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The Effect of Logotherapy to Diabetes Mellitus Client's Meaning of Life

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Abstract

Diabetes mellitus is a chronic disease that caused meaning of life disturbance. Logotherapy is an intervention that could affect people life perspective. The purpose of this study was to analyze the effect of logotherapy implementation to the meaning of life in diabetes mellitus client. This study used quasy-experimental pretest-post-test with control group. The dependent variable was meaning of life, and the independent variable was the implementation of logotherapy. Sample in this study was 30 respondents, were taken by using consecutive sampling. The meaning of life were taken by using Purpose in Life Test (PIL Test) then analyzed by using Wilcoxon Sign Rank Test and Mann Witney U statistic test, a= £0.05. The result showed logotherapy had significant effect on meaning of life in the treatment group (p=0,001). Statistical test Mann Whitney U Test showed that there was a difference meaning of life in control group and the treatment group after implementation of logotherapy. It could be concluded that the implementation of logotherapy has an effect to increasing the meaning of life in diabetes mellitus client. Further study was recommended to developing deeper study that related to logotherapy in diabetes mellitus client.

Keywords :Diabetes mellitus, logotherapy, meaning of life.

Introduction

Diabetes Mellitus (DM) is one of the chronic disease that can cause disturbance to one's meaning of life. It is due to the many DM's accompany symptoms and unable to accept the sick condition feelings, lead to a minor, middle and major psychological disorder. Live in a DM condition leads to psychological problems such as anxiety, depression, and ability disorder, which can worsen the patient's blood sugar levels, also incapability in life (Kodl and Seaquist, 2008). According to the result of the first stage interviews in RSUD dr Sayidiman, most of the clients were complaining about the sick condition they experienced. Clients said they feel unable to adapt with the sick condition and the new circumstances. They said that their life is meaningless, and they are just a burden for the people around them. These statements indicated that someone is having a meaning of life's disturbance.

The meaning of life holds an important roles in human's life and can be used as the purpose of the life. It makes people lives their lives positively in every situation, including sick condition (Bastaman, 2007). DM disease is a chronic disease that cannot perfectly healed, needs a life-time treatment, and cause a deep psychological changes within patient (Watkins & Teasdale, 2001). The early sign from DM diagnosis were memory disturbance (especially short-time), orientation, patient become agitated, anxious, and hyperactive. Some patients can be quiet, withdraw from society, and less active than before (Sadock , 2010).

Directorate General of Disease Control and Environmental Sanitation (Ditjen P2PL) stated that WHO predicts an increase of DM patients in Indonesia from 8.4 million in 2000 to about 21.3 million by 2030. While the International Diabetes Federation (IDF) predicts an increase in the number of people with DM in Indonesia from 9.1 million in 2014 to 14,1 million by 2035. Based on data from health research, the proportion of DM patients in Indonesia aged more than 15 years is about 12 million people. And 2.5% or 605,974 people are in East Java (Riskesdas, 2013). From the preliminary study at RSUD Dr. Sayidiman Magetan, there are 5,879 DM patient visits in May 2015 to June 2016. The increase of DM patients each year, shows the greater duty of health personnel in providing management. Included in helping find the meaning of life of DM patient.

Research on the meaning of life in DM clients concludes that clients with DM who have discovered the meaning of life, have gone through different stages in each individual (Khotijah, 2016). Other studies explain the existence of psychological symptoms as a protective factor for patients with DM to recover is social support and meaningfulness of life. Phenomenological studies on the meaning of life of DM clients also found that the meaning of the life of clients with chronic diabetes mellitus in Semarang is in a state of suffering and deepening of spiritual value (Rochmawati, 2011).

Suffering is closely related to the tragic events that come from sickness and illness, wrong and sin, and death and being left. Long lasting suffering can cause stress, loss of life meaning, depressive disorder, even mental disorder with suicidal risk (Rüpke, 2010) This will not happen if the patient can find the meaning of life from the state of illness. To find the meaning of life, someone must go through five stages in the discovery and fulfilment of the meaning of life that is the stage of suffering, the stage of self-acceptance, the stage of finding the meaning of life, the realization of meaning, and the stage of living meaningful life (Bastaman, 2007). One method to find the meaning of the client's life in the aspect of nursing psychology is by using logo therapy or also called logotherapy (Tristiana, 2016). Logotherapy is generally described as a psychological style that recognizes the spiritual dimension of man in addition to the physical and psychological dimensions (Bastaman, 2007). The initial goal of logotherapy is to achieve a meaningful and happy life. Logotherapy is indicated to overcome the disorders of somatogenic neurosis, psychogenic neurosis, and noogenic neurosis. Somatic neurosis is a disturbance of feelings related to physical hendaya, psychogenic neurosis sourced from emotional barriers and noogenic neurosis caused by the fulfilment of meaningful life desires (Bastaman, 2007; Braun et al., 2002). The program of Logotherapy was designed to help participants clarify values that were particularly meaningful to them, set reasonable goals, assure that the goals would actualize the participants' meaningful values, set practical plans to achieve the goals, identify participants' assets and deficits that would affect their attempts to achieve their goals, and intentionally incorporate the assets and deficits into the plans to achieve the goals to actualize the values (Robatmili, Shahrak, Talepasand, Nokani, & Hasani, 2015).

Studies related to logotherapy showed an influence on the meaningfulness of life, improve the ability to interpret life, reduce the response of significant helplessness (Ukus, 2015; Sarfika, 2012; Kanine, 2011). Based on the results of the study researchers are interested to perform logotherapy on DM clients as a standard therapy companion, so the client is able to achieve and improve the meaning of life.

Method

The research design used quasi experimental non-randomized pre and post-test control group design. The study population was all DM patients in RSUD Dr. Sayidiman Magetan in August–October 2016. The sample was 30 respondents divided into 2 groups with 15 respondents per group taken by using consecutive sampling technique. Inclusion criteria include DM clients experiencing life-meaning disorders aged 21–59 years, and is already working. While the exclusion criteria were DM terminal clients, having physical disabilities that interfere with activities (for example blind, deaf).

The dependent variable is the meaning of life condition of DM client in RSUD dr Sayidiman Magetan and the independent variable is Logotherapy. Logotherapy is given individually in 4 sessions by researcher. The first session is to identify problems encountered, the cause of the problems, discuss problem solving and reveal the desired expectations of current conditions. The second session, client was given stimulation of the creative imagination, chooses the most desirable expectations, reason for choosing the hope, and trying to find the meaning contained in each of the reasons. The third meeting is to find the meaning of life in the daily activities undertaken. In addition, the client is given a schedule sheet of daily activities so that clients can remember better what activities to do and take the meaning of the activity. The fourth session of logotherapy is the last session to evaluation was conducted that includes the client's opinions and feelings about logotherapy, mentioning the meaning of life found in everyday activities, revealing problems that have not been resolved and discussing follow-up plans with the therapist.

The researchers used two instruments, consists of Purpose In Life Test Questionaire (Schulenberg, 2011) questionnaire, adapted from Crumbaugh and Maholick (1964) with sub-seading by the researchers (Crumbaugh & Maholick, 1964), for the collection of dependent variable data. And the standard procedure operational (SPO) of logotherapy, referring to the logotherapy workbook by Kanine (2011) and Setyowati (2014) tailored to the subject of the study, for the collection of independent variable data (Kanine, 2011; Setyowati, 2014).

The collected data was analyzed by Wilcoxon signed rank test to determine the difference before and after treatment (different pre-test and post-test). Statistical analysis of the results from the questionnaire was then performed statistically using Mann Whitney to analyse the comparison between the control group and the treatment group. The degree of significance is determined by the if value of sig $p \leq 0.05$ then the hypothesis of the study is accepted, which shown that there was influence of logotherapy on the meaning of life of the diabetes mellitus client.

Results

Characteristics of Respondents

The largest number of respondents is male which is 19 people (63.3%). In accordance with predetermined inclusion criteria, age is grouped into ages 18–59 years and the largest percentage aged 51–59 years is 60%. Most of the respondent's education is a high school graduate of 14 people (46.7%). Based on the work, the largest number of respondents worked as entrepreneurs. Meanwhile, according to the duration of DM, the

Table 1 Distribution of respondent characteristics in treatment and control group (n = 30)

Respondent Characteristics	Treatment Group		Control Group		Total	
	n	%	n	%	n	%
Gender						
Male	10	66.7	9	60	19	63.3
Female	5	33.3	6	40	11	36.7
Age						
<30	1	6.7	1	6.7	2	6.7
31–40	2	13.3	1	6.7	3	10
41–50	4	26.7	3	20	7	23.3
51–59	8	53.3	10	66.7	18	60
Education						
Primary School	4	26.7	3	20	7	23.3
Middle School	3	20	3	13.3	6	20
High School	5	33.3	8	53.3	14	46.7
College	3	20	2	13.3	5	16.7
Occupation						
Entrepreneur	1	6.7	2	13.3	3	10
Employee	4	26.7	4	26.7	8	26.7
Laborers / Farmers / Drivers	6	40	4	26.7	10	33.3
Government Employee / Army / Police	4	26.7	5	33.3	9	30
Diabetes Mellitus duration						
< 1 year	4	26.7	5	33.3	9	30
1–5 year	6	40	5	33.3	11	36.7
> 5 year	5	33.3	5	33.3	10	33.3

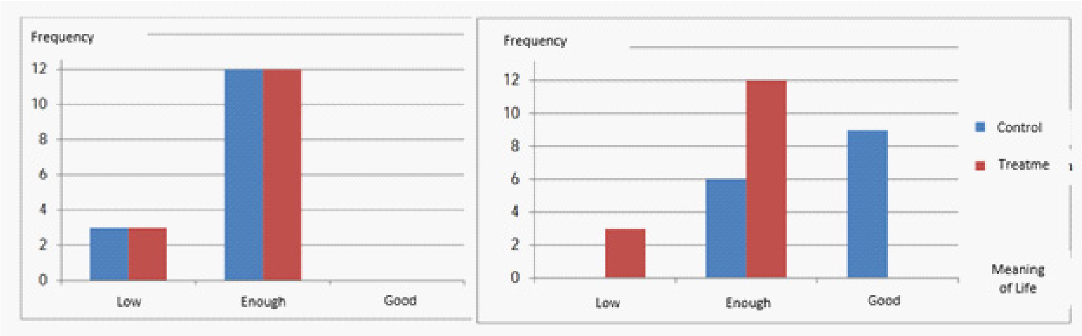

Figure 1 There are 6 respondents experiencing interruption of middle meaning of life and 9 respondents had a good meaning of life

Table 2 Data analysis of changes in the meaning of life of the DM client 's

Level Meaning of life	Treatment Group		Control Group	
	Pre	Post	Pre	Post
High	0	10 (66.7%)	0	0
Middle	12 (80%)	5 (33.3%)	12 (80%)	12 (80%)

Low	3 (20%)	0	3 (20%)	3 (20%)
Wilcoxon Sign Rank Test; p-value (within group)	0.001		0.317	
Positive Rank Test	11		0	
Negative Rank Test	0		1	
Ties	4		14	
Mann Whitney U Test; p-value (between group)	0.001			

highest data is 1–5 years, 36.7% (Table 1). Researchers do not provide type 1 or 2 types of DM because they aim to see the meaning of life for people with DM.

Effects of Logotherapy on the meaning of life of DM patients

The majority (80%) of the treatment and control group's meaning of life prior to the administration of logotherapy intervention showed that all groups experiencing impaired meaning of life in the form of middle meaning of life. The meaning of life of treatment group before and after intervention have different level of classification. There are 6 respondents experiencing interruption of middle meaning of life and 9 respondents had a good meaning of life (Figure 1).

The results of Wilcoxon sign rank test showed that there was a different meaning of life in treatment group between before and after intervention p = 0.001 (Table 2), but there was no difference of life meaning in control group p = 0.317. In the treatment group 11 respondents experienced an increase in the meaning of life (positive ranks).

Discussion

Based on the results of this study, almost 80% of DM clients who underwent treatment in hospitals Dr. Sayidiman Magetan experiencing impaired meaning of life. The data shows that there are 24 respondents experiencing enough meaning of life disturbance and 6 respondents with low meaning of life disturbance, with the total of respondent is 30 DM patients. The pretest result indicated that all respondents had a meaning of life disturbance. Respondents say ever since they suffered from DM, their life had change, experiencing heavy days, disturbed daily activities and jobs, feeling a confused life, being a burden to families and people around, activities are always the same, bored and saturated with routines, and feel the world is unfair. Respondents felt that there were no purpose in life, loss of life satisfaction, lack of freedom, and even suicidal thoughts. However, respondents are responsible for their health, respondents are still trying to perform treatment and obedient to the advice of doctors and health workers. DM disease can lead to psychological changes such as changes in mental processes, behaviours, and neurological functions that cause clients to be quiet, anxious, withdrawn from society, and inactive in social relations (Sadock, 2010). DM is a chronic disease that weakens the body so it can lead to depression and anxiety for the sufferer (Stuart, 2009). Psychological disorders in DM clients can also be caused by signs and symptoms experienced by clients (Price, 2006) who experience three typical symptoms (three-poly), namely polyuria (often pee), polydyption (often drinking), and polyphagia (often eating). Management that must be done by the DM clients throughout their life can also lead to depression and boredom. It is found in many DM clients who become research respondents. Clients say they feel bored for doing the same activities continuously, and feels that they are living a different life with others. The length of time a client suffering from a chronic illness can result in a psychological disturbance to the client, mainly due to the ongoing treatment. Increased cortisol hormone, epinephrine and norepinephrine are triggered by elevated glucose levels in the blood so that DM clients experience mood disorders such as being quiet, often daydreaming and angry without any obvious cause (Brunner, 2002).

Based on the results of existing research and theories, researchers assume that the occurrence of the meaning of life disturbance on DM clients is influenced by internal and external factors. Internal factors are factors from within the client itself, including one of the signs and symptoms that accompany the DM disease. Treatment of signs and symptoms that arise often result in clients feel bored and saturated. Continuous injections of insulin or oral hypoglycaemic drugs to be taken daily, routine blood glucose examinations, and the need for regular physical exercise lead to new lifestyle changes in which the changes make DM clients feel that they have no freedom in life, boredom, despair and helplessness. If boredom is unavoidable and clients withdraw, then one tends to perform activities with unwillingness, and live despair life without the purpose and meaning of life. External factors include support from family and people around. It is found in DM clients at research where the average DM client fears about being divorced by their partner, feels unworthy of having a role in the family for not being able to fulfil obligations as a couple, feeling useless for not being able to play a role in the family, feeling worthless because they cannot make something good, feeling sad because cannot make their partner's happy, their body feels weak, lack of spirit and arise boredom for doing activity.

The treatment group experienced a significant increase in the assessment of meaning in life. There were 66.7% of clients who experienced improved meaning in life, and 33.3% of clients whose meanings of life were disrupted in the medium range. There is no longer a client who interpreted their life is low. The client said after doing logotherapy with the therapist, they can be more contemplating about what happened. The client understands about the illness, feels that their pain is a trial from God, become optimistic with their life, can do useful things even though they cannot engage in strenuous activities, can be useful for the family and the environment by doing the best thing they can, and feel daily activities is always a vigorous and a source of satisfaction. Significant increase of meaning in life in treatment group was different from control group. The control group did not experience any change in the meaning of life at all, which means the meaning of life in the control group is still disturbed. Clients still feel a burden to the family, unable to make family happy, feel bored with the routine, not able to understand about the meaning of life, life goals, life choices and have not been able to get the source of pleasure and satisfaction in life.

The data shows that most respondents coming from high school graduates (46.7%), and there are 16.7% of respondents were college graduates. The higher a person's level of education, the easier it will be to filter the information from the outside and get smarter in sorting through the problem. Logotherapy in this study is given individually to facilitate the client counselling with the therapist without feeling ashamed to tell the problem. Counselling always focuses on the problems experienced by clients. The process is consistent with the claim that logotherapy focuses on life issues related to death, freedom, powerlessness, loss, loneliness, anxiety and social isolation (Isaacs, 2001). Correspondingly, the discovery of the client's main problem which lead to the meaning of life disturbance is important to take into further counselling action by the therapist. Changes in the meaning of life that increases after the implementation of logotherapy, are influenced by the acceptance of clients to the activities and accuracy of therapists who perform a good logotherapy according to the guidelines. In the implementation of logotherapy, the researchers conducted interviews with clients and found it easier to give understanding to respondents who were a high school / college graduates than those whose an elementary and junior high school graduates. It shows that education level influences one's acceptance of innovation, the speed of innovation adoption process, and one's behaviour.

The implementation of logotherapy aims to help clients use the suffering they experience as a tools to find the purpose in life. Many people think that suffering is a fate that cannot be prevented. Logotherapy teaches to see the positive value of suffering, provides an opportunity to take lessons from suffering and provide comfort and preparedness for dealing with a useful death. The client is given an understanding of how to face the toughest times, keep receiving the process of suffering even though DM disease is medically stated never to heal until the end of the life, and provide support to clients to always eager to live their life. Most clients can put themselves well, conduct therapy sessions smoothly without repeating, and most importantly the client feel their life is more meaningful and their after logotherapy. This proved to give a significant impact on increasing meaning of life in DM client in RSUD Dr. Sayidiman.

The results of this study were supported by a study of 30 respondents with chronic disease, that logotherapy is an effective therapy in clients with chronic diseases. Logotherapy has a positive and effective support for the psychosocial changes experienced by clients with chronic illness. From the results and statements, it can be concluded that logotherapy is an effective therapy used on clients with DM disease that have a decreased meaning of life. Logotherapy is given individually in 4 sessions. On giving the therapy, a therapist is required to act scientifically. The role of the therapist in carrying out logotherapy is to maintain intimate relationships and scientific separation, meaning that the therapist must create a relationship between clients by seeking a balance between two extremes, namely intimate relationships (sympathy) and scientific separation by handling clients as far as they are involved in therapeutic techniques. In the provision of intervention, an evaluation is conducted at the end of each meeting and at the beginning of the next meeting, in accordance with the opinion that changing the behaviour of a person needs to be accompanied by information and given repeatedly (Widhiarso, 2012).

After the logotherapy process, most clients begin to feel that the suffering they experience is a rebuke from God in order to become a better creature, so that the client can take wisdom. Clients address disease complaints wisely, those who consider themselves as a troublesome for their friends then communicate more with their friends and understand that people around were helping with sincerity, clients also start doing reciprocity by helping each other. The client feels his/her life is more meaningful and gets a different view of the suffering experienced. No more clients who feel different from others, because the client believes that all human life must be given different trials. Clients can spend the day feeling happy and doing daily treatment without any burden.

Respondents who have not been able to proceed to the next session should be repeating the previous session. Similarly, for respondents who have continued to the next session will be evaluated from the previous meeting. It can be concluded that the changes that occur in the respondent after the implementation of logotherapy are because the client is given knowledge repeatedly or reinforced at each meeting, and optimized in each session so that the process of learning can fosters motivation. There is a decrease in the number of the classification of low meaning of life after the logotherapy, as well as the decreased range of middle impaired meaning of life. Meanwhile, the qualification of good / normal meaning of life has increased significantly. The increased of the meaning of the client's life is greatly influenced by the success rate of logotherapy itself. In this case, the role of the therapist is very important, that the therapist must be able to place themselves equally between the client with the therapist, facilitate the client to convey the problem experienced with full confidence. Significant improvement in the meaning of life is also influenced by client demographic factors such as level of education, environmental factors, and family support factors. Individual logotherapy proven to bring positive impact for DM client, which is happiness. Thus the values of logotherapy philosophy can be achieved. Humans are creatures that are biopsychosocial and spiritual unitas though in a state of suffering, still given the opportunity to achieve a more meaningful life (the meaningful of life) (Yusuf et al., 2016).

The use of logotherapy in DM patients by nurses needs to consider the demographic factors of DM patients. Nurses also need to pay attention to the perceptions of DM patients on their illness and self-acceptance of DM patients.

Conclusion

Providing individual logotherapy is proven to increase the DM client's meaning of life, so that clients can have an attitude of receiving with full patience, and be positive and live their life with happiness. The increased of the meaning of life is influenced by the acceptance of clients to the activities and accuracy of therapists who perform a good logotherapy according to the guidelines.

Ethical Clearance
This study has obtained the approval of ethical clearance from the ethics committee of the Faculty of Nursing Airlangga University Surabaya Indonesia.

References

Bastaman,H.D.(2007).*Logoterapi :Psikologi Untuk Menemukan Makna Hidup dan Meraih Hidup Bermakna*. Jakarta: PT Raja Grafindo Persada.

Braun, J., Brandt, J., Listing, J., Zink, A., Alten, R., Golder, W., Gromnica-Ihle, E., Kellner, H., Krause, A., Schneider, M., Sorensen, H., Zeidler, H., Thriene, W. & Sieper, J. (2002). Treatment of active ankylosing spondylitis with infliximab: a randomised controlled multicentre trial. *Lancet, 359*, 1187–93.

Brunner, S. (2002). *Buku Ajar Keperawatan Medikal Bedah.* Jakarta: EGC.

Crumbaugh, J. C. & Maholick, L. T. (1964). An Experimental Study in Existentialism: The Psychometric Approach to Frankl's Concept of Noogenic Neurosis. *J Clin Psychol, 20,* 20–7.

Isaacs, A. (2001). *Keperawatan Kesehatan Jiwa dan Psikiatrik*. Jakarta: EGC.

Kanine, E. (2011). *Terhadap Respon Ketidakberdayaan Klien Diabetes Melitus.*

Khotijah. (2016). Makna Hidup Di Balik Sakit (Studi Fenomenologi terhadap Penderita Diabetes Melitus di Desa Sambong Kecamatan Punggelan Kabupaten Banjarnegara). *Jurnal Psikologi.*

Kodl, C. T. & Seaquist, E. R. (2008). Cognitive dysfunction and diabetes mellitus. *Endocr Rev, 29*, 494–511.

Price, S. A. D. W., L. M. (2006). *Patofisiologi : Konsep Klinis ProsesProses Penyakit* (Edisi 6, Volume 1). Jakarta: EGC.

Riskesdas. (2013). *Riset Kesehatan Dasar. In: Penelitian, B. P.* (ed.). Jakarta: Balitbang Kemenkes RI.

Robatmili, S. F. S., Shahrak, M. A., Talepasand, S., Nokani, M., & Hasani, M. (2015). The Effect of Group Logotherapy on Meaning in Life and Depression Levels of Iranian Students. *Int J Adv Couns., 37*(1), 54–62.

Rochmawati Dh. (2011). Pengaruh Logoterapi terhadap Konsep Diri dan Kemampuan Memaknai Hidup pada Narapidana Remaja di Lembaga Pemasyarakatan Kelas 1 Semarang 1. *Jurnal Psikologi, 42.*

Rüpke J. (2010). *Roman Gods: A Conceptual Approach.* Mosby Elsevier Inc.

Sadock Bj, K. V. (2010). B*uku Ajar Psikiatri Klinis*. Jakarta: EGC.

Sarfika R. (2012). Pengaruh terapi kognitif dan logoterapi terhadap depresi, ansietas, kemampuan mengubah pikiran negatif, dan kemampuan memaknai hidup klien diabetes melitus di rsup dr. M. Djamil padang. *Jurnal kesehatan jiwa UI.*

Schulenberg Se, S. L., Buchanan Em. (2011). The Purpose in Life Test-Short Form: Development and Psychometric Support. *Journal of Happiness Studies, 12*, 861–76.

Setyowati We. (2014). *Pengaruh terapi kelompok Logoterapi berbasis Health Belief Model terhadap kemampuan memaknai hidup pada perempuan yang mengalami* *kecemasan di Lapas wanita kelas II Kota Semarang*. Universitas Airlangga, Surabaya.

Stuart Gw. (2009). *Principles and practice of psychiatric nursing*. Canada: Mosby.

Tristiana, R. D., Kusnanto, Widyawati, Ika Yuni, Yusuf, Ah., Fitryasari, Fitri. (2016). *Kesejahteraan Psikologis Pada Pasien Diabetes Mellitus Tipe 2 Di Puskesmas Mulyorejo Surabaya.* Universitas Airlangga, Surabaya.

Ukus V. (2015). Pengaruh Penerapan Logoterapi Terhadap Bawah Manado. *Jurnal kesehatan jiwa UI, 3,* 1–8.

Watkins, E. & Teasdale, J. D. (2001). Rumination and overgeneral memory in depression: effects of self-focus and analytic thinking. *J Abnorm Psychol, 110*, 353–7.

Widhiarso W. (2012). *Skala Psikologi* Retrieved 2016.

Yusuf, A., Nihayati, He., Iswari, Miranti., Okviasanti, Fanni. (2016). *Kebutuhan Spiritual; Konsep dan Aplikasi dalam Asuhan Keperawatan.* Jakarta: Mitra Wacana Media Jakarta.

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Exploring Nurses' Experience of Managing Attention and Mood in Post-Stroke Patients: A Qualitative Study

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Abstract

Attention is an important aspect of cognitive development in the perspective of information processing, whereas mood is an affective aspect relating to expectations about positive or negative feelings. Decreased attention and mood in post-stroke patients can cause instability, cognitive impairment, and long-term rehabilitation. These impacts affect the patients' activity daily living (ADL). Priority of post stroke patient care in hospital was priority on physical problem rather than psychological, social and spiritual problems. Nurses as caregivers in the hospitals should understand in manage bio-psycho-socio-cultural-spiritual problems in post-stroke patients. This descriptive study that used a descriptive qualitative research was conducted to describe the barrier of managing attention and mood in post stroke from the perspective of nurses. This research was a pilot study using qualitative design and involved six nurses at Temanggung General Hospital, Indonesia. The data collection was carried out using in-depth semi-structured interviews. The data analyzed using inductive content analysis. Five themes emerging from data included the nurse's focus on the physical problem, lack of awareness to manage attention and mood, unavailability of early assessment for attention and mood, family participation in nursing care and lack of information about the interventions in handling attention and mood. The initial assessment of attention and mood greatly encourages nurses to provide alternative or complementary nursing that can be administered in the hospital. Nurses' understanding of knowledge and skills are essential to prevent the impact of reduced attention and mood. The management of attention and mood should be supported by all professional health providers, and facilities in hospitals, as well as the role of the family.

Keywords: Attention and mood, management of attention and mood, stroke patients.

Introduction

The majority of Indonesians prefer to use government hospitals because the insurance provided by the Indonesian Government can only be used in government hospitals. Nurses as one of health workers in the hospitals play an important role in the effort to achieve health development goals (Kandou, 2015). The success of health care depends on the participation of nurses in providing quality nursing care. One of the attempts to provide quality nursing care and maintain patient safety is by applying the Standard Operating Procedure (SOP) in carrying out nursing actions. But the fact is that currently nurses in hospitals have not all implemented Standard Operating Procedures (SOP). This is evidenced from the results of the study that a total of 42 (100%) nurses at PKU Muhammadiyah Gombong hospital were not dutiful in applying SOP in carrying out nursing actions due to lack of socialization and evaluation of SOP at the hospital (Mutiana, 2014).

Stroke is one of conditions that requires hospitalization due to neurological damage. The neurologic damage of stroke causes both physical and psychological problems. According to the American Heart Association (AHA), physical problems in the form of disability in stroke patients remain dominant in the last decade. There are currently 3.8 million women and 3 million men living with stroke-related disabilities (Davis & Lockhart, 2016), whereas cognitive and affective disorders triple in post-stroke. Attention is part of the cognitive while mood is part of the affective mood is part of the affective.

Reduced attention in post stroke patients is characterized by the difficulty of concentrating and answering questions. Reduced attention affects disease recovery, instability, and poor performance degradation(Hyndman, Pickering, & Ashburn, 2007), can be predicted in functional recovery within the next 2 years(Robertson, Ridgeway, Greenfield, & Parr, 2007), affects function cognitive, among others, the ability to analyze, interpret, plan, organize and implement complex information (Hasra & Munayang, 2014). These affect the Activity Daily Living (ADL) (Hyndman et al., 2007).

