring levels of urea and hemoglobin, which have an impact on the QOL of patients undergoing HD.

Keywords: chronic kidney disease, hemoglobin, urea level, hemodialysis, quality of life

Introduction

The World Health Organization reports that chronic kidney disease affects up to 10% of the global population, but that only 10% of those need dialysis or a kidney transplantation (Mills et al., 2015). Chronic kidney disease (CKD) prevalence was 14.3% in the general population and 36.1% in high-risk populations in developing countries (Ene-Iordasche et al., 2016). It is estimated that at least 2.9 million people in Asia require dialysis, representing a 66% deficit in the provision of dialysis (Bikbov et al., 2020). For instance, the number of hemodialysis patients rose from 77.892 in 2017 to 132.142 in 2018 (Kemenkes RI, 2018).

CKD is progressive and irreversible kidney damage or kidney function below 60% of normal (Black and Hawks, 2009). Patients whose glomerulus filtration rate (GFR) is less than 60 ml/min/1.73 m2 begin to experience nocturia, weakness, nausea, decreased appetite, and weight loss. This symptom is caused by the accumulation of toxic waste materials in the blood, particularly urea (Suwitra, 2009). Blood urea levels offer a more precise indication of dangerous urea production in people with renal failure than creatinine levels do. Prior to hemodialysis, the urea levels of CKD patients remained abnormal, and they were generally hyper uremic (Martini, 2010). Anemia, which results in diminished tissue perfusion and weakening, also contributes to the clinical manifestations of CKD. Kidney damage prevents the production of erythropoietin, which stimulates the bone marrow to create red blood cells (KDIGO, 2013).

Hemodialysis (HD) is the most common renal replacement therapy procedure that improves symptoms and preserves life for patients with CKD. HD is a burden that lowers quality of life compared to diabetes or cancer (Liu et al., 2006; Kitagawa et al., 2017; Dąbrowska-Bender et al., 2018; Kim, Kang and Woo, 2018; Bonenkamp et al., 2020). The WHO defines quality of life (QOL) as the subjective assessment of the effects of disease and treatment on physical, psychological, and social functioning and well-being (Ju and Tong, 2017). QOL has been recognized in the field of nephrology as a significant patient-reported outcome measure (PROM). The quality of life of patients undergoing dialysis is influenced by physical, biological, psychological, social and cultural factors (Zamanian and Kharameh, 2015; Ganu et al., 2018). Low QOL independently predicts hospitalization and death (Bonenkamp et al., 2020). CKD patients will suffer a variety of health issues throughout their lifetimes, particularly with regard to their QOL, whether they are receiving treatment or undergoing hemodialysis (HD). Therefore, improving QOL in patients undergoing HD is a crucial issue.

People with advanced stages of CKD have a worse QOL than those with normal or healthy kidneys (Nguyen et al., 2018). A study of 155 patients with CKD stages 1-5 found that the quality of life of these patients declined with the progression of their disease (Cruz et al., 2011). It has been found that the utility index drops by 0.011, 0.018, and 0.28% in those with stage 1-4 CKD compared to those with normal renal function (Nguyen et al., 2018). However, patients undergoing HD with anemia who get corrective therapy until Hb levels reach 11-12 g/dl had improved quality of life (Brunelli et al., 2010). Moreover, body mass index (BMI), cholesterol, serum albumin, hemoglobin and dietary intakes may influence QOL (Tong et al., 2009). Other study reported no association between household income and QOL (Alencar et al., 2020) while others demonstrated an improved QOL with higher income in terms of physical functioning, pain and social aspects (Shirazian et al., 2016). Patients undergoing HD who are dependent on health workers and unproductive may have a lower quality of life (Tome, Nurhayani and Darmawansyah, 2019). This study aimed to determine factors associated with QOL among patients undergoing HD in Indonesia. This study is rarely found in the literature and will be a novelty in the measuring levels of urea and hemoglobin, which have an impact on the QOL patients undergoing HD.

Materials and Methods

Study design

The research variables were duration of HD, levels of urea, hemoglobin and QOL patients undergoing HD. This was a cross-sectional study.

Sample

Respondents were patients undergoing HD in the HD center at one of the public hospitals in Malang, Indonesia, during August to December of 2022. The population were 170 patients. Sampling process used was purposive sampling. The inclusion criteria were patients who agreed to participate in this study, undergoing HD two times a week, aged over 18 years old, able to write and read in Bahasa, and willing to participate in this study. G-Power Software Version 3.1.6 was utilized to calculate the sample size utilizing the t-test under the assumptions of $\alpha = 0.05$ (Lemeshow et al., 1990) and power level= 0.80. The projected sample size needed for recruitment was therefore 150.

Instrument

Demographic data are sex, age, marital status, education, income level, occupation, and length of HD treatment. Data were obtained from medical records including hemoglobin, urea, creatinine concentration and interdialytic weight gain (IDWG). IDWG is an increase in fluid volume which is manifested by an increase in body weight as an indicator to determine the amount of fluid entered during the interdialytic period and patient compliance with fluid management in patients receiving hemodialysis therapy. IDWG was obtained from the previous hemodialysis session by measuring the difference between pre and post-dialysis weight during the interdialytic period.

QOL was measured using the World Health Organization Quality of Life Brief Version (WHOQOL-BREF) (WHO, 2012). The WHOQOL-BREF, which has been translated into Indonesian, is assigned a score based on four domains: i) physical, which consists of

Table 1. Demographic data of participants (n=150)

Demographic Data	n	%
Age		
45-59 years (Middle-Aged)	79	52.7
60-74 years (Elderly)	71	47.3
Type Sex		
Man	80	53.3
Woman	70	46.7
Education		
Under/Senior High School	86	57.3
University	64	42.7
Marital Status		
Marry	112	74.7
Not yet Married	38	25.3
Job		
Government Employees	15	10
Private Employee	47	31.3
No Work	88	58.7

seven questions, ii) psychological, which consists of six questions, iii) social relations, which consists of three questions, and iv) environment, which consists of eight questions. Each question is scored on a scale of 1 to 5, with a higher score indicating a higher quality of life. The domain score is calculated by multiplying the average of each facet by four. In the current study, Cronbach's alpha was 0.82.

Procedure

Ethical permission was obtained prior data collection from institutional board of STIKes Kepanjen (0.075/ETIK/IV/2022). The research permission was given by the studied hospitals and HD clinics. The researchers approached the manager and head nurse and explained the study purpose, eligibility criteria, procedure, and ethical issues. The manager and the head nurse shared information about potential participants with researchers. The researchers then approached the participants and described the study's objective and procedure. All who agreed to participate were provided with a signed and dated written informed consent form. The process of collecting data through filling out questionnaires is as follows: Distribution of questionnaires to participants is given at the hospital according to the hemodialysis schedule. Respondents were assisted in filling out the questionnaire, but still met the research protocol. The filling in process was carried out during the hemodialysis session but adjusted to the patient's condition. Then the obtained questionnaire data were then recapitulated and analyzed.

Data analysis

The Statistical Package for Social Science (SPSS) 20.0 software was used to analyze the data. Normality was tested using the Kolmogorov-Smirnov test. Because the data were normally distributed, parametric tests were employed. The demographic data of participants were described using descriptive statistics. Continuous variables were treated using mean and standard deviation, whereas categorical data were reported using percentages and frequencies. The independent t test and Pearson correlation were used in this study to examine the relationship between demographic and clinical factors and depression. Linear regression was used to determine factors associated with QOL. A two-tailed p-value ≤ 0.05 was considered statistically significant.

Table 2. Bivariate analysis length of HD, hemoglobin concentration, urea with QOL

Variables	*Mean ± SD*	p-value
Length of HD	7.86±3.32	0.025
Hb concentration	9.34±2.57	0.04
Urea level	12.31±6.72	0.048
QOL	74.4±27.7	

Results

As many as 150 participants joined in this study with those middle-aged being 52.7%. The majority of the patients (53.3%) were male, 57.3% had education below senior high school,74.7% were married, and 58.7% unemployed (Table 1).

Descriptive analysis of QOL and each dimension in patients undergoing HD was performed. The total mean of the QOL in patients undergoing HD was 74.4 ± 27.7 with a range from 10 to 100. The highest mean score was reported for physical health (78.3 ± 24.8), followed by social relationship (75.1 ± 26.2), then psychological domain (73.4 ± 23.7), and the lowest score was reported for environmental domain (72.6 ± 24.3).

In bivariate analysis length of HD was significantly associated with QOL in patients undergoing HD (p=0.025), hemoglobin concentration was significantly associated with QOL in patients undergoing HD (p=0.04), urea was significantly associated with QOL in patients undergoing HD (p=0.048) (Table 2).

Discussions

The data show that high blood urea predicts lower QOL in patients undergoing HD. High levels of urea in patients undergoing HD cause various organ disorders, such as anorexia and nausea in digestion, metabolic acidosis in the blood leading to cardiac arrhythmias, skin damage, and decreased consciousness. With increasing levels of urea, it will increase the symptoms and complications of HD. Increased levels of urea are the same as accumulation of toxins in the blood which reduces physical abilities, increases dependence on others, reduces self-confidence and affects the sociopsychological dimension. With this condition, patients feel their quality of life is greatly reduced (Ghahfarokhi and Abbaszadeh, 2012). Patients undergoing HD need to control urea levels regularly by performing hemodialysis according to the program. In addition, CKD patients adopt a low-urea diet, which is to limit foods high in protein.

Low hemoglobin concentration was a factor associated with lower QOL in patients undergoing HD. The results of the study stated that an increase in hemoglobin levels in patients undergoing HD had an effect on increasing four domains of QOL, namely physical, psychological, social and environmental relationships. These findings have implications for the treatment of patients undergoing HD in the context of initiation and targeting of hemoglobin levels. The signs and symptoms experienced by patients with anemia are tired quickly and run out of energy, increased heart rate, fast breathing, dizziness, headache, paleness and insomnia (Finkelstein et al., 2009). In adaptation to hemodialysis, the threat of death due to complications of the disease will make the patient vulnerable to emotional problems which can lead to depression because they feel hopeless (Cruz et al., 2011). This will cause the patient to have a negative perception of himself thus affecting physical and mental health. Various clinical symptoms and psychological problems that appear have the potential to cause a decreased QOL.

Hemoglobin levels reaching normal levels have an impact on how well patients undergoing HD are able to live their lives. Aerobic metabolism in the body is controlled by hemoglobin, which carries oxygen in the blood. A healthy body metabolism also contributes to a high quality of life.

The result showed that longer duration of HD could decrease QOL. The longer a patient undergoes hemodialysis therapy is inversely proportional to the quality of life of patients with terminal kidney disease (Anees et al., 2011). This is because the patient's level of worry and stress is increasing because they think hemodialysis should be able to cure them. Three months after suffering from CKD and hemodialysis therapy, patients generally feel that their quality of life continues to decline (Ghahfarokhi and Abbaszadeh, 2012). This is due to the patient's physical, social and psychological abilities tend to decrease. Moreover, longer years under dialysis could be attributed to increased economic burden and dialysis complications.

The strength of the study is that such research was rarely found in the literature and will be a novelty in the measuring levels of urea and hemoglobin which have an impact on QOL patients undergoing HD. Limitation of this study was data collection could not be done simultaneously due to adjusting the patient's hemodialysis schedule and laboratory results.

Conclusions

There is longer duration of HD associated with lower QOL in patients undergoing HD; low hemoglobin concentration and high blood urea were factors associated with lower QOL in patients undergoing HD. The results of the above study recommend to nurses and health workers to improve critical thinking skills, including measuring and educating participants that the levels of urea and hemoglobin have an impact on the QOL undergoing HD. To future researchers, recommendations are in the form of observation of factors that affect the QOL of patients undergoing HD.

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ORIGINAL ARTICLE

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The complexities of human procedural nursing research ethical approval processes in Indonesia

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ABSTRACT

Introduction: Research requires high quality ethical practices. However, research approvals vary between developed and developing countries resulting in additional challenges for researchers wishing to participate in collaborative research projects. The aim of this paper is to describe and discuss three nursing research ethics application processes in different locations in Indonesia that had an Australian university overseeing them. The first research project aimed to identify the health needs of women and their families in the Surabaya region. The second project aimed to interview women with breast cancer in the Bandung region and the third project aimed to examine empowerment issues in diabetes care in supporting patient self-management in Jakarta.

Methods: Three nurse researchers provide a reflective account of the ethics application processes of their qualitative research projects conducted between 2014 and 2021. A collective case-study methodology using descriptive analysis was applied where the information was collated and compared for similarities, differences and challenges.

Results: Ethics and site approvals varied at each Indonesian site. The ethical and approval application processes were time-consuming at all levels. which delayed the start of all the projects, which varied from between one to six months. As a result, all three projects experienced delayed completion.

Conclusions: Ethical approval is required for medical research prior to any data collection. Approval processes need to be consistent so that delays in the application processes are avoided. Any delays in approval to conduct research has implications for research projects. It is essential that timeframe factors need to be considered when applying for grant funding, gatekeepers are identified early, and payments are identified and planned for. It is recommended that, to improve consistency with ethical application processes, streamlining of applications and approvals in Indonesia needs to be reviewed, particularly since the introduction of the WHO March 2022 Standard Operating Procedures.

Keywords: developing countries, ethics, research methods, nursing

Introduction

With increasing worldwide demand for the use of evidence-based practice, collaborative international research partnerships are continually being forged, particularly in nursing. This type of collaborative research is viewed highly within the research community and beyond (Serguga et al., 2014). Positive outcomes of global health research partnerships include the development of research capacity and improvements in the production and use of evidence to improve global health equity (Murphy et al., 2015). In the Asia-Pacific region for instance in Indonesia, there has been increased interest in research partnerships with other countries, particularly in the area of primary care research which aims to explore medical issues in relation to individuals, families and the community and may also include evaluation of the effectiveness and efficiency of healthcare practices and health policies (Ichsan et al., 2018).

By increasing research capacity and improving the evidence base used to inform clinical practice, improvements in health outcomes can be achieved, especially in developing countries such as Indonesia (Ichsan et al., 2018). Additional benefits include knowledge sharing between partners, generation of new knowledge, capacity development leading to strengthened capacity among individuals, institutions, and systems where all partners can benefit from improved cultural competencies, improved research design and methods, enhanced pedagogical capacity, and access to unique opportunities for mentorship (Murphy et al., 2015). Potential positive impacts from the benefits of collaborative research may include improved quality of medical research outcomes, effective problem-solving for healthcare issues, and improved nursing practices particularly in Indonesia (Wutzke et al., 2017; Nyström et al., 2018) . However, partnerships formed between developed and developing countries can face many challenges, with power and resource differences. Additionally, there are many hurdles and barriers that need to be overcome including regulatory demands, particularly in developing countries (Serguga et al., 2014).

One area of challenge in particular is that of gaining ethical approval to conduct research. Academics from a range of different countries and institutions have expressed frustration of the intricacies of the ethics application procedure (Davis et al., 2022). Conducting medical research involving humans requires stringent ethical practices to protect participants and researchers. But these practices vary from country to country with consideration needing to be given to legal and statutory frameworks, discipline codes of practice, local cultural norms of ethical conduct and formal ethics committee reviews (Green and Thorogood, 2018) . In addition there are regulations to be considered, which are usually advisory rather than mandatory, that provide frameworks for high-quality ethical research governance (Green and Thorogood, 2018). Furthermore, there are Standard Operating Procedures (SOPs) that need to be followed in some regions such as the Asia-Pacific Region (World Health Organisation (WHO) South-East Asia, 2022). The SOPs provide guidelines and other procedural issues concerning ethic applications (World Health Organisation (WHO) South-East Asia, 2022). Procedural ethics refers to research ethics approval processes that may include developing research protocols, participant information sheets, informed consent forms, and other procedural documentation (Chiumento, Rahman and Frith, 2020). These types of standardized documents can provide a shared reference between those involved in the research process, such as researchers and research participants, which can be tailored for research practice (Chiumento, Rahman and Frith, 2020) . However, there remain many challenges for researchers in gaining ethical approval to conduct research.