Reduced mood in post-stroke patient is characterized by irritability syndrome, loss of interest, and concentration difficulties, as well as mood depression. Mood decline in post stroke patients refers to changes or emotional abnormalities that occur as a result of stress due to physical paralysis, which is also estimated due to the inability to use limbs maximally, the inability to communicate so that the post-stroke patients change or make adjustments when communicating (Lee, Seo, & Shim, 2017). The impact of mood reduction is the long-term rehabilitation and adjustment processes (Donnellan, Hickey, Hevey, & Neill, 2010), decreased cognitive abilities, dysphagia, low-level participation in daily activities Living (ADL), and social isolation (Hasra & Munayang, 2014). the higher the stroke level of stroke patients, the higher the level of dependence especially in ADL in stroke patients (Ratnasari & Solechan, 2012).

The low awareness of stroke risk factors, the lack of recognition of signs and symptoms of stroke, the impact of decreased attention and mood, not optimal stroke services and low adherence to therapy programs for prevention of recurrent stroke are problems that are common in stroke services in Indonesia (Irbantoro, 2016). therefore, comprehensive service development is needed . This comprehensive stroke unit aims to prevent more disabilities and deaths among stroke patients (Natasia et al., 2014).

Therefore, a qualitative study on nurses' experience in dealing with attention mood problems in post-stroke patients needs to be conducted. It aims to find out the nurses' responses in handling attention problems and mood of patients treated in Regency General Hospital Temanggung

Method

This research is a qualitative study employing the phenomenology approach. Data were collected from 6 nurses' interviews by selecting criteria. The criteria for nurses are between the ages of 20 and 40, men and women, have work experience in the room care of stroke patients of at least 2 years, graduates of Diploma 3 or undergraduate degrees. Interviews were conducted in the discussion room at Flamboyan II, Temanggung Hospital. Before conducting an interview by giving a few questions, the researcher explained the informed consent, after the nurse agreed to become a research sample, it continued to fill demographic data. Voice recordersin cellphone was a tool for recapitulating the results of interviews, then the transcripts were made to determine the topic of this research.

The data collection was done by using semi structured interviews. The questions given to the participants include:

1) What is your experience with regard to nursing problems that arise in post-stroke?
2) What is the priority?
3) Do you know the definition of attention and how do signs and symptoms reduce attention of stroke patients?
4) Do you know the definition, signs and symptoms decrease mood in stroke patients?
5) How was your experience in treating patients with attention and mood disorders in post-stroke patients?
6) Is there an assessment format available to assess attention and mood?
7) What do you do when you meet a patient with attention and mood problems?
8) Do nurses use intervention to address the attention and mood derived from the results of the study?

Data Analysis

The content analysis guided by Elo and Kyngas (2008) was used to analyze the data. To ensure the trustworthiness, the researcher followed the inductive content analysis process. Started with open coding, all notes and heading were written in the text while reading it. The written material was read thoroughly, and as many headings as necessary were written down in the margins to describe all aspects of the content. The headings were gathered from the margins on to coding sheets, and categories were freely generated. After open coding, the list of categories was grouped under higher order headings and collapsed the similarly into broader higher-order categories. Finally, major themes were identified through interpretation as inductive content analysis. The use of quotation was presented in the findings of the study to support the themes.

Results

This research reveals 5 themes, which include the nurses’ focus on the physical problem, lack of awareness in managing attention and mood, unavailability of early assessment for attention and mood, family participation in nursing care, and lack of information about the interventions in handling attention and mood. The initial assessment of attention and mood greatly encourages nurses to provide alternative or complementary nursing that can be administered in the hospital.

Theme 1: The nurses’ focus on the physical problem

Experience is an event that has actually been experienced by individuals. Disclosure of experiences in narrative means expressing or exposing an event or experience that has been experienced in the order of time of occurrence.The following are the participants’ statements related to problems that often occur among post stroke patients:

Physical problems identified from the interview:

“Most strokes experience weakness of the extremities, verbal communication, decubitus that occurs from the home. Usually, decubitus arise from home and is not treated with care and taken to the hospital already in a severe condition”

Psychological problems identified from the interview:

“Often the patient is afraid of not being able to heal, refusing his illness, dismissing God not as patient as if giving such a pain, angry without cause, even if anyone comes suspected”

Five nurses mentioned that physical problems in hospitals were more prioritized rather than psychological. This is expressed by the nurse mentioning the first handling of physical problems:

“Stroke patients have motion problems we usually do over baring. We can help when we do good activities to meet the needs of personal hygiene, collaboration with physiotherapy. Physiotherapy comes only one time. Usually, afternoon nurses do ROM to patients “

While handling psychological problems:

“Usually when we see an angry patient, we let her in first so angry finish first, but to approach the family's habits at home patients if pain like this. If it is not angry just give advice to patients by motivating patients "

Four participants said that dealing with physical problems was a priority over psychological problems.

"Physical problems take precedence, because the frequent patients in the hospital, their his psychological problems are disrupted due to physical problems. Yes, we always use SOPs during the course of action to the patient, but usually for ROM, oral hygiene or the other "

Theme 2: Lack of awareness to manage the attention and mood

Nurses understand that the concept of attention and mood in post stroke patients will be understood from the understanding, signs and symptoms, and how to deal with the problem.

"From my experience, patients who have passed a stroke often have attention problems, confusion, sometimes disorientation. The purpose of the attention can be interpreted as possible. I know if you experience that we invite communication to be more focused and should be more patient ".

Theme 3: unavailability of early assessment for attention and mood

Psychological treatment of post-stroke patients can be done through appropriate assessments. Screening is a brief assessment using a tool that has been validated along with a clinical judgment to decide whether someone needs to be assessed further, monitored, or given access to psychological treatment.Nurses in the hospital have done the assessment according to the standard in hospital, but in the assessment did not assess attention and mood.

Summaries presented during the interview related to this theme are:

"We always use Standard Operating Procedures (SOP) when performing actions to patients. SOP in book form. The book is about 10 years. SOP of hospital nursing action overcome frequent physical problems, but is not available early assessment for attention and mood. So we never did "

Theme 4: Family participation in nursing care

The family role in patient care either in hospital or after returning from hospital.

Summaries presented during the interview related to this theme are:

"Nurses here perform routine nursing actions in the hospital, priority on physical problems, but usually if we have problems related to psychological problems more approach to the family and let the patient in a stable emotional state, just after doing roughly the patient's good new mood we communicate to the patient"

Theme 5: lack of information about the interventions in handling attention and mood

The handling of patients to overcome the attention and mood of patients in the hospital has not been done by nurses. However, much research on how to overcome attention and mood is very significant. The results of the research literature to address attention are Attention Process Training / APT, overcoming mood with motivational interview, attention and mood with NRE, overcoming cognitive and mood with natural interaction, listening to music andovercoming psychophysiology with aroma massage and foot bath.

Summaries presented during the interview related to this theme are:

"In hospitals there is never any intervention you mentioned. Here, it is only normal to perform nursing actions to overcome physical problems. Listening to music can become a therapy, but it has not been applied in the room here"

Discussion

Nurses working in stroke space hospitals have different perceptions of how to deal with attention and mood problems among post-stroke patients. Individual perception can be different, because the stimulus received by each individual is not the same. The acceptance of such responses will differ depending on the individual response (Braund, 2008). Feelings, ability to think, experiences owned by individuals are not the same. Thus, in perceiving stimulus, each individual is different (Kozier, 2010). From the explanation, it can be said that the difference in perspective is a natural thing which happened.

Some nurses see how to deal with post-stroke nursing problems as a parenting activity that starts from assessment to evaluation by taking into account the principle of the human wholeness whole dimension called holistic. This view is gained on the basis of the knowledge they have gained while studying. This is in accordance with the concept as explained by Betty Newman in his holism concept, that man is a unified whole consisting of bio-psycho-socio-cultural-spiritual (Kozier, 2010).

The application of holistic principles to patients in the hospital has not been fully met, especially psychological problems, proved in this study that if the patient experiences symptoms of nurse mood reduction indirectly overcome it but the nurse lets the patient until the patient is cooperative with the nurse. This will result in decreased quality of nursing services in hospitals, this is in accordance with the results of research indicates that there is a significant influence between therapeutic communication on nurse service quality (Prismeiningrum, 2015). The quality of patient care depends on the care giver's ability to communicate with each other (Afriyani, 2011).

This was supported by the research of Ristianingsih et al., 2014 stating that nurses must implement the principle of holistic nursing care that includes biopsychososio and spiritual. And from the results of observations in this study nurses have a perception of the implementation of spiritual actions are not the nurses' responsibility in full because there is already a spiritual guide at the hospital. So that it can be said that nurses do not carry out holistic nursing. The need and spiritual care in carrying out the nursing process proved to be very accommodating both in terms of philosophy and practice. Therapeutic relationships are intertwined with the provision of appropriate spiritual care. (Azizah, 2008).

Supporting research also from Roatib et al. (2007) which states that the older the age and the higher the education shows the less motivation of nurses in applying therapeutic communication in the work phase. Though therapeutic communication is the most essential element in the treatment process, it is not only a supplementation. Therapeutic communication is influential in the healing process and at the same time forming new links. This is because in achieving the healing process nurses do not rely solely on medical action. Therefore therapeutic communication has an important role in achieving patient recovery that requires spiritual/emotional encouragement through approaches to patients with communication, especially in tone of voice, expression.

Approach to the family is done by the nurse when the patient shows the attitude of refusing to the nurse is evidenced by when the patient sees the mosquito, refuses, nurses approached the family. The family plays a role in determining how care or care is needed by a sick family member. Empirically it can be said that the health of family members and the quality of family life becomes highly correlated or significant. Families occupy positions among individuals and communities, so by providing health services to families, nurses get two benefits at once. The first advantage is to meet individual needs, and the second advantage is to meet the needs of society (Luthfa, Lukman, & Sari, 2016).

The magnitude of the family's role toward sick family members can also be explored in this study. The presence of a family that accompanies and helps, especially when the patient is sick can ease the patient's burden. This shows that the family acts as family care giver for the patient. Active family involvement is a functional family form and can provide optimal support in care, especially on the daily problems of the patient (Afriyani, 2011).

Early assessment of cognitive impairment is particularly important at the early diagnostic stage, whereas in the mood it also needs to be done routinely about one month after the stroke or just before the hospital's release if faster. The second assessment was given about 6 weeks after resignation or about three months after the stroke with further assessment given at 6 and 12 months to detect long-term problems that exist.

Management of patients during hospital

post-stroke between physical overcome is usually move position, doing wound care dekubitus, move the body parts of paralysis. while for attention and mood problem only approach to family. Whereas the results showed great results with some of these interventions. These interventions include Attention Process Training / APT, Motivational Interview (MI), listening of music, and the Natural Restorative Environment (NRE).

Attention process training (APT) is an intervention that reduces attention deficits after traumatic brain injury. The study was conducted in post-stroke patients, aiming to evaluate the effectiveness of APT in increasing attention and broader outcomes in stroke patients 6 months after stroke. Assessment results are done at 5 weeks and 6 months after randomization. The results showed that APT intervention resulted in a much greater increase of attention than in the control group or who received the standard from the hospital (Barker et al., 2013).

Motivational Interview (MI) is a speech-based therapy that has been applied to many health problems that require behavioral change but can also support adjustment. Studies of post-stroke patients in the intervention group received up to four sessions of 30 to 60 minutes of MI. In the early sessions, therapists set the agenda so that patients talk about their adjustment to stroke and current concerns. The results indicate that motivational interviews are significant to mood and reduce mortality 12 months post stroke (Watkins et al., 2011).

While the intervention with the handling of wider music that overcome the mood and post stroke cognitive. The musical intervention in this research is to provide music with their own portable CD player and music CD with any music genre. The results of this study indicate that recovery in verbal memory and focused attention areas increased significantly in the intervention group and not in the control group (Sa et al., 2008). These findings suggest that for the first time listening to music during the early stroke stage can improve cognitive recovery and prevent deterioration.

Whereas the results show that the natural environment is very influential on the feelings. More specifically, attention serves as a basic process involved in understanding the world and organizing thoughts and feelings (Berman, Jonides, & Kaplan, 2008). Poor attention has been shown to be associated with a decrease in performance in daily instructional activities of daily life (Hyndman et al., 2007). The increased demand for attention can deplete artificial neural networks and cause inadequate attention function (Cimprich & Ronis, 2013). The results of the review indicate that the environment can lead to the restoration of attention requiring mental effort (voluntary attention). Exposure to the natural environment can provide an attraction to restore one's attention from mental fatigue (Lindern & Lymeus, 2016). According to the Attention Restoration Theory (ART), interacting with environments containing inherently attractive stimuli calls for only voluntary attention, thus enabling directional attention mechanisms to be an opportunity to recharge (Berman et al., 2012). That is, the need for attention directed at such an environment is minimized, and attention is captured in a bottom-up by the features of the environment itself. Thus, after interacting with the natural environment, individuals perform better on tasks that depend on the ability of focused attention.

Conclusion

This preliminary study yielded five themes; all of which have interrelationships. The understanding of nurses in dealing with attention and post-stroke mood should be owned by nurses in the hospital. There is a decrease in attention and mood. Nurses need a family role as family care giver for patients. Active family involvement is a functional family form and can provide optimal support in care, especially on the day-to-day issues experienced by the patient. The availability of preliminary assessment of attention and mood issues and use of research results to address attention and mood in post-stroke patients is required by hospital nurses to prevent unexpected events.

References

Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., … Jonides, J. (2012). Interacting with nature improves cognition and affect for individuals with depression. *Journal of Affective Disorders, 140*(3), 300–305. https://doi.org/10.1016/j.jad.2012.03.012

Braund, M. J. (2008). The structures of perception: An ecological perspective. *Kritike, 2(*1), 123–144. https://doi.org/10.3860/krit.v2i1.574

Davis, C., & Lockhart, L. (2016). Update: Stroke guidelines. *Nursing Management, 47*(2), 24–33. https://doi.org/10.1097/01.NUMA.0000480697.42505.97

Donnellan, C., Hickey, A., Hevey, D., & Neill, D. O. (2010). *Effect of mood symptoms on recovery one year after stroke*, 1288–1295. https://doi.org/10.1002/gps.2482

Hasra, Indha Wardhani P.L.Herdy Munayang, L. F. J. K. (2014). *Prevalensi gangguan fungsi kognitif dan depresi pada pasien stroke di Iriana F BLU RSUP Prof. Dr.R.D.Kandao, Manado.*

Hyndman, D., Pickering, R. M., & Ashburn, A. (2007). The influence of attention deficits on functional recovery post stroke during the first 12 months after discharge from hospital. *Journal of Neurology, Neurosurgery & Psychiatry, 79*(6), 656–663. https://doi.org/10.1136/jnnp.2007.125609

Kandou, P. R. D. (2015). Hubungan Perilaku Perawat Dengan Pendokumentasian Asuhan Keperawatan Di Cardiovaskular and Brain. *E-Journal Keperawatan (E-Kp), 3*, 1–9.

Kozier, B. (2010). *Foundamentals of Nursing*, 1, 1163–1219. Retrieved from http://eprints.jcu.edu.au/16419/2/16419_Berman_et_al_2010_Front_pages.pdf

Lee, J. H., Seo, E. K., & Shim, J. S. (2017). The effects of aroma massage and foot bath on psychophysiological response in stroke patients, 1292–1296.

Pepy Ratnasari, S. P. K., & Solechan. (2012). *Hubungan antara tingkat ketergantungan activity daily living dengan depresi pada pasien stroke di RSUD Tugurejo Semarang.*

Robertson, I. H., Ridgeway, V., Greenfield, E., & Parr, A. (2007). Motor recovery after stroke depends on intact sustained attention: A 2-year follow-up study. *Neuropsychology, 11*(2), 290–295. https://doi.org/10.1037/0894-4105.11.2.290

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Analysis of Factor Affecting Nutrition Status on Children

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Abstract

The problem of malnutrition remains overlooked in Indonesia, especially on children, caused by various factors. Indonesia is the 17th country with 3 nutrition problems, including stunting (short body), wasting (skinny body), and overweight (obesity). This research aims to analyze factors affecting nutrition status on children in the area of West Java Province, including the mother's and the child's socio-demographics factor, and the child's health status. The research method was descriptive quantitative with cross-sectional approach. The number of samples is 810. The research was conducted in 6 districts that support Family Planning (KB), including Bandung District, Bandung City, West Bandung District, Subang District, Sumedang District, and Garut District. The quantitative analysis consisted of univariates using percentage and frequency distribution, as well as bivariate analysis using chi square test. The result of the research shows that nearly all toddlers have good nutrition status as much as 87.9%, and toddlers with malnutrition as much as 10.6%. The analysis factor shows that there is a relationship between the mother's age ($p = 0.048$; OR = 1.583), family income ($p = 0.010$; OR = 1.803), delivery complications ($p = 0.008$; OR = 2.091), provision of exclusive breastfed milk (ASI) at the age of 0–6 years old ($p = 0.000$; OR = 2.321), provision of exclusive breast milk and complementary feeding given to babies before 6 months old (MPASI) at the age of 6 months to 2 years old ($p = 0.002$; OR = 2.037), and the child's history of hospitalization ($p = 0.008$; OR = 2.055), while other factors are considered irrelevant. This research suggests that healthcare staff collaborate in providing knowledge to mothers on the provision of exclusive breast milk and complementary feeding as well as the prevention of illness on their children.

Keywords: Children, factor affecting nutrition status, nutrition status.

Introduction

The problem of low-quality citizenship is indicated by, out of many others, the prevalence of nutrition affecting the quality of human resources. This will lead to the loss of young generations and the nation's future economy (Fotso et al., 2012). One of WHO's SDG targets is preventing hunger. In 2025, such problems of malnutrition are expected to be solved.

Indonesia is one of the developing countries with a quite serious malnutrition problem. Few others also face similar problems due to improper food provision (Ningsih, Kristiawati, & Krisnana, 2014). Data from WHO (2010) discovered that 1.5 million children have died due to improper food provision and 90% of the cases occur in developing countries. Today, malnutrition remains a national problem unattended, especially on toddlers. This is because toddlers have a relatively fast growth, thus requiring the biggest portion of nutrition compared to other stages of development (Ningsih, Kristiawati, & Krisnana, 2014).

Global Nutrition Report (USAID, 2014) claimed that Indonesia is the 17th country with 3 main malnutrition problems to date, including stunting (short body), wasting (skinny body), and overweight (obesity). Data from Basic Health Research (Riskesdas) (2013) show that the prevalence of fat body at the age of 0-59 months, according to weight/ height, is 11.8%. Meanwhile, data from Nutrition Status Monitoring (Pemantauan Status Gizi (PSG)) claim that the prevalence of fat toddlers in Indonesia with similar measurements reaches 5.3% (Kementerian Kesehatan Republik Indonesia, 2016). Data from Riskesdas (2013) also discovered that today's Indonesian children are suffering from malnutrition, knowing that 8 out of 100 children are obese. This prevalence is based on the index measurement of body mass divided by age on children aged 5–12 years old as much as 8%. WHO (2010) thinks that malnutrition is not a problem in a country if that country has a fat-toddler indicator above 5%.

Problems of nutrition are pertinent to a child lacking of nutrition at early age, impacting to his cognitive disabilities and behavior deceleration. A child's cognitive growth may also be affected by the resultant interaction between his brain and his environment. It also affects his intelligence, analytical thinking, and productivity level. Lack of nutrition in this age may be relevant to the risk of chronic disease such as obesity, heart and vein disease, hypertension, and diabetes. Parents, therefore, are responsible for providing adequate nutrition intake to support their child's cognitive development (Ministry of Health (Kemenkes RI), 2017; Mohd Nasir et al., 2012). It is one of the fundamental factors affecting the cognitive performance as a defense mechanism to nerve building and brain development (Kementerian Kesehatan Republik Indonesia, 2017; Mohd Nasir et al., 2012).

The nutrition status during the 1000 first days of birth (HPK), or also known as "heydays", will impact on the qualities of a child's health, intellect, and productivity in the future (USAID, 2014; Kementerian Kesehatan Republik Indonesia, 2013). Mothers and babies must have adequate and quality nutrition to ensure their own health and motoric, social, and cognitive abilities, as well as learning skills in the future. Children with malnutrition during their heydays will likely to face neurological issues, a decrease in learning abilities, a higher chance of dropping out from school, barriers in productivity and working motivation, a decrease in the ability of providing nutritious food, and a decrease in caretaking. These all will further result in the prevalence of malnutrition and poverty for more generations to come. Considering the importance of nutrition during heydays, prevention of nutrition problems, therefore, becomes the main priority to improve the life quality of future generations (Bappenas RI, 2012).

The efforts of prevention of nutrition problems must be adjusted with the collateral factors (Aridiyah, Rohmawati, & Ririanty, 2015). The causing factor is directly from the child's unbalanced eating pattern and contagious illness. On the other hand, indirect factors include food availability, environment sanitation, and upbringing such as eating pattern, provision of knowledge, behavior, skills, and healthcare service (Arifin, 2016; Kementerian Kesehatan Republik Indonesia, 2017; Subarkah, Nursalam, & Rachmawati, 2016). This research aims to analyze factors that affect a child's nutrition status as seen by the mother's and the child's socio-demography, and the child's health status.

Method

This research is a descriptive quantitative research utilizing a cross-sectional approach. The population in this research is Productive Couples (PUS) with such criteria as pregnant mother (first to third trimester) and/or mothers with toddlers. These samples were taken from 6 districts in the province of West Java. The determination of districts for sampling in this research is done based on the highest number of occurrence of malnutrition in West Java (Bappenas RI, 2012). The districts include Bandung District, Bandung City, Garut District, West Bandung District, Subang District, and Sumedang District with the total of population as much as 534,652 respondents. The minimal number of samples is based on the number of population according to the table of sample determining by Isaac and Michael with 1% significance rate and the total of population as many as ±550,000. Therefore, the minimal number of samples is 665-810. The number of samples used in this research is 810 respondents. Data collection is carried out by enumerators by visiting respondents to each district. Filling in the questionnaire by the respondent was accompanied by enumerators.

Sampling technique is done using cluster sampling from 6 district consisting of 6 villages that support KB; therefore, each village is represented by 135 respondents in each. In this research, 810 respondents from 6 KB villages in 6 districts in West Java. Out of 810 respondents, 735 of which are toddlers and mother with toddlers (89.3%), pregnant mother (8.2%) or 67 people, and pregnant woman with toddlers (2.5%) or approximately 20 people.

Data were collected by using questionnaire to measure: individual factors, consisting of the mother's history of pregnancy and medical records; socio-demographic factors, consisting of gender, age, education level, occupation, family income, health insurance, healthcare access, and behavior, including the family's knowledge and action in its sustainability, the effort of nutrition fulfillment on pregnant mother, antenatal check-up and secure delivery, exclusive breast milk provision, effort of nutrition fulfillment on toddlers, immunization provision, growth and development, and healthy life behavior on families (PHBS). Besides, sampling was also done by running through medical records taken from the Book of Mother and Child's Health to observe the health status of the mother and the child (nutrition problems, pregnant mother's anemia, a high-risk pregnancy), physical observation with anthropometry to observe nutrition status on toddlers classified as adequate nutrition, lack of nutrition, malnutrition, or over nutrition.

Data analysis was done using Chi Square and Spearman analysis to observe factors affecting nutrition status on children. Research relevant to humans must be done according to ethical principles. According to Polit and Beck (2008), researcher must provide protection toward individual rights involved in the nurse's research. Therefore, this research has guaranteed ethical consentment from research Ethical Committee Universitas Padjadjaran, with letter number: 1206/UN6/KEP/EC/2018. The implementation of this research was done using 3 months from October to December 2018.

Results

Table 1 Nutrition Status of Toddlers based on Weight/Age

Nutrition Status	Frequency (f)	Percentage (%)
Malnutrition	6	0.8
Lack of Nutrition	72	9.8
Adequate Nutrition	646	87.9
Over Nutrition	11	1.5

Table 2 Nutrition Status on Toddlers based on Distribution per District

Nutrition Status Indicator	Bandung City		Bandung District		West Bandung District		Subang District		Sumedang District		Garut District	
	f	%	f	%	f	%	f	%	f	%	f	%
Based on Weight/Age:												
Malnutrition	2	1.6	0	0	0	0	1	0.8	3	2.6	0	0
Lack of Nutrition	11	8.5	22	17.1	7	5.7	19	15.3	8	7	5	4.3
Adequate Nutrition	114	89.1	106	82.1	116	94.3	99	79.9	102	88.7	109	94
Over Nutrition	1	0.8	1	0.8	0	0	5	4	2	1.7	2	1.7

Table 3 Mother's Socio-Demographic Factor

Factors	Frequency (f)	Percentage (%)
The mother's age		
Early teens 12-16 years old	276	34.5
Late teens 17-25 years old	378	47.2
Early adults 26-35 years old	141	17.6
Late adults 36-45 years old	6	0.7
The mother's education level		
Elementary school	236	29.5
Middle school	328	40.9
High school	200	25.1
Diploma	10	1.2
Undergraduate	26	3.2
Postgraduate	1	0.1
Mother's Occupation		
Unemployed	647	80.8
Farmer	62	7.7
Private Employee	48	6.0
Self-Employed	31	3.9
Civil Servant	3	0.4
Others	10	1.2
Father's Occupation		
Unemployed	10	1.2
Farmer	90	11.2
Private Employee	208	26.0
Self-Employed	396	49.5
Civil Servant	40	5.0
Others	57	7.1
Family income		
IDR 1,500,000	365	45.6
IDR 1,500,000-2,500,000	271	33.8

IDR 2,500,000	165	20.6
Family Spending		
IDR 1,500,000	315	39.3
IDR 1,500,000-2,500,000	332	41.5
IDR 2,500,000	154	19.2
Health Insurance		
Negative	282	35.2
Positive	519	64.8
Access to Health Service		
Difficult	59	7.4
Easy	742	92.6
Caretaker		
Mother	604	75.4
Grandmother/Grandfather	153	19.1
Sibling	40	5.0
Creche	3	0.4
Help	1	0.1
KB Acceptor		
No	146	18.2
Yes	655	81.8
Types of KB		
Injection	440	67.2
IUD	68	10.4
Piil	105	16.0
Condom	5	0.8
Implant	24	3.7
MOW	12	1.8
Mikrogi	1	0.1
KB Information from Healthcare Staff		
Negative	35	4.4
Positive	766	95.6
Mother’s Nutrition Status		
Very Skinny	25	3.1
Skinny	61	7.6
Normal	379	47.3
Overweight	180	22.5
Obese	156	19.5
Pregnancy Status		
Not Pregnant	715	89.3
Pregnant	86	10.7
Mother’s History of Contagious Illnesses		

Negative	779	97.3
Positive	22	2.7
Mother’s History of Chronic Illnesses		
Negative	768	95.9
Positive	33	4.1

Table 4 Relationship between Mother’s Factor and Child’s Nutrition Status

		Nutrition Status (Weight/Age)		p value	OR
		Malnutrition	Adequate		
Education Level	Middle school and under	61	452	0.783	0.935
		11.9%	88.1%		
	High school and higher	28	194		
		12.6%	87.4%		
Age	> 34 years old	36	53	0.048	1.583
		15.7%	23.0%		
	≤ 34 years old	194	452		
		38.4%	89.5%		
Number of Children	>2 children	18	137	0.831	0.942
		11.6%	88.4%		
	≤ 2 children	71	509		
		12.2%	87.8%		
Occupation	Employed	18	129	0.955	1.016
		12.2%	87.8%		
	Unemployed	71	517		
		12.1%	87.9%		
Income	≤ IDR 1,500,000	52	283	0.010	1.803
		15.5%	84.5%		
	> IDR 1,500,000	37	363		
		9.3%	90.8%		
Spending	≤ IDR 1,500,000	40	241	0.166	1.372
		14.2%	85.8%		
	> IDR 1,500,000	49	405		
		10.8%	89.2%		
Health Insurance Possession	Negative	34	227	0.572	1.141
		13.0%	87.0%		
	Positive	55	419		
		11.6%	88.4%		
Access to Healthcare Service	Difficult	5	54	0.376	0.653
		8.5%	91.5%		
	Easy	84	592		
		12.4%	87.6%		

KB Acceptors	Negative	14	79	0.353	1.340
		15.1%	84.9%		
	Yes	75	567		
		11.7%	88.3%		
Mother's Nutrition Status	Not Normal	42	349	0.227	0.760
		10.7%	89.3%		
	Normal	47	297		
		13.7%	86.3%		
Delivery Complications	Positive	21	83	0.008	2.091
		20.2%	79.8%		
	Negative	68	562		
		10.8%	89.2%		
Delivery Complications	Non-Healthcare Staff	7	47	0.842	1.088
		13.0%	87.0%		
	Healthcare staff	82	599		
		12.0%	88.0%		
Delivery Process	Special delivery	10	69	0.874	1.059
		12.7%	87.3%		
	Normal delivery	79	577		
		12.0%	88.0%		
History of Contagious Illnesses	Positive	3	20	0.889	1.092
		13.0%	87.0%		
	Negative	86	629		
		12.1%	87.9%		
History of Chronic Illnesses	Positive	3	30	0.588	0.716
		9.1%	90.9%		
	Negative	86	616		
		12.3%	87.7%		

Table 5 The Child's Demography and Health Status Factor

Factor	Frequency (f)	Percentage (%)
Gender		
Male	386	52.5
Female	349	47.5
Age		
Toddlers	733	99.7
Children	2	0.3
Immunization Completeness		
Non-Immunized	17	2.3
Partial Immunization	102	13.9
Complete Immunization	616	83.8
Immunization Schedule		

Not Immunized	17	2.3
Misscheduled Immunization	118	16.1
On-time Immunization	600	81.6
Status of Exclusive Breast Milk 0-6 Months		
Exclusive Breast Milk and Complementary Feeding	59	8.0
Exclusive Breast Milk and Formula Milk	117	16.0
Exclusive Breast Milk	555	75.5
Only Formula Milk	4	0.5
Status of Exclusive Breast Milk 6 Month-2 years old		
Exclusive Breast Milk, Formula Milk, Complementary Feeding (No)	150	20.4
Formula Milk and Complementary Feeding (No)	61	8.3
Exclusive Breast Milk and Complementary Feeding (Yes)	524	71.3
Age During Which Complementary Feeding is Given		
0 Month	2	0.3
1 Month	3	0.4
2 Month	4	0.5
3 Month	8	1.1
4 Month	19	2.6
5 Month	12	1.6
6 Month (suitable)	643	87.6
7 Month	33	4.5
8 Month	8	1.1
9 Month	1	0.1
10 Month	1	0.1
12 Month	1	0.1
History of Hospitalization		
Negative	624	84.9
Positive	111	15.1
Child’s Medical Records		
Negative	649	88.4
TBC	18	2.4
ISPA/Pneumonia	45	6.1
Other Illnesses	23	3.1

Table 6 Relationship between Child's Health Status and Child's Nutrition Status

		Nutrition Status (Weight/Age)		p value	OR
		Malnutrition	Adequate		
Gender	Male	43	343	0.398	0.826
		11.1%	88.9%		
	Female	46	303		
		13.2%	86.8%		
Immunization Completeness	Partial	11	108	0.297	0.703
		9.2%	90.8%		
	Complete	78	538		
		12.7%	87.3%		
Immunization Schedule	Miss scheduled	15	119	0.720	0.898
		11.2%	88.8%		
	On-time	74	527		
		12.3%	87.7%		
Exclusive Breast Milk 0 – 6 Month	Non Exclusive Breast Milk	35	141	0.000	2.321
		19.9%	80.1%		
	Exclusive Breast Milk	54	505		
		9.7%	90.3%		
Exclusive Breast Milk and Complementary Feeding 6 Month – 2 years old	Negative	38	173	0.002	2.037
		18.0%	82.0%		
	Positive	51	473		
		9.7%	90.3%		
Start of Complementary Feeding	Unsuitable	14	78	0.330	1.359
		15.2%	84.8%		
	Suitable	75	568		
		11.7%	88.3%		
History of Hospitalization	Positive	22	89	0.008	2.055
		19.8%	80.2%		
	Negative	67	557		
		10.7%	89.3%		
Medical Records	Positive	13	73	0.360	1.343
		15.1%	84.9%		
	Negative	76	573		
		11.7%	88.3%		

Based on the table above, the nutrition status overall based on weight/age in 6 districts in nearly all cities are adequate (87.99%), but malnourished children reach up to 10.6%.

Seen from weight/age of the toddler's nutrition status (table 2) in 6 districts, nearly all of them have adequate nutrition, which is in Bandung City as much as 89.1%, Bandung District, 82.1%, Bandung Barat

District 94.3%, Subang District 79.9%, Sumedang District 88.7%, and Garut District 94%. However, Table 2 shows problems of malnourished toddlers. Out of 6 districts, 3 districts have malnourished and nutrition-lacking children from more than 10%, including Bandung City 10.1%, Bandung District 17.1%, and Subang District 16.1%. On the other hand, the 3 remaining districts have the percentage below 10%, including Sumedang District 9.6%, Garut District 4.3%, and West Bandung District 5.7%. Bandung District and Subang District are the 2 areas with the biggest portion of malnutrition cases, as much as 17.1% and 15.3%, respectively. The biggest number of malnutrition cases occurs in Sumedang District as much as 3.6%, followed by Bandung City 2.6%. Seen from above, Bandung District has the highest percentage for toddlers lacking of nutrition out of the 6 districts.

Overall, the prevalence of malnourished and nutrition-lacking nutrition in this research reaches up to 10.6%. The distribution of the nutrition status for toddlers each district can be seen in this table 2.

Table 3 above shows that the mother's age is highly varying, 47.2 mothers are aged 17-25 years old, 40.9% others are junior high school graduates, 80.8% others are unemployed, thus they take care of their own children 75.4%. The father's occupation is varying, but mostly are private employees 49.5% with average income lower than 1,500,000 rupiahs. The average family spending is not parallel with family income. As much as 41.5% of family spending is bigger than that of the income (1,500,000 rupiahs – 2,500,000 rupiahs). As much as 64.8% of all families have health insurance and 92.6% of which have easy access to healthcare service. As much as 81.8% of mothers have used family planning and 67.2% of mothers use injection KB, while 9.6% get information about KB from healthcare staff. The mother's nutrition status is also varying, around 47.3% have adequate nutrition, and 3.1% lack of nutrition. As much as 89.3% of them are non-pregnant woman, 97.3% mothers do not have contagious illness history, and 95.9% mothers do not have history of chronic diseases.

Table 4 shows that the mother's socio-demographic factors are relevant to the nutrition status is the mother's age, family income, and delivery complications (p value < 0.05), while other factors are considered irrelevant. Based on the OR value, it is found out that mothers above 35 years old carry the risk of having malnourished children 1.583 times bigger than those aged under 35 years old. In terms of family income, families having income less than 1,500,000 rupiahs carry the risk of having malnourished children 1,803 times bigger than those earning more than 1,500,000 rupiahs. On the other hand, mothers who have a history of delivery complications carry the risk of having malnourished children 2,091 times bigger than those who do not.

Table 5 shows that there are 386 male children (52.5%). Nearly all children are toddlers (99.7%). Based on Immunization status, nearly all children get complete Immunization (83.8%), and nearly all get on-time Immunization (81.6%). Besides, all children get exclusive breast milk 75.5%). Most respondents get complementary feeding after the child is 6 month old (71.3%) and nearly all respondents get complementary feeding after the child is 6 month old (87.6%). On the other hand, based on the child's health status, nearly all children have never been hospitalised (84.9%), and nearly all of them do not have any history of contagious illness (88.4%).

The table above shows the relationship between the child's health factor and their nutrition status. Based on the p value, it is known that the factor of exclusive breast milk provision on toddlers before six months old, exclusive breast milk and complementary feeding provision on toddlers aged 6 months - 2 years, and history of hospitalization with p value < 0.05. This shows that there is a significant relationship between that variable and the child's nutrition status.

Based on the OR value, it was found out that a child not given exclusive breast milk only before 6 months old are at risk of being malnourished 2.321 times bigger than those who do. This also applies to child who do not get exclusive breast milk and complementary feeding, they are at risk of being malnourished 2.037 times bigger than those who do at the age of 6 months until 2 years old. On the other hand, the child with history of hospitalization have 2.055 risk bigger of having malnourished than those who do not.

Discussion

Overall, the toddler's nutrition status based on Weight/Age in 6 districts in most toddlers have adequate nutrition (87.9%), but it can be seen that malnourished and nutrition-lacking toddlers reach 10.6%. The nutrition status in 6 districts in nearly all children are categorized under "adequate," specifically in Bandung City 89.1%, Bandung District 82.1, West Bandung District 94.3, Subang District 79.9, Sumedang District 88.7, and Garut District 94. Therefore, the problem of malnourished toddlers is still apparent. Out of these 6 locations, 3 districts have a more than 10% of malnourished and nutrition-lacking toddlers including Bandung City 10.1%, Bandung District 17.1%, and Subang District 16.1%. Meanwhile, the remaining 3 districts have the percentage below 10%, including Sumedang District 9.6% and Garut District 4.3%, West Bandung District 5.7%. Bandung District and Subang District were the two areas with the biggest portion of malnourished toddlers; that is, 17.1% and 15.3% respectively. The biggest number of malnourished toddlers is in Sumedang District as much as 3.6%, followed by Bandung City 2.6%. Overall, the prevalence of malnourished and nutrition-lacking toddlers reaches as high as 10.6%. This number is generally lower than the national prevalence, which is 17.7 % (Riskesdas, 2018), however this still exceed WHO parameter line in terms of the number of malnourished toddlers, which is 10%.

Nutrition problems, especially malnourishment and stunting in toddlers, may the child's growth, with negative impacts lasting for future life, such as intellectual downturn, vulnerability of degenerative and non-contagious illnesses, productivity decrease, which then leads to poverty and the risk of having babies with low weight (UNICEF, 2013; UNICEF, 2012; WHO, 2010; Adair & Guilkey, 2007). Other impacts of malnutrition during heydays are always associated with lack of specific vitamin and minerals and other micronutrients. Past research regarding the impact of lack of micronutrients, from the increase of risk on contagious illness to death. The consequences for children is grave. Lack of pure protein in advanced stage may cause kwashiorkor during school age and adolescents.

The relationship between the mother's factor and the child's nutrition status can be seen from p value on the table. If p value shows > 0.05, it means there is no relationship whatsoever. Otherwise, it shows a significant relationship. On the table, it was found out that the mother's factor relevant to the child's nutrition status is the mother's age, family income, and delivery complications. The results of this study are in line with Anugraheni and Kartasurya's research (2012) and Assefa, Belachew, and Negash's research (2013).

Based on the OR value, a mother aged above 35 years old has the risk of malnourished baby 1.583 times bigger than those aged below. This is parallel with research by Khotimah and Kuswandi (2014) claiming that age is an important indicator in determining one's productivity; younger people tend to have higher productivity level, while older ones tend to have lower. On the other hand, Harlock (2000) in Khotimah and Kuswandi (2014) claim that the older someone gets, the higher his level of knowledge is. According to Khotimah and Kuswandi (2014) and Astari, Nasoetion, and Dwiriani (2005) age is one of the factors that can describe how mature someone is, especially in terms of eating pattern, which will impact to the nutrition status. Therefore, younger mothers tend to create more varying eating pattern for their children, resulting in better nutrition status for both.

On the family income factor, it was known that families with income less than 1,500,000 rupiahs have the risk of malnourished toddlers 1803 times bigger than those who earn more. Limitation in income also determines the quality of food.

it is undeniable that what a family can earn will show in the food preserved in the dining table. Income is the main indicator relevant to food quality. The more a family can earn, the more is the quality of the food they consume. This argument sounds logical, knowing that a person can only eat what he can afford. Low income also leads to low purchasing power; this brings about many complications for the health of the family and the baby's nutrition status (Khotimah & Kuswandi, 2014). The result of this research is also suitable with a literature claiming that poverty is the main cause of malnutrition, being the first of the list (Suhardjo, 2002). If seen from the characteristics of family income, the root of malnutrition problem lies in economic crises. Most toddlers having difficulty growing physically are born in low-economy family (Aridiyah, Rohmawati, & Ririanty, 2015).

On the other hand, mothers who have delivery complications, have the risk of malnourished toddlers 2091 bigger than those who do not. These complications include anemia, hypertension, and hyperemesis. All will hamper the fetus's growth and development inside womb, so that the baby will be born with lower body weight (BBLR) which also impacts on his nutrition status (Karima & Achadi, 2012).

Table 6 shows the relationship between the child's health and his nutrition status. Based on the p value, the factor of exclusive breast milk provision on toddlers before the age of 6 months old, exclusive breast milk and complementary feeding provision for toddlers at the age of 6 months - 2 years old, and history of hospitalization have p value < 0.05. This shows that there is a significant relationship between that variable and the child's nutrition status. The results of this study are in line with Tan,s research (2011).

Based on the OR value, children who are not given exclusive breast milk only before 6 months old, carry the risk of malnutrition 2.321 times bigger than those who do. This is parallel with research from Nilakesuma, Jurnalis, and Rusjdi (2015) showing that toddlers getting exclusive exclusive breast milk have 80% normal nutrition status. This also applies to those who only get exclusive breast milk and complementary feeding carry the risk of malnutrition 2.037 times higher than those who get both at the age of 6 months to 2 years old.

The less frequency of exclusive breast milk provision becomes one of the triggers of malnutrition on toddlers, which may be caused by past experiences. A good exclusive breast milk provision by the mother will help balance the child's nutrition. This is because at the age of 0-6 months, the mother will create an immunity system for the toddlers, preventing them from contagious illnesses. Afterwards. at the age of 6 months, the toddler is given complementary feeding in sufficient amount and frequency, so that their nutrition level is fulfilled. The lower the frequency of exclusive breast milk provision, the higher the risk of malnutrition to toddlers, seen from both weight/age and length/age indices.

A good provision of exclusive breast milk by mother will balance the child's nutrition so that his development goes normally. Exclusive breast milk is highly required during the baby's development period so that the nutrition is fulfilled. Therefore, it is mandatory that a mother provide exclusive breast milk to babies until 6 months and keep providing until the baby reaches 2 years old. (AL-Rahmad, Miko, & Hadi, 2013). This research supports the Health Department claiming that issues during the baby's development is caused by lack of nutrition since birth, providing complementary feeding too early or too late, complementary feeding does not suffice the baby's needs or the providing pattern is less proper, as well as inadequate baby treatment. In this research, it can be concluded that there is a significant relationship between exclusive breast milk provision and the toddler's nutrition status ($p = 0.000$). This argument is strengthened by research from Giri, Suryani, and Murdani (2013) that mothers giving exclusive breast milk tend to have toddlers with better nutrition status than mothers who do not.

On the other hand, the child with history of hospitalization carries the risk 2.055 times bigger of malnourishment than children who do not. The status of lack of nutrition faced by toddlers is caused by the factor of history of contagious illness. This must be faced by the mother alone. This means that the history of contagious illness in toddlers is relevant to the fact that he has been infected on the respiratory system called ISPA; other illnesses include tuberculosis. All illnesses were faced by the toddlers themselves due to the amount of bacteria from food and non-hygienic environment. Such medical records allow the children to undergo hospitalization. Therefore, that very record is what hampers the nutrition status to be better (Handayani, 2017).

Conclusion

The research was done in 6 districts including Bandung City, Bandung District, West Bandung District, Subang District, Sumedang District, and Garut District. In general, the prevalence of toddlers with malnutrition reaches 10.6%. This number is collectively lower than the national prevalence (17.7%) (Riskesdas, 2018), but it exceeds the target from WHO (10.0%). Therefore, this research concludes that there is a relationship between the mother's age ($p = 0.048$; OR = 1.583), family income ($p = 0.010$; OR = 1.803), delivery complications ($p = 0.008$; OR = 2.091), provision of exclusive breast milk at the age of 0-6 years old ($p = 0.000$; OR = 2.321), provision of exclusive breast milk and complementary feeding at the age of 6 month-2 years old ($p = 0.002$; OR = 2.037), and the child's history of hospitalization ($p = 0.008$; OR = 2.055), while other factors are irrelevant. Mothers with the age above 35, family with income less than 1,500,000 rupiahs, mothers with delivery complications, children not given exclusive breast milk before 6 months old, children not given exclusive breast milk and complementary feeding, and children with history of hospitalization- all these factors lead to them having bigger risks of malnutrition. Therefore, the research suggests that healthcare staff collaborate from all sectors to provide health education on the provision of exclusive breast milk and complementary feeding as well as on the prevention of illness on children.

References

Adair, L.S., & Guilkey, D.K. (2007). Age-specific determinants of stunting in Filipino children. *Journal of Nutrition, 127,* 314–320.

AL-Rahmad, A.H., Miko, A., & Hadi, A. (2013). Kajian stunting pada anak balita ditinjau dari pemberian ASI eksklusif, MP-ASI, status imunisasi dan karakteristik keluarga di Kota Banda Aceh. *Jurnal Kesehatan Ilmiah Nasuwakes, 6*(2), 169 – 184.

Anugraheni, H.S., & Kartasurya, M.I. (2012). *Faktor risiko kejadian stunting pada anak usia 12-36 bulan di Kecamatan Pati, Regency Pati*. Eprints Undip.

Aridiyah, F.O., Rohmawati, R., & Ririanty, M. (2015). Faktor-faktor yang mempengaruhi kejadian stunting pada anak balita di wilayah pedesaan dan perkotaan (The factors affecting stunting on toddlers in rural and urban areas). *e-Jurnal Pustaka Kesehatan, 3*(1), 163-170.

Arifin, Z. (2016). Gambaran pola makan anak usia 3-5 years old dengan gizi kurang di Pondok Bersalin Tri Sakti Balong Tani Kecamatan Jabon–Sidoarjo. *Midwiferia, 1*(1), 16. https://doi.org/10.21070/mid.v1i1.345.

Assefa H., Belachew T., & Negash L. (2013). Socioeconomic factors associated with underweight and stunting among adolescents of Jimma Zone, South West Ethiopia: A cross-sectional study. *Hindawi Publishing Corporation ISRN Public Health*, Volume Article ID 238546, 7 pages. http://dx.doi.org/10.1155/2013/238546.

Astari, L.D., Nasoetion, A., & Dwiriani, C.M. (2005). Hubungan karakteristik keluarga, pola pengasuhan dan kejadian stunting anak usia 6-12 bulan. *Media Gizi dan Keluarga, 29*(2), 40-6.

Bappenas RI. (2012). *Pedoman perencanaan program gerakan sadar gizi dalam rangka seribu hari pertama kehidupan (1000 HPK),* p 1-8.

Fotso, J.C., Madise, N., Baschieri, A., Cleland, J., Zulu, A., …, Mutua, A. et al. (2012). Child growt in urban deprived setting: Does household poverty status poverty status matter? At which stage of child development?. *Health Place, 18*(2), 375–384.

Giri, M.K.W., Suryani, N., & Murdani K.P. (2013). Hubungan pengetahuan dan sikap ibu tentang pemberian ASI serta pemberian ASI eksklusif dengan status gizi balita usia 6–24 bulan (di Kelurahan Kampung Kajanan Kecamatan Buleleng). *Jurnal Magister Kedokteran Keluarga, 1*(1), 24–27.

Handayani, R. (2017). Faktor-faktor yang berhubungan dengan status gizi pada anak balita. *Journal Endurance, 2(*2), 217–224. DOI: http://doi.org/10.22216/jen.v2i2.1742.

Karima K., & Achadi E.L. (2012). Nutrition status and infant birth weight. *Jurnal Kesehatan Masyarakat Nasional, 7*(3).

Kementerian Kesehatan Republik Indonesia. (2013). *Naskah akademik pedoman gizi seimbang (PGS)*. Jakarta: Kementerian Kesehatan Republik Indonesia; p 1-27.

Kementerian Kesehatan Republik Indonesia. (2013). *Rencana kerja pembinaan gizi masyarakat tahun 2013*. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan Republik Indonesia. (2013). *Laporan hasil riset kesehatan dasar (Riskesdas) tahun 2013 [internet]: Status gizi anak balita*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2013. Diakses di http://www.depkes.go.id pada tanggal 3 Januari 2019 Pkl. 10.00 WIB.

Kementerian Kesehatan Republik Indonesia. (2017). *Germas wujudkan Indonesia sehat. Kementerian Kesehatan Republik Indonesia.* Retrieved from http://www.depkes.go.id/article/view/16111500002/germas-wujudkan-indonesia-sehat.html.

Khotimah, H., & Kuswandi, K. (2014). Hubungan karakteristik ibu dengan status gizi balita di Desa Sumur Bandung Kecamatan Cikulur Regency Lebak tahun 2013. *Jurnal Obstretika Scientia, 2*(1), 146–162.

Mohd Nasir, M.T., Norimah, A.K., Hazizi, A.S., Nurliyana, A.R., Loh, S.H., & Suraya, I. (2012). Child feeding practices, food habits, anthropometric indicators and cognitive performance among preschoolers in Peninsular Malaysia. *Appetite, 58*(2), 525–530. https://doi.org/10.1016/j.appet.2012.01.007.

Nilakesuma, A., Jurnalis Y.D., & Rusjdi, S.R. (2015). Hubungan status gizi bayi dengan pemberian ASI ekslusif, tingkat pendidikan ibu dan status ekonomi keluarga di wilayah kerja Puskesmas Padang Pasir. *Jurnal Kesehatan Andalas, 4*(1). ISSN: 2301-7406.

Ningsih, S., Kristiawati, & Krisnana I. (2014). Hubungan perilaku ibu dengan status gizi kurang anak usia toddler. *Jurnal Pediomaternal, 3*(1), 58–65.

Polit, D.F., & Beck, C.T. (2008). *Nursing research: Generating and assessing evidence for nursing practice,* (8th Ed.). Philadelphia: Lippincott.

Riskesdas. (2013). *Penyajian pokok-pokok hasil riset kesehatan dasar 2013.* Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan RI. Akses www.litbang.depkes.go.id tanggal 10 Desember 2013.

Riskesdas. (2018). *Hasil utama Riskesdas 2018.* Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan RI.

Subarkah, T., Nursalam, & Rachmawati, P.D. (2016). Pola pemberian makan terhadap peningkatan status gizi pada anak usia 1 – 3 tahun (Feeding pattern toward the increasing of nutritional status in children aged 1 – 3 years). *Jurnal INJEC, 1*(2), 146–154.

Suhardjo. (2002). *Perencanaan pangan dan gizi*. Jakarta: PT Bumi Aksara.

Tan, L. (2011). Factor associated with exlusive breastfeeding among infants under six month of age in Peninsular Malaysia. *Internasional Breastfeed Journal, 6*(2).

United Nations Children's Fund (UNICEF). (2013). *Improving child nutrition: The achievable imperative for global progress.*

United Nations Children's Fund (UNICEF). *Improving child nutrition, the achievable imperative for global progress.* New York: United Nations Children's Fund.

United Nations Children's Fund (UNICEF). *Ringkasan kajian gizi Oktober 2012.* Jakarta: UNICEF Indonesia.

USAID. (2014). *Multi-sectoral nutrition strategy 2014-2025 technical guidance brief: Implementation guidance for ending preventable maternal and child death*. P 1-6.

World Health Organization (WHO). (2010). *Nutrition landscape information system: Country profile indicators*. Geneva, Switzerland: World Health Organization.

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Psychometric Evaluation of Instruments Measuring The Older Adult's Functional Status in Indonesian

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Abstract

For year research on quantifying how well individual's function has been reported. Assessing function is particularly important in the older adults, as the prevalence of functional disability increases with age. In Indonesia, there is a lack of studies that measure the functional status of the older adults. There is even less research on evaluating the psychometric properties of an instrument. Therefore, this study aimed to compare the psychometric properties of the evidence supported functional status instrument consisting of the Short Physical Performance Battery (SPPB), the Functional Status Questionnaire (FSQ) and the Physical Performance Test (PPT). This study using the validation design with descriptive approach. And 401 subjects aged more than 60 years old were recruited purposively from five districts in Aceh. Every instrument showed good validity and reliability and has been used either for research purposes or in clinical setting. All subjects completed the FSQ, SPBB, and FSQ assessment. Correlation between SPPB and PPT were higher than FSQ when assessed for convergent validity the FSQ had comparable correlations with the reported health status. However, relationship between SPPB, PPT and FSQ were inconsistent. The findings of this study is expected to support the psychometric properties of all three instrument for functional status assessment in Indonesian Older adults, and SPPB appear to be the best among the other instruments to use in the nursing practice.

Keywords: Assessment, functional status, indonesian older adults, instrumentation.

Introduction

Functional status has evolved into one of the patient's outcome criteria and it is an important part in measuring the older adults' health condition. Functional status describes as the patient's perception of how they function on a daily basis (Wang, 2003). Maintaining and enhancing the individual's ability to gain functional independence in self-care, mobilization and social activities has been widely identified as the goal of nursing service delivery. Even some nursing theorists such as Dorothea Orem and Sister Calista Roy incorporate functional status into the theoretical frameworks of their theory. In addition, functional status also has been included into the outcome criteria of nursing intervention (Doran, 2011).

The older adults often come to health care services with acute or chronic health problems that affect their functional ability. Decline in functional ability is often followed by a decrease in independence. However, this process is not unchangeable, it can be prevented by recognizing the signs of functional degradation so that appropriate interventions can be determined to prevent functional decline (Quinn, McArthur, Ellis, & Stott, 2011).

Over the past two decades, there has been considerable progress in the assessment of functional status and disability in the older population. Older adult who lives in the community, screening and assessment are key factors for detecting early onset of functional and disability deficits. Functional assessment provides guidance for determining gerontology nursing interventions, and also provides baseline data for evaluation of the effectiveness of interventions. Functional status is beneficial to study because it can be used as a significant clinical predictor, and also indirectly can be utilized as disability predictors, placement in institution and even death (Gill, 2010). Therefore, classification and functional assessment of the older adults greatly affect nursing practice, health care systems, as well as for researchers and policy makers (Cieza & Stucki, 2008). However, the choice of appropriate instruments depends on the measured constructs, the ecological aspects of the instrument and their validity and reliability (Freiberger et al., 2012).

Functional status often assessed by physical performance tests, in which an individual is required to perform a specific task (or set of tasks) and objectively evaluated, by default using predetermined criteria, which may include counting repetitions or corresponding activity times (Gill, 2010). There are several instruments to measure functional status currently available, but most of these instruments are used in patients undergoing rehabilitation programs or with certain disease conditions such as patients with dementia and mentally impaired patients, therefore not all instruments are suitable for assessing functional status in general older adults.

After extensive literature review, the researchers found three commonly used instruments for measuring functional status and could be used in the older adult's population they are: (1) Short Physical Performance Battery (SPPB) (Guralnik et al., 1994), (2) Functional Status Questionnaire (FSQ) (Cleary & Jette, 2000; Jette et al., 1986), and (3) The Physical Performance Test (PPT) (Reuben & Siu, 1990; Sherman & Reuben, 1998). The criteria used to determine the instrument to be used for this study include (1) has passed the validity and reliability test, (2) easy to use (no special training required), (3) free of charge, (4) required short time for the assessment for a maximum of 10 minutes and (5) can be used for the older adults who are less educated.