In Australia, a developed country, the National Health and Medical Research Council Act 1992 (NHMRC Act) provides governance to the National Health and Medical Research Council (NHMRC) (National Health Medical Research Council (NHMRC), 2022) . This council is the statutory body and has powers and obligations to oversee the guidelines in the National Statement that are applicable to the conduct of medical research involving humans (National Health Medical Research Council (NHMRC), 2022). The National Statement, which was developed jointly by the NHMRC, the Australian Research Council and Universities Australia, guides researchers conducting medical research, ethical reviewing bodies, research governance and potential research participants (Pollacsek, Boardman and Mccann, 2017) . Research committees in Australia are required to include scientists, non-scientists, institutional representatives, lay people who do not engage in medical, scientific, legal or academic work and a person who performs a community pastoral role (Davis et al., 2022) . Australian universities have a responsibility to ensure that any research conducted by their researchers, students or associated funding bodies is ethically acceptable, safe and of an appropriate level of quality and that their Human Research Ethics Committees (HRECs) have reviewed and approved all projects (Davis et al., 2022). There can be concerns by researchers and others, such as international post-graduate students from developing countries, regarding decisions made by HRECs as a result of differences in previous experiences in gaining ethical approval for projects in their developing country (Davis et al., 2022). Challenges in gaining ethics approval is reported to be a common experience for many (Davis et al., 2022). This is particularly so for Indonesia.

In Indonesia, a developing country, the National Commission for Research and Development of National Health committee assists the Health Minister of the Indonesian Republic in providing regulations and guidance for enforcing ethical research and health development involving humans (Fourianalistyawati et al., 2018). Even though universities in Indonesia are starting to include research ethics committees (REC), the number of committees is small (Fourianalistyawati et al., 2018). Hence, there are likely to be no human research ethics committee procedures for social research (Davis et al., 2022). This means that alternative permissions to conduct research are required to be sourced in many instances (Fourianalistyawati et al., 2018). This may result in researchers and students encountering difficulties adapting to differing cultural expectations due to differences in approval processes (Davis et al., 2022). For instance, previous approval may have been granted by an Indonesian government education official who may have directed researchers to undertake particular activities were they were allowed to make their own ethical decisions about the research project (Davis et al., 2022). This can be problematic for researchers, including post-graduate students from developing countries such as Indonesia that have a less developed research ethics tradition, including absence of university topics encompassing ethical research principles and, therefore, they face challenges when undertaking coursework that assumes knowledge, skills or attributes relating to ethical practice in research (Davis et al., 2022). In addition, the international collaborative system on research involving human objects should be well-implemented to protect participants from being exploited (Rachmawaty, 2017). To protect participants and to conduct ethical research, researchers need to be mindful of differing international ethical requirements when applying for research approvals.

When considering collaborative research projects with researchers and post-graduate students from Australia and Indonesia, navigating the differences in ethical approval processes needs to be negotiated so that all factors are considered. These include the ethical principles of respect for autonomy, beneficence, nonmaleficence, and justice (Varkey, 2021). In nursing research, ethical principles are implemented to protect vulnerable groups and study participants from any potential harmful effects from the study that is being conducted, and to maintain the fullest respect, dignity and privacy of participants involved in research projects (Rashid, 2022). When applying these principles, it is important to understand that differences in ethical processes across countries such as Australia and Indonesia may exist and requires further exploration. Hence, the aim of this paper is to describe and discuss different ethical approval processes experienced by researchers and post-graduate students in different locations in urban, sub-urban and rural locations in Indonesia conducted between 2014 and 2021 which all had an Australian university overseeing the projects. Understanding the differences in processes may assist future researchers and post-graduate students to navigate the different ethical approval systems, particularly within Indonesia.

Materials and Methods

This paper applies a collective case-study methodology to provide a reflexive account of the experiences of three nurse researchers in applying for ethical clearances for their nursing projects. A collective case-study methodology aims to gain a deeper understanding of similar cases allowing for a wider and deeper understanding of a phenomena (Jones and Lyons, 2004). According to Gangeness and Yurkovich (2006), case study research provides nurses with a holistic and appropriate form of inquiry that is suitable for a variety of settings, thus making this methodology appropriate for this review paper. A descriptive method was utilized within this case-study, which, according to Yin (2003), allows for a description of the phenomena within their context. A purposive sample of research projects was selected based on the lead Australian researcher of this study being the common denominator in all three independent projects. Each of the researchers in the three projects were approached via email by the lead researcher of this study inviting them to voluntarily participate. The three researchers agreed to participate.

The three different nursing research projects were conducted in Jakarta, Surabaya and Bandung in Indonesia by the authors of this paper whose experiences of managing ethical clearances in Indonesia are included in this review. The researchers involved in the projects included academics, researchers, and research higher degree post-graduate students (PhD candidates). The ethical research processes were reviewed for the three research sites that were conducted in urban, sub-urban and rural Indonesian settings between 2014 and 2021 by the academic, researchers and post-graduate students involved in the research projects. Each of the projects research methodologies and methods were reviewed and documented. This included reviewing the methods chapters of two theses which contained in-depth detail on the ethical application processes and one research project documentation. The ethics application processes were all reviewed. All documents were assessed for

Table 1. Ethical approval processes in three sites in Indonesia

	Project 1 Surabaya (2014-2016)	**Project 2 Bandung & Batam (2018-2020)**	**Project 3 Jakarta (2019-2021)**
Study type Demographic location	Phenomenology Urban	Phenomenology Rural Urban	Case Study Sub-urban Urban x 2
Number of data collection sites requiring approval	1	2	3
Data collection method	1. Interviews 2. Focus group discussions 3. Field notes observations	1. In-depth interviews	1. Interviews 2. Focus group discussion 3. Field note observations
Ethics Committee approvals	An Australian University Social and Behavioural Research Ethics Committee An Indonesian University Research Ethics Commission, Institute for Research and Community Service	An Australian University Social and Behavioural Research Ethics Committee	An Australian University Social and Behavioural Research Ethics Committee Hospital Research Ethics Committee
Additional approvals required	Site 1 - yes Site 2 - yes Site 3 - yes	Site 1 - Yes Site 2 - Yes	Site 1 - Yes Site 2 - Yes Site 3 – Yes
Payment required	Yes	No	Site 1 – No Site 2 – Yes Site 3 – Yes
Total length of time to gain final ethical approval	2 months	4 months	6 months

similarities, differences and challenges faced during the ethical application and approval processes by the academic. Themes were identified by coding categories and concepts based on reading and re-reading of the data. Member checking was conducted with all the research team members.

All three projects were overseen by an Australian university academic/researcher, which meant that the integrity of the projects adhered to strict guidelines. These guidelines included assessing all projects for the four specific categories of physical harm, psychological harm, social harm and economic harm and which were closely reviewed before permission to conduct the research could occur (National Health Medical Research Council (NHMRC), 2022). All three applications were submitted to the Australian university research ethic committee.

The Australian HREC panel, which met monthly, comprised of a variety of experts from various fields (The Flinders University of South Australia and Flinders Medical Centre, 2011). The process involved review of all the applications and issues of concern were raised with conditional approval being granted until those issues were addressed. The Australian HREC required any additional REC approvals and other permissions to be provided in English for review before the final permission for the projects was granted. This meant translations were required from Bahasa to English and had the approved translations certified.

Results

The research approaches of the three studies varied from phenomenology to case studies. Data sources included semi-structured and in-depth interviews with experts in their field, consumers of healthcare and focus group discussions with healthcare professionals and consumers of healthcare (see Table 1). Additionally, field notes were recorded at some sites. Four themes were identified by coding categories and concepts based on reading and re-reading of the data. These were timeframes for approval, additional permission requirements, payment of fees and transparency and bureaucracy of the application procedures. Each of the three projects is described below and includes the project details, and total timeframe for each application.

Project 1

Project 1 was a phenomenological study in urban and sub-urban Surabaya that involved three sites for data collection. This project aimed to identify the specific health needs of women and their families living in a coastal area in Surabaya. This study examined statistical data, health records, focus group discussions, individual in-depth interviews, and field note observations. The participants of this study were mothers, community leaders, healthcare providers, including doctors, midwives, and nurses, as well as Ministry of Health officers. Apart from the Australian university HREC approval, an additional Indonesian university REC approval was required before data collection could proceed. The result of the ethical review process in Indonesia was a full board classification. This process involved submission of an ethical protocol followed by the researchers presenting the research proposal to a panel of three research ethics reviewers who required further discussion involving questions, clarifications, input and suggestions for improvement of the proposal. Following this discussion, the original proposal was revised and, once the three reviewers agreed, a new ethical certificate was issued by the Indonesian university institution. Additional site approvals were also required for this project from the Ministry of Health, Surabaya. No payments were required for administration of the additional approvals by any of the three sites. Once all the permissions were received in writing, they were translated into English before submission to the Australia University HREC for final approval of the project. Once approved, the project commenced. The whole process for the ethics approval took two months.

Project 2

Project 2 was a phenomenological study exploring women's experiences in the use of Complementary and Alternative Medicine for Breast Cancer management. Data were sourced from in-depth interviews with women with breast cancer in two different sites. The first site was a cancer support group in Bandung, West Java, and the second was a cancer support group located in Batam, Kepulauan Riau. There was no REC approval required at either of the sites; however, additional permissions were required. Site 1 required a permission letter from the chairperson of the support group who did not have any understanding of ethical processes. This meant the researcher was required to meet with the chairperson and explain in detail all aspects of ethical research processes and responsibilities. Similarly at site 2, permission was required from the chairperson of the support group. At this site the chairperson was familiar with ethical processes and a permission letter was provided. There were no costs required in the process of obtaining the permission letter from both sites. The official permission letters were submitted to the Australian HREC following translation into English and final approval to commence the project was given. The whole process for the ethics approval took four months.

Project 3

Project 3 was a single embedded multiple unit case study in urban and sub-urban Jakarta. This study involved adult patients with Type 2 Diabetes Mellitus (T2DM) who attended outpatients units in a primary healthcare service (Site 1) (Ind. Puskesmas), a regional hospital (Site 2), and a top referral national hospital (Site 3). Medical doctors, nurses, and dietitians who worked with the patient participants were also included in this study. Additional approvals were required from the three data collection sites for the interviews, observations, focus group discussions and field notes. Site 1 did not have a specific REC but did require permission letters/correspondence from the Head of the Provincial Health Office, Head of Home Affairs Office and the Head of Community Health Care Centre. Site 2 and Site 3 required additional Indonesian REC approval. Site 2 required the hospital ethics committee to approve the project, which also involved permission letters from the Head of the Provincial Health Office, the hospital director, and the hospital research and training department. Site 3 required Hospital and Faculty of Medicine REC approval, which involved permission letters from the hospital director, Head of Internal Medicine Department, and Head of Endocrine and Diabetes Division. The researcher was required to pay an administration fee to all three sites; however, site 1 waived the fee due to the researcher's affiliation with the Provincial Health Office. Once all the written approvals, which were translated into English, were received they were submitted to the Australian HREC for final approval and the project commenced. The ethics review process for this research protocol posed minimal risks to participants, involving data collection through non-invasive methods and was reviewed as accelerated. The whole process for the ethics approval and permission process to enter the field took six months.

Discussions

There were a number of issues identified across all three research site locations in the urban, sub-urban and rural areas. These ranged from differing time periods for the ethics approval processes, differing additional permission approvals, inconsistency in payment of administration fees, issues of transparency during the processes of obtaining clearances, and bureaucratization of the processes.

Timeframes for approval

The ethics approval process commenced with applications presented in the three different study locations in Indonesia. Once these approvals were gained, the international university in Australia HREC reviewed and approved the projects. This highlights the hierarchy of approval and demonstrates the potential for power imbalance where each country has their own approach to research ethics, having their own focused priorities and operational norms of ethical principles (Chiumento, Rahman and Frith, 2020). These differences impacted on the time period to gain ethics approval. Approvals varied greatly between the three projects. The minimum timeframe was two months with the longest timeframe being six months. The time taken varied due to differences in local requirements, availability of ethics committee members, availability of meeting times for involved staff, complicated administration and bureaucracy systems and the impact of the COVID 19 pandemic.

Delays such as these experienced in all three projects are not uncommon. Lengthy regulatory and ethical review delays from the commencement of a project to the start of the actual research data collection in developing countries have been reported in many studies, resulting in creating obstacles for the research projects (Alemayehu, Mitchell and Nikles, 2018). Overcoming barriers such as time delays in gaining ethical approval is vital so that future research projects are not unnecessarily delayed as delays could impact on improvements in health outcomes for patients (Ichsan et al., 2018). Additionally, researchers need to allocate appropriate timelines for research projects taking into consideration funder requirements, institution requirements and site-specific requirements.

Additional permission requirements

Gaining permissions from different agencies associated with the research projects varied. Some agencies required written approval from senior management officials who were familiar with ethical principles whilst other centers were unfamiliar with ethical principles. This required the researchers to meet with officials, who acted as the gatekeeper, to personally explain the research and processes. Gatekeepers are seen as an integral part of the ethical process as these decision-makers share a desire to protect research participants from harm (Kay, 2019). Additionally, gatekeepers hold the power to approve or deny access to the research participants, access to research sites and be concerned about the researchers being scrupulous in adhering to ethical principles (Clark, 2011; Christian et al., 2022) . As gatekeepers are often the vital link for successful research outcomes, positive relationships between the gatekeeper and the researcher are essential (Kay, 2019; Koirala, Amgai and Davidson, 2020; Thoft, Ward and Youell, 2021).

The development of trusting relationships takes time and patience and may present additional challenges to undertaking a research project. For researchers seeking additional approval permissions to access data collection sites, this can cause additional delays in the application processes. The gatekeepers, who may constitute different types, including the person who could provide immediate approval, the person who re-directed the request to others, the person did not know if they could approve the application, or one who did not respond at all to the request, need to be identified and contacted, which can tedious, time-consuming and obstructionist (Christian et al., 2022). According to Susulo et al. (2014) , differing roles in the healthcare field can result in differing ethical views. These differing roles can also impact on gatekeeping outcomes and need to be considered. Once the gatekeeper has been contacted, trusted working relationships need to be developed. These additional steps created additional burdens for the researchers involved in the three Indonesian projects. To mitigate these types of delays for future research projects it is suggested that ongoing education is required at all healthcare facility levels regarding research ethics procedures and processes.

Payment of fees

Inconsistency in payment fees was seen between all three projects, questioning the bureaucracy of the different locations. There was no cost required from applicants by the Australian university HREC. However, a number of the sites in one of the projects in Indonesia required payment before the ethics application would be assessed and permission granted. Payment of fees for services (administration), is viewed as one way to improve service certainty and expedite application processes (Taufik et al., 2021). However, there was no consistency in fee requirements across the three Indonesian research project sites. Costs varied for one of the projects from 500,000 to 1.5m rupiah (AU $ 50-150) for one of the projects where fees were required for the three different data collection sites. According to Fakultas Kedokteran Universitas Indonesia-Rumah Sakit Cipta Mangunkusumo K E P K User Guide (2023), the variation in fees was dependent on whether the research was conducted by foreign researchers or was a sponsored research project, such as in the case of ethics approval fees by the Indonesian national referral hospital for one of the projects. The added burden of administration payments contributed to the delay to this particular project as additional rules and guidelines were required to be followed.

Other fees were also paid in some of the research projects. Participation incentive fees were provided to some participants in the projects which ranged from Rp50,000 to Rp 200,000 (AU$5 -AU$20). This was in line with other similar studies in Indonesia (Linawati et al., 2022). Although the practice of participation fees is widespread across the globe, it remains ethically contentious (Pollacsek, Boardman and McCann, 2017; Largent et al., 2022). However, according to Pollacsek, Boardman and McCann (2017), providing a payment as an incentive is not considered unethical as a payment is considered an offer rather than a threat. It is vital, however, that participants are provided with informed consent so they are aware of what they are agreeing to, being paid for and that the fees are equitable. According to Largent et al. (2022), concerns about payments cited in other studies include that participation fees might unduly influence the participants or lead to coercion, undermine participant informed consent, or result in the disproportionate enrolment of low-income or otherwise disenfranchised individuals. However, their research, which was conducted in a developed country, found that incentives did not impact unduly on participant recruitment.

According to Pollacsek, Boardman and McCann (2017), when conducting research with vulnerable populations, those who are socially or economically disadvantaged, the amount of payment suggested as being appropriate can be guided by advice from the local community. LeBarron et al. (2015), also recommend that researchers in low-income country settings consult with local collaborators and mentors about being culturally sensitive as to appropriate ways to compensate participants for their time. All three project researchers liaised with key personnel in their specific research locations. As a result, participants in some of the studies were provided with a participation fee, the amount of which was determined during the consultation. This was regarded as being acceptable to all parties involved as it was viewed that, in Indonesia, a low-income country, providing participants with funds to assist with travel or food is a cultural expectation rather than an incentive expectation.

Transparency and bureaucratization of the application processes

There were issues with transparency and bureaucracy in the research ethics application processes leading to additional steps required by the applicants that were not anticipated. These additional steps resulted in time-consuming hurdles for the applicants, delaying the approvals and commencement of the projects. For instance, one of the project applications required the additional steps of the researcher following up directly with the person-in-charge/administrator both by telephone and in person. Another of the projects required the researchers to personally present the proposed project to a panel of the research ethics committee. Although there were guidelines for the HRECs applications, there was ambiguity in requirements, resulting in tensions and challenges.

According to some researchers, ethics approvals can lack transparency, which can be especially challenging for researchers in developing countries who face issues with differences in culture, security, society structures and norms that are different to developed countries. Further, according to Brown, Spiro and Quinton, there can be a disconnect between researchers and ethics committees in relation to bureaucracy and formality were ethical regulations substantially increase the time and effort required by researchers to meet the administrative demands. Additionally, there can also be a disconnect between research site approvals and researchers with the navigation of bureaucratic requirements. For example, the researchers of the three projects had to be well-informed and familiar with the administrative procedures and which departments/government authorities were required to be approached for providing permission to conduct research in their specific community areas. There was no consistent approach across the three different projects.

According to Koirala, Amagai and Davidson (2020), researchers need to use professional and organizational networks from a broad range and build a good rapport so that access to systems during the research projects is achievable. This may include pre-planning to identify the key contacts, use of strategic connections, dedication and some luck (Koirala, Amgai and Davidson, 2020). Additionally, use of formal (such as email requests) and informal (such as online social networks) systems in developing countries to navigate the bureaucracy can help in the process (Koirala, Amgai and Davidson, 2020). Furthermore, LeBaron et al. (2015), report that the importance of advanced planning when conducting research in developing countries cannot be underestimated. However, the impact of unforeseen events such as the COVID 19 pandemic, cannot be planned for. Hence, ensuring transparency of ethical approvals and understanding complex bureaucratic systems is vital in the initial instance when conducting research in developing countries.

Study strengths and limitations

This study contributes to the gaps in existing knowledge regarding ethics application processes in developing countries such as Indonesia. Notably, this study adds to the existing literature by exploring the experiences of researchers and post-graduate research higher degree students base in Indonesia in the Asia-Pacific region highlighting the differences in processes in three different projects within the same developing country.

A limitation of this study is the difference in timeframes between the three projects applications for ethics approval. The time period for when the research projects were conducted varied from three to eight years ago. During this time, changes have occurred in the Asia-Pacific region with the development of WHO March 2022 Standard Operating Procedures (SOP) for the ethics review committee (World Health Organization (WHO) South-East Asia, 2022). These SOPs may assist in future research ethics applications in centers unfamiliar with ethical approval processes which, in turn, may shorten the ethical approval timeframe for research projects.

Conclusion

Symptoms commonly occur as clusters rather than as a single symptom. Identifying symptom clusters is important in terms of maintaining patient's health-related quality of life. The Indonesian version of the CKD–SBI was demonstrated to be a valid and reliable instrument to identify symptom clusters among patients with hemodialysis in Indonesia. The Indonesian version of the CKD-SBI was shown to be suitable for specific characteristics and can be used in clinical settings in Indonesia to identify symptom burden and symptom clusters among patients with hemodialysis. For further study, research about symptom management among patients with hemodialysis can be the main focus.

Conflict of interest

The authors declare that there is no conflict of interest.

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ORIGINAL ARTICLE

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Translation and psychometric testing of Indonesian Version of Chronic Kidney Disease–Symptom Burden Index

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ABSTRACT

Introduction: Chronic Kidney Disease Symptom Burden Index (CKD-SBI) is an instrument measuring symptom burden developed by Almutary and colleagues in 2015 to refine the identification of symptom burden in chronic kidney disease population. This instrument has not been tested for Indonesian language, thus, the aim of study was to translate and psychometrically testing the Indonesian version of CKD-SBI.

Methods: This study design was cross-sectional study. The study methods were divided into translation and psychometric testing. The translation was conducted by adapting Guillemin and Beaton's guidelines. The psychometric properties determined 320 hemodialysis patients with several inclusion criteria such as above 18 years old, regularly receiving hemodialysis for more than 3 months. Patients with cognitive impairment, psychiatric patients, and in critical condition were excluded.

Results: The item content validity index of the Indonesian version was 0.92, and the subscale content validity was 0.78. The instrument demonstrated convergent validity with the Kidney Disease Quality of Life. Excellent internal consistency was demonstrated based on a Cronbach's alpha coefficient of .91 and a subscale ranging from 0.86 to 0.92. The confirmatory factor analysis showed that the five factors of English Version did not fit the Indonesian version. The parallel analysis suggested that five factors be retained from the distress and frequency dimensions because they were statistically and conceptually acceptable.

Conclusions: Translated Indonesian versions of CKD-SBI can be used as instruments to assess symptom burden among patients with hemodialysis. By assessing symptom burden, we hope nurses in the hospital are able to decide effective symptom management to increase the health-related quality of life among these populations.

Keywords: nurses, nursing, symptom burden, psychometric, chronic kidney disease

Introduction

People with chronic kidney disease (CKD) encounter a disease burden in the form of multiple symptoms due to the accumulation of toxins resulting from a decline in kidney function (Vadakedath and Kandi, 2017). The number of symptoms among patients with CKD ranges from approximately 6-20 per patient (Almutary, Bonner and Douglas, 2013) and symptoms typically occur in clusters (Lee and Jeon, 2015; Almutary, Douglas and Bonner, 2016; Amro et al., 2016;). Previous studies investigating symptoms among the CKD population have focused on single symptoms rather than on clusters. However, two or more symptoms may be connected and may thus share the same etiology (Dodd, Miaskowski and Paul, 2001; Kim et al., 2005; Lockwood et al., 2019).

The number of patients who require hemodialysis in Indonesia increased rapidly from 52.8 thousand in 2016 to 77.8 thousand in 2017 (Pernefri, 2017).

Among renal replacement therapy sections, hemodialysis is the default treatment among Indonesian patients in the advanced stages of CKD. As the major treatment choice, hemodialysis may contribute to the symptom burden experienced by patients along with the nature of the disease trajectory itself (Almutary, Bonner and Douglas, 2013). A limited number of studies have identified the symptom burden and symptom clusters in Indonesia, among which one study identified clinical symptoms among patients undergoing hemodialysis in Indonesia. The results revealed a small mean of total symptom burden (9.79 ± 12.594) ranging from 0-80 (Nurtiana and Agustiyowati, 2019), indicating a low rate of symptom burden compared to other countries. The results may have been due to the small sample size, which inherently leads to low reproducibility of results (Button et al., 2013). Also, there is no study in Indonesia which has investigated symptom clusters among this population.

Several instruments have been developed to measure symptoms in practice and research, but few tools exist that consider comprehensive domains and dimensions, which results in limitations related to capturing CKD symptom experiences (Almutary, Douglas and Bonner, 2016). The Chronic Kidney Disease Symptom Burden index (CKD-SBI) developed by Almutary et al. in 2015, was a refinement of the Dialysis Symptom Index (DSI). The CKD-SBI addresses the limitations of the DSI symptom dimension, and the symptom domains are considered comprehensive. Compared to other available instruments, the CKD-SBI can comprehensively identify symptom burden in the context of both physical and psychological domains, and adopts multidimensional assessments, such as occurrence, severity, distress, and frequency of symptoms, which is useful in terms of translating into renal nursing practice (Almutary, Bonner and Douglas, 2016). However, CKD-SBI is only available in Arabic and English versions. Therefore, we conducted this study to translate and psychometrically test the Indonesian version of the CKD-SBI to identify the symptom burden and symptom clusters among patients undergoing hemodialysis in Indonesia.

Materials and Methods

Study design

A cross-sectional descriptive study design was used with a convenience sample of patients undergoing hemodialysis in Indonesia. Data were collected from July 2019 to January 2020 at two hemodialysis units in Jakarta, Indonesia. The study comprised two steps. In Step 1, the original English version of the CKD-SBI was translated into Indonesian. In Step 2, the psychometric properties of the translated version, including content validity and internal consistency, criterion related validity, factor analysis which consisted of confirmatory factor analysis (CFA) an exploratory factor analysis (EFA), and parallel analysis, were evaluated.

Method

The study methods were divided into translating, cross-culturally adapting, and reporting an examination of the psychometric properties of the Indonesian version of the CKD-SBI. Patients over 18 years old receiving regular hemodialysis for more than three months were approached and given information about the study. Patients with cognitive impairment, psychiatric issues or who were critically ill were excluded. A factor analysis requires a rule of thumb of 10 observations per variable for stability and generalizability (Comrey and Lee, 2013). Because there are 32 items in the CKD-SBI, 320 respondents were required. Informed consent was obtained from 320 patients ranging in age from 18 to 93 years of age.

Data analysis

Step 1 Translation: A request for permission letter was sent to Almutary to translate the original 32-items in the CKD-SBI. The cross-cultural adaptation translation process was conducted using well-established procedures following Beaton et al. (2000). The content validity index (CVI) for 32 items and a subscale were examined based on relevancy on a scale where 1 = not relevant to 4 = highly relevant, where any item having a value less than 3 was re-evaluated. In addition, the equivalence, clarity, and readability of both translated versions were assessed by the panel using a 4-point Likert scale ranging from 1 = not clear to 4 = very clear. Equivalence was used to determine whether both languages had equal meaning, where clarity referred to the degree of ambiguity and readability as indicated by whether the items were understandable. The CVI was computed using the proportion of items awarded ratings by the three experts.

Quality of life, as measured by the Kidney Disease Quality of Life (KDQOL)-36, was used to examine the criterion-related validity of the CKD-SBI. The KDQOL-36 has been used widely worldwide among target populations. The Indonesian version of the KDQOL-36 was translated in 2014 and was found to have appropriate psychometrics (Hidayah, 2014). The KDQOL-36 consists of 36 questions divided into several subscales, such as SF (items 1 to 12), burden of kidney disease (items 13-16), symptoms or problems (items 17-28), and effects of kidney disease (items 29-36). SF is divided into a physical component summary (PCS) and a mental component summary (MCS).

Step 2 Psychometric Analysis: The internal consistency of the CKD-SBI was assessed by determining the Cronbach's alpha coefficients for the overall scales and subscales. Cronbach's alpha coefficients above 0.70 were considered satisfactory (Polit and Beck, 2012). Several techniques were applied and compared to determine the factor structure of the Indonesian version of the CKD-SBI: a confirmatory factor analysis and an exploratory factor analysis (scree plot examination, eigenvalue greater than 1), and a parallel analysis.

In the CFA, model fit was appraised using the following criteria: (a) p-value of chi square test >0.05; (b) chi-square test divided by the degrees of freedom ($\chi 2/df$) < 3 or 5; (c) confirmatory fit index (CFI) ≥ 0.90; (d) normed fix index (NFI) ≥ 0.85; (e) standardized root mean square residual (SRMR) < .080; (f) root mean square error of approximation (RMSEA) < 0.08; (g) goodness of fit index (GFI) ≥ 0.95; and (h) adjusted goodness of fit index (AGFI) ≥ 0.90 (Kline, 2023). In the EFA, principal axis factoring was used for factor extraction, and a Promax rotation with Kaiser normalization was used for the rotation methods (Costello and Osborne, 2005). Number factors with eigenvalues greater than 1 were retained based on the screen plot and parallel analysis. Core symptoms in each cluster were determined based on stability across dimensions and clinical plausibility. The criteria for factor item retention included a minimum factor membership of two items, item loadings above 0.50, fewer cross-loaded items, and conceptual (Hair *et al.*, 2014).

Ethical consideration

The number of ethical approval from the Institutional Review Board (IRB) was ND-1020/UN2.F1/ETIK/PPM.00.02/2019. The number of approval research permission from Fatmawati hospital was DM 01.01/VIII.2/9375/2019, and from Cipto Mangunkusumo National Hospital was LB/1.4.12/0118/2020. Ethical consideration was followed by the investigator and research assistants including informed consent, autonomy, anonymity, beneficence, and justice (Polit and Beck, 2012).

Table 1. Demographic data of participants

Variable	n (%)	Mean and SD
Gender		
Female	145 (45.3)	
Male	175 (54.7)	
Body Mass Index		
Underweight (below 18.5)	24 (7.5)	
Normal (18.5–24.9)	214 (66.9)	
Overweight (25–29.9)	67 (20.9)	
Obese (30 and above)	15 (4.7)	
Marital Status		
Single	28 (8.7)	
Married	262 (81.9)	
Widowed	30 (9.3)	
Education		
Elementary school	30 (9.3)	
Junior high school	28 (8.7)	
Senior high school	171 (53.4)	
University	91 (28.4)	
Work Status		
Unemployed	192 (60.0)	
Employed	79 (24.7)	
Retired	49 (15.3)	
Comorbidities (CCI)		
0	107 (33.4)	
1-2	142 (44.3)	
Above 3	71 (22.1)	
Age		51.50 ± 14.56
Duration		46.28 ± 43.76

Results

Demographic data

The majority of the sample was male (n = 175; 54.7%), had a normal Body Mass Index (BMI) (n = 214; 66.9%), was married (n = 262; 81.9%), had graduated from senior high school (n = 171; 53.4%), not employed (n = 192; 60.0%), and had 1-2 comorbidities (n = 141; 44.3%) measured by using Charlson's Comorbidity Index (CCI) (Charlson et al., 1987). The participants ranged in age between 18 to 93 years old, and the average age was 51.50 (SD = 14.56). The mean hemodialysis duration was 46.28 (SD = 43.76), which was the equivalent of 3.8 years (Table 1).

Content validity

The equivalence, clarity, and readability of the Indonesian version of the CKD-SBI were 92%, 93%, and 94%, respectively. The CVI in this study were 0.92

Table 2. Pearson correlation between CKD – SBI symptom dimensions and KDQOL -36 subscales (N = 320)

Symptoms Dimension	KDQOL–36 Subscale					
	Total score KDQOL-36	MCS	PCS	Effect of Kidney Disease	Symptom or Problem list	Burden of Kidney Disease
Occurrence	r = -0.67**	r = -0.65**	r = -0.35**	r = -0.29**	r = 0.71**	r = -0.07
Distress	r = -0.74**	r = -0.56**	r = -0.45**	r = -0.57**	r = 0.47**	r = -0.42**
Severity	r = -0.73**	r = -0.54**	r = -0.45**	r = -0.56**	r = 0.45**	r = -0.44**
Frequency	r = -0.68**	r = -0.46**	r = -0.44**	r = -0.59**	r = 0.36**	r = -0.46**
Total symptom burden	r = -0.74**	r = -0.55**	r = -0.46**	r = -0.58**	r = 0.47**	r = -0.43**

*=p < 0,05; **= p < 0,01

Table 3. Exploratory factor analysis

Distress		Severity		Frequency	
Symptom	**Loading**	**Symptom**	**Loading**	**Symptom**	**Loading**
		Fluid volume symptoms			
Restless leg	0.64	Restless leg	0.70	Restless leg	0.59*
Diarrhea	0.61	Diarrhea	0.58	Diarrhea	0.55
Chest pain	0.55*	Swelling in legs	0.57	Shortness of breath	0.55*
Swelling in legs	0.53	Chest pain	0.51*	Chest pain	0.54*
		Dry mouth	0.51	Swelling in legs	0.52
		Neuromuscular or pain symptoms			
Dizziness	0.86	Headache	0.76	Dizziness	0.79
Headache	0.82	Dizziness	0.75	Headache	0.79
		Bone or joint pain	0.53*		
		Sexual symptoms			
Decreased interest in sex	0.97*	Difficulty becoming sexual aroused	0.93*	Decreased interest in sex	0.99*
Difficulty becoming sexually aroused	0.96*	Decreased interest in sex	0.92*	Difficulty becoming sexually aroused	0.99*
		Sleep symptoms			
Trouble falling asleep	0.91			Trouble staying asleep	0.89
Trouble staying asleep	0.85			Trouble falling asleep	0.83
		Psychological symptoms			
Feeling anxious	0.94*	Feeling sad	0.97*	Feeling anxious	0.95*
Feeling sad	0.92*	Feeling anxious	0.96*	Feeling sad	0.93*
Worrying	0.84*	Worrying	0.87*	Worrying	0.86*
Feeling Nervous	0.79*	Feeling nervous	0.86*	Feeling nervous	0.79*
Feeling irritable	0.63*	Feeling irritable	0.67*	Feeling irritable	0.60*
		Total variances			
55.11%		55.61%		48.81%	

*= p < 0,05

for item content validity index (I-CVI) and, and 0.87 for scale content validity index (S-CVI).