According to Caprio and Williams (2007), the most commonly used instrument to assess functional status is Katz Index and Barthel Index. Katz Index usually used to examine the functional status of a person in performing their daily activities and Barthel Index was used to examines the functional capabilities of individuals day to day activity and mobility (Mahoney & Barthel, 1965; VanSwearingen & Brach, 2001; Zeltzer, 2008). However, both instruments only focus on a person's ability to perform daily activities, while functional status not only examines ADL but also physical, emotional and social skills. In Indonesia the instrument used to assess functional status is still very limited. The SPBB, FSQ, and PPT are not too often used in Indonesia although the psychometric properties of these three instruments have been recognized globally (Cleary & Jette, 2000; Freiberger et al., 2012; Gill, 2010). In addition, systematic reviews from the literature review have confirmed the validity and reliability of SPBB, FSQ and PPT, even recommending the three instruments to be used in clinical practice (Freiberger et al., 2012; Moore, Palmer, Patterson, & Jeste, 2007). However, no prior studies have compared the psychometric properties of the three instruments was found. Based on the above explanation and taking into account the limited research in the older adult's population with regard to their functional status measurement, the researcher is interested in conducting research to determine which of these three instruments is most suitable for use in the context of older adult's population in Indonesia. Moreover, this study also compared the validity and reliability of SPPB, FSQ and PPT.

Method

Research subjects were recruited through direct contact, after getting permission with the village head. This study recruited subjects by purposive sampling that is the selection method based on certain requirements, they are: (1) aged 60 years and above (2) did not suffer severe cognitive impairment as evidenced by the Short Portable Mental Status Questionnaire (SPMSQ) with score less than 8 (severe cognitive impairment). For validation research such as this research, random sampling technique is not very necessary because the sample in this research were considered to be homogeneous. The study recruited 401 samples of older adults living in the community, most sample assessed at their homes, some of them were evaluated at the primary health care center and some were at village activity center. Data collection is conducted by 5 enumerators who have been trained prior to data collection.

After the verbal informed consent, respondent was asked to fill out the demographic data questionnaire and Functional Status Questionnaire (FSQ) through a guided interview, followed by an assessment using the Short Physical Performance Battery (SPPB) and Physical Performance Test (PPT) form. A summary of the overall research instruments is provided in Table 1.

FSQ is a multi-item instrument and is a self-administered instrument type. In this study we used all components of the FSQ consisting of (1) Basic Activities of Daily Living (FSQ BADL), (2) Intermediate Activities of Daily Living (FSQ IADL), (3) Psychological Function (FSQ FP), (4)) Social function/role (FSQ FS), social activities (FSQ FSKS), and quality of social interaction (FSQ FSKIS) and (5) single item consisting of 6 questions (IT). The FSQ asks respondents to indicate their function from 4 weeks before. Response options for the FSQ show the degree of difficulty felt related to the tasks in the FSQ item statement, and the choice of answers given between: usually can be without difficulty, little difficulty, many difficulties, usually not done for health reasons, and usually not done because other reasons. Scores for each sub-scale range from 0, indicating the worst function, to 100, indicating the best function. The warning zone is under 90 and 73 for BADL and IADL sub-scales. If patient or respondent scores are in the warning zone then according to the assessment of various interdisciplinary groups they have impaired function and should receive clinical attention (Jette et al., 1986).

SPPB and PPT are instruments used to evaluate the ability of respondents to perform a series of tasks. SPPB consists of three assessment hierarchies that start from the balance test, walk speed test and standing test from the chair five times. Each assignment is scored from 0 (poor performing task) to 4 (execution of good task) (Guralnik et al., 1994). PPT can ideally be completed within 5 minutes and requires only one checker and several tools that are easy to find. Seven physical functions are assessed, among others: (1) write the phrase "whale living in the blue sea", (2) simulation of eating, (3) lift the book and put it on a shelf that is higher than the respondent's arm length, (4) wear and remove jacket , (5) take a coin from the floor, (6) rotate 360 degrees, (7) walk 50 feet, (8) using stairs for one try, and (9) using stairs for several times. Each item is scaled 5 points (0–4), 0 indicates "inability to perform task" and 4 indicates the fastest or best time to perform the task. A high score means the respondent has a good function, the best score is 36 (D. B. Reuben & Siu, 1990). For this study we used a total of 9 items, for respondents who did not have stairs in their home, data collection was performed in village activities centre.

Before the instrument administered, all of the tool have been through the process of back translation, which is a process of translating an instrument using a bilingual expert (Brislin, 1970). The instrument in this study was originally in English, therefore the first step was to translated it into Indonesian by a bilingual translator, then translated back to English by a different bilingual translator. The second English version is compared to the original version to see if there is any difference in meaning. Due to the absence of meaningful meaning differences, the translated instrument in Indonesian can be used for this research.

Data analysis for this study consist of descriptive and inferential statistic. Descriptive statistics were used for analysing socio-demographic characteristics in form of frequencies, percentages, means, and standard deviation. For inferential statistics pearson product moment correlation coefficient was used to analyse convergent validity of the three scales. Spearman rank correlation was also used to analyse the test-retest reliability.

Table 1 Functional Status Measurement Tools

Scale/Items	Data Collection Procedure	Respond Format	Scoring Method (range)
FSQ BADL/3	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ IADL/7	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ FP/5	Interview/self-report	Frequency	Standardization (0-100)
FSQ FS/6	Interview/self-report	Frequency	Standardization (0-100)
FSQ FSKS/3	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ FSKIS/5	Interview/self-report	Frequency	
FSQ IT/6	Interview/self-report		
1. Work situation		1. Work option	1. 1–6
2. Days in bed		2. Days count	2. 0–30 days
3. Restricted days		3. Days count	3. 0–30 days
4. Sexual Relationship		4. Level of satisfaction	4. 1–6
5. Perception about health		5. Level of satisfaction	5. 1–6
6. Gathering with family and friends		6. Gathering frequency	6. 1–6
SPPB Balance test/3	Observation	Timing	Standardization
SPPB Speed test/1	Observation	Timing	Standardization
SPPB Chair stand/2	Observation	Timing	Standardization
PPT/9	Observation	Timing	0-4/item

Results

Table 2 shows the overall characteristics of the respondents involved in the study. The average age of respondents is 66.30 years (SD 5.71). The sample is generally in the 60-70-year age group (older adults group), dominated by female respondents, married, and domiciled in Aceh Pidie and Aceh Utara. Almost all respondents have chronic disease, which is dominated by cardiovascular disease, arthritis and diabetes mellitus. The duration of the disease is predominantly 1-5 years range and the main caregiver is their child and spouse respectively. The education of respondents is almost half as low and they do not have job to support their economy. Cognitive function mostly in low category and majority of the respondents reported that their health status was quite healthy.

Table 2 Respondent characteristics

Socio-demographic Characteristics	Total (n=401)
Age (years)	
60–74	368 (91.8%)
75–89	31 (7.7%)
>90	2 (0.5%)
Gender	
Female	231 (57.6%)
Male	170 (42.4%)
Status	
Married	220 (54.9%)
Widow/widower	126 (31.4%)
Single	46 (11.5%)
Separated	9 (2.2%)
Location	
Pidie	96 (23.9%)
Aceh Utara	96 (23.9%)
Bireun	94 (23.4%)
Aceh Besar	68 (17%)
Aceh Timur	47 (11.7%)
Having chronic illness	
Yes	377 (94%)
No	24 (6%)
Name of disease (n=377)	
Cardiovascular diseases	162 (43%)
Arthritis	138 (36.7%)
Diabetes mellitus	42 (11.1%)
Gastrointestinal disease	23 (6%)
Lung and respiration disease	8 (2%)
Others	4 (1%)
Morbidity (n=377)	
Single	262 (69.5%)
Multiple	115 (30.5%)
Illness duration (years) (n=377)	

1–5	204 (54.1%)
6–10	150 (39.8%)
11–15	18 (4.8%)
16–20	5 (1.3%)
Primary Caregiver	
Children	196 (48.9%)
Spouse	184 (45.9%)
Next of kin	19 (4.7%)
Paid caregiver	2 (0.5%)
Education	
Elementary school	180 (44.9%)
No formal education	149 (37.2%)
Junior/senior high school	50 (12.5%)
Diploma	20 (5%)
Bachelor	2 (0.5%)
Occupation	
Do not work	258 (64.3%)
Farmer	90 (22.4%)
Merchant	27 (6.7%)
Retired	21 (5.2%)
Others	5 (1.1%)
SPSMQ	
Low	175 (43.6%)
Intact	164 (40.9%)
Moderate	62 (15.5%)
Health Status	
Quite healthy	244 (60.8%)
Good	123 (30.7%)
Very healthy	25 (6.2%)
Not healthy	9 (2.2%)

Table 3 Central tendency, range and internal consistency for measuring functional status (FSQ, SPPB, and PPT)

Scale	Mean	Standard Deviation	Observed Range	% floor	% ceiling	Internal Consistency, Cronbach's α
FSQ BADL	85.56	18.35	33.33–100	3	52	0.88
FSQ IADL	43.10	19.47	0–94.44	1	1	0.82
FSQ FP	74.17	13.60	28–100	0	6	0.72
FSQ FS	49.97	14.66	0–94.44	0	1	0.53
FSQ FSKS	64.92	25.40	0–100	2	18	0.89
FSQ FSKIS	80.63	11.20	40–100	0	9	0.43

SPPB	6.93	2.62	0–12	1	1	0.80
PPT	20.43	7.27	2–34	1	0	0.91

Table 4 Correlation between scales measuring functional status

Instruments Name	FSQ BADL	FSQ IADL	FSQ FP	FSQ FS	FSQ FSKS	FSQ FSKIS	SPPB	PPT
FSQ BADL	1							
FSQ IADL	0.62**	1						
FSQ FP	0.36**	0.38**	1					
FSQ FS	0.46**	0.56**	0.45**	1				
FSQ FSKS	0.67**	0.78**	0.42**	0.60**	1			
FSQ FSKIS	0.43**	0.40**	0.38**	0.19**	0.42**	1		
SPPB	0.61**	0.72**	0.30**	0.49**	0.66**	0.20**	1	
PPT	0.74**	0.79**	0.41**	0.53**	0.79**	0.49**	0.79**	1

**Correlation significant at 0.01 levels (2-tailed)

All instruments have been confirmed and filled before the enumerators leave the study site. The mean and standard deviation of all instruments measuring functional status can be seen in table 3. There are no significant floor and ceiling effects for FSQ IADL, FSQ FS, SPBB and PPT. As for FSQ BADL, FSQ FSKS and FSQ FSKIS the effects of floor and ceiling are significant. Nunnally in the later version of his Pychometric theory book (1994) suggested α geater than 0.7 was considered to have acceptable internal consistency (Streiner, 2003). Therefore, the internal consistency of these three instruments considerd to be adequate for every subscale, especially PPT, but for FSQ FS and FSQ FSKIS internal consistency is lower than other subscale.

Correlation between scales can be seen in table 4. The highest correlation is at the value of r = 0.79 is in the correlation between PPT with FSQ IADL, PPT with FSQ with FSKS and PPT with SPPB. The low correlation is at the value of r = 0.19 that is the correlation between FSQ FSKIS with FSQ FS. The correlation between SPPB and PPT is the highest and both instruments are equally measuring the functional status of the older adults by means of observation.

Discussion

The main research objective of this research is to determine which of these three instruments (FSQ, SPPB, and PPT) can be used to measure functional status of older adults population in Indonesia which one is most appropriate. To determine the suitability of course one of the basic thing to do is to determine the reliability and validity of the instruments. We found in studies conducted on older adults people living in the community that almost all instruments have the potential to be used as a standard instrument to measure functional status of older adults living in the community, especially SPPB and PPT. both are internally consistent with Cronbach's α 0.80 and 0.91 and both also do not experience floor and ceiling effects and have good construct validity.

The second research objective was to compare the validity and reliability of the three instruments; this was obtained by looking at the correlation between the instruments. Two observation instruments have a high correlation with each other (r = 0.79) both are well correlated to the self-reported instrument that can either be filled by the respondent themself or through a guided interview. PPT particularly has a fairly high correlation value with FSQ (r = 0.41 - 0.

79) compared to SPBB with FSQ (r = 0.20 - 0.72). These results indicate that SPPB and PPT are potentially useful as screening tool at the primary care level.

FSQ consists of several subscales within it scale, in contrast to other instruments in this study FSQ does not use sum scores for all items in its instrument, but uses sum for each subscale. Therefore, it can be concluded why for some subscales the correlation was very low especially subscales other than FSQ BADL and FSQ IADL. Several studies only use these two subscales in evaluating functional status (Reuben, Valle, Hays, & Siu, 1995; Sherman & Reuben, 1998). But for this study researchers decided to include the entire subscale and items. This was done so that all components in the instrument can be seen whether it is suitable for Indonesian older adults. After going through the process of translation, data collection and analysis, FSQ proved to have many weaknesses. In the translation process there were no grammatical errors nor significant differences from the original. However, enumorators reported that they had difficulty when asking one question related to the older adult sexual activities. Therefore, this particular questions "during the past month, how satisfied are you with your sexual relationship? Was changed to "during the past month, are you still sleeping in the same room with your husband?". Surely this option is was not the best one, but to increase response rate and interest of respondents this is the most possible solution. Further research maybe needed to assess FSQ cultural context. Cronbach's α for the overall subscale in FSQ is quite good, especially FSQ BADL (0.88) and FSQ IADL (0.82), but Cronbach's α for FSQ FS and FSQ FSKIS are very low 0.53 and 0.43. The highest inter-subscale correlation in FSQ is between FSQ IADL and FSQ FSKS (r = 0.78) and the lowest correlation is between FSQ FS and FSQ FSKIS (r = 0.19). Although the reliability and correlation of FSQ is lower than SPPB and PTT but there are some advantages of FSQ among others objective instruments, it was the existence of subscales which inquire about psychological and social aspects affecting functional status of older adults.

SPPB and PPT in term of their validity and reliability are in better quality than FSQ especially PPT with the highest value of Cronbach's α at 0.91. Both the translation and data analysis of this instrument do not experience significant problems. But the problem is during data collection mainly for PPT. One of the tasks in PPT relates to the ability of the older adults to write, it is certainly difficult to do if the older adults are illiterate. Then evaluation related to the use of stairs. Not all houses have stairs so it will be difficult to assess the older adult's ability to climb up and down stairs. The solution to this problem was to use the 7 items of questions rather than 9. For this study researchers wanted all items to be evaluated. Therefore, for the older adults who do not have stairs data collection was conducted at the village activity centre. SPPB on the other hand has almost no significant constraints from the process of translation to the data analysis. Based on the preferences asked to the older adults they also prefer SPPB compared to other instruments. Enumerators also report the same thing that SPPB is the easiest to use.

To answer the research question about which instrument is most suitable for the Indonesian context, we are recommending SPPB based on our data. SPPB does not require any modification at all and also easy to administer.

Conclusion

The findings of this study is expected to support the validity and reliabilty of all three instrument for functional status assessment in Indonesian older adults, and SPPB appear to be the best among the other instruments to use in the nursing practice followed by PPT and FSQ.

References

Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216. https://doi.org/10.1177/135910457000100301.

Caprio, T. V., & Williams, T. F. (2007). Comprehensive geriatric assessment. In E. H. Duthie, P. R. Katz & M. L. Malone (Eds.), *Practice of Geriatrics* (4th ed.). Philladelphia: Elsevier Saunders.

Cleary, P. D., & Jette, A. M. (2000). Reliability and validity of the Functional Status Questionnaire. *Quality of Life Research, 9,* 747-753.

Doran, D. (2011). *Nursing Outcomes the State of the Science*. Sudbury, MA: Jones & Bartlett Learning.

Freiberger, E., de Vreede, P., Schoene, D., Rydwik, E., Mueller, V., Frändin, K., & HopmanRock, M. (2012). Performance-based physical function in older community-dwelling persons: a systematic review of instruments. *Age and Ageing*. doi: 10.1093/ageing/afs099.

Gill, T. M. (2010). Assessment of Function and Disability in Longitudinal Studies. *Journal of the American Geriatrics Society, 58,* S308-S312. doi: 10.1111/j.15325415.2010.02914.x

Guralnik, J. M., Simonsick, E. M., Ferrucci, L., Glynn, R. J., Berkman, L. F., Blazer, D. G., … Wallace, R. B. (1994). A short physical performance battery assessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. *Journal of Gerontology, 49*(2), M85–94.

Jette, A. M., Davies, A. R., Cleary, P. D., Calkins, D. R., Rubenstein, L. V., Fink, A., … Delbanco, T. L. (1986). The Functional Status Questionnaire. Reliabilty and validity when used in primary care. *J Gen Intern Med, 1,* 143–149.

Mahoney, F. I., & Barthel, D. W. (1965). Functional evaluation: the Barthel Index. Maryland State Medical Journal, 14, 56-61.

Moore, D.J., Palmer, B.W., Patterson, T.L., & Jeste, DV. (2007) A review of performance-based measures of functional living skills. *Journal of Psychiatric Research, 41*(1–2), 97–118.

Quinn, T. J., McArthur, K., Ellis, G., & Stott, D. J. (2011). Functional assessment in older people. *BMJ, 343*. doi: 10.1136/bmj.d4681.

Reuben, D. B., & Siu, A. L. (1990). An objective measure of physical function of elderly outpatients. The Physical Performance Test. *Journal of the American Geriatrics Society, 38*(10), 1105–1112.

Reuben, D. B., Valle, L. A., Hays, R. D., & Siu, A. L. (1995). Measuring physical function in community-dwelling older persons: a comparison of self-administered, Interviewer-administered, and performance-based measures. *Journal of American Geriatrics Society, 43*(1).

Sherman, S. E., & Reuben, D. (1998). Measures of Functional Status in Community-Dwelling Elders. *Journal of General Internal Medicine, 13*(12), 817–823. https://doi.org/10.1046/j.1525-1497.1998.00245.x.

Streiner, D. L. (2003). Starting at the beginning: an introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment, 80*, 99–103 .

VanSwearingen, J.M., & Brach, J.S. (2001). Making geriatric assessment work: Selecting useful measures. *Physical Therapy, 81*(6), 1233–5.

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Measuring Work Fatigue on Nurses: A Comparison between Indonesian Version of Fatigue Assessment Scale (Fas) and Japanese Industrial Fatigue Ressearch Commite (Jifrc) Fatigue Questionnaire

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Abstract

A Nursing is one type of jobs that is at risk of experiencing fatigue because its workload is quite high. Fatigue Assessment Scale (FAS) and Japanese Industrial Fatigue Research Committee (JIFRC) fatigue questionnaire are two instruments that are often used to measure work fatigue in various types of work because the ease of use. This study aims to test and compare the validity and reliability of the Indonesian version of FAS and JIFRC among nurses in one governmental hospital in East Kalimantan Indonesia. The study was conducted on 170 nurses in one of the Class A Referral Government Hospitals in East Kalimantan. Determination of the study sample using stratification simple random sampling method, the FAS questionnaire obtained from Zuraida & Chie, the JIFRC questionnaire was taken from Tarwaka, the Validity and Reliability test using Pearson Product Moment and Cronbach's alpha. The JIFRC in Indonesian version has a satisfactory psychometric property with adequate validity and reliability to assess work fatigue in nursing profession. The best Cronbach alpha (0.921) will be obtained if item number 3 and 16 are corrected for the editorial/sentence arrangement

Keywords: Fatigue assessment scale, japan industrial fatigue research committee, nurses, reliability, work fatigue, validity.

Introduction

Work fatigue is still an occupational health problem that needs attention from health and safety managers because it can have a detrimental impact on individuals and organizations. In general, work fatigue is a physical and psychological phenomenon that is defined as a condition of weakness, dislike and reluctance to continue current activities, not interested in doing further work, a decrease in alertness, a decrease in physical and emotional capacity, and a decreased ability to do certain jobs (Thiffault & Bergeron, 2003). Fatigue experienced is basically a cumulative process and is indicated by a decrease in the ability to carry out tasks and a decrease in attention to stimuli from the environment. People who experience work fatigue also generally experience changes in motivation to complete their work (De Vries, Michielsen, & Van Heck, 2003).

Work fatigue has an impact on biological balance, psychological and cognitive processes. At the individual level, work fatigue has a detrimental effect because it can reduce concentration and thinking power, decrease physical capacity, excessive dependence on others, become easily forgotten, have difficulty perceiving and respond to dangerous situations, communication difficulties and a decrease in the quality of personal life. While from the aspect of the organization, work fatigue experienced by its personnel will have an impact on decreasing the quality of service to consumers, increasing the number of turn-over and decreasing work productivity (Bao & Taliaferro, 2015; Blouin et al, 2016; Drake & Steege, 2016; Graves & Simmons, 2009).

Nursing is one type of profession that is at risk of experiencing fatigue. This is because the main workload factor is high, as well as additional workloads such as having to operate a variety of high-tech medical and care equipment, must be responsible for the diagnosis and monitoring of patients with complications and emergency problems. The roles and responsibilities carried out by nurses on work, family and social life have caused nurses too often experience work fatigue as an accumulation of sleep disorders, lack of rest periods, physical and psychological stress and emotional changes. (Barker & Nussbaum, 2011; Bjorvatn et al, 2012; Korompeli et al, 2013; Samaha et al, 2007).

From the aspect of social relations, work fatigue that is not addressed will have an impact, among others, the deterioration of the relationship between nurse-patient, nurse-family, and other nurses. While from the aspect of work, work fatigue experienced by nurses can cause an increase in errors in nursing care, errors in carrying out doctor’s advice, wrong decision making, and errors in monitoring and observing patients. All the effects of work fatigue will ultimately reduce the quality of service and patient safety (Carney, 2013; Drake & Steege, 2016; Graves & Simmons, 2009; Rahman et al, 2017; Scott et al, 2014; Steege et al, 2017).

According to Akerstedt & Gillberg (1990), work fatigue can be measured subjectively and objectively, but there is no standard measuring tool to measure work fatigue. Some commonly used measuring instruments include subjective measurements based on questionnaires, psychomotor tests based on reaction time and concentration, measurement of ocular parameters and physiological measurements (Sibsambhu, Mayank, & Aurobinda, 2010). Questionnaire-based subjective fatigue measurement is a measuring instrument that is quite widely used for reasons of practicality and measurement results can be obtained quickly. For the purposes of measuring work fatigue, there are a number of commonly used questionnaires including The brief fatigue inventory (BFI), Fatigue severity scale (FSS), Global vigor and affect (GVA), May and Kline adjective checklist, Pearson-Byars fatigue feeling checklist, Rhoten fatigue scale, Schedule of fatigue and anergia, Checklist individual strength (CIS), Fatigue assessment instrument (FAI), Fatigue impact scale (FIS), Fatigue rating scale (FRS), Fatigue assesment scale (FAS), Fatigue questionnaire, Fatigue severity inventory, Fatigue symptom inventory (FSI), Fisk fatigue severity score, Lee fatigue scale (LFS), Piper fatigue scale (PFS) and visual analogue scale for fatigue (Dittner, Wessely, & Brown, 2004), and fatigue scale from Japanese industrial fatigue research commite (JIFRC) (Saito, 1999).

Of the various fatigue scales, FAS and JIFRC are two questionnaires that are often used by researchers to measure work fatigue in various types of work and conditions. In accordance with the conclusion of Hendriks et al. (2018), FAS is a questionnaire that is often used to measure fatigue in various conditions and diseases (26 different condition and disease) in 19 countries and 12 languages. Meanwhile, JIFRC is a fatigue scale with a wide use and has been used to examine work fatigue in various jobs (Sunarno et al, 2017; Susihono et al., 2016; Konisi et al, 1991).

Fatigue Assessment Scale (FAS) is a work fatigue questionnaire developed by Michielsen et al. (2004), that contains 10 items of questions to reveal subjective work fatigue in the form of reflection of physical and mental work fatigue and its implications for motivation in carrying out activities. The FAS questionnaire was stated to have high reliability for measuring fatigue among workers (De Vries, Van der Steeg, & Roukema, 2010). Whereas JIFRC fatigue scale is a work fatigue questionnaire compiled by the Japan industrial fatigue research committee (Saito, 1999; Sudo & Ohtsuka, 2002). This questionnaire consists of 30 items of questions, generally divided into three parts (fatigue assessment related to weakening physical activity, fatigue associated with weakening motivation and fatigue associated with physical complaints) (Adiatmika, 2009; Susihono et al., 2016). FAS and JIFRC are quite widely used to assess work fatigue in various types of work because of practicality, do not need special skills to apply it, and respondents do not need much time to fill it, however scientific evidence that shows both of these measures is valid and reliable to assess work fatigue among nurses still in Indonesia still limited.

The quality of research is not only determined by the researcher's accuracy and research results, but also by the quality of the questionnaire used. In quantitative research, the quality of the measuring instrument used is achieved through measuring the validity and reliability of the questionnaire (Heale & Twycross, 2015). Validity is to measure what is intended to be measured, reliability concerns the extent to which a measurement of a phenomenon provides stable and consist result (Taherdoost, 2016). This study aims to test the validity and reliability of the Indonesian version of FAS and JIFRC fatigue scale on nurses.

Method

Research methods and samples

The cross-sectional study was conducted on 170 samples of nurses in one of the Class A Referral Governmental Hospitals in East Kalimantan from May to July 2018. Determination of the sample study was carried out by stratificatied simple random sampling, taken from all private hospitalization rooms (Sakura and Teratai), public inpatient installations (Edelwise, Anggrek, Cempaka, Melati, Mawar, Cempaka, Aster, Flamboyan, Bougenvile, Seruni, Angsoka and Dahlia) and emergency room (ER).

Instruments

The Indonesian edition of the FAS questionnaire was taken from Zuraida & Chie (2014), This questionnaire contains 10 questions to reveal the general feeling of work fatigue in the past year. The Indonesian edition of FAS uses five Likert scales with answer options consisting of: (1) never, (2) sometimes, (3) being felt regularly, (4) often experienced, (5) always experienced. The item questions in FAS consist of 1) I am bothered by fatigue, 2) I get tired very quickly, 3) I don't do much during the day, 4) I have enough energy for everyday life, 5) Physically I feel exhausted, 6) I have problems to start things, 7) I have problems to think clearly, 8) I feel no desire to do anything, 9) Mentally I feel exhausted, 10) When I am doing something I can concentrate quite well. Total scores obtained by summing all scores per item, then categorized into 2 (scores 1-30 = "low" work fatigue) and (score 31-60 = "high" work fatigue)

The Indonesian edition of the JIFRC questionnaire was taken from Tarwaka (2010), This questionnaire consists of 30 question items. In general, this questionnaire consisted of 3 parts, the first ten questions revealed "drowsiness and dullness", the second ten questions revealed "difficulty in concentration" and the third ten questions reveal "projection of physical disintegration", same as the FAS questionnaire, in this study the Indonesian version of IFRC questionnaire used five Likert scales with the answer options consisting of: (1) never, (2) sometimes, (3) being felt regularly, (4) often experienced, (5) always experienced. Total scores obtained by summing all scores per item, then categorized into 4: 1) scores 30–52=”low” work fatigue; 2) scores 53–75=“medium” work fatigue; 3) scores 76–98=”high” work fatigue; 4) scores 99–120=”very high” work fatigue.

Statistical Analyses

Data were analyzed by the Statistical Package for the Social Sciences (SPSS ver. 21, Chicago, IL, USA), in order to describe mean, standard deviation (SD) and percentage frequency. The minimum, maximum and variance were also reported for each item of the questionnaire.

Validity and Reliability

Pearson Product Moment Correlation was used to evaluate the construct validity of each item to the total score. FAS and JIFRC test correlations were considered as ‘good to excellent’ when r ≥ 0.75, as ‘good’ when r ranged between 0.5 and 0.7, as ‘fair’ when r ranged between 0.25 and 0.50, and as ‘little or no relationship’ when r was less than 0.25 (Kline, 2000; Portney & Watkins, 2009).

Cronbach’s alpha scores were used to assess the internal consistency reliability of FAS and JIFRC questionnaire. A value between .70 and .79 is considered ‘fair’, a value between .80 and .89 considered ‘good’, and a value .90 and above considered ‘excellent’ (Cicchetti,1994; Nunnally & Bernstein, 1994; Michalopoulos et al., 2015).