Internal consistency

Cronbach's alpha for the 32 items scale was 0.906, and for the distress, severity, and frequency dimensions it was 0.903, 0.923, and 0.863, respectively.

Criterion validity

Criterion-related validity was identified by correlating the CKD-SBI to the KDQOL-36. The symptom burden list of the KDQOL-36 was positively significant with the Distress dimension ($r = 0.47$; $p< 0.001$), Severity dimension ($r =0.45$; $p< 0.001$), and Frequency dimension ($r = 0.36$; $p< 0.001$) of the CKD-SBI. Respondents with higher scores of symptom distress, severity, and frequency had higher scores on the KDQOL-36 symptom problem list. Symptoms among the CKD patients were correlated with poor health-related quality of life. A negative correlation was found between the of CKD-SBI and the MCS, PCS, effects of kidney disease, and burden of kidney disease dimensions, showing a moderate to strong relationship (Table 1).

Confirmatory factor analysis

The five factors originally reported by Almutary were evaluated with a confirmatory factor analysis. The analysis for each dimension showed that the data didn't fit the model. Distress (χ2 998.515, df= 242; CMIN/DF = 4.12; P = 0.000; GFI = 0.794; RMR = 0.507; NFI = 0.760; CFI = 0.805; RMSEA = 0.099; AGFI = 0.745). Frequency (χ2 480.098, df= 179; CMIN/DF = 2.68; P = 0.000; GFI = 0.871; RMR = 0.469; NFI = 0.839; CFI = 0.892; RMSEA = 0.073; AGFI = 0.833). Severity (χ2 759.402, df= 220; CMIN/DF = 3.45; P = 0.000; GFI = 0.820; NFI = 0.775; RMR = 0.462; CFI = 0.855; RMSEA = 0.088; AGFI = 0.774). The CFA didn't fit the model.

Exploratory factor analysis

Principal Axis Factoring (PAF) was used for the factor extraction, and a Promax rotation with Kaiser normalization was conducted for the rotation methods. The Promax rotation assumed that the extracted factors of the CKD-SBI were correlated. The desirable convergent validity was items with loadings greater than 0.50, where divergent validity was defined as the absence of a relationship between the items and other subscales. The Kaiser Mayer Olkin (KMO) and Bartlett's sphericity test scores were observed for each dimension. An overall KMO score >0.80 indicated sampling adequacy (severity = 0.835; distress = 0.835; frequency = 0.802) and the overall Bartlett's sphericity score was significant for the factor analysis ($p < 0.001$). The results of the initial solution showed nine factors with eigenvalues greater than 1 for the Severity, Distress, and Frequency dimensions. Among these dimensions, the nine factors solution explained 55.11%, 55.61%, and 48.81%, respectively. The scree plot demonstrated five factors to be appropriate. The parallel analysis suggested the five factors most appropriate for the Distress and Frequency dimensions, and the four factors for the Severity dimension. After conducting the parallel analysis, the EFA was repeated on a forced 5-factor for the Distress and Frequency dimensions, and four factors for the Severity dimension. The investigator included item loadings above 0.50, fewer cross-loadings, and more than two items in one cluster. No cross-loading items were found. The investigator found four clusters that were consistent along all dimensions, and one cluster was found only under two dimensions. Five clusters in the Distress dimension explained 23.97% of the total variance; five clusters in the Severity dimension explained 23.42% of the total variance, and five clusters in the Frequency dimension explained 19.23% of the total variance in the CKD-SBI Indonesian version. In summary, across three dimensions, the number of symptoms in all clusters ranged from two to 16 items.

Factor labeling

A total of five factors found in the EFA were reviewed and labelled. In the Distress dimension, factor 1 consisted of four items, labelled as fluid volume symptoms, which accounted for 23.97% of the variance. Factor 2 consisted of two items, labelled as neuromuscular or pain symptoms, which accounted for 8.41% of the variance. Factor 3 consisted of two items, labelled as sexual symptoms, which explained 5.12% of the variance. Factor 4 consisted of two items, labelled as sleep, which explained 3.93% of the variance. Factor 5 consisted of five items, labelled as psychological symptoms, which explained of 3.48% of the variance.

In the Severity dimension, factor 1 had five items, labelled as fluid volume symptoms, which accounted for 23.42% of the variance. Factor 2 had three items, labelled as neuromuscular or pain symptoms, which accounted for 8.89% of the variance. Factor 3 consisted of two items, labelled as sexual symptoms, which explained 5.59% of the variance. Factor 4 consisted of five items, labelled as psychological symptoms, which accounted for 3.65% of the variance.

In the Frequency dimension, factor 1 consisted of five items, labelled as fluid volume symptoms, which accounted for 19.23% of the variance. Factor 2 had two items, labelled as neuromuscular or pain symptoms, which accounted for 7.63% of the variance. Factor 3 had two items, labelled as sexual symptoms, which explained 6.47% of the variance. Factor 4 had two items, labelled as sleep symptoms, which explained 3.77% of the variance. Factor 5 had five items, labelled as psychological symptoms, which accounted for 3.50% of the variance.

Discussions

This study describes the translation procedures and provides an examination of the psychometric properties of the Indonesian version of the CKD-SBI. The CKD-SBI was designed to be a comprehensive assessment tool to address limitations related to symptom identification in chronic kidney disease (CKD) patients. The CKD-SBI has been translated into two languages across different stages of chronic kidney disease, including those receiving dialysis and those not receiving it (Almutary, Bonner and Douglas, 2015). This new Indonesian version is the initial cross-cultural version in South-Asian countries, following the previous version in English and Arabic. Three panels of experts reviewed the Indonesian version of the CKD-SBI, which had high scores for equivalence, clarity, and readability. All items in the Indonesian version of the CKD-SBI were deemed to be clear, to reflect the original meaning, and to be understandable. The I-CVI indicated good results, whereas the S-CVI had an acceptable score. The internal consistency was considered excellent based on the Cronbach's alpha, which indicated good reliability, and the score was close to the Almutary's version for the comparable reliability score. Criteria-related validity was also checked to identify the relationships between the CKD-SBI and the KDQOL-36. The findings were consistent with previous reports (Almutary, Bonner and Douglas, 2015).

The first process of the cross-cultural adaptation of the Indonesian version of CKD-SBI involved the use of a confirmatory analysis. The CFA showed that the results from our study did not fit Almutary's 5-factor solution in terms of consistency across dimensions. In the Distress dimension, the CMIN/DF score was acceptable; however, the CFI, NFI, GFI, and AGFI were lower than the recommended thresholds, and the RMSEA was higher. In the Frequency dimension, the RMSEA score was acceptable, but the CMIN/DF, CFI, NFI, GFI, and AGFI were lower than the recommended thresholds. Furthermore, in the Severity dimension, the CMIN/DF score was acceptable, but the RMSEA was higher and the CFI, GFI, NFI, and AGFI were lower than the recommended thresholds.

The parallel analysis suggested that five factors should be retained from the Distress and Frequency dimensions; however, in the Severity dimension, only four factors were retained. Only four factors remained consistent across all dimensions. The original version of the CKD-SBI reported five factors, including fluid volume symptoms, neuromuscular symptoms, gastrointestinal symptoms, sexual symptoms, and psychological symptoms while the Indonesian version of the CKD-SBI included fluid volume symptoms, pain or neuromuscular symptoms, sleep symptoms, sexual symptoms, and psychological symptoms. Several factors from Almutary's original version were similar to the Indonesian version of the CKD-SBI: fluid volume symptoms, neuromuscular or pain symptoms, sexual symptoms, and psychological symptoms. The differences between Almutary's original version and the Indonesian version of the CKD SBI included not only the number of factors or clusters across dimension, but also the number of items in each factor or cluster and the name of the clusters.

The second factor in Almutary's original version (gastrointestinal symptoms) was not found in the current study. Different populations may have different occurrence of symptoms among patients. Among non-dialysis and peritoneal dialysis patients the risk of gastrointestinal symptoms has been found to be higher than in hemodialysis populations. According to the literature, gastrointestinal symptoms may appear in the CKD population due to the lower glomerular filtration rate (GFR), which leads to uremia (Lew and Radhakrishnan, 2020). Uremia causes pathological and physiological changes throughout the gastrointestinal tract, which leads to gastrointestinal symptoms (Nissenson et al., 2022). Gastrointestinal symptoms can improve with hemodialysis procedures (Lew and Radhakrishnan, 2020).

The first factor, fluid volume symptoms, comprised four items in the Distress dimension, and five items under the Severity and Frequency dimensions. Fluid volume symptoms result from the accumulation of fluids, excreta nitrogen, and electrolytes (Fernandes et al., 2017). Patients with chronic kidney disease are unable to regulate total body fluid, which results in an imbalance in body fluids. Restless leg, diarrhea, swelling in legs, and chest pain were common items in this cluster.

The second factor, in the Distress and Frequency dimensions, there were two items, and in the Severity dimension, there were three items. In Almutary's original version, the name of this factor was neuromuscular symptoms only. However, in the current study, neuromuscular and pain symptoms were viewed as having similar underlying characteristics, so they can occur together as one cluster (Lockwood et al., 2019). Several factors contribute to the occurrence of neuromuscular and pain symptoms: hyperkalemia (Arnold et al., 2016), comorbid conditions, and an impaired peripheral nervous system due to lower GFR, which is called peripheral neuropathy or uremic neuropathy (Almutary, Bonner and Douglas, 2015; Almutary, Douglas and Bonner, 2016; Abd El Naby et al., 2020). Dizziness and headache consistently appeared in three dimensions.

The third factor was sexual symptoms. The items reflect a decreased interest in sex and difficulty becoming sexually aroused, which were loaded together consistently along all dimensions. The items under sexual symptoms were similar to those of the original study (Almutary, Douglas and Bonner, 2016). Several factors contribute to the occurrence of sexual symptoms, including medications, anemia, zinc deficiency, comorbid diseases, vascular problems (occlusions in the veins and arteries), psychosocial problems, and comorbidities (Palmer, 2018). In Indonesian culture, talking about sexual is taboo, so attention to sexual symptoms is low. However, identifying this problem and applying appropriate symptom management is important.

The fourth factor, sleep symptoms, only loaded under the Distress and Frequency dimensions. Items related to sleep symptoms involved two issues: trouble falling asleep and trouble staying asleep. Sleep symptoms had relatively high item loadings (above 0.80). Uremia, psychological problems, and sleep during dialysis contributed to the occurrence of sleep symptoms (Palmer, 2018). In Almutary's original version, items related to sleep symptoms co-occurred with fluid volume symptoms. Sleep symptoms related to multiple factors, such as comorbidities (dementia, congestive heart failure, obstructive sleep apnea), medications, and lifestyle behavior (caffeine consumption, sleeping or napping during dialysis) (Scherer, Combs and Brennan, 2017).

In the fifth factor, psychological symptoms, five items were consistent along all dimensions and involved feeling anxious, feeling sad, worrying, feeling nervous, and feeling irritable. The items found in the current study were similar to those in Almutary's study (Almutary, Douglas and Bonner, 2016). Living with CKD and routine hemodialysis results in many stressors, such as facing death, fear of dialysis, uncertainty about the future, the changes or dysfunctions in family and social roles, dietary restrictions, changes in lifestyle, and dependence on healthcare and medications, all of which lead to psychological symptoms (Niu and Liu, 2017).

The final version of the Indonesian version of the CKD-SBI showed that 32 items had statistically validity, reliability, and were equivalent to the original version. However, these findings are limited in terms of measuring symptom burden and symptom clusters among patients with CKD undergoing hemodialysis. Further research is needed to validate the 5-factor model used here to measure symptom burden and symptom clusters among patients at different stages of CKD, such as stages involving pre-dialysis, peritoneal dialysis, and kidney transplantation.

Conclusion

Symptoms commonly occur as clusters rather than as a single symptom. Identifying symptom clusters is important in terms of maintaining patient's health-related quality of life. The Indonesian version of the CKD–SBI was demonstrated to be a valid and reliable instrument to identify symptom clusters among patients with hemodialysis in Indonesia. The Indonesian version of the CKD-SBI was shown to be suitable for specific characteristics and can be used in clinical settings in Indonesia to identify symptom burden and symptom clusters among patients with hemodialysis. For further study, research about symptom management among patients with hemodialysis can be the main focus.

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Conflict of interest

The authors declare that there is no conflict of interest.

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Cyberincivility among Filipino Nursing Students in a public university: knowledge, experience, and acceptability

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ABSTRACT

Introduction: The pandemic rapidly shifted nursing education to the online platform, and cybercommunication may expose students to the risk of online uncivil behaviors. Understanding cyberincivility in the primary mode of education during the pandemic is necessary. This study determined the cyberincivility knowledge, experience, and perception of acceptability among nursing students in the Philippines.

Methods: A cross-sectional research design was employed with 300 Filipino nursing students of a public university who participated in the survey conducted last June 2021 using the Academic Cyberincivility Assessment Questionnaire. Data were described, and statistical differences and relationships were tested using ANOVA, t-Test, and Pearson correlation.

Results: Findings indicated that nursing students generally had high knowledge (M=11.53), low experience (M=1.67), and low acceptability (M=1.41) of online uncivil behaviors. Academic cyberincivility knowledge, experience, and acceptability did not significantly vary (p>0.05) based on sex, year level, and duration of daily internet usage. There was a significant positive moderate correlation (r=.402, p=.000) between cyberincivility experience and acceptability.

Conclusions: Nursing schools should continuously strive to avoid the risk of uncivil cyberspace behaviors and promote an online culture of civility in online learning spaces.

Keywords: cross-sectional study, cyberincivility, nursing students, Philippines, professionalism

Introduction

Online communication has become more predominant in academia as the COVID-19 pandemic shifted most nursing education programs to the online platform (Kim et al., 2020; Oducado, 2020; Oducado & Soriano, 2021). However, the environment in the online setting can present several challenges (Hopkins et al., 2017). Even before the pandemic, it had already been reported that nursing students used online platforms for educational purposes (Duke et al., 2017; Oducado et al., 2019). Cyber or electronic communication is more common nowadays, and such a platform can lead to miscommunications and misunderstandings between faculty and students (Swartzwelder et al., 2019). Moreover, online platforms have become potential sites that could breed incivility, exposing students to the risks and dangers of online uncivil behaviors (Clark et al., 2012; Kim & Choi, 2021; Oducado et al., 2019). Cyberincivility refers to online breaches of professional standards or behaviors in the digital realm that go against the established norms and values shared by the majority of a community or society (Kim et al., 2020; Sternberg, 2012). De Gagne (2018) identified academic uncivil or misbehaviors online, including but not limited to blaming technology for communication failure, attacking or insulting other students' thoughts or comments, posting distributing photos, and breaching privacy.

Student incivility is a persistent problem in nursing education that can threaten patient safety and outcomes (Al-Jubouri et al., 2021; Butler & Strouse, 2022; Muliira et al., 2017; Robertson, 2012). Some scholars noted that uncivil behaviors are increasing in higher and nursing education, with many nursing schools reporting to have encountered at least one incidence of students posting unprofessional content online (Anderson et al., 2021; Marnocha et al., 2015). A substantial lack of cybercivility has been reported through research on the behavior of nurses and nursing students (De Gagne et al., 2016). Prior research has also documented the negative impact of incivility, such that it can create a nuisance in the learning environment and can be detrimental to the learning process and relationships (Hyun et al., 2022; Ibrahim et al., 2015; Natarajan et al., 2017). Experience of incivility among faculty have led to damaged professional and personal life resulting in losing the motivation to teach (Park & Kang, 2020).

The lack of knowledge and adequate preparation to know, understand, and recognize appropriate and acceptable online communication is one possible reason for unintentionally engaging in cyberincivility (Clark et al., 2012; Lampley, 2016). Also, lower knowledge of cyberincivility was found to be linked with higher tolerance of cyberincivility (Kim et al., 2020). Moreover, the increased online presence has blurred boundaries between personal and professional lives (Daigle, 2020). Suler's (2004) online disinhibition effect suggests that some people act out more intensely when online than they would in person. Hence, people may be likely to engage in hostile or aggressive behavior online because of the anonymity and reduced social cues associated with online interactions. Without the social pressure of face-to-face interactions, people may feel more empowered to express their true feelings, including negative or hostile ones.

Meanwhile, a growing body of studies has been conducted on cyberincivility (e.g. Clark et al., 2012; De Gagne et al., 2018; Ibrahim & Qalawa, 2015; Kim et al., 2020). However, despite the negative impact of cyberincivility concerning nursing students, even fewer studies can be accessed online and conducted locally, particularly during the pandemic when instruction shifted online. Such research can serve as a basis for nursing schools that could better guide ethical practice and online etiquette among students. And as future professionals, it is expected that nursing students exhibit online professionalism and civil behaviors (Oducado et al., 2019). The study will be beneficial in providing a practical solution to the lack of cybercivility information among nursing students, emphasizing the need for developing cybercivility policies in academic institutions to prevent cyberincivility and promote a safe online learning environment. As a result, this would help the nursing students improve their awareness of behaviors appropriate to their environment, assist them in creating meaningful relationships in online educational settings and improve the quality of online nursing education. Moreover, these are important because such guidelines could promote an online culture of civility and measure up to the nursing profession's standards (De Gagne et al., 2018).

This study aimed to determine the academic cyberincivility knowledge, experience, and acceptability among nursing students in the Philippines and whether significant differences existed according to sex, year level, and duration of internet use. Also, significant relationships between the three major variables (knowledge, experience, and acceptability) were tested.

Materials and Methods

A descriptive cross-sectional research design was utilized in this study. The participants were the three hundred (n=300) nursing students of an undergraduate nursing program in a public university in the Philippines who responded to the survey. The eligibility criteria were all bonafide or officially enrolled Level 1, Level 2, and Level 3 nursing students who were enrolled in an undergraduate nursing program. Students from other colleges as well as students with no or limited internet connectivity during the conduct of the online survey were excluded. The response rate for this study was 71.77% or 300 out of all 418 nursing students invited to participate.

Table 1. Profile of participants

Variables	f	%
Sex		
Male	89	29.7
Female	211	70.3
Year Level		
Level 1	93	31.0
Level 2	103	34.3
Level 3	104	34.7
Duration of Internet Use		
7 hours and below	71	23.7
8 to 11 hours	142	47.3
12 hours and above	87	29.0

Table 2. Level of academic cyberincivility knowledge, experience, and acceptability

Variables	M	SD
Knowledge	11.53	1.58
Experience	1.67	0.49
Acceptability	1.41	0.28

Table 4. Correlations between cybercivility knowledge, experience, and acceptability

	Pearson r	p-value
Knowledge and experience	-0.008	0.884
Knowledge and acceptability	-0.084	0.144
Acceptability and experience	0.402	0.000

The university's ethics review committee approved the study's conduct (Protocol Number WVSU.URERC-2021.CONS_004). Electronic informed consent was obtained prior to answering the actual survey. The researchers followed the principles of voluntary participation, confidentiality, and anonymity throughout the study. Permission to conduct the study was secured from the Office of the Dean and the level chairpersons. The data were collected through an online survey (Google Forms) in June 2021, which contained informed consent, questions, and answer options based on data gathering instruments. The class chairpersons were asked to facilitate the posting and distributing the link of the Google Forms to each student in their respective Facebook groups and Messenger group chats according to year level and section.

The study adopted the Academic Cyberincivility Assessment Questionnaire (ACAQ) by De Gagne (2018) to assess cyberincivility knowledge, experience, and acceptability. The original English version of ACAQ was used because the medium of instruction in Philippine nursing schools is English and also to allow comparison of results to prior research conducted in other countries using the same tool. The reported internal consistency of the instrument dimensions are as follows: knowledge Kuder-Richardson (KR) Formula 20 = 0.58, experience: Cronbach's α coefficients = 0.95, and acceptability: Cronbach's α coefficients = 0.94 (De Gagne et al., 2018). The Korean version had the following reliability indexes: knowledge KR Formula 20 = 0.22, experience: α = 0.96, and acceptability: α coefficients = 0.96 (Hong et al., 2020). For this study, KR Formula 20 for knowledge was 0.31, and Cronbach's α coefficients for experience and acceptability were 0.93 and 0.86, respectively. In this study, the first part assessed the demographic characteristics and duration of internet use ("How many hours do you spend using the internet daily?"). The knowledge part evaluated the knowledge domain of uncivil behaviors of the nursing students, which contains 15 items and can be answered by "1-true," "0-false," or "0-I don't know." Experience (how often uncivil events are observed and encountered) and acceptability (how tolerable or allowable uncivil events are) scales evaluated the 28 uncivil behaviors using the 5-point Likert scale. For experience, the respondents were asked to rate how often they have observed and encountered uncivil events in cyberspace. The choices included "1-never" to "5-very." The scale of acceptability asked how acceptable they perceive cyberincivility behavior with options ranging from "1-not at all" to "5-extremely."

All statistical computations were processed using the IBM Statistical Package for the Social Sciences (SPSS) version 23.0 for Windows. Frequency, percentage, mean, and standard deviation were used to describe the data. Statistical differences and relationships were tested using a one-way ANOVA, t-Test for Independent samples, and Pearson correlation with the alpha level of significance set at 0.05.

Results

Table 1 shows that the majority of nursing students were female (70.3%), and about half (47.3%) spent approximately 8-11 hours on the Internet daily. There were 34.7% in Level 3, 34.3% in Level 2, and 31% in Level 1. Table 2 shows that the mean scores of the participants in the academic cyberincivility knowledge, experience, and acceptability were 11.53 (SD=1.58) out of 15, 1.67 (SD=.49) out of 5, and 1.41 (SD=0.28) out of 5, respectively. Table 3 shows no significant differences (p>0.05) in academic cyberincivility knowledge, experience, and acceptability according to sex, year level, and duration of daily internet usage. Table 4 shows a significant moderate positive correlation (r=0.402, p=0.000) between cyberincivility experience and acceptability. On the other hand, cyberincivility knowledge was not significantly related to experience (r=-0.008, p=0.884) and acceptability (r=-0.084, p=0.144).

Table 3. Differences in cybercivility knowledge, experience, and acceptability

Variables	Knowledge		Experience		Acceptability	
	Test Statistics	p-value	Test Statistics	p-value	Test Statistics	p-value
Sex	0.870	0.385	-0.010	0.992	-0.566	0.572
Year Level	0.050	0.951	0.002	0.998	1.754	0.175
Duration of Internet Use	0.132	0.876	0.656	0.520	0.350	0.705

Discussions

This study assessed the academic cyberincivility knowledge, experience, and perception of acceptability among Filipino nursing students. While teaching cybercivility needs thoughtful consideration to deliver content and curriculum development (De Gagne, 2021), nursing students in this study generally had high knowledge of cyberincivility. Similar results were obtained in the earlier survey of De Gagne (2018) among four healthcare disciplines students. A relatively high knowledge was also noted in another recent study, although the cyberincivility knowledge of nursing students in Hong Kong was lower than that of the students from the United States and Korea (Kim et al., 2020).

Notably, despite some arguments that younger people who have been exposed to computers and the occurrence of cyberbullying at young age may be more accepting of this conduct, they may grow even more tolerant of cyberincivility as its frequency rises (Harper, 2019). This study demonstrated that nursing students had low experience with cyberincivility. However, this study's low incidence of cyberincivility cannot be interpreted as students having no personal incivility experiences. Similarly, the study of McNeill et al. (2016) revealed that the frequency of incidents of uncivil student behavior was relatively low. Earlier research by Clark et al. (2012) disclosed that nursing students found incivility to be a mild or moderate problem. On the other hand, the study by Kim et al. (2020) among three countries showed a mean score of 2.15 in cyberincivility experience, which was higher than this study. Asian culture is generally less assertive (Oducado & Montaño, 2021).

The authors explained that the low level of cyberincivility experience could be attributed to a characteristic of Asian students being less likely than their Western counterparts to communicate their feelings and views because they are concerned that doing so will offend others (Kim et al., 2020). However, Crosslin and Golman (2014) reported that the incidence of uncivil behaviors like cyberbullying among students in college ranges from 8-21%, but it was noted that the respondents indicated the failure to report the incident due to a belief that as adults, they should be able to manage such incidence. Careful analysis of each item revealed that 'Blaming technology for failure of communication, assignment completion or submissions' was the most frequently uncivil behavior experienced by students. The poor internet connection in the country and the lack of appropriate technology, possibly causing difficulty in passing academic requirements, may be a reason for this behavior. Rotas and Cahapay (2020) disclosed that one difficulty in university Filipino students' responses during remote learning is the inadequacy of learning resources. Furthermore, the item in this study with a higher mean score than the other items was 'Working on an assignment with others (via email or Instant Messaging) when the instructor asked for individual work.' This study's finding parallels that of Kim et al. (2020). This result could be related to the leniency in cyberspace, wherein students can easily share their output with their peers through instant messaging. Unfortunately, because student activities on the internet cannot be meticulously monitored, this could lead students to commit academic misconduct such as plagiarism (Debuque et al., 2023).

This study also reported a low acceptability of cyberincivility. This may indicate that the nursing students were well aware of cybercivility, its consequences, and its impact; hence, they perceived it as an issue and considered such behaviors unacceptable. Likewise, in the study by Kim et al. (2020), most respondents recognized cyberincivility as a serious problem. Another careful analysis of each item revealed that nursing students' most acceptable uncivil cyber behaviors could be related to time sensitivity. Lack of timely feedback on assignments was considered incivility by students in another study (McNeill et al., 2016). The Filipino time culture can explain the nursing students' acceptability of late submissions and email responses. Filipino time is primarily the practice of being late, followed by cultural tolerance and acceptance (Chua, 2019). However, this low regard or indifference to time may not be tolerated in other settings or countries.

On the other hand, the behaviors that the participants of this study regarded as less acceptable were related to breaching patient and students' privacy and making racial, ethnic, sexual, or religious insults. Nursing students value confidentiality both in the academic and clinical setting. A prior study in the Philippines among nursing students also reported maintaining confidentiality and privacy was perceived as a responsible behavior on social media (Oducado et al., 2019). Similarly, in a study by Matlakala, (2015), the participants expressed a positive view of keeping patients' information private. They stated they were morally obliged to do so and not reveal such information. According to the study participants, all patients have the right to confidentiality, and the nurse-patient relationship is built on trust between these two parties. After all, nursing educators must ensure that students acquire basic skills in creating a healthy environment that respects patients' rights.

This study found a significant positive correlation between cyberincivility experience and acceptability. This finding may suggest that the more uncivil behavior is considered acceptable, the more likely students will experience it, or vice versa. For instance, privacy breaches may be more unacceptable for students; hence, few are likely to engage in and experience such behavior. Kim et al. (2020) also noted that the acceptability of cyberincivility was positively correlated with the frequency of cyberincivility experience. Meanwhile, it is also possible that people who are more knowledgeable about the internet and online communication may be more aware of the potential harms of cyberincivility, and, therefore, less likely to find it acceptable (Kim et al., 2020). However, this present study noted otherwise. Perhaps, many other factors could influence someone's knowledge about cyberincivility, such as their personal values, cultural background, and social environment. It could be that what constitutes cyberincivility can vary widely depending on the context and the individuals involved (Oducado et al., 2019; Soares et al., 2017). What one person considers professionally acceptable behavior online may be regarded as uncivil by someone else. Therefore, it is essential to consider the nuances and complexities of this issue when attempting to understand the topic of cyberincivility.

Finally, no significant difference in knowledge, experience, and acceptability according to sex, year level, and duration of internet use was noted in this study. This study's result corroborates the prior study conducted by Kim et al. (2020), which revealed no significant difference in cybercivility knowledge based on sex and level of education. This result may be attributed to the homogeneity of the sample and the same curriculum these nursing students attend. The extent of information regarding cybercivility they are being exposed to is the same, thus not making a significant difference in their level of knowledge. Moreover, cybercivility experiences remain similar between males and females. It could be that perpetrators of cyberincivility do not have a marked preference toward their target, and some people online can appear and remain anonymous. In contrast, uncivil behaviors like cyberbullying can be common among females because of their propensity to verbal aggression expression (Navarro et al., 2015). Also, this study was consistent with the results of Kim et al. (2020), wherein the participants from their cross-country study displayed the same frequency of cyberincivility experience regardless of the length of time spent on the internet daily. The study also found that cyberincivility acceptability was associated with having more SNS accounts, spending more time on SNS, receiving more emails, and sending more text messages.

Despite the study findings' relevance, it has limitations, and conclusions can only be generalizable among the study participants. Also, the use of cross-sectional design and test of correlation and significant differences according to selected variables (sex, year level, and duration of internet use) means causality between variables cannot be inferred. Other variables such as urban or rural origin, parent's socioeconomic status, etc., may be considered by future scholars. The study is also limited to using a questionnaire subject to self-report bias. Future researchers may further conduct a test-retest reliability to assess the psychometric property of the knowledge scale because of its low internal consistency value. Moreover, given that what constitutes cyberincivility can vary widely depending on the context and the individuals involved, further validation of the tool within the Philippine context is needed to contextualize the research questionnaire, similar to the study conducted by Hong et al. (2020) in Korea.

Conclusions

This study highlights that nursing students have sufficient knowledge of uncivil cyber behaviors. They are aware of what cybercivility is, where cyberincivility usually occurs, and its effects and consequences. It is also noteworthy that, although nursing students spend significant hours on the internet and that the technological landscape has become a significant venue for various activities and expressions for nursing students, cyberincivility is still less encountered by them at present. However, there might be some instances where nursing students still experience uncivil behaviors online. Also, nursing students have a low tolerance for cyberincivility and perceive uncivil cyber behaviors as unacceptable and improper. This study can raise awareness among nursing students, educators, and administrators that is hoped to lead to proactive efforts to address and prevent such negative behaviors online. The academe may utilize the study's findings as baseline data and serve as a guide in building a foundation for enhancing programs and policies to deal with cyberspace behaviors, whether in facilitating what is appropriate or reprimanding harmful behaviors, thus promoting a culture of civility in online learning spaces.

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ORIGINAL ARTICLE

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Analysis of factors affecting fear and mental health awareness of coronavirus disease infection

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ABSTRACT

Introduction: Coronavirus disease 2019 (COVID-19) is a global health challenge that persists in causing both health emergencies and mental health crises around the world. This study aimed to analyze the factors contributing to COVID-19 infection and their impact on mental health crises on Java Island.

Methods: A cross-sectional study was conducted between June and July 2020 on Java Island, Indonesia, involving 1,218 respondents selected through convenience sampling. The independent variables included demographic, individual internal, and psychological factors, while the dependent variable was mental health crisis occurrence. Data were collected through demographic information, knowledge and attitude questionnaires, depression anxiety stress scores, the brief-COPE inventory, as well as surveys addressing encountered problems and mental health emergencies. The collected data underwent analysis using chi-square and multivariate logistic regression.

Results: Significance was observed in the relationship between demographic, individual internal, and psychological factors, and their impact on mental health crises ($p < 0.05$). Following adjustment with logistic regression, psychological factors exhibited a more pronounced relationship, with the highest association observed in stress levels ($p = 0.000$, 95% CI: 1.064-2.131).

Conclusions: Individual stress levels emerged as the foremost contributing factor to mental health crises. Psychological elements, encompassing anxiety levels, stress, coping mechanisms, and encountered challenges, played substantial roles in disrupting psychological well-being and mental health.

Keywords: COVID-19, crisis, factors, fear, mental health

Introduction

Coronavirus disease 2019 (COVID-19) remains an ongoing global health challenge, having escalated into a health emergency across the world (WHO, 2020). Its treatment remains elusive and continues to be a subject of research (Hotez, Corry and Bottazzi, 2020; Huang *et al.*, 2020). Consequently, the incidence of COVID-19 cases continues to surge (Wang et al., 2020; Wu et al., 2020). The rapid transmission of the virus has sparked widespread concern (Huang *et al.*, 2020) as people face increased susceptibility to infection, illness, and even fatality due to this virus (Covaci, 2020). As a result, people start to have a fear of infection (Fofana, 2020) and begin to overprotect themselves to prevent the spread of the virus (Covaci, 2020). Many resort to measures such as frequent hand washing, avoiding social interactions, harboring suspicions about others carrying the virus, and stigmatizing COVID-19 patients and their close contacts (Carroll *et al.*, 2020; Dymecka, Gerymski and Machnik-Czerwik, 2020; Nursalam *et al.*, 2020). The heightened sense of fear and panic during pandemics and epidemics has taken a toll on the mental health of both individuals and communities.