Ethical issue

This study was reviewed and approved by the Ethical Commission of Health and Medical Research of Mulawarman University (Indonesia) Faculty of Medicine, which refers to The International Ethical Guidelines for Biomedical Research Involving Human Subjects and the international ethical guidelines for epidemiological studies from the Council for International Organisations of Medical Sciences (CIOMS 2016). Informed written consent was obtained from participants prior to their participation. The informed consent form stated the purpose of the study, data confidentiality terms and their voluntary right of participation in the study, as well as providing a guarantee that no participant would suffer any harm as a result of his or her participation in the study.

Results

Samples characteristics

The majority of respondents in this study were >25–29 years old (27.6%), the majority of gender was female (74.7%), the majority of marital status were married (79.4%), education level is mostly Diploma III in Nursing, most of the working experience is more than 5 years (50.6%) and employment status is mostly contract nurses (72.4%) (table 1).

Table 1 Personal Characteristics of Samples (n=170)

Variable	Number	(%)
Age (years)		
21–25	34	19.4
> 25–29	47	27.6
> 29–33	35	20.0
> 33–37	12	6.9
> 37–41	13	7.4
> 41	29	16.6
Gender		
Male	43	25.3
Female	127	74.7
Marital Status		

Not Married	35	20.0
Married	135	79.4
Education Background		
Strata 1 in Nursing	38	21.7
Diploma IV in Nursing	14	8.2
Diploma III in Nursing	118	69.4
Working Period		
1–5 years	84	49.4
> 5 years	86	50.6
Employee Status		
Permanent	47	26.9
Contract	123	72.4

Table 2 Descriptive Characteristics And The Pearson Correlation (R) Of Each Data For Internal Consistency of Fatigue Assesment Scale (FAS) (n=170)

Item	Mean	SD	Variance	(r)	P Value	Corrected item/total correlation	Cronbach's alpha if item deleted
Item 1 (bothered by fatigue)	2.30	0.67	0.46	0.511	0.000	0.354	0.695
Item 2 (get tired very quickly)	2.18	0.63	0.40	0.511	0.000	0.366	0.694
Item 3 (don't do much during the day)	1.95	0.67	0.45	0.436	0.000	0.269	0.709
Item 4 (have enough energy for everyday life)	2.78	0.64	0.42	0.113	1.144	-0.065	0.755
Item 5 (physically feel exhausted)	2.30	0.72	0.52	0.607	0.000	0.458	0.677
Item 6 (problems to start things)	1.74	0.72	0.52	0.642	0.000	0.501	0.669
Item 7 (problems to think clearly)	1.75	0.61	0.37	0.608	0.000	0.485	0.676
Item 8 (no desire to do anything)	1.88	0.65	0.43	0.746	0.000	0.648	0.647
Item 9 (Mentally feel exhausted)	1.86	0.74	0.55	0.758	0.000	0.648	0.713
Item 10 (can concentrate quite well)	2.60	0.80	0.64	0.366	0.000	0.156	0.727
Total Score	21.38	3.66	13.42	1		1.000	0.834

Table 3 Descriptive Characteristics And The Pearson Correlation (R) Of Each Data For Internal Consistency of Japan Industrial Fatigue Research Committee (J-IFRC) (n=170)

Item	Mean	SD	Variance	(r)	P Value	Corrected item/total correlation	Cronbach's alpha if item deleted

Item 1 (The head feels heavy)	2.35	0.73	0.53	0.442	0.000	0.388	0.920
Item 2 (Feel tired all over the body)	2.72	0.80	0.64	0.562	0.000	0.511	0.918
Item 3 (Feet feels heavy)	2.54	0.93	0.86	0.479	0.000	0.412	0.921
Item 4 (Frequency of yawning)	2.55	0.68	0.46	0.457	0.000	0.408	0.920
Item 5 (Distracted mind)	2.05	0.59	0.35	0.621	0.000	0.587	0.917
Item 6 (Sleepy)	2.44	0.65	0.42	0.496	0.000	0.451	0.919
Item 7 (Eyes feel heavy)	2.28	0.78	0.61	0.525	0.000	0.472	0.919
Item 8 (Rigid and awkward to move)	1.65	0.58	0.33	0.492	0.000	0.452	0.919
Item 9 (Feeling like to lie down)	1.74	0.56	0.32	0.538	0.000	0.501	0.919
Item 10 (Feeling difficult to think)	2.54	0.77	0.60	0.612	0.000	0.566	0.918
Item 11 (Tired of talking)	2.02	0.60	0.36	0.698	0.000	0.669	0.916
Item 12 (Feeling nervous)	1.79	0.72	0.52	0.643	0.000	0.603	0.917
Item 13 (It's hard to concentrate)	1.82	0.76	0.58	0.608	0.000	0.563	0.918
Item 14 (It's hard to focus)	1.88	0.43	0.19	0.607	0.000	0.582	0.918
Item 15 (Tend to forget)	1.87	0.51	0.26	0.615	0.000	0.585	0.918
Item 16 (Lack of trust)	2.17	0.66	0.43	0.402	0.000	0.352	0.921
Item 17 (Anxious about something)	1.89	0.69	0.47	0.476	0.000	0.427	0.920
Item 18 (Cannot control attitude)	2.29	0.65	0.43	0.594	0.000	0.555	0.918
Item 19 (Can not be diligent in work)	1.82	0.61	0.38	0.488	0.000	0.445	0.919
Item 20 (Headache)	1.78	0.66	0.43	0.592	0.000	0.553	0.918
Item 21 (Shoulder feels stiff)	2.29	0.65	0.43	0.583	0.000	0.543	0.918
Item 22 (Feeling pain in the back)	2.25	0.72	0.53	0.609	0.000	0.566	0.918
Item 23 (Shortness of breath / difficult to breathe)	2.38	0.78	0.61	0.589	0.000	0.541	0.918
Item 24 (Feeling thirsty)	1.72	0.71	0.51	0.583	0.000	0.539	0.918
Item 25 (Hoarseness)	2.88	0.84	0.70	0.460	0.000	0.398	0.920
Item 26 (Feeling dizzy/dizzy)	1.72	0.73	0.53	0.547	0.000	0.499	0.919

Item 27 (Feeling dizzy /dizzy)	2.10	0.66	0.44	0.612	0.000	0.573	0.917
Item 28 (The eyelids feel heavy)	1.72	0.69	0.47	0.536	0.000	0.491	0.919
Item 29 (Trembling in certain parts of the body)	1.58	0.58	0.34	0.654	0.000	0.623	0.917
Item 30 (Feeling unwell)	2.00	0.57	0.33	0.695	0.000	0.668	0.917
Total score	62.81	11.37	129.32	1		1.000	0.834

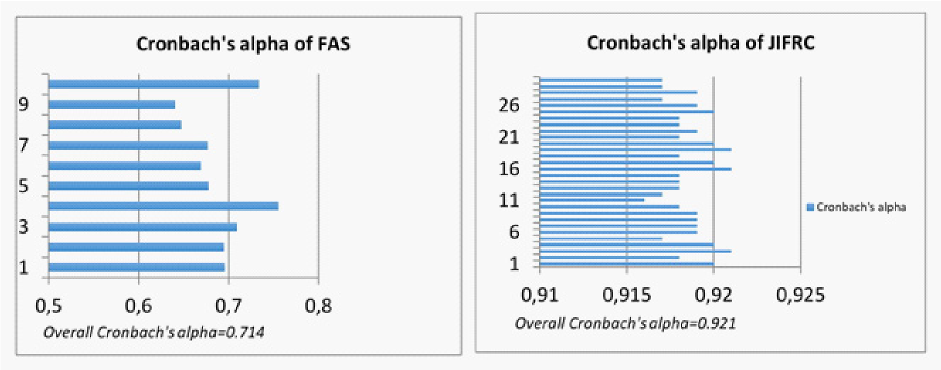

Figure 1 Reliability test result of FAS and JIFRC

Results of the questionnaire validity test

The mean of the total FAS score was 21.38 (± 3.66), its mean in this study the average nurse experienced work fatigue in the “low” category.The 4th item on “I have enough energy for everyday life” showed the highest score (2.78, ± 0.64), whereas the 6th item on “I have problems to start things” had the lowest score (1.74 ± 0.72). The largest variance was also observed in item 10th on “When I am doing something I can concentrate quite well” (0.64, ± 0.80) and smallest variance observed in item 7th on “I have problems to think clearly“ (0.37, ± 0.61). The smallest Pearson correlation value is 0.113 (item number 4 on “I have enough energy for everyday life”), and the largest Pearson correlation is 0.758 (item number 9 on “Mentally I feel exhausted”). Based on the previous criteria, it can be concluded that the item number 1, 2, 5, 6, 7, 8, 9 declared are “good” or in this study called as a valid because Pearson correlation (r) ranged between 0.5 and 0.7. The item number 3, 4, and 10 declared are little/fair or in this study called as an invalid because Pearson correlation (r) ranged between <0.25 to 0.5. (Table 2).

The mean of the total JIFRC score was 62.81 (± 11.37), its mean in this study the average nurse experienced work fatigue in the “medium” category. The 25th item on “feeling thirsty” showed the highest score (2.88, ± 0.84), whereas the 29th item on “trembling in certain parts of the body” had the lowest score (1.58 ± 0.58). The largest variance was also observed in item 3rd on “feet feel heavy” (0.86, ± 0.93) and smallest variance observed in item 14th on “it’s hard to concentrate“ (0.19, ± 0.43). The smallest Pearson correlation value is 0.40 (item number 16 on “tend to forget”), and the largest Pearson correlation is 0.698 (item number 11 on “feeling difficult to think”). Based on the previous criteria, it can be concluded that the item number 2, 5, 7, 9, 10, 11, 12, 13, 14, 15, 18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30 declared are “good” or in this study called as a valid because Pearson correlation (r) ranged between 0.5 and 0.7. The item number 1, 3, 4, 6, 8, 16, 17 and 19 declared are fair or in this study called as an invalid because Pearson correlation (r) ranged between 0.25 to 0.5. (Table 3).

Results of the questionnaire reliability test

As shown in table 2 and figure 1, If item question number 10 "When I am doing something I can concentrate quite well" is deleted this can increase Cronbach's alpha coefficient by 0.727, If item question number 3 "I don't do much during the day" is deleted this can increase Cronbach's alpha coefficient by 0.709 and if item question number 4 "I have enough energy for everyday life" is deleted this can increase Cronbach's alpha coefficient by 0.755. But in general, the combination of all 10 items of FAS has shown the fair reliability with Cronbach's alpha coefficient of 0,714. This result generally shows the Indonesian version of FAS is reliable to measure work fatigue in nurses. To get the highest reliability index from this questionnaire, it is recommended to delete or correct question number 4 (have enough energy for everyday life).

Based on table 3 and figure 1, If item question number 1, 4 and 17 are deleted this can increase Cronbach's alpha coefficient by 0.920, If item question number 3 and 16 are deleted this can increase Cronbach's alpha coefficient by 0.921 and if item question number 6, 8, 19 are deleted this can increase Cronbach's alpha coefficient by 0.919. But in general, the combination of all 30 items of JIFRC has shown the excellent reliability with Cronbach's alpha coefficient of 0.921. This result generally shows the Indonesian version of JIFRC is reliable to measure work fatigue in nurses.

Based on the comparison of Cronbach alpha values from FAS (0.714) and JIFRC (0.921), it can be concluded that JIFRC is a more reliable work fatigue scale for measuring work fatigue in nurses, even though the Pearson correlation from both questionnaires is the same which ranges from 0.25–0.5.

Discussion

To achieve the accuracy of the results of the study, the measuring instrument (questionnaire) used must be valid and reliable. Validity is to measure what is intended to be measured, explains how well the collected data covers the actual area of investigation and expresses the degree to which a measurement measures what it purports to measure. Reliability concerns the extent to which a measurement of a phenomenon provides stable and consist result, and also the degree to which the results obtained by a measurement and procedure can be replicated (Taherdoost, 2016; Bolarinwa, 2015).

The most appropriate method to assess the reliability of the questionnaire is Cronbach's alpha reliability coefficient, which has been frequently used to assess the internal consistency of Likert-type scales. If the items in a scale are equally weighted and independent, high correlation coefficients are expected to between each item and the total score (Aydin Özkan, Karaca, & İster, 2017). Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity (Tavakol & Dennick, 2011).

Based on the comparison of the values of Cronbach alpha reliability test and Pearson correlation validity test, compared with the FAS, the JIFRC has proven the validity and reliability values higher, this instrument is more recommended for measuring work fatigue for nurses. Although overall the JIFRC questionnaire is good at measuring work fatigue for nurses, to further improve its validity and reliability it is recommended to improve grammar on items number 1, 3, 4, 6, 8, 16, and 19, so that Pearson correlation coefficients are obtained more from 0.5.

The results of this study are different from Fang, Katz, and Alberto, (2015) which proves that FAS is valid and reliable to measure work fatigue in construction in New England, research to measure work fatigue in nurses in Western North Carolina, and result of Cano-Climent, et al. (2017) which proves FAS valid and reliable for measuring feelings of fatigue in postpartum women at Spanish.

Conclusion

The study demonstrates that the Indonesian version of JIFRC fulfills the criteria of a reliable and valid assessment tool to rate the work fatigue among nurses, although there are eight question items that still need to be fixed. The high internal consistency and construct validity support the application of the JIFRC as an easy administered tool to assess work fatigue among nurses in Indonesian healthcare settings. The author is very grateful to all nurses who participated in this study, the hospital management who allowed this research and the enumerators. The author declares no conflict of interest.

References

Adiatmika, I. P. G. (2009). Total Ergonomic Approach in Decreasing Quality of Fatigue of Metal Crafters. *Anima Indonesian Psychological Journal, 25*(1), 71–78.

Akerstedt, T., & Gillberg, M. (1990). Subjective and objective sleepiness in the active individual. *Int J Neurosci, 52*(1–2), 29–37.

Aydin Özkan, S., Karaca, T., & İster, E. D. (2017). Validity and reliability of the "perceptions of restraint use questionnaire" for use in Turkey. *Turk Geriatri Dergisi, 20*(1), 30–37. Retrieved from http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L615141041.

Bao, S., & Taliaferro, D. (2015). Compassion Fatigue and Psychological Capital in Nurses Working in Acute Care Settings. *International Journal for Human Caring, 19*(2), 35.

Barker, L., & Nussbaum, M. (2011). Fatigue, performance and the work environment: a survey of registered nurses. *J Adv Nurs, 67*(6), 1370–1380.

Bjorvatn, B., Dale, S., Hogstad-Erikstein, R., Fiske, E., & Pallesen, S. (2012). Self-reported sleep and health among Norwegian hospital nurses in intensive care units. *Nurs Crit Care, 17*(4), 180–188.

Blouin, A., Smith-Miller, C., Harden, J., & Li, Y. (2016). Caregiver Fatigue: Implications for Patient and Staff Safety, Part 1. *J Nurs Adm, 46*(6), 329–335.

Bolarinwa, O. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal, 22*(4), 195–201. https://doi.org/10.4103/1117-1936.173959.

Cano-Climent, A., Oliver-Roig, A., Cabrero-García, J., de Vries, J., & Richart-Martínez, M. (2017). The Spanish version of the Fatigue Assessment Scale: reliability and validity assessment in postpartum women. *PeerJ, 5*, e3832. https://doi.org/10.7717/peerj.3832.

Carney, L. M. (2013). The hidden shift: how do night shift nurses learn to adapt to circadian disruption? *J Nurses Prof Dev., 29*(6), 316–320.

Cicchetti, D. V. (1994). Guidelines, Criteria, and Rules of Thumb for Evaluating Normed and Standardized Assessment Instruments in Psychology. *Psychological Assessment, 6*(4), 284–290. https://doi.org/10.1037/1040-3590.6.4.284.

De Vries, J., Michielsen, H., & Van Heck, G. (2003). Assessment of fatigue among working people: a comparison of six questionnaires. *Occup Environmen Med, 60*(Suppl 1), i10–i15. https://doi.org/10.1016/0016-3287(94)90002-7.

De Vries, J., Van der Steeg, A. F., & Roukema, J. A. (2010). Psychometric properties of the Fatigue Assessment Scale (FAS) in women with breast problems. *International Journal of Clinical and Health Psychology, 10*(1), 125–139.

Dittner, A., Wessely, S., & Brown, R. (2004). The assessment of fatigue - A practical guide for clinicians and researchers. *Jurnal of*

Psychosomatic Research, 56(2), 157–170.

Drake, D., & Steege, L. (2016). Interpretation of Hospital Nurse Fatigue Using Latent Profile Analysis. *ANS Adv Nurs Sci, 39*(3), E1–E16.

Fang, D., Katz, J. N., & Alberto, J. (2015). Development and Validation of a Fatigue Assessment Scale for U.S. Construction Workers. *Am J Ind Med, 58*(2), 220–228. https://doi.org/10.1002/ajim.22411. Development.

Graves, K., & Simmons, D. (2009). Reexamining fatigue: implications for nursing practice. *Crit Care Nurs Q., 32*(2), 112–115.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence Based Nursing, 18*(3), 66–67. https://doi.org/10.1136/eb-2015-102129.

Hendriks, C., Drent, M., Elfferich, M., & Vries, J. De. (2018). The Fatigue Assessment Scale : quality and availability in sarcoidosis and other diseases. *Pulmonary Medicine, 24*, 1–9. https://doi.org/10.1097/MCP.0000000000000496.

Kline, P. (2000). *The Handbook of Psychological Testing (Second)*. London and New York: Routledge.

Konisi, Y., Horiguchi, S., Miyama, Y., & Kawai, T. (1991). A questionnaire study on fatigue symptoms of municipal personnel. *Osaka City Med, 37*(2), 157–162.

Korompeli, A., Chara, T., Chrysoula, L., & Sourtzi, P. (2013). Sleep disturbance in nursing personnel working shifts. *Nurs Forum, 48*(1), 45–53.

Michalopoulos, L. T. M., Murray, L. K., Kane, J. C., Van Wyk, S. S., Chomba, E., Cohen, J., … Bolton, P. A. (2015). Testing the validity and reliability of the Shame Questionnaire among sexually abused girls in Zambia. *PLoS ONE, 10*(4), 1–17. https://doi.org/10.1371/journal.pone.0123820.

Michielsen, H. J., De Vries, J., Van Heck, G. L., Van de Vijver, F. J. R., & Sijtsma, K. (2004). Examination of the Dimensionality of Fatigue: The Construction of the Fatigue Assessment Scale (FAS). *European Journal of Psychological Assessment, 20*(1), 39–48. https://doi.org/10.1027/1015-5759.20.1.39.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). USA: McGraw-Hill, Inc.

Portney, L., & Watkins, M. (2009). *Foundations of clinical research: applications to practice Pearson education.* New Jersey: Upper Saddle River.

Rahman, A. H., Mimin, Abdul, K., & NAing, L. (2017). Psychosocial factors, musculoskeletal disorders and work-related fatigue amongst nurses in Brunei: structural equation model approach. *Int Emerg Nurs, 34*, 17–22.

Saito, K. (1999). Measurement of fatigue in industries. *Ind Health, 37*(2), 134–142. https://doi.org/10.2486/indhealth.37.134.

Samaha, E., Lal, S., Samaha, N., & Wyndham, J. (2007). Psychological, lifestyle and coping contributors to chronic fatigue in shift-worker nurses. *J Adv Nurs, 59*(3), 221–232.

Scott, L. D., Engoren, C. A., & Engoren, M. C. (2014). Association of Sleep and Fatigue With Decision Regret Among Critical Care Nurses. *American Journal Od Critical Care, 23*(1), 13–23.

Sibsambhu, K., Mayank, B., & Aurobinda, R. (2010). EEG signal analysis for the assessment and quantification of driver's fatigue. *Transportation Research Part F, 13,* 297–306.

Steege, L., Pinekenstein, B., Rainbow, J., & Knudsen, A. (2017). Addressing Occupational Fatigue in Nurses: Current State of Fatigue Risk Management in Hospitals, Part 1. *J Nurs Adm, 47*(9), 426–433.

Sudo, N., & Ohtsuka, R. (2002). Fatigue Complaints Among Female Shift Workers in a Computer Factory of Japan. *J. Human Ergol, 31*, 41–51.

Sunarno, S. D. A. M., Ramdhan, D. H., Efendi, H., & Amalaili, P. (n.d.). Study of Shift Work , Quantity and Quality of Sleep with the Occurrence of Fatigue at Universitas Indonesia Security , 2017. In Int. *Conference of Occupational Health and Safety* (ICOHS-2017) (Vol. 2018, pp. 709–717). https://doi.org/10.18502/kls.v4i5.2601.

Susihono, W., Parwata, Y., & Sandi, N. (2016). Ergonomics participatory decrease fatigue , musculoskeletal disorders , and increase the comfort in assembling the net of tonis game. *Bali Med J, 5*(1), 179–184. https://doi.org/10.15562/bmj.v5i1.341.

Taherdoost, H. (2016). Validity and Reliability of the Research Instrument ; How to Test the Validation of a Questionnaire / Survey in a Research. *International Journal of Academic Research InManagement (IJARM), 5*(3), 28–36.

Tarwaka. (2010). *Ergonomic Industry; Ergonomic Basic Knowledge and the Application in Working Place.* (1st ed.). Solo: Harapan Press.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2,* 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd.

Thiffault, P., & Bergeron, J. (2003). Fatigue and individual differences in monotonous simulated driving. *Personality and Individual Differences, 34*(1), 159–176. https://doi.org/10.1016/S0191-8869(02)00119-8.

Zuraida, R., & Chie, H. H. (2014). Pengujian Skala Pengukuran Kelelahan Kerja (SPK) Pada Responden di Indonesia. *ComTech, 5*(2), 1012–1020.

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Improving Student Nurses' Clinical-Reasoning Skills: Implementation of a Contextualised, Guided Learning Experience

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Abstract

Well-developed clinical reasoning skills are central to the process of clinical judgement. However, the results of recent studies suggest that curricula and teaching approaches that support student nurses' development of clinical reasoning skills have not yet been fully achieved. Cognitive apprenticeship offers a new approach to facilitate the development of complex thinking skills, for example, reasoning skills in making clinical decisions. This study examined the effect of an educational intervention utilizing principles of cognitive apprenticeship on students' ability to apply clinical reasoning skills within the context of a purpose-built clinical vignette. A quasi-experimental, non-equivalent control-group design was used to evaluate the effect of the educational intervention on students' accuracy, inaccuracy and self-confidence in clinical reasoning. Eighty-five undergraduate nursing students participated in the study. A purpose-built clinical vignette was utilised to collect data from study participants. Mixed-Design ANOVA with a significant level of $p < 0.05$ was employed. Both quantitative and qualitative data were collected. A statistically significant increase in students' accuracy in clinical reasoning was found after the six-weeks educational intervention. Examination of the quantitative data at time 2 discovered a statistically significant higher accuracy in clinical reasoning score ($p<0.00$) of the intervention group as compared to the control group. Results from inaccuracy and self-confidence in clinical reasoning did not reach significance. Results from the qualitative data are reported separately. It is argued that interplay of small group discussion of domain specific case-scenarios and the provision of guided learning experience may play a role in achieving partially successful results. This study makes an important contribution to nursing education by providing evidence to understand how best to facilitate nursing students' development of clinical reasoning.

Keywords: Clinical judgement, clinical reasoning, cognitive apprenticeship, educational intervention, nursing education.

Introduction

The development of clinical judgement and quality nursing graduates who can meet the demands of complex health settings remain an educational challenge. Developing nurses' clinical-reasoning skills is likely to contribute positively to the quality of clinical judgment in clinical practice (Alfaro-LeFevre, 2017, Johnsen, Slettebø, Fossum, 2016; Sar., Fitri, & Widianti, 2017). Wosinski, Belcher, Dürrenberger, Allin, Stormacq & Gerson, 2018). However, Tanner (2010) in an action-oriented plan for the future development of the nursing profession argue that nurses in the United States of America entering the field are not equipped with essential knowledge and clinical-reasoning skills for current practice, nor are they prepared to continue learning to meet the challenges of the nursing profession in the future. Similarly, Benner, Sutphen, Leonard, Day & Shulman (2010) found that the nursing students in their study were poorly prepared to meet the current challenges of the healthcare sector, which led to their inability to cope with contemporary practice. Therefore, they argue that if clinical judgment is to be improved, nursing teachers need to focus on developing student nurses' clinical-reasoning skills by improving the pedagogical basis of educational interventions in this area.

Contemporary educational research highlights the importance of students' active engagement in learning, particularly in relation to the development of complex thinking skills, for example, reasoning skills in making clinical decisions. However, in a systemic review of the effectiveness and efficacy of educational interventions on clinical judgment, Thompson and Stapley (2011) found that results were unclear and the means to achieve positive effects are not yet known. For example, some current studies investigating the effect of Problem-Based Learning (PBL) showed that some issues are still prominent including students' familiarity and teachers' capability to conduct PBL (Wosinski et al., 2017; Gholami, Moghadam, Mohammadipoor, Tarahi, Sak, Toulabi, & Pour, 2016; Mutiara, Suryani, Ikeu, 2017). This raises important questions about teaching approaches that might achieve better outcomes. Cognitive apprenticeship offers the opportunity to develop a novel educational approach to the development of clinical-reasoning skills within the undergraduate nursing context. Collins, Brown, and Newman (1989) defined cognitive apprenticeship as a 'learning-through-guided-experience' (p. 456) which focusses on the development of cognitive and metacognitive skills for solving complex problems. According to Collins, Brown, and Newman (1989), the focus on expert processes and situated learning within a collaborative environment enables students to build conceptual models of complex target skills and, thus, 'encourages both a deeper understanding of the meaning of the concepts themselves and a rich web of memorable associations between important concepts and problem-solving contexts' (p.3). Teaching students through cognitive apprenticeship enables making tacit processes visible to learners so that they can observe and practice them (Collins, Brown, & Holum, 1991). These characteristics highlight the potential of cognitive apprenticeship as an innovative educational approach for facilitating the development and application of clinical-reasoning skills. Hence, this study aimed to examine the effect of an innovative teaching approach facilitating active engagement in clinical reasoning within the context of high-risk pregnancy on the learning experience of undergraduate nursing students at a university in North Sulawesi Province, Indonesia. This study makes an important contribution to nursing education by providing evidence to understand how best to facilitate nursing students' development of clinical reasoning.

Cognitive apprenticeship has been used in learning situations that involve interpretation and judgement in diverse fields such as nursing, medicine, science and teacher education (Maher, Gilmore, Feldon & Davis, 2013; Wu, Hwang, Su & Huang, 2012; Zurmehly, Lynd & Leadingham, 2011) and has been growing in respect and popularity during the 2000s due to its emphasis on social-constructivist methods of supporting development of cognitive skills and metacognitive skills.

Drawing on the work of Facione (2010) and Collins, Brown and Newman (1989), the educational intervention for this study was designed to provide explicit, well-designed

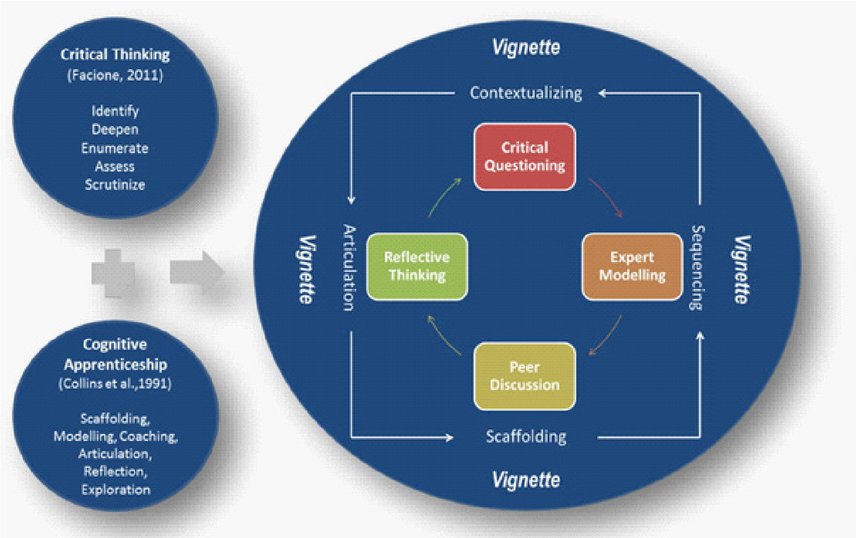

Figure 1 Clinical reasoning: a contextualised, guided learning experience Model (Yauri, 2015)

educational support to assist student nurses with the development of clinical-reasoning skills and their application in clinical-practice situations. The educational intervention package consists of two books: Teacher's guide and Students' workbook. As presented in Figure 1, the model for the educational intervention features four key teaching/learning strategies (critical questioning, expert modelling, peer discussion and reflective thinking), which are complemented by four learning-enhancement strategies (contextualisation, sequencing, scaffolding and articulation). These strategies are described in the following section.