The global tally of COVID-19 cases has steadily climbed day by day (Staden, 2020) since the initial case was identified in Wuhan, China, in December 2019 (Stoecklin *et al.*, 2020). By July 2020, the global COVID-19 case count had reached 16.39 million, with Indonesia contributing 86,521 cases to the total count (Staden, 2020; WHO, 2020). The total number of fatalities reached 651,000, with 65,000 critically ill patients requiring hospitalization (Jung *et al.*, 2020). Java Island holds the highest proportion of COVID-19 cases in Indonesia, accounting for 80% of the nation's total cases (Wahyuhadi *et al.*, 2022). This surge in cases has triggered a range of psychological reactions, spanning from mild to severe (Barzilay *et al.*, 2020; Carroll *et al.*, 2020). Research conducted among 7,143 Chinese students indicated that 75.1% experienced no anxiety symptoms, while 24.9% exhibited mild (21.3%), moderate (2.7%), or severe (0.9%) anxiety symptoms (Cao et al., 2020; Wang, Ma, et al., 2020). Similarly, research in Italy revealed that 31.38% of individuals reported general psychopathological symptoms, 37.19% experienced anxiety, and 27.72% showed signs of post-traumatic stress disorder (Maugeri *et al.*, 2020; Pakenham *et al.*, 2020). These findings underscore the serious nature of psychological responses that demand attention across various sectors in response to COVID-19 (Cao *et al.*, 2020; Pakenham *et al.*, 2020).

Psychological responses within communities exhibit considerable diversity (Barzilay et al., 2020; Dymecka, Gerymski, & Machnik-Czerwik, 2020). While some individuals harbor fears about COVID-19 and consider it a conspiracy (Georgiou, Delfabbro and Balzan, 2020), such misinformation hampers efforts to control virus transmission (Fofana, 2020), including excessive psychosomatic symptoms and repetitive adherence to health protocols (Barzilay *et al.*, 2020; Carroll *et al.*, 2020; Dymecka, Gerymski and Machnik-Czerwik, 2020). Since March 2020, Indonesia's declaration of a national health emergency has intensified the community's apprehension of COVID-19 (Fofana et al., 2020). The substantial caseload and death toll have bred a negative stigma, leading people to shun those at risk of transmitting the virus, including healthcare workers (Efendi *et al.*, 2023). Even deceased COVID-19 patients face rejection due to persistent community belief in their contagion potential (Hotez, Corry and Bottazzi, 2020). Moreover, misleading information from various media sources fosters negative psychological outcomes such as heightened anxiety, culminating in mental health crises and social stigmatization (Covaci, 2020; Dymecka, Gerymski and Machnik-Czerwik, 2020).

Table 2. Distribution of research variables

Variable	N	%
Age		
Late teenager (17-25 years)	544	44.7
Early adult (26-35 years)	315	25.9
Late adult (36-45 years)	224	18.4
Early elderly (46-55 years)	135	11.1
Gender		
Male	377	31.0
Female	841	69.0
Educational background		
Elementary school	10	0.8
Junior high school	24	2.0
Senior high school	225	18.5
Diploma degree	136	11.2
Bachelor's degree	698	57.3
Master's degree	103	8.5
Doctoral degree	22	1.8
Knowledge		
Less	76	6.2
Moderate	275	22.6
Good	867	71.2
Attitude		
Less	73	6.0
Moderate	276	22.7
Good	869	71.3
Stress level		
Very severe	143	11.7
Severe	128	10.5
Moderate	189	15.5
Mild	103	8.5
Normal	655	53.8
Anxiety level		
Very severe	288	23.6
Severe	144	11.8
Moderate	131	10.8
Mild	117	9.6
Normal	538	44.2
Coping mechanism		
Less	32	2.6
Moderate	280	23.0
High	906	74.4
Problems faced		
Less	150	12.3
Moderate	874	71.8
High	194	15.9
Mental health crisis		
No disorder	933	76.6
Need mental health services	148	12.2
Need counseling	123	10.1
Mental health crisis	14	1.1

Prompt intervention is imperative to address the psychological issues, including mental health crises and stigma, pervasive in Indonesian society, thus preventing more severe repercussions (Nursalam *et al.*, 2020). While physical interventions have been implemented in Indonesia, psychological support has received less attention. Consequently, many individuals grapple with anxiety stemming from misinformation (Dymecka, Gerymski and Machnik-Czerwik, 2020). Given these challenges, a deeper exploration is necessary to ascertain the most suitable psychological interventions to tackle the psychological impacts, mental health crises, and social stigma prevalent within the community. Thus, this study aimed to analyze the contributory factors of COVID-19 in relation to mental health crises on Java Island.

Materials and Methods

Research design and samples

This cross-sectional study was conducted between June and July 2020 on Java Island, Indonesia. The study aimed to include individuals aged 20 to 54 years residing on Java Island. The research sample comprised 1,218 respondents from five provinces on Java Island: Jakarta, West Java, Yogyakarta, Central Java, and East Java. Respondents were selected using convenience sampling techniques through both online and offline media channels. To assess demographic factors, individual internal factors, psychological factors, and community mental health crises, confidential questionnaires were administered to the participants to ensure data privacy and reliability.

Variable and instruments

The study's independent variables encompassed demographic factors, individual internal factors, and psychological factors. Demographic factors included residence location, ethnicity, marital status, income, religion, and health status. Individual internal factors covered age, gender, education level, knowledge, and attitude. Psychological factors encompassed stress levels, anxiety, coping mechanisms, and encountered challenges. The dependent variable was the occurrence of a mental health crisis. The research instruments included a structured questionnaire comprising demographic information, knowledge, and attitude (adopted from Dauda Goni, 2018), the Depression and Anxiety Stress Scale (Lovibond and Lovibond, 1995), the brief-COPE inventory (Carver, 1997), questions about faced challenges (Gilhooly *et al.*, 2007), and mental health crises (Talevi *et al.*, 2020). Utilizing a Likert rating scale with four items, ranging from 1 (strongly disagree) to 4 (strongly agree), the questionnaire encompassed 5-21 questions. Total scores ranged from 0 to 84. The instrument underwent initial validation and reliability testing, yielding Cronbach's α values between 0.875 and 0.995.

Data analysis

SPSS version 22.0 was employed for data analysis, employing inferential statistics such as the chi-square test and logistic regression. Descriptive statistics were used to summarize the demographic characteristics of the respondents. Bivariate analysis, utilizing the chi-square test as a nonparametric approach was employed to examine significant relationships between sample characteristics, individual internal factors, psychological factors, and

Table 1. Respondents’ Characteristics

Respondents’ Characteristics	N	%
Location		
East Java	569	46.7
Central Java	133	10.9
West Java	267	21.9
Yogyakarta	62	5.1
Jakarta	187	15.4
Marital Status		
Single	813	66.7
Married	389	31.9
Widow/widower	16	1.3
Ethics		
Javanese	895	73.5
Sundanese	172	14.1
Cirebon	10	0.8
Betawinese	74	6.1
Osing	2	0.2
Madura	57	4.7
Boyam	8	0.7
Religion		
Moslem	1139	93.5
Buddha	15	1.2
Hindu	16	1.3
Christian	19	1.6
Confucianism	29	2.4
Occupation		
Pharmacist	3	0.2
Midwife	22	1.8
Doctor	9	0.7
Lecturer	83	6.8
Freelancer	18	1.5
Teacher	24	2.0
Housewife	58	4.8
Student	376	30.9
Nurse	240	19.7
Farmer	6	0.5
Civil servant	71	5.8
Secretary	8	0.7
Private employee	180	14.8
Entrepreneur	76	6.2
Unemployed	44	3.6
Income		
< Minimum regional income	566	46,5
≥ Minimum regional income	652	53,5
COVID-19 status		
Healthy	1122	92.1
People in supervision (ODP)	20	1.6
People in high-risk (ODR)	6	0.5
Patient in supervision (PDP)	11	0.9
COVID-19 positive	59	4.8

Table 3. The relationship between individual internal factors and mental health crisis

Variable	Mental health crisis								p-value
	No Disorder		Need Mental Health Services		Need Counseling		Mental Health Crisis		
	N	%	N	%	N	%	N	%	
Age									
Late teenager (17-25 years)	390	71.7	84	15.4	60	11.0	10	1.8	0.033
Early adult (26-35 years)	253	80.3	32	10.2	28	8.9	2	0.6	
Late adult (36-45 years)	184	82.1	17	7.6	22	9.8	1	0.4	
Early elderly (46-55 years)	106	78.5	15	11.1	13	9.6	1	0.7	
Gender									
Male	298	79.0	40	10.6	34	9.0	5	1.3	0.518
Female	635	75.5	108	12.8	89	10.6	9	1.1	
Educational background									
Elementary school	6	60.0	4	40.0	0	0.0	0	0.0	0.000
Junior high school	12	50.0	3	12.5	9	37.5	0	0.0	
Senior high school	146	64.9	35	15.6	36	16.0	8	3.6	
Diploma degree	119	87.5	13	9.6	4	2.9	0	0.0	
Bachelor's degree	531	76.1	89	12.8	72	10.3	6	0.9	
Master's degree	97	94.2	4	3.9	2	1.9	0	0.0	
Doctoral degree	22	100.0	0	0.0	0	0.0	0	0.0	
Knowledge									
Less	55	72.4	12	15.8	2	2.6	7	9.2	0.000
Moderate	189	68.7	47	17.1	37	13.5	2	0.7	
Good	689	79.5	89	10.3	84	9.7	5	0.6	
Attitude									
Less	56	76.7	10	13.7	2	2.7	5	6.8	0.000
Moderate	201	72.8	25	9.1	43	15.6	7	2.5	
Good	676	77.8	113	13.0	78	9.0	2	0.2	

mental health crises. Significant variables were subjected to multivariate logistic regression analysis to identify the most influential factor among all variables. Relationships were presented through odds ratios (OR) alongside 95% confidence intervals (CI), considering a p-value of 0.05 as statistically significant.

Ethical considerations

This study received ethical approval from the Ethics Committee of the Faculty of Nursing, Universitas Airlangga, Indonesia, with certificate number 2038-KEPK. After receiving explanations and research procedure instructions, all respondents voluntarily provided informed consent to participate in the research. The research procedure adhered to the principles outlined in the Declaration of Helsinki for research involving human participants.

Results

able 4. The relationship between psychological factors and mental health crisis

Variable	Mental Health Crisis								p-value
	No Disorder		Need Mental Health Services		Need Counseling		Mental Health Crisis		
	N	%	N	%	N	%	N	%	
Stress Level									
Very severe	32	22.4	41	28.7	59	41.3	11	7.7	0.000
Severe	73	57.0	28	21.9	27	21.1	0	0.0	
Moderate	117	61.9	39	20.6	33	17.5	0	0.0	
Mild	77	74.8	22	21.4	2	1.9	2	1.9	
Normal	634	96.8	18	2.7	2	0.3	1	0.2	
Anxiety Level									
Very severe	118	41.0	73	25.3	86	29.9	11	3.8	0.000
Severe	83	57.6	33	22.9	28	19.4	0	0.0	
Moderate	98	74.8	24	18.3	7	5.3	2	1.5	
Mild	113	96.6	3	2.6	1	0.9	0	0.0	
Normal	521	96.8	15	2.8	1	0.2	1	0.2	
Coping Mechanism									
Less	26	81.3	3	9.4	1	3.1	2	6.3	0.000
Moderate	183	65.4	46	16.4	43	15.4	8	2.9	
High	724	79.9	99	10.9	79	8.7	4	0.4	
Problems Faced									
Less	112	74.7	20	13.3	18	12.0	0	0.0	0.000
Moderate	674	77.1	106	12.1	82	9.4	12	1.4	
High	147	75.8	22	11.3	23	11.9	2	1.0	

Table 5. Multivariate analysis of the contributing factors to a mental health crisis

Variable	p-value	Odds Ratio (OR)	95% CI	
			Lower	Upper
Age	0.004*	0.912	0.764	1.089
Gender	0.177	1.162	0.784	1.721
Location	0.000*	0.819	0.710	0.944
Marital status	0.000*	0.788	0.509	1.219
Ethnicity	0.933	1.064	0.918	1.232
Religion	0.255	0.878	0.680	1.135
Occupation	0.008*	1.041	0.978	1.108
Educational background	0.000*	1.082	0.895	1.307
Income	0.005*	0.825	0.559	1.217
COVID-19 status	0.974	0.939	0.753	1.170
Knowledge	0.001*	0.578	0.396	0.843
Attitude	0.238	0.494	0.347	0.702
Anxiety level	0.000*	0.756	0.540	1.058
Stress level	0.000*	1.506	1.064	2.131
Coping mechanism	0.000*	0.297	0.177	0.498
Problems faced	0.869	1.131	0.755	1.693

*=p < 0,05

Characteristics of respondents and distribution of research variables

The results of the demographic information provided insights into various characteristics of the respondents. A significant portion of the sample, comprising 569 respondents (46.7%), resided in East Java. Furthermore, 895 respondents (73.5%) identified as Javanese, and 1,139 respondents (93.5%) identified as Muslims. Additionally, 813 respondents (66.7%) were unmarried, 376 respondents (30.9%) were students, and 240 respondents (19.7%) were employed as nurses. The majority of respondents (53.5%) reported an income level falling below the regional minimum wage. Concerning health status, 1,122 respondents (92.1%) reported being in good health, while 59 respondents (4.8%) had tested positive for COVID-19 (Table 1).

Table 2 illustrates the variables related to individual internal factors, encompassing age, gender, education level, knowledge, and attitude. It also presents psychological factor variables, including stress levels, anxiety levels, coping mechanisms, and challenges faced by the respondents. The results reveal that the majority of respondents were female (69.0%). Among them, 544 respondents (44.7%) fell within the age range of 17 to 25 years, and 698 respondents (57.3%) held a bachelor's degree. In terms of knowledge, 867 respondents (71.2%) demonstrated good knowledge levels, while regarding attitude 869 respondents (71.3%) displayed positive attitudes. The assessment of stress levels indicated that the majority of respondents experienced normal stress levels, with 143 respondents (11.7%) reporting high stress levels. Regarding anxiety, 538 respondents (44.2%) exhibited normal levels, while 288 respondents (23.6%) experienced high levels of anxiety. Moreover, a significant proportion of respondents (906, 74.4%) displayed strong coping abilities, with 874 of them (71.8%) encountering moderate challenges. Finally, 23.4% of the respondents reported experiencing a mental health crisis, necessitating counseling services.

Factors influencing relationships with mental health crisis

The analysis of individual internal factors revealed a significant relationship between age, education level, knowledge, and attitude, and the occurrence of mental health crises ($p < 0.05$). Notably, late teenagers exhibited the highest incidence rate of mental health issues, with 15.4% requiring mental health services, 11.0% seeking counseling, and 1.8% experiencing mental health crises. Furthermore, gender emerged as a factor linked to heightened mental health challenges among women. Additionally, a higher education level was associated with a greater likelihood of mental health problems. Conversely, lower levels of knowledge and less positive attitudes were also found to potentially contribute to mental health issues (Table 3).

Psychological factors were demonstrated to be significant contributors to mental health issues. As indicated in Table 4, individuals exhibiting high levels of stress, elevated anxiety, and limited coping abilities, especially when confronted with substantial challenges, displayed more pronounced mental health crises. Notably, individuals with very severe stress levels (7.7%) and inadequate coping mechanisms (6.3%) reported the highest prevalence of mental health crises.

Multivariate analysis was conducted using logistic regression with a 95% CI. The factor exhibiting the strongest association with mental health crises was stress level (p = 0.000; 95% CI: 1.064-2.131). This outcome highlights that the relationship between stress levels and mental health crises was threefold higher or more significant than other variables (Table 5).

Discussions

Psychological factors, particularly individual stress levels, have been strongly associated with mental health crises (Wu et al., 2020). The findings indicated a prevalence of severe and very severe stress levels due to the COVID-19 pandemic. This aligns with research conducted in the US, Israel, and several other countries, which consistently reported elevated stress levels globally. The identified stressors within the community encompassed fear of infection, COVID-19-related fatalities, community-level discomforts such as mask-wearing and social distancing, interpersonal suspicion and distancing, familial exposure to the virus, asymptomatic carriers unknowingly transmitting the virus, and economic hardships resulting in financial strain (Barzilay *et al.*, 2020; Carroll *et al.*, 2020). Incorrect information and misconceptions emerged as a common underlying factor, reflecting a broader trend observed by Georgiou, Delfabbro and Balzan (2020), who highlighted the prevalence of conspiracy theories that discredited COVID-19. This misinformation contributed to a surge in cases, as evidenced by studies such as Qiu et al. (2020). The impact on health workers was also evident, with a significant proportion displaying moderate to severe stress responses in the face of public reluctance to participate in prevention efforts (WHO, 2020).