Key teaching/learning strategies.

Critical questioning.

The critical-questioning strategy can be described as a strategy designed to facilitate purposeful questions that target the development of clinical-reasoning skills (Merisier S., Larue C., Boyer L, 2018). Within the context of the vignette developed for this study, critical questions were developed to help students in the high-risk-pregnancy nursing context undertake further patient-data collection; decide whether high-risk-pregnancy problem/s existed; prioritise identified problems; select the most relevant and feasible intervention/s based on a process of decision making; and reflect on the effectiveness of the decision made. Five critical questions included are 1) what are the facts?; 2) what are the key problems?; 3) what possible intervention can be done?; 4) what are the relevant and feasible interventions?; 5) how good was my thinking?

Expert modelling.

The expert-modelling strategy involved the demonstration of clinical-reasoning skills application by the expert (i.e. the teacher) to provide a 'real-life' model that would help students observe, conceptualise and develop a conceptual model of the processes important to accomplishing abstract skills that are largely 'hidden' from students' direct view (Herrington et al., 2010., Johnsen., Slettebø., Fossum, 2016). Expert modelling was employed in the educational intervention in this study using the 'think-aloud' approach, which is a process that involves the teacher verbalising their thinking. This approach includes the discussion of the assumptions, relevant evidence and the logic of the thinking process when solving problems.

Peer discussion.

The peer-discussion strategy focuses on the learner sharing ideas with other learners. Collins et al. (1989) believe that the presence of other learners provides learners with 'calibrations for their own progress, helping them to identify strengths and weaknesses and thus focus their efforts on improvement' (p. 486). Consequently, peer discussion was implemented as part of the key teaching/

learning strategies in this study to allow students to share their thinking with the group and reflect on others' experiences (Chang, Chang, Kuo, Yang & Chou, 2011; Wiggs, 2011). This study considered that learning through peer discussion would provide students with multiple roles and perspectives and assist the development of students' clinical-reasoning skills to solve clinical problems.

Reflective thinking.

As a form of metacognition, reflective thinking is the deliberate monitoring and correction of the one's cognitive strategies (Facione, 2011; Lai, 2011). When reflecting on experiences, students are able to identify both positive and negative experiences and construct a conceptual framework from their experiences. Studies have found that facilitating learning using reflective thinking enhances clinical reasoning (Kuiper et al., 2010; Facione, 2011). To stimulate students' reflective thinking, this study provided guiding reflective questions to the students after they completed each learning activity.

Enhancement strategies.

To operationalise the key teaching/learning strategies, the learning strategies were complemented by four enhancement strategies that provided practical support for the delivery of the learning activities. The strategies are as follows.

Contextualising.

Contextualising learning instruction assists students to construct new meanings of concepts. Collins et al. (1991) argue that contextualising learning must represent the real world of practice. More importantly, must involve situations that would normally involve the knowledge being taught (Perin, 2011). In the educational intervention applied in this study, the contextualisation strategy framed learning activities based on the intended learning objectives within the context of high-risk-pregnancy nursing. Students were guided to build on their existing nursing knowledge and skills and develop new conceptual knowledge and clinical-reasoning skills relevant to high-risk-pregnancy care. Five clinical-reasoning questions were used to contextualised the learning activities.

Sequencing.

Sequencing learning instruction refers to a strategy used by the teacher to organise diversity and complexity of the learning content. In this study, students were assisted to work through three clinical vignettes that are structured with incremental levels of complexity: a simple clinical vignette, a more complex clinical vignette and a complex clinical vignette. This strategy aims to assist students to build a deeper and wider conceptual foundation of the learnt subject. By sequencing the learning activities, students obtain a general picture and comprehensive understanding of the tasks (Pritchard & Woollard, 2010).

Scaffolding.

The scaffolding strategies in this study were informed by the concept of ZPD, which was originally designed to assist children to do something that could not be done without assistance (Herrington et al., 2010; Handwerker, 2012). The teacher should be able to identify the needs of the students and deliver relevant scaffolding strategies. In this study, scaffolding was performed in several ways. First, the teacher was located in the learning environment and actively listened to the peer discussion. Second, during the peer discussion, the teacher gave students hints to think about, for example, the teacher might prompt students to think about factors that were missing in the patient's clinical information or had not been fully considered by the student.

Articulation.

The articulation strategy involved facilitating students to express their ideas in the group. Being able to articulate reason in a logical and coherent manner indicates the use of the cognitive skills essential for reasoning (Facione, 2011). In the educational intervention implemented in this study, the students were prompted with questions that were designed to facilitate discussion about contradictions, inconsistencies, strong/weak points in students' thinking or to motivate the students to challenge each other's reasoning.

Method

The study was undertaken in two phases. Phase 1 was the development and content validation of an educational-intervention package. Phase 2 implemented the finalised educational intervention and evaluated with a cohort of Indonesian undergraduate nurses. A quasi-experimental, non-equivalent control-group design was used to examine the impact of the developed educational intervention on students' accuracy, inaccuracy and self-confidence in clinical reasoning. Implementation of the educational intervention occurred in the Faculty of Nursing at Catholic University of De La Salle Manado. Using survey questionnaire, Pre-test data (Time 1) and post-test data (Time 2) were collected. Following the educational intervention, focus-group discussions were also conducted to explore the perceptions of intervention and control group participants regarding their learning experience. This paper focusses on the quantitative component of the Phase 2 data collection. The qualitative findings are reported separately.

Sampling

Following ethics approval from the University Human Research Ethics Committee (UHREC) (Reference No. 1200000588) of Queensland University of Technology, participants were drawn from a cohort of third-year student nurses in the Bachelor of Nursing undergraduate program (five-year degree). The total pool was 175 students. Convenience sampling strategy was employed. Eighty-five (n = 85) students consented to participate. These students were then randomly allocated into the intervention and control group. The same inclusion criteria for the intervention and control groups were employed; these were third-year nursing student enrolled in five-year programme at the Faculty of Nursing of CUDLSM, registered and studying Reproductive System II under the national nursing curriculum and having fulfilled the prerequisite course Reproductive System I.

Instruments

A purpose built instrument (the clinical vignette) was constructed to allow the evaluation of clinical-reasoning skills. The clinical vignette was a short, purpose-designed scenario that described a health situation related to high-risk pregnancy. Drawing upon previous work by Botti and Reeve (2003), it contained relevant, but insufficient information about an existing health problem. It also contained information that was irrelevant to the problem. If students wished, they were allowed to request additional information about the problem as they worked through the vignette. The content of the vignette was based on the undergraduate nursing curriculum and the maternity nursing texts (Ackley, 2011; Chapman, 2010) that were relevant to the high risk pregnancy subject being studied by the study participants. Using a system adapted from Botti and Reeve (2003), students' responses were scored. In addition, participants were asked to identify their level of self-confidence in the process of thinking on a 1-5 scale where 1=Not confident at all and 5=Extremely confident. This scale was adapted from the Student Satisfaction and Self-Confidence in Learning published by the National League for Nursing (NLN) (National League for Nursing, 2012) since the original version was developed for assessing students' self-confidence in a simulation context. Two processes were employed to assess the content validity of the clinical vignette including review by an expert panel and review by a sample of undergraduate nursing students. Results of the validation processes are reported separately.

Implementation

The usual teaching by the control group was lectures and group presentation. The lectures mainly involved teacher-centred learning and focused on relevant content and learning outcomes. For the group presentations, students formed groups of approximately 7 – 8 students and each group was allocated a specific topic to prepare and present to the class. In addition, student preparation for the presentations was outside the lecture time and no teacher guidance was provided during the preparation. In contrast to the usual teaching approach, the educational intervention focused on students working in small groups (5-6 students per group) on case-based scenarios that became progressively more complex throughout the implementation period. Consistent with the principles of Cognitive Apprenticeship, a key feature of the group work environment was the provision of expert modelling, coaching and explicit guidance by the teacher where needed. Thinking aloud and reflection on thinking by students and the teacher occurred throughout the group interactions. Implementation of the study occurred over a period of six weeks within the high-risk-pregnancy nursing care subject that was part of the National Bachelor of Nursing curriculum. During this period, the group work activities occurred on a weekly basis for three hours per session. Teaching activities in the intervention group were performed by the researcher while the usual teaching was implemented by the subject teachers.

Data Collection

Data were collected at pre-test (Time 1) and post-test (Time 2). Students were asked to respond to the five clinical reasoning questions which accompanied the clinical vignette, and had the opportunity to request additional information as they worked through the clinical vignette. Two outcomes were measured using the clinical vignette: 1) students' clinical reasoning; and 2) students' perceived self-confidence in clinical reasoning. Students' clinical reasoning was measured using two primary variables - accuracy and inaccuracy in clinical reasoning. The clinical vignette that was developed for evaluating the educational intervention was a short, purpose-designed scenario describing a health situation related to high-risk pregnancy. It contained relevant but insufficient information about a 'problem' being experienced by a woman receiving antenatal care. The clinical vignette also contained information that was irrelevant to the 'problem' (Ackley & Ladwig, 2011; Chapman & Durham, 2010). Students were asked to respond to the five clinical reasoning questions provided, which accompanied the clinical vignette, and had the opportunity to request additional information as they worked through the clinical vignette (Yauri, 2015). In addition, they were asked to rate their level of self-confidence in responding to every question, using five levels of self-confidence ranging from 1 (not confident at all) to 5 (extremely confident).

Data Analysis

Group means and standard deviations were calculated. Sphericity test showed equality of variance of the differences between each pair of the measured values. Therefore, Group and Time differences were analysed by Mixed-Design Anova. A significance level of alpha ($p< 0.05$) was used and eta squared (η^2) was calculated.

Results

Eighty per cent of the participants in this study were aged 19–21 years, and

Table 1 Changes at Time1 and Time 2 in Overall Scores for Intervention and Control Groups

Variables	Time	Control Group (n= 43)		Intervention Group (n = 42)		M Difference
		M	SD	M	SD	
Accuracy in clinical reasoning	1	6.86	1.35	6.67	1.30	0.19
	2	6.12	1.24	9.74	1.4	3.62
Inaccuracy in clinical reasoning	1	8.65	1.65	8.74	1.86	0.09
	2	8.44	1.39	7.48	1.58	0.96
Self-confidence in clinical reasoning	1	86.63	20.56	70.60	14.81	16.03
	2	72.84	11.28	72.83	14.03	0.01

Table 2 Changes at Time1 and Time 2 in Overall Scores for Intervention and Control Groups: MD ANOVA Results

Variables	Effect (F)	F	Sig.	η^2
Accuracy in clinical reasoning	Group	49.68	0.000	0.37
	Time	57.90	0.000	0.41
	Group X Time	155.6	0.000	0.65
Inaccuracy in clinical reasoning	Group	2.84	0.095	0.03
	Time	9.96	0.002	0.11
	Group X Time	5.09	0.027	0.03
Self- confidence in clinical reasoning	Group	1.29	0.26	0.01
	Time	0.002	0.96	0.01
	Group X Time	2.35	0.13	0.00

$^*p < 0.05$

approximately 85 per cent were women. Data from participants' demographic characteristics showed sample homogeneity. The Phase 2 results indicated that educational intervention had a positive impact on the accuracy of participants' clinical reasoning. This was indicated by their responses to a purpose-built clinical vignette and comments in regard to their learning experiences within each of the study conditions. Participants' pre- and post-test scores for accuracy, inaccuracy and self-confidence in clinical reasoning are reported in Tables 1 and 2.

As shown in the Table1, there was an increase in the mean of overall accuracy scores for intervention group students from time 1 (6.67) to time 2 (9.74). In fact, the mean of overall accuracy scores of the intervention group was higher than the control group as many as 3.62. Although there was a decrease in overall accuracy scores for intervention group students from time 1 (8.74) to time 2 (7.48), the overall scores on inaccuracy in clinical reasoning, the mean difference between the control and intervention groups at time 2 was very small (< 1). Furthermore, the control group had a higher overall score for self-confidence in clinical reasoning than the intervention group at Time 1 but had no difference in the mean overall score at Time 2. To avoid Type 2 errors, changes both from Time 1 and Time 2 as well as differences between the overall scores for intervention and control groups were analysed using a Mixed-Design ANOVA. Details of results are shown in Table 2.

A Mixed-Design ANOVA analysis revealed a significant interaction effect between Group and Time, Wilks' Lambda = 0.35, F (1, 83) = 155.6, p = 0.000, with a very large effect size ($\eta^2 = 0.65$). Similarly, there was a significant main effect for Time, Wilks' Lambda = 0.59, F (1, 83) = 57.90, p = 0.000, $\eta^2 = 0.41$ (very large effect size) with an increase in the mean overall accuracy scores for intervention group students. A significant main effect was also found for Group, F (1, 83) = 49.68, p = 0.000, with partial eta square showing a very large effect size ($\eta^2 = 0.37$) (Pallant, 2013), suggesting a difference in the effectiveness of the educational intervention and usual teaching on students' overall accuracy in clinical reasoning. This results depicted a statistically significant increase in students' accuracy in clinical reasoning after the six-weeks educational intervention. As multiple comparisons in MD ANOVA employ the Bonferroni correction to prevent Type I error, a more stringer alpha level is used. With inaccuracy in clinical reasoning, there were no significant differences (p > 0.05) found between the two groups at Time 1 or Time 2 for the overall scores. Similarly, results from self-confidence in clinical reasoning did not reach significance.

Discussion

The present study found significant differences in the accuracy of students' clinical reasoning for those who received the educational intervention compared to those who received usual teaching. However, the results for inaccuracy in clinical reasoning were insignificant between the two teaching approaches. Students participating in the study were in the third year of a five-year Bachelor of Nursing programme and were not experienced in domain-specific knowledge. Perhaps, similar to Botti and Reeve's (2003) study, the lack of significance seen in the inaccuracy results of the present study might be related to the students' lack of experience with the subject content and the fact that higher level ability is required to make precise discriminations between what may be unfamiliar data—as opposed to the recognition of more familiar data—and hence, the differential effects on accuracy and inaccuracy seen in the intervention group's clinical reasoning.

Results from the intervention and control groups' responses to self-confidence in clinical reasoning revealed no significant differences between the intervention and control groups' perceived self-confidence at either Time 1 or Time 2. However, there were trends in the data that suggested that at Time 2, the intervention-group students perceived a high level of self-confidence in identifying possible interventions, selecting the most appropriate interventions, and in their decision-making process compared to the control-group students. This result differs to findings from a longitudinal study by Patterson (2006). The results suggested that students' self-confidence was significantly increased. The differences between Patterson's study and the present study suggest that the shorter length of the current study might have influenced the results. This highlights the possible influence of time and practice in developing student self-confidence in clinical-reasoning skills.

It is possible that the lack of statistical significance in the results for students' self-confidence reflected an overconfidence factor that has been reported by Berner and Graber (2008). According to these authors, people are more likely to rate their confidence beyond the accuracy of those judgements and notably, overconfidence seems to disappear in easy tasks but intensify with difficult tasks. The intervention and control groups in the present study might have responded overconfidently to the clinical-reasoning questions at Time 1 by choosing 'confident' or 'extremely confident'. Consequently, the levels of self-confidence after the educational intervention were perceived to be similar to the self-confidence levels expressed at Time 1. As a result, a significant difference between Time 1 and Time 2 was not detected. Despite insignificant results, the intervention group demonstrated a positive direction in changes in self-confidence, while the control group revealed a negative trend in self-confidence in clinical reasoning.

Reflecting on the overall findings of this study, it is proposed that three key factors were instrumental in achieving the partially positive outcomes including situating the knowledge through case-based learning; making clinical reasoning visible using a 'think-aloud' approach with students; enhancing collaboration through small peer-group discussion. Situating knowledge through case-based learning was a key element of the design and implementation of the educational intervention. According to Brown et al. (1989), situating learning in an authentic context (i.e. situations that would usually involve the relevant knowledge and skills) assists students to develop the cognitive and metacognitive skills important to solving real-life problems. Contextualising learning according to culture and the environment where the knowledge is constructed and employed enables students to develop conceptual models of the targeted tasks or procedures before practicing the knowledge and skills in the real environment (Brown et al., 1989). Thus, contextualising learning facilitates the development of expertise in a specific area (Brown et al., 1987; Collins et al., 1991), which includes disciplinary knowledge (e.g. key concepts, principles and demonstration of procedures), techniques or approaches for making judgements, and self-regulation (e.g. ability to identify, select appropriate strategies and re-evaluate decisions made if needed).

For the purpose of the present study, the learning activities were contextualised within case scenarios that were drawn from examples of high-risk-pregnancy situations that students are likely to encounter in their everyday practice. This differs from the usual teaching methods used within the Bachelor of Nursing at CUDLSM, which generally involve more traditional didactic approaches. Studies support the use of case-based learning to develop students' cognitive and metacognitive skills (Wosinski et. al., 2018; Gholami et al., 2016). During the process of problem solving, students need to recursively monitor and correct their decisions in previous steps or use their metacognitive skills (Wosisnski et al., 2018; Gholami et al., 2016). Thus, compared to didactic instruction, the use of a case-scenario approach offers a potentially more effective manner in which to assist students to connect what they are learning to the knowledge and skills required in real-life situations.

As discussed by Brown et al. (1987), a key element of cognitive apprenticeship is to make the process of thinking used by experts visible to students to enable their development of the cognitive and metacognitive skills needed to solve complex problems. In a cognitive-apprenticeship approach, expert thinking is made transparent through community-of-practice interactions between students and teachers. To learn expert thinking, students are required to participate actively in the activities and observe how experts use their thinking to solve the complex problems in real-life situations.

To facilitate the visualisation of expert thinking, the present study employed a 'think-aloud' approach in which teacher verbalised their thinking. This included discussion of the assumptions, clinical-reasoning logic and usage of relevant evidence in relation to the case scenarios (Calleja et al., 2011; Pinnock & Welch, 2014). This is different from the usual teaching method employed in the Bachelor of Nursing course at CUDLSM, in which the expert thinking is generally hidden, as teachers do not verbalise their process of thinking. The focus in this course is on traditional learning through the information-dissemination approach that requires students to memorise content (Collins et al., 1991; Dennen & Burner, 2008).

The think-aloud approach can be beneficial for both teachers and students. Using of this approach, students can observe the thinking processes employed by the teacher to solve complex problems and, consequently, they can observe how knowledge and skills are employed (Johnsen., Slettebø., & Fossum, 2016). When the think-aloud approach is used interactively with students participating in the exchange, they are able to make linkages between the current information being provided and knowledge from their long-term memory (Gazzaniaga et al., 2010). Facilitating the articulation of their thinking processes enables students to self-assess their thinking and subsequently self-correct their thinking and, thus, their metacognitive skills development. For teachers, thinking aloud interactively with students can also act as an assessment strategy. It allows teachers access to students' cognitive and metacognitive processes and thus provides formative information on the level of support needed by the students. For these reasons, scholars argue that the think-aloud approach is an effective strategy for enhancing students' clinical reasoning (Forsberg, Ziegert, Hult & Fors, 2013; Johnsen., Slettebø., & Fossum, 2016)

Collaboration through a small-group discussion was another key element of the design and implementation of the educational intervention employed in the present study. Learning through collaboration is consistent with the community-of-practice concept, which emphasises the social dimension of learning and knowing. In a community of practice, the sharing of perspective, expertise, experiences, activities, information and knowledge promote the active participation of the community members (Collins et al., 1991; Laal & Ghodsi, 2012), which allows the creation of collaborative learning environments that engage students and teachers (Collins et al., 1991). Learners become involved in a community of practice, which can transform passive ways of learning to active participation in the learning experience. As discussed by Karagiorgi and Symeou (2005), collaborative learning environments enable students to develop, compare and understand multiple perspectives of an issue, as well as develop a meaningful understanding through developing and evaluating the opinions of others. This is consistent with Collins et al.'s (1991) views on the sociology aspect of the learning environment, which emphasises the importance of the social process in providing opportunities for students to observe procedures and attitudes demonstrated by the expert, as well as the values, judgement processes and cultural elements that inform the thinking process and decisions made. Laal & Ghodsi (2012). believe that students can experience pleasure and satisfaction when they solve a problem. According to Gazzaniaga et al. (2010), positive learning experiences are more likely to be repeated. Arguably, experiencing pleasure and self-satisfaction in learning is an effective precursor to enhance self-confidence and continual use of problem solving as the students' manner of learning. It is important that communication between teachers and students facilitate students to share their thinking in a non-threatening environment (Laal & Ghodsi, 2012).

In the present study, collaboration was facilitated in the small peer-group discussions of case scenarios in the context of high-risk pregnancy. The group discussions were designed to provide opportunities for students to develop, compare and understand multiple perspectives through meaningful activity and social interaction. Learning was guided by the teacher using relevant strategies such as thinking aloud and providing hints. This differs from the usual teaching methods used in the Bachelor of Nursing course at CUDLSM, which generally involve teacher-centred learning and are focused on individual activities and learning achievement. Studies support the use of a collaborative learning approach to develop students' clinical-reasoning skills.

Considering all the results of this study, it is argued that the interplay between authentic contextualisation of learning, the use of a 'think-aloud' approach to model expert clinical reasoning, and the promotion of peer collaboration through small peer-group discussions conducted in an informal environment facilitated more effective learning outcomes for students in the intervention group (compared to the students in the control group). The contextualisation of learning provided by the educational intervention gave this group a clear and relevant learning context and activities that fostered a meaningful learning experience for students. This was scaffolded by the deliberate use of the think-aloud approach by the teacher and supported by the small-group discussion, which promoted students' active participation in the learning activities.

Conclusion

This study found that the educational intervention implemented in this study demonstrated some positive effects on students' development of clinical-reasoning skills. These findings highlight the benefit of a contextualised learning experience, collaborative construction of knowledge and the role of thinking aloud in achieving positive outcomes for students' clinical-reasoning skills; these are the key of the positive outcomes of this study. In particular, the educational intervention was identified as able to enhance accuracy in clinical reasoning in the intervention-group students and provide a more enjoyable learning experience for the students. Having a clear educational model will enable teachers to reflect critically on the construction of learning experiences that facilitate students' development of habits of inquiry and complex thinking skills. From the overall results of the study, it is argued that the educational intervention had a number of positive effects in relation to facilitating students' clinical-reasoning skills. Further research to investigate the effectiveness of the educational intervention with a larger sample size will be needed.

References

Ackley, B. J. & Ladwig, G. B. (2011). *Nursing diagnosis handbook: An evidence-based guide to planning care.* St Louis, MO: Mosby.

Alfaro-LeFevre, R. (2017). *Critical thinking, clinical reasoning, and clinical judgment* (6th Ed.). Philadelphia:Elsevier, Inc.

Benner, P., Sutphen, M., Leonard, V., Day, L. & Shulman, L. S. (2010). Educating nurses: A call for radical transformation. Retrieved from http://QUT.eblib.com.au/patron/FullRecord.aspx?p=468681.

Berner, E. S., & Graber, M. L. (2008). Overconfidence as a cause of diagnostic error in medicine. *The American Journal of Medicine, 121*(5), S2-S23.

Botti, M., & Reeve, R. (2003). Role of knowledge and ability in student nurses' clinical decision making. *Nursing & Health Sciences, 5*(1), 39-49.

Brown, J. S., Collins, A. & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32–42.

Calleja, P., Nash, R. E., Tippett, V., Harvey, T., Wirihana, L. A., & Malouf, N. (2011). *Using 'think aloud'as a strategy for learning clinical reasoning in high fidelity case-based simulation for undergraduate nursing students*. Queensland University of Technology. Brisbane, Australia.

Chang, M. J., Chang, Y. J., Kuo, S. H., Yang, Y. H. & Chou, F. H. (2011). Relationships between critical thinking ability and nursing competence in clinical nurses. *Journal of Clinical Nursing, 20*(21–22), 3224–3232.

Chapman, L. & Durham, R. F. (2010). *Maternal-newborn nursing: The critical components of nursing care*. Philadelphia, PA: F.A. Davis Company.

Collins, A., Brown, J. S. & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator, 15*(3), 6–11.

Facione, P. (2011). *THINK critically*. Upper Saddle River, NJ: Prentice Hall.

Gazzaniaga, M. S., Heatherton, T. F. & Halpern, D. F. (2010). *Psychological science* (3rd ed.). New York, NY: W.W. Norton & Company, Inc.

Herrington, J., Reeves, T. & Oliver, R. (2010). *A guide to authentic e-learning*. New York, NY: Routledge.

Johnsen, H. M., Slettebø, Å., & Fossum, M. (2016). Registered nurses' clinical reasoning in home healthcare clinical practice: A think-aloud study with protocol analysis. *Nurse education today, 40,* 95-100.

Karagiorgi, Y. & Symeou, L. (2005). Translating constructivism into instructional design: Potential and limitations. *Journal of Educational Technology & Society, 8*(1), 17-27.

Kuiper, R., Murdock, N. & Grant, N. (2010). Thinking strategies of baccalaureate nursing students prompted by self-regulated learning strategies. *Journal of Nursing Education, 49*(8), 429–436. doi: 10.3928/01484834-20100430-01.

Laal, M. & Ghodsi, S. M. (2012). Benefits of collaborative learning. *Procedia—Social and Behavioral Sciences, 31*(0), 486–490. doi: 10.1016/j.sbspro.2011.12.091.

Lai, E. R. (2011). *Critical thinking: A literature review*. Pearson Research Report.

Maher, M. A., Gilmore, J. A., Feldon, D. F. & Davis, T. E. (2013). Cognitive apprenticeship and the supervision of science and engineering research assistants. *Journal of Research Practice, 9(*2), Article M5. Retrieved from http://jrp.icaap.org/index.php/jrp/article/view/354/311.

Merisier, S., Larue, C., & Boyer, L. (2018). How does questioning influence nursing students' clinical reasoning in problem-based learning? A scoping review. *Nurse education today, 65*, 108–115.

Mutiara, M., Suryani, S., Ikeu, N. (2017). Perspektif mahasiswa mengenai Problem-Based learning (PBL). *Journal Keperawatan Padjadjaran, 1*(3), 290–301.

National League for Nursing (NLN). (2012). *Educational Practices Questionnaire: Students Satisfaction and Self-Confidence in Learning, NLN Laerdal Research Tools.* New York, NY: National League for Nursing. Retrieved from http://sirc.nln.org/mod/page/view.php?id=88.

Pallant, J. F. (2013). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS.* Crows Nest: Allen & Unwin.

Perin, D. (2011). Facilitating student learning through contextualization: A review of evidence. Community College Review, 39(3), 268–295. doi: 10.1080/07370000802584539

Pinnock, R. & Welch, P. (2014). Learning clinical reasoning. *Journal of Paediatrics and Child Health, 50*(4), 253–257. doi: 10.1111/jpc.12455.

Pritchard, A. & Woollard, J. (2010). *Psychology for the classroom: Constructivism and social learning.* Retrieved from http://QUT.eblib.com.au/patron/FullRecord.aspx?p=515360.

Sari, C. W. M., Fitri, S. Y. R., & Widianti, E. (2017). Critical Thingking and Decision Making Skills Based Learning Methods at The Faculty of Nursing Universitas Padjadjaran. *Jurnal Pendidikan Keperawatan Indonesia, 3*(2), 126–130.

Tanner, C. A. (2010). Transforming pre licensure nursing education: Preparing the new nurse to meet emerging health care needs. *Nursing Education Perspectives, 31*(6), 347–353.