Demographic factors also played a pivotal role in the onset of mental health crises. The situational context of specific locations influenced individual behavior (Giallonardo *et al.*, 2020). Self-quarantine and social restrictions further amplified fear (Dymecka, Gerymski and Machnik-Czerwik, 2020). Notably, regions with higher COVID-19 caseloads and more rigorous social distancing measures reported a higher prevalence of mental health crises. The pandemic's economic and educational disruptions rendered students and entrepreneurs particularly vulnerable to heightened stress levels and the need for counseling (Bonaccorsi et al., 2020; König, Jäger-Biela and Glutsch, 2020). Comparable trends were noted in China, where students encountered graduation delays and employment challenges due to digital adaptation limitations (Fernandes, 2020; König, Jäger-biela and Glutsch, 2020). Entrepreneurs faced financial crises as their businesses dwindled, except for those offering essential pandemic-related goods (Ashraf, 2020; Bonaccorsi *et al.*, 2020). A decrease in community income due to pandemic-related unemployment and remote work contributed to employee burnout and subsequent mental health crises (Zar *et al.*, 2020).

Among individual internal factors, age, education level, knowledge, and attitude emerged as influential in the onset of mental health crises (Nursalam *et al.*, 2020). Education played a critical role, with higher education levels often associated with better health literacy, contrasting those subscribing to COVID-19 conspiracy theories (Boulle *et al.*, 2020; Nepomuceno *et al.*, 2020). Education level also plays an important role. People with higher education levels tend to be easier to receive health education than people who considered COVID-19 as a conspiracy theory (Georgiou, Delfabbro and Balzan, 2020; Nepomuceno *et al.*, 2020). Challenges arose for those with limited awareness who hesitated to contribute to transmission prevention efforts (Nursalam *et al.*, 2020). Furthermore, the community exhibited varying knowledge and attitudes, ranging from strict adherence to health protocols to nonchalance, necessitating tailored interventions (Wang, Di et al., 2020; Williamson et al., 2020; C. Wu et al., 2020).

Social psychology emerged as pivotal in managing mental health challenges. The proliferation of misinformation triggered heightened anxiety and fear (Boulle et al., 2020; Dymecka, Gerymski and Machnik-Czerwik, 2020), resulting in stigmatization of COVID-19 patients and their families. This extended to health workers who were often barred from returning home (Bagcchi, 2020; Ramaci, Barattucci and Ledda, 2020). While healthcare professionals demonstrated adaptive coping strategies, the loss of family members due to COVID-19 and strict burial procedures induced significant grief among the broader community (Benussi *et al.*, 2020). Psychosomatic symptoms and health-related anxieties further exacerbated the situation. These psychological concerns are central to understanding mental health crises, warranting prompt attention and resolution.

This study does possess limitations, chiefly in relation to external or environmental factors that could precipitate mental health crises. The use of convenience sampling may have compromised the representativeness of the national sample. Moreover, the study was conducted during the peak crisis period of the COVID-19 pandemic, before transitioning into a more normalized phase in the later months of the year. Consequently, psychological and mental health issues may have evolved as the pandemic persisted.

Nevertheless, the study's strength lies in its robust methodology and the use of valid and reliable instruments in accordance with established standards. The study's findings can serve as a valuable supplementary resource concerning factors contributing significantly to mental health crises.

Conclusions

Individual stress levels were identified as the most influential factor contributing to mental health crises. Among the primary contributors disturbing psychological well-being and mental health are psychological factors, encompassing levels of anxiety, stress, coping mechanisms, and challenges faced. These elements played pivotal roles in disrupting psychological equilibrium and mental well-being. Consequently, psychological interventions are imperative for effectively addressing these concerns.

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Conflict of interest

We declare that there is no conflict of interest in this study.

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ORIGINAL ARTICLE

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Exploring problems and needs in disaster preparedness : a qualitative study

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ABSTRACT

Introduction: Disasters are sudden, unplanned events that cause damage and loss to people. The way people understand or interpret disasters that occur is very diverse, so they respond and act on differently in anticipating future disasters that may occur in their environment. There is also diversity in problems and needs based on community perception. The purpose of this research is to explore the problems and needs related to disaster preparedness in the community.

Methods: An ethnographic study was conducted from September 2021 until July 2022 at Central Sulawesi. Twenty-five participants who met the inclusion criteria were involved through purposive sampling. The inclusion criterion was communities who directly affected by the Palu disaster on September 28, 2018. Researchers used a semi-structured interview guide as a data collection tool. Recording devices were used during the interviews. Interview data were recorded verbatim and the data analysis process was based on Gerrish and Lacey. Checking members and bold descriptions was done to maintain the validity of the data.

Results: Three main themes were found from emerging data, 1) Health support needs, 2) Knowledge support needs, and 3) Disaster support system needs., the researchers asked both community members and parties concerning problems and needs in regard to preparedness related to disasters.

Conclusions: Information support related to disasters, technology support especially in terms of early warning systems, as well as socialization and first aid training for health are needed for the community to support the sustainability of disaster preparedness in the community.

Keywords: disaster, preparedness, problem, need, community

Introduction

Indonesia is located on the equator and is the largest archipelago country located between the continents of Asia and Australia. Given its high exposure to various natural and climate hazards as well as considerable social vulnerability, Indonesia is considered to be one of the most disaster-prone countries (UNU-EHS, 2014). Interaction between residents increases, uncontrolled increase in urbanization and social and environmental impacts which are not considered due to economic development, has led to disasters and high climate-related vulnerability and risk in Indonesia (Djalante et al., 2017). Disasters can also be described as the combined result of exposure to a hazard, existing conditions of vulnerability, and inadequate capacity or actions to mitigate or deal with the potential negative consequences. Loss of life, injury, disease and other negative impacts on the physical, mental and social aspects of humans, including property damage, damage to assets, loss of services, social and economic disruption, and environmental degradation, are the impacts of disasters. Normal life patterns can be disrupted, physical and emotional pain and a sense of great helplessness and hopelessness are also the effects of disaster. Disasters also have an impact on the socioeconomic structure of a region and the environment often require outside assistance and intervention. Disasters affect society in many ways. The impact on healthcare infrastructure is also multi-factorial.

Previous studies show that disasters can have an impact on society. In general, awareness, vigilance and preparedness have grown and developed through regular training, learning from the experiences of several developed countries that are prone to disasters such as Japan, the United States, Germany, Korea South, and several countries in Europe (Roskusumah, 2013). Communities that are able to cope with the impact of disasters on their own, can survive and bounce back are called safe communities. Safe community is not only the ability to cope with disasters but also the ability to deal with potential disturbances as a whole. Safe communities are formed by people who understand the nature of the disaster threats they face. This understanding can be obtained through counseling and training (Ismunandar et al., 2021). Increased knowledge to be aware of disaster preparedness can achieved with socialization with the aim of educating. That matter in line with the activities carried out by BNPB, that socialization regarding disaster awareness is very important to do to reduce the impact when a disaster occurs (Pahleviannur, 2019).

The earthquake and tsunami that rocked Palu and Donggala Central Sulawesi on Friday 28 September, 2018, at around 17.02 WIB was not the first in the history of disasters in the area. On Saturday, the National Disaster Management Agency (BNPB) released that Palu and Donggala had experienced earthquakes and tsunamis several times. History records that on December 1, 1927, an earthquake and tsunami occurred in Palu Bay. Local government officials did not fully understand the flow and procedures for responding to disasters quickly, as was evident during the disaster that hit Palu City and several other areas of Central Sulawesi. The government and society showed unpreparedness in facing the disaster. This can be seen from the monitoring results of the Partnership Team for Governance Reform at the Karajalemba Joint Post (Civil Society Coalition for Humanity) for the period 10-19 October, 2018. Assistance came from ministries/agencies and non-governmental organizations who came repeatedly and concentrated in the office courtyard of Palu City Government during the initial monitoring period. From the testimonies of the victims of the disaster, they explained that the pattern of aid distribution seemed unprofessional, because up to three days after the disaster they had not received aid (Samad et al., 2018). Cultural approaches to disasters and disaster resilience need to consider the community and cultural aspects, which are interconnected to the social structure of the society and the previous characteristics of the specific social groups (Lucini, 2014). The cultural difference behind this study is that researchers want to explore from the point of view of people living in disaster-prone areas about the disasters around them, including problems and needs related to disaster preparedness. How people see problems and needs related to disaster preparedness can be very different and this research explores the problems and needs related to disaster preparedness from the community's point of view.

Materials and Methods

This study uses a qualitative research method, specifically Focused Ethnography. The research area in this study is in Palu district, especially Lere Village, under the working area of the Kamonji Health Care Center. Inclusion criterion for main key informants is community members who were directly affected by the disaster that happened on 28th September, 2018. Total of participants in this study is 27, consisting of community members who lived in the area that directly affected by the disaster, community leaders, religious leaders, healthcare providers including a nurse, midwife, and representative of the health department, rescuer teams, both government and non-government. and a parliament member. A tape recorder was used to record the results of the interviews which were then transcribed verbatim. The data obtained were then analyzed to get a theme in accordance with the research objectives. This study will follow the analysis data process of ethnographic study according Gerrish and Lacey (2010) which comprises seven steps of data analysis. An example of the data analysis process is shown in Table 1.

The researcher validated the data by checking members as validation of the research results, to ensure reliability. The results of the research were compared with the results of similar studies to test the transferability of the research results. To guarantee the ethical consideration for this study, research ethics approval was obtained from Institutional Review Board (IRB) Khon Kaen University, no HE632304 on 16 June 2021. The research applied ethical principles in data collection, maintaining the confidentiality of participants' identities, benefits, fairness, and no harm carried out by researchers in the data collection process.

Table 1. Example of data analysis

Quotes	Coding	Sub themes	Themes	Categories
"Ma'am, we have to live in refugee camps until now, because our I lost my house, ma'am; it's hot in the refugee camp, children who get sick easily, husbands also lost the boats to earn a living. There's no help now, ma'am, since this year's fasting month." (P7, 27 years old, housewife)	Loss house	Loss of assets	Economic loss	Community understanding related with impact of disaster
"I just focused on running and seeing my two children, so many people were being pushed around by my body, there I lost my two children. After 3 days in the refugee camp I met my son number 1. He was found on the roof of the shop, when he met me, he was crying while hugging me, he was sorry he couldn't take care of his sister; his sister was taken with water." (P10, 30 years old, fish seller).	Loss child	Loss of someone close	Loss of human life	Community understanding related with impact of disaster
"I have to admit, from the ***many agencies*** *involved, we* ***lack coordination****. Preparedness is a separate division in BPBD, before the incident there were practically very few activities, now after the incident, we plan to socialize the Disaster Prepared Bag, but of course it must be coordinated with other agencies so that it is in line. Our programs often clash."* (G4, 37 years old, Provincial Disaster Management Board).	Lack coordination	Organizational factor	Disaster support system need	Organizational problem related with disaster preparedness
"The ***elder's message****, always pay attention to it is sea water, when it is high and low. If* ***suddenly, the sea water recedes*** *as if it was sucked into the middle, run quickly, go to a high place. That's a sign of a tsunami."* (P5, 41 years old, fisherman).	Elder's message	Knowledge from ancestor	Local knowledge factor	Factors that affect community preparedness in dealing with disasters

Whenever a participant feels uncomfortable, they can withdraw from the study, and there are no consequences.

Characteristics of participants

The main key informants in this study are a community directly affected by disasters. General informants involved in this study are community members who lived in the area directly affected by disaster, community leaders, religious leaders, healthcare providers including a nurse, midwife, and representative of the health department, rescuer teams, both government and non-government. and a parliament member. To choose key informants, the researcher had inclusion criteria, described as a set of predefined characteristics used to identify subjects who will be included in a research study (Salkind, 2010). Inclusion criteria for main key informants are community members who were directly affected by the disaster that happened on 28th September 2018. Table 2 shows the demographic characteristics of the participants.

Table 2. Demographic data of participants

Demographic Characteristics	Frequency	Percentage (%)
Age		
26 – 35	5	33.3
36 – 45	14	53.3
46 – 55	6	13.4
Level of Education		
Elementary School	6	24
Junior High School	5	20
Senior High School	7	28
Bachelor Degree	6	24
Master Degree	1	4
Occupation		
Housewife	5	20
Fisherman	4	16
Do not have permanent	1	4
job	3	12
Fish seller	1	4
Cleaning Service	1	4
Flower seller	8	32
Government	2	8
Non-Government		
Religion		
Islam	23	92
Christian	2	8

Results

Search results

The results of community disaster preparedness problems and needs are categorized into three themes, namely: 1) Knowledge support needs, 2) Disaster support system needs, and 3) Health support needs. The researchers asked both community members and parties about problems and needs related to preparedness for disasters. Communities that experience large-scale disasters can have further trauma when outside organizations responding to the event fail to take into account the local culture, expertise, and capacity. Many experts call for greater understanding differences in society to encourage collaboration. Organizations from outside that try to address the problems and needs of the community, but ignore the cultural values that exist in society, will cause new problems later.

Theme 1: Health support needs

Health support needs are categorized by: 1) Education about first aid, and 2) Improved rapid response system. One of the impacts of disasters is the impact on public health, coupled with the loss of access, so that the perceived impact will be even greater.

consequences that can endanger the health and lives of people are very important. After a disaster, a large number of people will need proper healthcare. Disasters demand a variety of needs because they differ greatly according to time, place, and extent. In critical situations, great efforts must be made to ensure that everyone receives proper care and lives are preserved. A well-organized disaster preparedness plan and effective community participation are essential to reduce the impact of natural disasters. Disaster health management is a systematic process, administrative, organizational, and operational decision-making skills and capacities, which deal with planning challenges to improve and reduce the health consequences of natural disasters.

"I was also in pain, my wife could only cry. Finally I tore my shirt, I told my wife to tie my wound. My wife and I both have hypertension, usually every night we take medicine from the puskesmas. After 3 nights in the upper village, new help arrived, ma'am, my head was about to explode, my body was hot and cold. Not only was I sick, many on the pitch were sick, but we both didn't know what to do. There was a wound on his head, legs, left alone, until the blood was dry." (P6, 35 years old, fisherman).

"For 3 days, we saved ourselves in Kawatuna, we just gathered in the field. Then, we heard that those in the Great Mosque, and at the city hall. Finally, on the third day, we walked to the Great Mosque, where we got there. Masya Allah, there was a lot of food, medicine. Even though we were only 7 kilometers away, the help did not reach us. I can't imagine that if there were refugees who were farther away from us, they might starve to death." (P7, 26 years old, housewife).

Theme 2: Knowledge support needs

On the theme of the need for knowledge support, it can be done through: 1) Routine of training, and 2) Socialization about disaster on a regular basis. Loss of life, property, jobs and damage to physical infrastructure and the environment are a real impact of

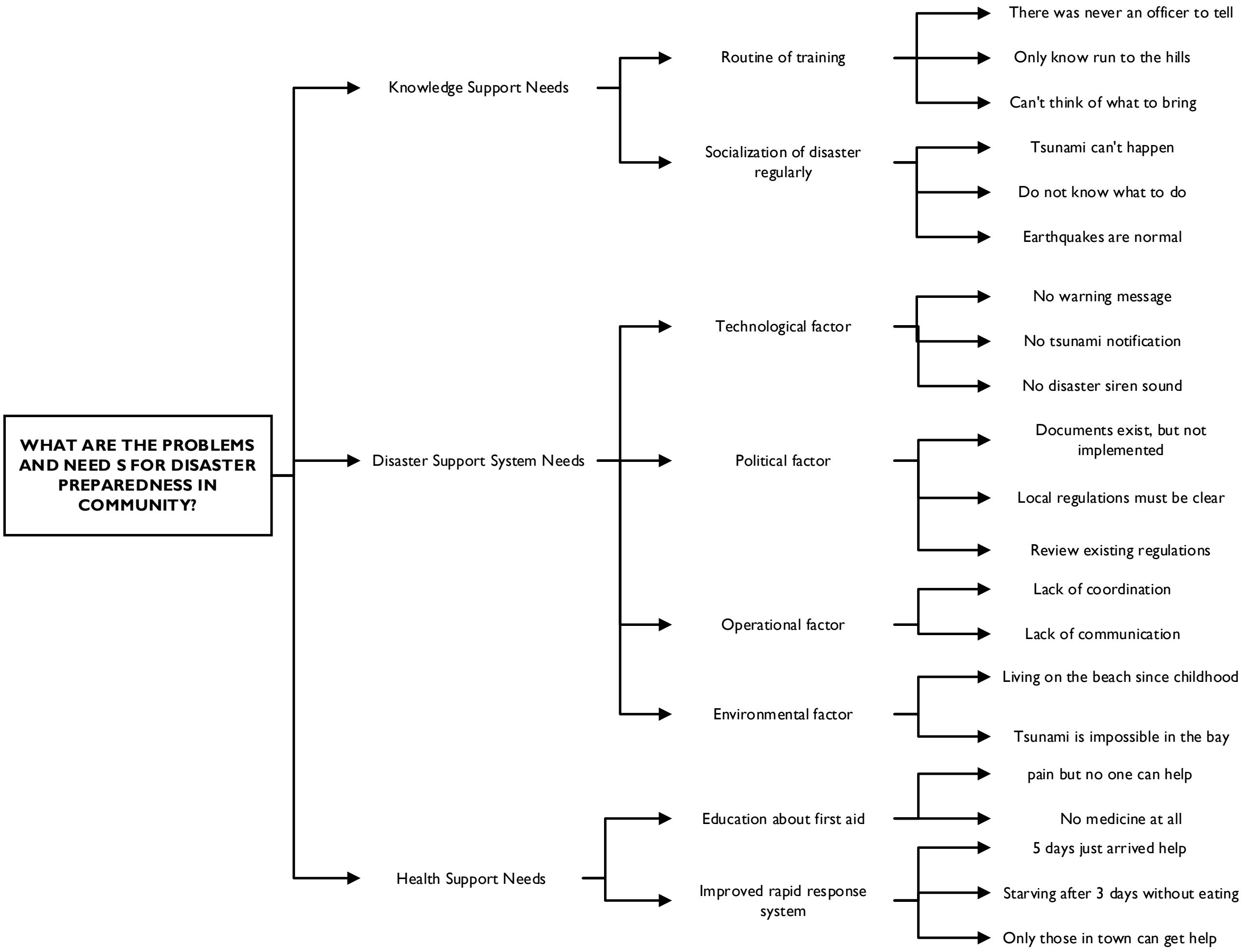

Figure 1. Problem and Needs for disaster preparedness in community

the disaster. During the last century, and increasing sharply over the last decade, the number of reported disasters has continued to increase. There are perceived gaps in coordination and information sharing in the context of disaster management, while knowledge management can improve disaster management processes. Identification of key disaster knowledge factors will be a driving force for successful disaster management. The level of community preparedness in dealing with disasters can be affected due to a lack of knowledge about disasters.