Thompson, C. & Stapley, S. (2011). Do educational interventions improve nurses' clinical decision making and judgement? A systematic review. *International Journal of Nursing Studies, 48*(7), 881–893. doi: 10.1016/j.ijnurstu.2010.12.005.

Wiggs, C. M. (2011). Collaborative testing: Assessing teamwork and critical thinking behaviours in baccalaureate nursing students. *Nurse Education Today, 31*(3), 279–282.

Wosinski, J., Belcher, A. E., Dürrenberger, Y., Allin, A. C., Stormacq, C., & Gerson, L. (2018). Facilitating problem-based learning among undergraduate nursing students: A qualitative systematic review. *Nurse education today, 60,* 67–74.

Wu, P.-H., Hwang, G.-J., Su, L.-H. & Huang, Y.-M. (2012). *A context-aware mobile learning system for supporting cognitive apprenticeships in nursing skills.*

Yauri, I. (2015). *Exploring an Innovative Educational Approach to Facilitating Student Nurses' Clinical-Reasoning Skills in North Sulawesi Province, Indonesia* (Doctoral dissertation). Queensland University of Technology, Brisbane.

Zurmehly, J., Lynd, M., & Leadingham, C. (2011). Skilful coaching: New directions in teaching health assessment. *Journal of College Teaching & Learning, 1*(4), 57–62.

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Relationship between Family Anxiety, Family Support and Quality of Life of Attention Deficit Hiperactivity Disorder (Adhd) Children

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Abstract

Attenton Deficit Hiperactivity Disorder (ADHD) is behavioral disorder characterized attention deficit disorder, impulsive behavior, accompanied by excessive activity that is inconsistent with age in childhood, ADHD can impact the decline in the quality of life of children, some of the factors that influence anxiety among families and family support. This study aimed to analyze the relationship between anxiety of family and family support for ADHD children's quality of life in Extraordinary school type C Bandung. The study design was cross-sectional quantitative analytic. The subject of research totally 87 ADHD families with children aged 8-12 years who attend school in 5 pieces of extraordinary school type C Bandung but there was something problem like rejection, no have time and others therefore 63 samples were collected. Sampling using total sampling technique with 3 pieces inventory questionnaire including children's quality of life questionnaire (PedsQL), family anxiety (STAI-S) and family support (CASSS). Data were analyzed using Pearson correlation coefficient. The results showed a correlation between anxiety and family support families with ADHD children's quality of life as well as having a fairly strong correlation ($r = 0.75$ and $r = 0.78$). That is, an increase or decrease in the quality of life can be determined by changes in the anxiety of family and family support simultaneously. Increased family anxiety can reduce the quality of life of children ADHD whereas the increase in family support can improve the quality of life of children ADHD. Nurses are expected to increase school health services by involving schools, families and communities as well as the expected nursing policy makers in order to make policy on the procurement of health-based community health nursing school.

Keywords: ADHD, anxiety, family support, and quality of life.

Introduction

Common problems that often hinder the development of school-age children is Attention Deficit Hyperactivity Disorder (ADHD) or Attention Concentration Disorders / Hyperactivity. ADHD which is a behavioral disorder characterized attention deficit disorder (inattentiveness), impulsive behavior (impulsivity), and may be accompanied by excessive activity (overactivity / hyperactivity) that are not in accordance with the age in childhood (American Psychiatric Association / APA, 2000).

ADHD case more often encountered in the community, where the number of events is increasing, especially in children of school age. ADHD prevalence in school-age children around the world about 3%–10%, although the prevalence varied substantially (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). Prevalence ADHD in East Asian countries, showed that the prevalence was similar between the West and non-West area which was around 8.1% to 8.6% (Gau, Chong, Chen, & Cheng, 2005; Takahashi, Miyawaki, Suzuki, Mamoto, Matsushima, Tsuji , & Kiriike, 2007). In Indonesia, the number of events are still unaccounted for exact figures, although it looks pretty much abnormality occurs and is often found in children of preschool and school age (Judarwanto, 2007). However, in a study by Wihartono (2007).

The impact of the combination of symptoms ADHD third-symptoms including symptoms of hyperactivity, and impulsivity inatensi which can lead to an abnormal child development so difficult for children with ADHD to excel in school. ADHD hyperactive behavior makes the child have difficulty when it is a social institution (Vaughan, Roberts & Needelman, 2009). Many of the children ADHD have difficulty in school, often problematic forms of discipline or academic difficulties (Weyandt & DuPaul, 2006).

Such conditions would cause suffering and obstacles to children in performing daily functions. A variety of other disorders that can occur in children ADHD such as lack of self-esteem, impaired interact with peers, family and also disturb the readiness of children to learn and overall will make the decline in the quality of life of children (Escobar, Soutullo & Hervas, 2005; Nijmeijer, Minderaa, & Buitelaar, 2008; Varni & Burwinkle, 2006; Strine, Lesesne, & Okoro, 2006).

ADHD child's quality of life is inseparable from some of the factors that influence it. According to Jeanne, Landgraf, Rich, & Rappaport (2002) factor of the quality of life of children ADHD can be seen from the impact or AIM (ADHD Impact Module) including health status of children, the frequency of experience "success" of children with parents in the home, the assessment of parents (child health, child discipline, parenting to the child, and the child's behavior), a child's diagnosis, how long the child gets treatment, and the role of families in supporting children ADHD. Another factor that affects the quality of life of children ADHD among other demographic factors, family support, clinical, physical, emotional, family and social anxiety (Riley, 2006;Wehmeier, Schacht, & Barkley, 2010; Sánchez, Cortés, Carlos, Moren, 2012; Theole, 2010).

Seeing the adverse conditions both for children and for families ADHD, it would require the support and participation of health workers, one of them based community health nursing school. Based community health nursing schools do not just pay attention to the quality of life of school children alone but noticed throughout aspect, be it schools, families and society as a whole and organized. According toCenters for Disease Control and Prevention (2011), Murray, Low, Hollis, Cross, & Davis (2007), responsibility for the health community nursing schools include; health education, physical health education, health services, nutrition services, counseling services, psychological, and social services healthy school environment, health promotion staff of teachers in schools, as well as community and family involvement.

But the existence of community-based school health nurse is still active in Indonesia, especially in Bandung. Community nurse completely still watching school health, especially the health of special needs schools. Community nurses in health centers still tend to provide comprehensive primary care to a variety of age groups.

Based on the descriptions above, in

Indonesia has never done research on the quality of life of children with ADHD. Although the quality of life of children ADHD study ever conducted in the United States and Europe, a similar study is also important in Indonesia because of demographics of these countries are very much different from the demographic situation in Indonesia. Therefore, I am interested to see the relationship between the anxiety of family and family support for quality of life ADHD children's in extraordinary school type C in Bandung.

Method

This research was a quantitative research, used analytic method with cross sectional approach. This study analyzed the relationship of anxiety families and family support on quality of life of children with ADHD. The sample in this study were families who have children of school age who have ADHD the inclusion criteria including; 1) school-age children by the age of 8–12 years old who have a diagnosis of ADHD by a psychiatrist; 3) studying at extraordinary school type C in the Bandung city; 4) live with biological parents; 5) the parents are willing to follow the research process; 6) The family-owned ADHD child does not have a physical disability such as blind, mute, paralyzed and so on.

ADHD children Quality of life was measured using the Pediatric Quality of Life Inventory (PedsQL) Generic Core version 4.0. The questionnaire consists of 23 statements consisting of: 1) Physical Function 8 statements; 2) The function of emotions 5 statements; 3) The social function 5 statements; and 4) The function of school 5 statement. This questionnaire consists of choice answers using a Likert scale (never, sometimes, often and always). The answer is never worth 1, sometimes worth 2, often worth 3 and is always worth 4 for a positive statement while negative questions worth instead. All of the answers will be summed for a total score of the whole. The highest total score of 92 and the lowest score is 23.

Family anxieties instrument used is questionnaire State-Trait Anxiety Inventory (STAI-S) composed of 20 short statement with less than 5 minutes in filling the answer. Choice answers on the questionnaire using Likert scale never, sometimes, often and always with a mark (√) in the column never, sometimes, often and always, value score a minimum of 20 and maximum of 80 with an indication of the higher the score the more anxious. Anxiety is divided in three categories including high, medium and low. High anxiety if the total score 61–80 anxiety, anxiety was for a total score of 41–60 and low anxiety with a total score of 20–40.

Family support instruments used in this study was a questionnaire the Child-Adolescent Social Support Scale (CASSS). This questionnaire consists of 12 items representing 5 subvariable statements include family support; 1) emotional support; 2) The instrumental support; 3) informational support; 4) support awards and 5) social support. All statements have a choice of answers using a Likert scale; always, often, sometimes and neverby way menyontreng with a mark (√) in the column always, often, sometimes and never which are available, the highest score value of family support is 48 and the lowest score is 12. Family support expressed either if the total score of 25–48 and less good family support with a value of 12–24.

Overall this questionnaire was to test the validity and reliability tests with Cronbach's Alpha was (0.86; 0.85; 0.90). Overall the questionnaire used is the inventory questionnaire in English, it had previously been done translation (translation) prior to Indonesian and do the translation back to English (back translation) was done and has been examined by two lecturers who are competent in their field. From the results obtained back translation no meaningful difference between the transitional English-Indonesian and Indonesian-English, so that questionnaires can be used. To determine the relationship between anxiety family, family support and quality of life of children ADHD with normal distribution of data used Pearson correlation test.

Results

The results of this study will look at the relationship between family anxiety, family support and quality of life in children ADHD using Pearson correlation.

Based on Table 1 above shows the relationship between family anxiety and the quality of life of ADHD children with a value of p = 0,000 (p <0,005). The relationship analysis of family anxiety with the quality of life of ADHD children showed a positive pattern, meaning that the higher the value of family anxiety increase the value of quality of life of ADHD children and had a relatively strong relationship (r=0.75).

From Table 2 shows the relationship between family support and the quality of life of children with ADHD characterized by the value p = 0,000 (p <0.005). Analysis of the relationship between family support and the quality of life of ADHD children showed a positive pattern, meaning that the higher the value of family support, the higher the quality of life of ADHD children and both variables had a relatively strong relationship (r=0.78).

Table 1 Relationship Family Anxiety with Quality of life ADHD Children's (N = 63)

Variable	Mean	Std. Deviation	Pearson Correlation	p Value
Family Anxiety	46.71	7.510	0.749	0.000

Table 2 Relationship Family support with Quality of life ADHD Children's (N = 63)

Variable	Mean	Std. Deviation	Pearson Correlation	p Value
Family Support	26.98	7.223	0.783	0.000

Discussion

The results of the study the relationship between the anxiety of families with children living quality of this ADHD gain value (p = 0.00), this indicates a significant relationship between anxiety families with children ADHD quality of life and have a relationship that was quite strong (r = 0.75). The results of this study are similar to studies Theule (2010), family anxiety had a significant association with the quality of life of children ADHD (p = 0.000). The results also in line with research conducted by Lange et al (2005), concerns a family has a significant relationship with the child's quality of life ADHD. Further research by Royen (2007), showed a significant relationship between the quality of life of children with feelings kekhawtiran ADHD family and family functions.

The results of this research project the theory by Semiun (2006), anxiety is not always a bad impact, the adaptive response of anxiety will increase the motivation of individuals to do something useful. Resubmitted by Murray & Johnson (2006), the anxiety factor family has contributed to the quality of life of children ADHD. Anxiety family will significantly alter the function of the family, the family will improve the supervision of children and consistent approach to discipline the child to reduce the risk of their behavior. Similar delivered by Podoloski & Nigg (2001), family anxiety will affect family coping ADHD to adapt dealing with children, families will tend to look for other sources of information to deal with children ADHD, such as how to improve social support,

Judging from the view of the community nursing, their relationship with the family anxieties lives of children ADHD it indicates that the feelings experienced by the family plays an important role to changes in the quality of life of children ADHD. Community nurses see this phenomenon would be important for the community nurses in caring for the family anxiety conditions. As presented Mubarak (2006), the support of community nurses prioritize promotive and preventive continuously without neglecting curative and rehabilitative services completely and comprehensively addressed to the individual, family, group to improve life function optimally, so as to be independent in health efforts ,

Independence of the family in maintaining the health and realize health is a major factor to be achieved by community nurses to families who are experiencing anxiety. Community nurse has hope to families that have the ability to identify health problems experienced by, set of health problems and prioritize problems, solve problems, cope with their health hadapai and evaluate the extent of solving the problems they face, which ultimately can improve the ability to maintain the health of independently (self care).

Attainment of independence families would not be separated from the community nursing strategy adopted them; provide health education. Health education in the form of a dynamic process of behavior change, where the change is not just a material transfer process / theory from one person to another and it is not a set procedure. However, these changes occur within the consciousness of individuals, groups or society itself. This family anxiety problems, nurses can provide health education about the positive things that can reduce anxiety among families with spiritual approaches, families are encouraged to draw closer to God Almighty, strive always grateful and believe that all the provisions of his was the best thing and definitely has a wisdom behind it. Then, provide health education related to information important in controlling anxiety families, such as providing health information to improve the health of children ADHD.

Then, a strategy that can be applied to families: partnership (cooperation). Various health problems that occur within the family environment. Therefore, cooperation is needed in order to achieve the purpose of nursing care through these efforts the various problems in the family will be resolved faster. This cooperation strategy will involve schools, families and communities. The school, family and community to get referrals to provide moral support and social terhadapo those families who have children ADHD, so expect the support of the collective of the school, the community towards families with children ADHD so do not feel isolated or embarrassed by her condition.

Apart from the role of community nurses, this study also showed relatively good family economic circumstances. It would be good for families, in addition to their role as well as community nurses, school and community. Established economic status present a materially prosperous. so that allgood family needs a healthy family needs and the needs of families who are sick can be fulfilled properly without increasing the burden on families. Landgraf, Rich and Rappaport (2002) describe the quality of life of older people was good, will have an impact on the behavior of parents of children ADHD. Most of the quality of life of parents are well illustrated by the lives of good economic status as well.

Caring for a child ADHD not only requires sensitivity, positive aspects and the role of parents is needed. However, to shape the child’s behavior is very necessary ADHD internal cognitive and affective adequate parents (Belsky, 1984 in Theule, 2010). Internal cognitive aspect is characterized by a high level of education. Higher education can bring out the sensitivity of parents to their children what was needed, a sense of responsibility, consistent and their unity (Belsky, 1984; Erickson & Reimer, 1999, in Theule, 2010).

The results of the research study Moen (2014), parents with children ADHD in Sweden do not always have lower education, more than half (69%) of parents have a higher education. ADHD parents with children not only need patience and a positive attitude, but more than it should have special skills (cognitive) in providing good care to children with ADHD.

The level of education has associated with the behavior, especially the behavior of parents of children with ADHD. Higher education reflects the mindset of someone who is able to adopt a positive attitude so well that it will be useful in the application of health care in children with ADHD. In line with the opinions Notoatmodjo (2008), educational level is an indicator that someone has menepuh formal education in a specific field which is an indicator that someone has mastered several disciplines. Someone with a good education, a more mature toward processes of change in themselves and change others and the environment, making it easier to accept outside influences are positive, objective and open to a variety of information including health information.

Families who live with children with special needs tend to worry and difficulty in maintaining and caring for a child with special needs, especially children ADHD. ADHD child showing hyperactive behavior, impulsivity and inatensi that tend to harm both the family and for others. This will lead to increase the feeling of fear the family so that the family tried to find a solution how to provide care to improve the health of children ADHD.

In addition, factors that support families to improve child care ADHD a good level of education that is family owned so that families have sufficient knowledge in receiving and managing information on child care ADHD to improve the quality of life of children with special needs. Internal cognitive aspect is characterized by a high level of education. Higher education can bring out the sensitivity of parents to their children what is needed, a sense of responsibility, consistent and their unity (Belsky, 1984; Erickson & Reimer, 1999, in Theule, 2010).

The results of the study showed that the relationship between family support ADHD child's quality of life obtain the value ($p = 0.00$), this indicated a significant relationship between family support with the quality of life of children ADHD. and have a relationship that was quite strong ($r = 0.78$). In line with the research Riley (2006), the results of research states that behavioral factors and support families who are not well significantly to the quality of life of children ADHD ($p = 0.00$). Family support that is not balanced, as not motivate the child, there is no time to play with children, do not protect children and do not understand the characteristics of children will have an impact on the psychological side of the child, the child felt ignored by a family so this has an impact on the quality of life of children with ADHD.

Next, the research by Rommelse, Altink, Oosterlaan, Buschgens, Buitelaar, and Sergeant (2008) The results showed a good family support had a significant relationship with the child's quality of life was good ADHD ($p = 0.00$). Lange, Sheerin, Carr, Dooley, Barton, Marshall and Doyle (2005) in The observations mentioned that family support is very influential on children's health improvement ADHD.

Based on the theory of Friedman (2003),family support is an attitude, actions and acceptance of family to sick patients. Family members saw that the people who are supportive are always ready to provide help and assistance if needed. The family is an important part of the health for the whole family. Parents are the most important part in the survival of a family, a good parent has the potential to promote health, feeling happy (well-being) and the development of physical and emotional, as well as the prevention of diseases and social problems that afflict the next generation (Gage, Everett & Bullock 2006).

Presented by Moen (2014), besides impact on self and social life, the impact of children with ADHD also felt by the family. Families must adapt to maladaptive behavior arising from ADHD children and families should prepare something unexpected happens to the child every day. Families should develop special skills in providing support, confidence and guidance to children with ADHD. In addition, families with children ADHD tend to have extreme experiences for their children, thus requiring them to adapt or have a positive coping with ADHD face child to care for, maintain and improve their quality of life (Podoloski & Nigg, 2001).

Scaramella & Leve (2004) describe the family is the most convenient place and the development of positive behaviors early on to children by teaching children about social values that exist in the home, school and community, as well as instilling religious values and other values. As well as providing protective treatment to the child's behavior. In addition, Tripp, Schaughency, Langlands & Mouat (2007) described the family was a source of support for the warmth / friendliness towards children at any time, the interaction and the ability to interact with others and the environment and a comfortable place to play and fun for children. Overall support of the family can realize an optimal quality of life for children.

As a community nurse, the results of this study can be used as an initiation for nurses to use support families by involving schools, families and communities. Acting as a coordinator, a nurse can foster co-operation with schools, with the nearest health center, families and communities in order to provide health education, health promotion related to how to give good support to children ADHD family support at home, at school social support and social support surrounding communities. In addition, nurses are able to communicate to your family needs, so as to use the resources in family support to maintain and improve the health of individuals and family members (Ryan & Scullion, 2000).

Family support comes from a family that has a value of warmth, comfort and a high sincerity it will touch the child as a human instinct, so that the child will be more easily directed to the better in order to improve the quality of life. With the support of the family collective, it is not independent of family wisdom involving external environment (school and community) that together can improve the quality of life of children ADHD.

Based on these findings, the important thing is the anxiety of this growing family will have an impact on the quality of life of children ADHD reduction and increased family support will improve the quality of life of children ADHD. Family anxiety problems is a major issue that must be addressed by a community nurse. Nurses can pursue health promotion by involving families in an organized manner by solving the problems that they have to use the nursing process approach and expected them to be independent in maintaining their health through health education (Mubarak & Chayatin, 2009).

Health education efforts to the problem of family anxiety can nurse health counseling on how to cope with family anxieties by providing information about the child penanggulan ADHD, along with a spiritual approach method. So families can obtain information about how to improve and optimize efforts ADHD child health as their treatment can be given, the therapy can be given as well as schools that can foster a child with ADHD to realize the quality of life of children ADHD better.

Based on these findings show that family anxiety and support the family has a relationship simultaneously with the quality of life of children ADHD. That is, an increase or decrease in the quality of life can be determined by changes in the anxiety of family and family support simultaneously.

Studies conducted Ostberg & Hagekull (2000) in Sweden, the anxiety of family and family support had a significant association with the quality of life of children ADHD. Family anxiety can lead to increased family support. Families are anxious, have the initiative to seek solutions in solving problems that occur in family members, especially children ADHD so that such solutions will influence the changes in the role and function of a good family to family attention to children ADHD, compassion good and social support others. The linkage anxiety which leads to increased family family support can have a positive effect on quality of life of children ADHD.

According Crnic & Greenberg (1990), family anxieties contextually predictable various things including frustration experienced by the family, turmoil of family functioning and family stressors factors, but it is inseparable from the social circumstances support the family including friends, family and community. From the theory reveals that anxiety has a very close relationship with family support.

Problems link between the anxiety of family and family support for children's quality of life ADHD impact on the role of community nursing, especially nursing school health. As a result, the role of nurses to be double, nurses must be able to direct the family anxiety that can be projected into the emergence of a good family support so as to realize the quality of life of children ADHD.

Conclusion

There is a relationship between anxiety and quality of life for ADHD children.

Each increase in one family anxiety unit will increase the value of quality of life for ADHD children. And also relationship between family support and the quality of life of ADHD children. Every increase in one family support unit will increase quality of life for ADHD children.

Because quality of life children ADHD have connected with family anxiety and support nurse are expected to increase school health services by involving schools, families and communities as well as the expected nursing policy makers in order to make policy on the procurement of health-based community health nursing school.

References

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders.* 4th, Text Revised. Washington, DC: American Psychiatric Press, Inc.

Escobar, Soutullo C.A &,Hervas A. (2005). Worse quality of life for children with newly diagnosed attention-deficit/hyperactivity disorder, compared with asthmatic and healthy children. *Pediatrics. 13*, 234–250 https://doi.org/10.1542/peds.2005-0386.

Friedman. (2003). *Family nursing: Research, theory and practice.* (5th ed). New Jersey: Prentice Hal.

Gau, S. S., Chong, M. Y., Chen, T. H., & Cheng, A. T. (2005). A 3-year panel study of mental disorders among adolescents in Taiwan. *American Journal of Psychiatry, 162*, 1344–1350.https://doi.org/10.1176/appi.ajp.162.7.1344.

Judarwanto, W. (2007). *Penatalaksanaan attention deficit hyperactive disorders pada anak*. Tesis. Universitas Gajah Mada.

Landgraf, J.M, Rich, M., & Rappaport, L. (2002). Measuring quality of life in children with attention-deficit / hyperactivity disorder and their families: development and evaluation of a new tool. *Archives of pediatrics & adolescent medicine, 156*(4), 384–391.

Lange, G., Sheerin, D., Carr, A., Dooley, B. Barton, V., Marshall, D., ... & Doyle, M. (2005). Family factors associated with attention deficit hyperactivity disorder and emotional disorders in children. *Journal of Family Therapy, 27*(1), 76–96.

Moen, Ø. (2014). *Everyday life in families with a child with ADHD and public health nurses' conceptions of Reviews their role.* Dissertation nursing science. Karlstad University.

Mubarak, WH (2006). 2. *Introduction of Community Nursing*. Jakarta: Sagung Seto.

Murray, N. G., Low, B. J., Hollis, C., Cross, A. W., & Davis, S. M. (2007). Coordinated school health programs and academic achievement: A systematic review of the literature. *Journal of School Health, 77*(9), 589–600. https://doi.org/10.1111/j.1746-1561.2007.00238.x.

Nijmeijer, J.S, Minderaa, R.B, & Buitelaar, J.K. (2008). Attention-deficit/ hyperactivity disorder and social dysfunctioning. *Clin Psychol Rev;28*, 692–708. https://doi.org/10.1016/j.cpr.2007.10.003.

Notoatmodjo, S. (2008). *Metodologi Penelitian Kesehatan.* Edisi revisi. Jakarta: PT. Rineka Cipta.

Podolski, C.L, & Nigg, J.T. (2001). Parent stress and coping in relation to child ADHD severity and associated child disruptive behavior problems. *Journal of clinical child psychology, 30*(4), 503–513.

Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: A systematic review and metaregression analysis. *American Journal of Psychiatry, 164,* 942–948. https://doi.org/10.1176/ajp.2007.164.6.942.

Riley, A. W. (2006). Factors related to health-related quality of life (HRQoL) among children with ADHD in europe at entry into treatment. *European Child & Adolescent Psychiatry, 15*, I38-45. doi: http://dx.doi.

org/10.1007/s00787-006-1006-9.

Rommelse, N.N.J, Altink, M.E, Oosterlaan, J., Buschgens, C.J.M, Buitelaar, J., & Sergeant, J.A. (2008). Support for an independent familial segregation of executive and intelligence endophenotypes in ADHD families. *Psychological Medicine, 38*(11), 1595.

Semiun, Y. (2006). 3. *Mental health.* Yogyakarta: Canisius.

Strine TW, Lesesne CA, Okoro CA. (2006). Emotional and behavioral difficulties and impairments in everyday functioning among children with a history of attention-deficit/hyperactivity disorder. *Prev ChronicDis,3:*A52.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1563970/.

Theule, J. (2010). P*arenting stress in families to quality of life children with ADHD.* Dissertation Doctor of Philosophy. University of Toronto. http://ebx.sagepub.com/content/early/2012/01/24/1063426610387433.

Varni JW, Burwinkle TM. (2006).The PedsQL as a patient-reported outcome in children and adolescents with Attention-Deficit/Hyperactivity Disorder: A population-based study. *Health Qual Life Outcomes,4*:26. https://doi.org/10.1007/s11136-005-1388-z.

Vaughan, B.S., H.J. Roberts., & H.Needelman, (2009). Cur¬rent medications for thetreatment of ADHD. *Psychology in the Schools, 46*(9),846–856. https://doi.org/10.1002/pits.20425.

Wehmeier, P. M., Schacht, A., & Barkley, R. A. (2010). Social and emotional impairment in children and adolescents with ADHD and the impact on quality of life. *Journal of Adolescent Health, 46*(3), 209–217. https://doi.org/10.1016/j.jadohealth.2009.09.009.

Weyandt, L. L., & DuPaul, G. (2006). ADHD in college stu¬dents. *Journal of Attention Disorders,10* (1), 9–19. https://doi.org/10.1177/1087054705286061.

Wihartono, W. (2007). Faktor Risiko Attention Deficit/Hyperactivity Disorder pada murid sekolah SD di Kecamatan Banguntapan Kabupaten Bantul D.I. Yogyakarta: *Artikel Penelitian. Berkala Kesehatan Klinik. 2007;VIII*(2):73-81.

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Factors Related To The Needs Of Parents Having School Age Thalassemic Children

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Abstract

Thalassemia is a major genetic blood disorder that has negative impacts on thalassemic children and their family. The needs of parents while caring for thalassemia children are important matters because the failure of meeting needs of parents may affect their mental and physical health. Yet, litle is known about factors that meeting the needs of thalasemic child parents. The study aim was to identify factors that correlate with the needs of parents having a school age thalassemic child in west jave province. This research used correlational analytic with cross sectional approach. The population in this study were parents of school-age children with thalassemia major totaling 136 people using the total sampling method. Data were analyzed with bivariate using chi square and biserial points. Then a multivariate analysis used logistic regression. The results showed the age of parents related to information (p = 0.005) and professional (p = 0.004), parent gender related to information (p = 0.000), professional (p = 0.017), social (p = 0.035), financial (p = 0.023) and spiritual (p = 0.009). Parental education is related to information (p = 0.000), social (p = 0.005), emotional (p = 0.000), financial (p = 0.016) and spiritual (p = 0.001). Parent income is related to information (0.000), social (p = 0.006), emotional (p = 0.000), financial (p = 0.003) and spiritual (p = 0.004). The number of thalassemia major children is related to emotional (p = 0.015) and financial (p = 0.013). Parental needs are related to several factors. The importance of increasing the role of nurses as educators and consultants and helping parents find sources of spiritual, emotional and financial support for parents of school-age children with thalassemia.

Keywords: Needs, parents, school-age children, thalassemia major.