"*Before the big disaster, as far as I remember, we were only gathered in the field once, there was an ambulance. There were people from the regional disaster department, he said, so we were trained there if for example there was a disaster what to do, how to help other people. But yes, only once as I recall, after that nothing at all. Yes, if this is the case, we live in a disaster area, what we want is training so that we are ready, in case there is another disaster*." (P16, 35 years old, fisherman).

"*Ma'am, I never thought that we would face a tsunami. At the age of 50, since I was little, there was no tsunami, nor have I heard from my parents' stories. Parents said we live in the bay, so there's no way a tsunami would come. So, I just believe what my parents say, how come suddenly after a big earthquake followed by a tsunami, ma'am*." (P2, 45 years old, fish seller)

Theme 3: Disaster support system needs

For problems and needs related to the disaster support system, there are four sub-themes found, namely: 1) Technological factors, 2) Political factors, 3) Operational factors, 4) Environmental factors. Several factors contributed to the current disaster response effort, which also reflects the lack of disaster preparedness. The features of most disaster preparedness arrangements are embedded in complex and rapidly changing decision-making environments. Systematic weaknesses in how decisions are made within the organizational hierarchies of many agencies involved in disaster preparedness are also reflected in this system. Delays and ineffective strategies in collecting, processing, and analyzing data can also play a role. Information technology, especially decision support systems, can be used to reduce the time needed to make important decisions about task assignments and resource allocation.

"*Earthquakes have happened here many times, ma'am, not just this once. In the past, if there was an earthquake like that, I received an SMS notification, how big was the earthquake, there was a potential for a tsunami or not. Yesterday, from the morning of the earthquake, from 10 am if I'm not mistaken, there was also no SMS, a warning there will be a tsunami, there is no ma'am, there is no warning. Maybe everyone is busy with festival events*." (P15, 32 years old, fish seller).

"*The Palu City Government has a document called a contingency document. What made me sad, because at that time I was already serving in parliament, I got the contingency document in Jakarta, not in Palu. It was my question at that time, how could important documents of our city be in the capital. The document is complete, explaining the conditions and risks that the city of Palu can face and what possible scenarios to overcome them. Currently the document has returned to Palu*." (G5, 37 years old, Municipality Parliament Member).

Discussions

Preparedness is generally seen as consisting of activities aimed at increasing response activities and coping capabilities. Planning effectively during and in the immediate aftermath of a disaster but also for successfully navigating the challenges associated with short- and long-term recovery, is an emphasis on preparedness that emphasizes recovery efforts (Sutton, 1999). Delivering information about hazards, risks and actions to the general public is an important public education related to disaster preparedness. One of the hopes of disaster preparedness at the household level is that households will adopt protective measures and keep essential supplies for survival of up to three days, which will make surviving afterward more comfortable until formal assistance is available. Much of the research on how to promote individual preparedness has tended to focus on perceived risk and influence communication (Touhy, Stephens and Johnston, 2014).

Disaster knowledge factors are defined as facts that increase knowledge about managing disasters successfully. Therefore, the disaster knowledge factor can directly or indirectly affect the process and outcome of disaster management. The identified factors are classified into several categories based on their characteristics: Technological, Social, Environmental, Legal, Economical, Operational/Management, Institutions and Politics. These factors are common to all types of disasters and across three phases; mitigation/ preparedness, assistance/ recovery and reconstruction/ rehabilitation (Pathirage et al., 2014).

Training is the systematic acquisition of knowledge and skills with the aim of developing the necessary competencies for effective performance in the work environment. Training can also be defined as the steps involved to prepare and reduce (Nazli, Sipon and Radzi, 2014).

As stated by the participants, their need for disaster training will greatly assist the community in preparing for future disasters, given that participants are aware that they live in disaster-prone areas. A lack of understanding and awareness. communities and actors managing biological resources and the environment against disaster risk in their area are the main factors causing the large number of casualties, damage and losses caused by disasters, in general. In addition, an inseparable factor is inadequate structural mitigation support. This results in a lack of awareness, vigilance and preparedness in dealing with disasters. Awareness, alertness and preparedness can be grown and developed through routine training (Roskusumah, 2013).

Disasters that occur can have a catastrophic impact on the community. Communities that are able to cope with the impact of disasters on their own, can survive and bounce back are called safe communities. Safe community is not only the ability to cope with disasters but also the ability to deal with potential disturbances as a whole. Safe communities are formed by people who understand the nature of the disaster threats they face. This understanding can be obtained through counseling and training (Ismunandar et al., 2021).

In many areas facing the dangers of earthquakes, tsunamis and volcanic eruptions, detailed data and information regarding the hazards faced and their intensity are still lacking. The latest science and technology is used as an assessment. Such information is needed to develop science-based risk reduction measures for highly disaster-prone areas. There is a need to involve universities in the development of disaster research, science and technology. Indonesia's disaster management system has five main pillars or subsystems, namely legislation, planning, institutions, budget, and capacity. The system was built to address existing problems and challenges and is described in the following programs: 1) regulatory and institutional capacity improvement; 2) integrated disaster management planning; 3) research, education and training; and 4) community and stakeholder capacity building and participation in disaster risk reduction (National Agency of Disaster Management, 2009).

In prior study, after the 2004 tsunami, Indonesia built a tsunami early warning system (Indonesian Tsunami Early Warning System – Ina-TEWS) under the coordination of the Ministry Research and Technology, and operated by Meteorology Climatology and Geophysics Council (BMKG). Germany contributed to construction and development of Ina-TEWS which includes monitoring systems, processing and analysis, deployment, development capacity, as well as increased awareness and community preparedness. One of the examples is that the rapid assessment team together conducted an evaluation tsunami early warning system in the earthquake and tsunami event in Aceh 11 April, 2012. In the report, it was stated that although BMKG had issued a tsunami warning, the siren not activated by local government so that 10 minutes after the warning, the siren was activated by BMKG remotely; however, some sirens cannot be activated. Based on media coverage and statements by BMKG, the tsunami early warning system did not succeed in detecting the 2018 tsunami in Palu, resulting in many casualties. In addition, verification of the incident in Palu could not be done because there were no functioning telephone lines in Palu shortly after the earthquake occurred. Despite the failure of the warning system, the community is also considered not to have had a self-evacuation reflex in the event of an earthquake (Kurniasih, Marin and Setyawan, 2020).

Tsunamis are predictable and people in their path are warned to move to a safer location; however, it can be difficult to predict earthquakes. The lack of a tsunami early warning system in the Indian Ocean was demonstrated during the Sumatra earthquake and subsequent tsunami in 2004 (Pathirage et al., 2014).

From the results of the study, it was found that the lack of coordination between institutions involved in disasters was also considered a problem. Regular coordination between related institutions, as well as clarity of disaster documents, are also felt to be very helpful in dealing with future disasters. Research in the hazard and disaster field focuses explicitly on governance topics, although there is considerable research related to disaster management, law, and risk reduction policies and programs. This review begins by placing disaster governance within the broader framework of environmental, risk and earth system governance and by defining disaster governance. Governance arrangements, describing the characteristics of systems, and providing examples of governance institutions and processes at various scales, are influenced by social, economic, as well as political forces, and are further discussed (Fuentes, 2017).

Other consequences associated with disasters encompasses deaths of many people, high costs over time, great economic and political impact, social and psychological disorders, damage to infrastructure, damage to houses, loss of property, and generally social disturbance of life in society. Among all that, the consequences that can endanger public health and life are very important. After the disaster, the impact is significant as a number of people will need proper healthcare. The risk of an outbreak is often greater in an emergency. Disasters reduce the physical health of survivors with injuries, and intensify chronic diseases (Pourhosseini, Ardalan and Mehrolhassani, 2015).

Nurses, as the largest group of committed health workers, often working in difficult situations with limited resources, play an important role when disaster strikes, serve as first responders, triage officers and care providers, care and service coordinators, information or education providers, and counselors. However, health systems and services in disaster situations only work when the nurse has the fundamental disaster competence or the ability to respond quickly and effectively. Multiple available definitions of disaster or emergency are all useful in reminding us that events are out of the ordinary or require resources beyond what is readily needed, so the response became known as the 'disaster' response.' As with jobs prepared for a global nurse audience, individual countries nursing regulations, employing agencies and institutions must interpret the world's expectations within the legal, cultural and ethical frameworks in which they function (International Council of Nurses, 2019).

Public health approach to disaster risk management should focus on reducing community vulnerability through prevention and mitigation and improvement measures coping capacity and readiness of the health sector and community and reduced access to health services (Disease Control Priorities Project (DCPP), 2007). It requires the concerted efforts of multiple systems and sectoral parties to prevent and reduce risk, prepare for emergencies, ensure effective response and recovery, and collectively contribute to the resilience of communities and countries to minimize health consequences and improve health outcomes, well-being and public safety (World Health Organization, 2019). First aid is not a substitute for all emergency services. However, to help reduce serious injury and increase the chances of survival, first aid is an important first step to provide effective and fast action. Salnil saves lives, taking urgent action and employing the right technique makes a difference. For the Red Cross Red Crescent, a key pillar for building safer and more resilient societies is first aid, which in turn is the best place to increase the impact of disaster preparedness and reduce risks to health. To achieve this, the International Federation of Red Cross and Red Crescent Societies (IFRC) believes that first aid must be accessible to all, including the most vulnerable, and an integral part of a broader development approach that values and prioritizes prevention (IFRC, 2016).

Good preparation supported with the capacity to respond, at the national to local level, through a clear emergency response plan approach, must be owned, so that the health sector is able to respond to various emergencies in public health problems. Public health emergencies can also be complex, combining more than one hazard. Countries and people are often faced with these dangers, both simultaneously and as a result of such as armed conflicts after natural disasters, seasonal epidemics in prolonged crises, etc. For example, during the COVID-19 pandemic, several countries also had to deal with concurrent emergencies that required an immediate response: earthquakes in Croatia, floods in Indonesia, Cyclone Yaa in Bangladesh, explosions in Beirut, and typhoons in the Caribbean islands, not to mention the outbreak of seasonal infectious diseases, are just a few examples (World Health Organization, 2019).

One of the most important links in the chain preparedness in emergencies and disasters is the health system with all its institutions at the primary level and secondary health. Over the historical timeline, we have recorded thousands of disasters. Some of them are local, while other people transcend all boundaries and their influence is not only global in the geographical sense but the consequences have been felt by many generations (Dobricanin, Djokic and Dobricanin, 2018).

Conclusions

Cross-sectoral support and cooperation is needed so that community preparedness can be fulfilled. Even though people are used to the environment in which they live, it is necessary to increase public awareness of the dangers, potential disasters and risks that may occur in their environment. Good coordination between organizations involved in disaster management will support the achievement of sustainable disaster management, which includes disaster preparedness. Of course, financial factors also play a very important role, because the budget for disaster management, including preparedness, is still sourced from the central and local governments. Local governments are very likely to receive grants from foreign parties, but in accordance with existing laws and regulations in Indonesia.

The impact of disasters is quite broad, especially the disaster that occurred in Palu not only triggered by one disaster, but multiple disasters, making the impact even more severe. One of these impacts is on the existing healthcare system. Cut off of all access and lack of trained personnel for first aid and emergency caused the number of victims to increase. Assistance from non-government organizations, both local and international, was constrained by transportation, which was quite difficult at the time. All incoming aid including non-government organization arrangements are under the command of the Regional Disaster Management Agency.

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ORIGINAL ARTICLE

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Navigating the new normal: infection prevention and control strategies post-COVID-19

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It is now more than three years since the Corona Virus Disease 2019 (COVID-19) phenomenon occurred unprecedentedly creating tremendous chaos and profoundly affecting the world. The phenomenon moved into a trajectory of epidemic, pandemic and currently, the endemic phase. The door to opportunities for evaluating and improving nursing practices remains open along this trajectory. Fear and anxiety are the two common emotional responses during the COVID-19 pandemic among nurses at all level, be them trained, academics or students. Intensely echoed in extensive global COVID-19 studies, the emotions are identified to be rooted from the deficiency in preparedness for infection prevention and control (IPC). Efforts encompassing ad hoc and regular practical interventions at healthcare settings and educational institutions were undertaken to compromise these deficits. The urgency of providing a timely, adequate and sufficient amount of IPC training reached its uttermost significance than ever before.

Without any doubt, IPC is consumed in a daily nurse's life, even before COVID-19 exists. But, when COVID-19 attacked the world, the first that was intensely disconcerting was and still, is the spread of infection and its implications to the wider populations and healthcare professionals, including nurses, not only physically but also emotionally. If the nurses has acquired IPC skills, why were nurses still anxious? International organizations also play their roles extensively at a global scale through publications of recommendations papers and guidelines for the IPC, such as the Centers for Disease Control and Prevention (CDC, 2020) and the World Health Organization (WHO, 2016, WHO, 2021).

Nurses assigned to COVID-19 care, especially those who are recent graduates, have reported feelings of insecurity, low confidence, hesitancy, and significant concerns about becoming infected and transmitting the virus to their families (Maideen et al., 2022). This sentiment is echoed in empirical studies from around the world. A systematic review by (Alhumaid, 2021) highlighted that effective infection prevention and control (IPC) goes beyond just COVID-19-specific measures. It also encompasses a broader understanding of common infectious diseases, best practices in hand hygiene, instrument decontamination, proper procedures for putting on and removing personal protective equipment (PPE), and responsible healthcare waste management.

It is not premature to assume that the deficiency in IPC preparedness is neither distinctly related to any level of nursing education, be it locally or internationally. Even though nurses were educationally prepared for IPC, but upon embarking work, they are not highly exposed to situations requiring intensive utilization of this IPC skills, not until the emergence of the COVID-19 phenomenon. Wastage of human potential in nursing can occur when nurses do not use and practice their skills (in this case, IPC) which later resulted in deprivation and even loss of such skills (Tura et al, 2022).

Additionally, the current emphasis of IPC predominantly evolved around aseptic techniques encapsulated basic nursing procedures. It is high time to evaluate nursing curricula and acknowledge the emphasis of IPC on communicable diseases which are currently limited. Earlier research on the nursing curriculum during the Influenza pandemic already evident that little attention has been paid to IPC and emergency response (Yonge et al., 2007). COVID-19 phenomenon again rings the bell for the need of strong IPC among nurses. IPC should not only be ad hoc, a one-time off, and a 'knee-jerk' response, instead, be proactive and meticulously monitored and sustained through consistent and robust training. The need for IPC education remains fundamental for nurses not merely in response to the COVID-19 but also in preparation for future pandemics.

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