Introduction

Thalassemia is an inherited hematological single gene disorder leading to anemia in affected children in the world that represents a major public concern in Southeast Asia, including Indonesia (Galanello & Origa, 2010; Mediani, Nurhidayah, Mardhiyah & Panigoro, 2017; Viprakasit Origa, & Fucharoen., 2014). According to the Indonesian Thalassemia Foundation-the central association of parents of thalassemia children that Indonesia is one of the countries with a high prevalence of thalassemia with the carriers of thalassemia around 5–10% and it is estimated that every year 500-600 babies are born with thalassemia. In 2015, thalassemia cases in Indonesia reached 7,029 cases. Meanwhile, cases of thalassemia in west java is the highest in Indonesia, it reachs 42% cases or 3,300 in early January 2016 (Kemenkes., 2017).

Thalassemia consists of minor thalassemia or the carrier and thalassemia major (Galanello & Origa, 2010; Regar, 2009). Thalassemia major is obtained genetically which is characterized by the reduction or absence of beta globin synthesis which results in the destruction of red blood cells in the bone marrow or spleen therefore, decreasing Hb, red blood cell production and anemia (Galanello & Origa, 2010; Marcdante, Kliegman, Jenson & Behrman, 2011).

When a child is diagnosed with thalassemia, parents start a new routine, are preoccupied with scheduling treatment, seeking information and learning about the treatment process, changing patterns of work, income, and responsibilities in the family and providing emotional support to children and other family members (Klassen et al., 2011; Pelentsov, Fielder & Esterman., 2015). Parents as caregivers should fulfil their duties of caring for school-aged children with thalassemia who need care for life (Astarani & Siburian., 2016; Pouraboli et al., 2015; Potts & Mandleco, 2007), but on the other hand they also need to meet the other children's needs, family members' needs and their own needs so that it requires great time, efforts and sacrifice (Astarani & Siburian, 2016; Klassen et al., 2011).

Need is an important thing and satisfaction is an indicator when needs have been fulfilled or not, in other words, someone will feel satisfied once they met their needs (Kim, Kashy, Spillers & Evans, 2010). Failure to fulfil needs results in an imbalance in one's condition that will affect mental and physical health (Asmadi, 2008; Winstanley, Simpson, Tate, & Myles, 2006). The health problems occurred in parents will affect the care of their children with thalassemia and lead an impact on children's health (Mediani et al., 2017; Wacharasin, Phaktoop & Sananreangsak, 2015), besides that, children also spend more time at home with parents compared to hospitals so parents can provide care better for their children (Wilder, 2010). The needs of parents in school-aged children with thalassemia are associated with long-term complications, blood transfusions and iron chelation (Mediani et al., 2017; Shosha, 2014).

The needs of information that needed by parents related to congenital blood disorders (carrier) in parents and how the scheme devolves to children, the vulnerability of thalassemia and managing side effects of transfusions such as iron overload. The needs of support are expected to come from family, friends, neighbours, teachers, nurses and physicians' supports regarding care, treatment and follow-up care (Mediani et al., 2017). Then the needs of financial are needed relating to thalassemia treatment: transportation costs, hospital admission costs when the child is sick, and costs while leaving his job to accompany his child (Mediani et al., 2017; Shosha, 2014). The needs of emotional of parents are related to the children's health condition, the severity of the disease and the responsibilities of parents. They live in fear and helplessness because their child's illness will worsen over time (Pelentsov, Dip, Laws & Esterman, 2015). The needs of spiritual are another urge for parents (Pelentsov, Dip, Laws & Esterman., 2015; Sujana, Fatimah & Hidayati, 2017). The needs of spiritual of parents concerned about the urge for meaning and purpose while caring for the child. Some parents feel unable to get involved with religious rituals and practices because of their child's illness, resulting in a crisis of faith.

Sociodemographic characteristics are strong predictors of not meeting the needs of parents and must be considered in developing interventions to help parents meet their needs (Kim, Kashy, Spillers, Evans, 2010). Sociodemography means a description of the population as a whole or group and is categorized based on certain characteristics, such as age, socio-economy and distribution of residence (Adioetomo, 2010). Some literature showed that the sociodemographic characteristics of parents related to the needs of parents including age, gender, education level and income (Kim, Kashy, Spillers & Evans, 2010) and the number of children with thalassemia (Habeeb et al., 2015; Ishfaq, Naeem & Ali, 2013). According to Kerr (2008) and Pelentsov, Dip, Laws and Esterman (2015) based on the concept of supportive care needs, this needs are influenced by age, gender, education, economic status, family support, culture and religion. The Child's characteristic related to parents' needs is time period of being diagnosed (Golics et al., 2013).

Family involvement in nursing care is part of the philosophy of pediatric nursing, namely family-centred care (Kyle & Carman, 2014). Family-centred care is able to improve the quality of life of children with thalassemia (Nafafi, Borhani, Rabari & Sabzevari, 2011). Family-centred care is used as a standard of pediatric nursing practice that involves families/parents in caring for children (Kuo et al, 2012; Suza, 2017).

As a pediatric nurse who provides nursing care, it is necessary to understand the factors related to the needs of parents in order to provide appropriate interventions according to the parents' needs of school-aged children with thalassemia. If the nursing interventions provided are not in accordance with the parents' needs, parents will experience emotional distress and have difficulty caring for their child (Fitch, 2008).

The Aim Of The Study

The aim of the study was to analyze factors that relate to the needs of parents having school age thalassemic children at 4 government hospitals in West Java Province.

Method

This study used a quantitative method with correlational analytic research design and a cross-sectional approach. The cross-sectional study is observing the subject of the study once and carrying out the variable measurement at the same time (Keller & Kelvin., 2012). The study used the total sampling method to choose the overall sampling of the population (Sugiyono, 2013). The sample in this study were all 136 parents of school-aged children (6–12 years) with thalassemia major: 40 respondents from Distric Hospital 45 Kuningan; 20 people from Gunung Jati Cirebon Hospital, 23 parents from Majalengka Distric Hospital and 53 people from Sumedang Distric Hospital. Sample selection based on inclusion criteria that were parents who accompany their thalassemic children for having thallasemic treatment in those hospitals, parents who can read and write, parents with children who undergo transfusions and iron chelation treatment. While, the exclusion criteria in this current study was parents with children who have undergone splenectomy.

Data collection was carried out in 4 govenment distric hospitals in West Java Province for five weeks starting on July 3rd, 2018 until August 21st 2018. Data coolection method used in this current study was questionnaires which focused on the needs of information, emotional, and spiritual using supportive care need instrument modified from Kerr et al. (2007) and the needs of professional from Pelentsov et al. (2016) while social and financial needs using the family need survey instrument. Meanwhile, the factors studied were the parents' age, gender, education, parent income, number of thalassemia major children and the time period of being diagnosed.

Data analysis were processed by using the computer software. Several data analysis techniques used in this study: 1) Univariate analysis was performed to obtain the frequency from each variable, 2) Bivariate analysis was conducted to determine the significance of the relationship between each independent variable and one dependent variable using the chi-square test and biserial points, and 3) Multivariate analysis used logistic regression due to variables in this study is categoric.

This study was approved by the Health

Research Ethics Committee of the Faculty of Medicine, Universitas Padjadjaran. The ethics committee has reviewed the study protocol and determined that it adheres to ethical principles. Ethical approval number is 514/UN6.KEP/EC/2018. Permission for conducting this study was obtained from dean faculty of nursing and directors of the hospitals. All participants were asked to complete a consent form. Confidentiality was warranted by restricting access to the names of participants and demogarpahic details were separated from other data to ensure that respondents could not be identified. Only the researchers can access to the raw data.

Results

Table 1 Characteristics of Parents of School-Aged Children with Thalassemia Major in West Java

Variable	f(%)
Age (years old)	
Late Adolescent (17–25 years old)	42 (30.1)
Adults (26–45 years old)	71 (52.2)
Early Elderly (46–55 years old)	24 (17.6)
Gender	
Male	34 (25.0)
Female	102 (75.0)
Education	
Primary (Elementery School/Junior High School)	79 (58.1)
Middle (Senior High School/of the same level)	36 (26.5)
High (College)	21 (15.4)
Income	
< Regional Minimum Wage (IDR 2,250,000)	97 ((71.3)
> Regional Minimum Wage (IDR 2,250,000)	39 (28.7)
The Number of Thalasemia Major Children	
1 child	110 (80.9)
> 1 child	26 (19.1)

Table 2 Characteristics of School-Aged Children with Thalassemia Major in West Java

Variable	mean ±SD	min	max
Length of time diagnosed	7.5 ± 2.85	1.00	12.0

Table 3 The Needs of Parents of School-Aged Children with Thalassemia Major in West Java

The parent's needs	Low		High	
	f	%	f	%
Need of Spiritual	56	41.2	80	58.8
Need of Social	57	41.9	79	58.1
Need of Information	60	44.1	76	55.9
Need of Emotional	63	46.3	73	53.7
Need of Finansial	69	50.7	67	49.3
Need of Professional	74	54.4	62	45.6

Table 4 Relationship of Parents' Age, Gender, Education, Income, the Number of Thalassemia Major Children with Parents' Needs of School-Aged Thalassemia Major Children in West Java

Variable	The parent's needs					
	Information	Emotional	Professional	Financial	Social	Spiritual
	P-value	P-value	P-value	P-value	P-value	P-value
Age 17-25 years old 26-45years old 46-55 years old	0.005	0.213	0.004	0.683	0.320	0.168
Gender Male Female	0.000	0.136	0.017	0.023	0.035	0.009
Education Elementery Midle High	0.000	0.000	0.794	0.016	0.005	0.001
Financial < UMR ≥ UMR	0.000	0.000	0.103	0.003	0.006	0.004
The Number of Thalassemia Major Children 1 child >1 child	0.670	0.015	0.246	0.013	0.052	0.924

Table 5 Length of Time Diagnosed with the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

Variable	Needs of Information	Needs of Professional	Needs of Social	Needs of Emotional	Needs of Financial	Needs of Spiritual
Length of Time Diagnosed	r = 0.170 p = 0.047	r = 0.127 p = 0.142	r = 0.222 p = 0.010	r = 0.265 p = 0.002	r = 0.202 p = 0.018	r = 0.157 p = 0.069

Table 6 The Significant Factors Related to the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

Factors	Needs	B	Wald	p-Value	OR (CI 95%)
The Number of Thalasemia Children	Emotional	1.385	6.038	0.014	3.995(1.324-12.060)
	Financial	1.153	3.383	0.024	3.167(1.165-8.607)
Gender	Information	2.639	22.090	0.000	13.997(4.657-42.069)
	Professional	1.332	7.943	0.005	3.790(1.500-9.572)
	Social	1.288	7.865	0.005	3.625(1.474-8.918)
	Spiritual	1.411	9.790	0.002	4.100(1.694-9.922)

It can be seen from the table 1 above more than a half of parents are 26-45 years old (52.2%). Mothers tended to accompany children more during thalassemia (75.0%) compared to fathers (25.0%). The majority of parents' education is on the elementary level (58.1%). Most of the parents get income less than Rp 2,250,000 or below the West Java RMW (71.3%). The majority of parents have one child with thalassemia (80.9%).

The time period diagnosed is an average of 7.5 years with only a year diagnosed and a maximum of 12 years with an average and standard deviation of 7.5 ± 2.85.

Based on the table 3 above, the needs of spiritual (58.8%) and social (58.1%) were the two highest of the parents' needs, follows the need of information (55.9%), emotional (53.7%) and for the two lowest of parents' needs were financial (49.3%), and professional (45.6 %).

Based on the table 4 above shows that the parents' age is related to the needs of information and professional with (p <0.05). The gender has a relationship with each domain of parents' needs except emotional needs. Moreover, education and income factors have a relationship to each domain of parents' needs except professional needs (p <0.05). Interestingly, the number of having a thalassemic child is the most related factor to emotional and financial needs, while others: the needs of information, professional, social and spiritual are significantly related to the gender of parents.

It can be seen from table 5 above there is a relationship between the length of time diagnosed with the needs of parents of school-aged children with thalassemia major, except for professional and spiritual needs.

Table 6 The Significant Factors Related to the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

The table 6 above illustrates result of multivariate analysis which indicates the variables that most related to the needs of parents of school-aged children with thalassemia major, based on the p-value and the Odd Ratio (OR) value: more than one thalassemia children who need emotional support more than 3,995 times and needs of financial more than 3,167 times compared to only one child thalassemia. Furthermore, female parents tend to need of information support was about13,997 times, professional needs of 3,790 times, social needs of 3,625 times and spiritual needs 4,100 times compared to male parents.

Discussion

So far to our knowledge, this is the first study conducted in multisites in West Java to explore predicting factors that correlated to the needs of thalassemic child parents. The findings of this study found that the highest needs of parents are spiritual needs. Thalassemic children need a life-long of treatments such as regular blood transfusions and iron chelation therapy (Mediani et al, 2017; Pillitteri., 2010). This such long treatments may cause negative impacts on thalassemic children and their families (Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, 2007). Fulfilment of spirituality in parents provides strength and helps them in controlling the problems and their burdens that occur which are related to their children's illness (Mediani et a.l, 2017; Pillitteri., 2010; Sujana, Fatimah & Hidayati, 2017). Spirituality is a source for someone who is religious as his coping (Frey, Daaleman., & Peyton., 2005).

The meaning of spirituality is finding out whether parents can find the meaning and purpose of life when their children are sick. If parents cannot find the meaning and purpose of their life, as a nurse, they can help parents find the meaning of spirituality and encourage parents to use their spirituality as a strength in facing problems (Nur'aeni, Ibrahim & Agustina, 2013). The conditions faced by parents make their lives not as normal as before children suffering from thalassemia, thus, by these conditions parents can actually take wisdom in their lives (Hexem et a.l, 2011). Previos research conducted by Nuraeni, Nurhidayah, Hidayati, Sari and Mirwanti (2015) showed that almost all respondents in this study chose and knew the spiritual needs by finding the meaning of pain and suffering.

Age affects a person in expressing feelings and using coping through illness (Viedebeck., 2008). Usually, anxiety at a young age is easier to emerge from at an older age, but can also occur otherwise. The anxiety that occurs in the elderly can arise due to past experience of the same thing before (Kaplan & Saddock, 2010). Research conducted by McKenna, Coller, Hewitt and Blake (2010) found that older parents want more information support from health professionals in making decisions. The older the age of parents will experience a physical decline so that it has an influence in providing information (Fahra, Widayati & Sutawardana, 2017; Kaplan & Saddock, 2010). Therefore, the parents' physical decline limits parents in seeking information so that it requires information support, in contrast to young age who can seek information from various sources.

Fathers are more responsible for family finances, this is related to the culture that the main breadwinner is a father (Handian, Widjajanto & Sumarni, 2017). In this study, most mothers did not work or as housewives and rely solely on income from their husbands. This makes the fathers have a greater financial burden so the financial support is more needed for the fathers than the mothers (67.6%). Meanwhile, mothers have a more sensitive feeling to their emotions that affect their emotional and psychologically status, they will easy to get anxiety and stress (Kaplan & Saddock, 2010). As Mediani et al. (2017) indicated that all mothers in their study experienced more fear and sadness because they felt worries and uncertainty about the future of their thalassemic child. Similarly, Oers et al. (2014) found that parents who have children with chronic diseases, especially mothers report high levels of anxiety and depression.

Interestingly, this current study is different from previous research conducted by Mundy (2010) that indicated the needs of mothers were not significantly different from fathers. In Asian culture, especially in Indonesia, fathers are required to remain calm in an emotional state and must control their emotions, so they are not free to express emotions (Kati, Opod & Pali, 2018). Although the gender in this study did not relate to emotional needs, the results of cross-tabulation showed that mothers needed high emotional needs (57.8%). Children with thalassemia pose an emotional burden to mothers because they are pregnant and raise children so they have stronger relationships with children.

Education is foundation for people to drive their ability in improving their health status; it enables people to be more productive to earn a better quality of life (Mediani, 2014). Low educated people tend to be less able to use effective and constructive coping compared to higher education levels so that they need the support of other coping sources (Davies et al, 2011; Notoatmodjo, 2007). Higher education will influence the thinking of parents so it is more rational in dealing with problems. People with having adequate knowledge and education tend to have effective and constructive coping when facing problems that will more easily overcome anxiety and fulfil their emotional needs (Mediani, 2014; Notoatmodjo, 2007). Results of this current study showed that some parents had low level education background, they finished their study from primary education (elementary/middle school) only and the need of emotional support as much as 67.1%. This study finding is in line with research conducted by Cheah, Ling and Chang (2015) which identified that low education background (elementary school education) was significantly associated with non-fulfilment of needs ($p < 0.01$).

Literature reveals that people who have low basic education are more often faces spiritual distress (Caldeira, Csrvalho & Viera., 2014). Meanwhile, previous study found that people with having higher education tends to have more experience with spiritual needs (Forouzi, Tirgari, Safarizadeh, & Jahani, 2017). Findings of this current study indicated that parents with having higher education are more effective in using spirituality than people with having low education. This current research is concurrent with earlier study conducted by Rezaei, Fatemi, Givari and Hoseyni (2009) which showed that the level of education is related to spirituality, the lower the level of education, the greater the spiritual needs.

High income tends to get good tools in finding information to increase their knowledge (Thavorncharoensa et al, 2010; Novrianda, Yeni & Asterina., 2014). Results of study by Thavorncharoensa et al (2010) stated that income affects information needed by parents, both from visual audio or print media. According to Darmojo and Hadi (2006) people who did not work showed little change in the level of knowledge compared to people who work because they are more active outside so they get a lot of information from friends in their work environment. Previous study conducted by Novrianda, Yeni and Asterina (2014) showed that income has a meaningful relationship with knowledge ($p = 0.006$). High economic status has better opportunity to get whatever is needed including information networks, while parents with low economic status must think about spending money because basic needs are more important to them. Health professionals also tend to assume that low-income parents are able to understand and use information properly (Gallo, Knafl & Angst., 2009). Another study conducted by

Alam (2007) found that parents with low economic status are associated with not meeting financial needs, especially medical expenses. In this study, parents said that even though the cost of treating thalassemia was borne by the Social Security Organizing Agency (BPJS), but parents with low income said they had to bear other costs such as transportation because they used motorcycle taxis, public transportation and minibuses to the hospital.

Social support is very important for low-income individuals because it helps them overcome financial problems (Documet et al, 2015; Mediani et al, 2017). The family financial burden on health care can be reduced by family support (Golics, Khurshid, Basra, Salek & Finlay, 2013). The research conducted by Mashayekhi, Jozdani, Chamak and Mehni (2016) found that low income can significantly influenced social support. Results of this study is concurrent with this current study that parents with low income required higher social support. This current study fundings are supported by otherprevious study conducted by Norberg, Lindblad and Boman (2006), which showed that income was related to social support received by parents (p = 0.012). Parents who care for children with chronic diseases and also low-income people will greatly influence their social life, such as interaction with other people in daily activities will be carried out quickly or immediately abandoned even though these activities have not been completed (Golics et al, 2013).

The more number of children, the stress level of parents would be higher because the role that must be done is increased as parents who care for children (Alam, 2007; Mirbehbahani, Salehi, Jahazi, &Karimi, 2014). Research conducted by Mirbehbahani, Salehi, Jahazi and Karimi (2014) showed that having more than one child thalassemia was associated with depression in the elderly (p = 0.01). Parents who have two thalassemia children feel sad and disappointed hoping that their other children will not suffer from thalassemia. Parents with two or more thalassemia children have greater pressure than parents who have one child with thalassemia major (Sultana, Humayun, Humayun & Zafar, 2016).

The financial burden becomes a problem in the family when treating children with chronic diseases, especially genetic diseases (Mediani et a, 2017). This means parents who have more than one child are influential in the family, especially low socio-economic groups (Wahab et al, 2011). The number of children affects the family finances because more and more children are cared for causing greater costs.

Based on bivariate tests showed there was no relationship between the number of thalassemia children and the spiritual needs of parents but the results of cross-tabulation showed that parents who have more than one thalassemic child need spiritual support. Everyone depends on spiritual and religious support in controlling their emotions (Golics et al, 2013). In this study, the mothers always cried while praying and wondered why their child must suffer from thalassemia and be different from other children.

The longer caring for children with thalassemia, the more obstacles faced by parents and that such bariers must be overcome during caring for thalasemic children because parents will often feel anxious about the uncertain condition of the child (Mediani et al, 2017; Rachmawati, Ranuh & Arief, 2016). Infact the treatment of thalassemic children need a life-long treatments of regular blood transfusion and iron chelation therapy, however there is no certainty of recovery also makes parents feel anxious (Mediani et al, 2017; Pouraboli et al, 2015). Similarly, Norberg and Boman (2008) found that anxiety and depression that occur in older people still occured after 2.5 years since being diagnosed and 12% of parents with having children diagnosed of cancer more than five years continue to report the same thing. This is due to parents's coping was not effective in overcoming their psychological distress and fear knowing their child illness. In addition, long treatments of thalassemia such as routine transfusions cause negative impacts on thalassemic children. Changes in face shape, skin colour, splenomegaly and growth delay in their children and delaying puberty in children as common problems faced by thalassemic children as side effect of long routine transfusion that will cause concern to parents (Kahouei, Kazemzadeh,

Zadeh & Ahmadi, 2016; Mediani et al, 2017; Norberg, & Boman, 2008; Shosha & Kalaldeh., 2017; Shosha, 2014).

Parents need information not only at the beginning of the diagnosis but continue during childcare (Mediani et al, 2017; Ririnisahawaitun, Prabandari, & Gamayanti, 2015). Research conducted by Lee, Nelson, Thompson and Donovan (2016) showed that the length of time diagnosed is related to information needs. According to Dahnil, Mardhiyah and Widianti's study (2017) that more than half of respondents need information regarding thalassemia, treatment and side effects of therapy. Similarly, Mediani et al. (2017) found that all participants in this study needs a lot information regarding the disease and its treatments. Parents still want the latest information about thalassemia such as new treatment options related to chelation and transplantation (Liem et al, 2011).

Acording to Shosha and Kalaldeh (2017) after one year since diagnosis of disease, perceived social support tends to decrease. The immediate family and people provide supports at the beggining of the diagnosis but from time to time the perceived support begins to decrease (Banovcinova & Baskova, 2014). The longer suffering from the disease makes a person resigned to treatment different from the time span of the sick who still have high expectations of treatment (Satari et al, 2012). Therefore, parents who have long treated thalassemia children need spiritual support because without hope it will cause a loss of enthusiasm and surrender that affects the care of their children (Mediani et al, 2017).

The longer the child is diagnosed, the treatment that has been carried out has been going on for a long time, this makes parents have financial difficulties because of the repeted costs to the hospital (Rijen, Spreeuwenber, Schippers & Groenewegen, 2013; Satari et al, 2012). Research conducted by Rijen, Spreeuwenber, Schippers and Groenewegen (2013) indicated that the longer the duration of illness is associated with lower opportunities to seek economics, especially parents of thalassemia children in this study some of whom have self-employment such as drivers, farmers and labourers whose income is not fixed monthly.

Based on result of multivariate analysis in this current study to see the most influential variables on the needs of parents thalassemic children can be seen from the value of the Odd Ratio (OR) to the variable p-value <0.05. Results of multivariate analysis indicated that there are three highest of the parents' needs were related to professional, emotional and financial needs. Interestingly, the most related to gender needs were information needs, professional support, social and spiritual support.

Literature identifies that parents who have more than one child with thalassemia major complain of financial problems in the family (Shosha & Al Kaladeh, 2017). This happens because of changes in the family economy and impact on the quality of parents in caring for children (Mediani et al, 2017; Shahraki-vahed et al., 2017; Retnaningsih & Dini, 2016). Some parents with low-economy have problems with the cost of hospital transportation for routine care and the problem is escalating as the number of thalassemia children increasing (Mediani et al., 2017; Shahraki-vahed et al., 2017).

Parents who have more than one child with chronic conditions feel their welfare is lower, less optimistic, distress and even depressed (Ekas, Whitman & Shivers, 2009; Saldanha, 2013). For instance, Saldanha (2013) found that parents who have more than one thalassemic child are significantly experienced stress. Similarly, Ismail et al (2013) identified that parents with more than one child with thalassemia faced more problems due to increased physical and mental stress that affect their quality of life.

The next one, gender was also identified as the most related factor to the needs of parents of thalassemic children in this current study. Spending time with friends and talking with parents of thalassemia is the most important thing for mothers compared to fathers. Emotional support is usually obtained from friends and family, while information support involves health professionals (Mediani et al, 2017; Requena, Arnal, & Gil, 2015). This current research is in line with the research conducted by Maunder (2012) which showed that in a multivariate manner, parent gender is the factor most related to parental needs (OR 3.6). Mothers said she wanted to get more support than fathers. As the primary caregiver, the mother's responsibility to bring her child to undergo treatment for a long time and the mother must also care for other children so that they need a source of support, both emotional, mental and social.

Limited information obtained by parents and poor communication from the nurses causes delays in parents' ability to care for children (Pelentsov, Fielder, Laws & Esterman, 2016). Support of physicians, nurses, psychologists/psychiatrists and nutritionists is the most important source for parents during treatment (Baer, 2013; Requena, Arnal & Gil, 2015). During the treatment is the right time to receive emotional support and information as one of the interventions of health professionals (Mediani et al, 2017: Requena, Arnal, Gil, 2015). It is therefore nurses as patient advocate should more aware about the patients and their family needs. Nurses need to maintain a good communication and provide cointinus supports to their thalassemic patients and their family. Furthermore, it is necessary to provide a consultation room in thalassemic clinic so parents will feel more compfortable and that it can guarantee its privacy and be more open to nurses.

Conclusion

According to findings of this current study can be concluded as follows:

1. The parents' age is related to the needs of information and professional. The gender has a relationship with each domain of parents' needs except emotional needs. Furthermore, education and income factors have a relationship to each domain of parents' needs except professional needs. The number of children with thalassemia major is related to social, emotional and financial needs. The time period of being diagnosed is related to information, social, emotional and financial needs but is not related to professional and spiritual needs.
2. The number of children with thalassemia major is the most related factor to emotional and financial needs, while others: needs of information, professional, social and spiritual are significantly related to the gender of parents.

The results of this study are expected to be input as consideration in providing nursing care to parents who have children with thalassemia.

1) Nurses are expected to play an active role as educators or consultants because most parents of children with thalassemia really need information and emotional support in child care. Therefore, consultation at any time is needed to support the parents' role by providing appropriate knowledge about treatment and care that is being undertaken. In addition, there are specialized nurses who can provide genetic counselling. Nursing services can also provide education on safe contraceptive methods. The implementation of prenatal diagnosis can also be considered in the prevention of thalassemia.

2) Providing spiritual, emotional and financial support to foster a sense of optimism and expectations of parents is needed by empowering parents in finding various sources of support that can strengthen coping strategies, both family and fellow parents who have children with thalassemia and other support groups, and looking for various family financial resources related to treatment, both formal and non-formal institutions such as those provided by the government with the use of BPJS and thalassemia foundations.

For the management of hospitals

It is expected to increase the role of nurses as educators and consultants who are directly faced with every parent who has children with thalassemia by socialising the importance of meeting the needs of parents of children with thalassemia major as an intervention in implement appropriate nursing care so parents can provide caring for their children with thalassemia optimally.

For Further Researchers

Future research is needed to examine other factors in each domain of parents' needs such as marital status, family form, coping, age of the child, and conduct further research by comparing differences in needs between fathers and mothers of school-aged children with thalassemia in helping meet their needs to improve the quality of services, especially pediatric nursing.

References

Adioetomo, S.M., & Samosir, O.B. (2010). *Dasar-dasar demografi 2*. Edisi ke-2. Jakarta: Salemba empat.

Alam, N. (2007). Unmet Need for Additional Medical Care for Sick Children In Mother's View in Rural Bangladesh: Implications for Improving Child Health Services. *Journal biosocial Science, 39*, 769–778. Doi: 10.1017/S002193200700185X.

Asmadi. (2008). *Teknik Prosedural Keperawatan: Konsep dan Aplikasi Kebutuhan Dasar Klien.* Jakarta: Salemba Medika.

Astarani, K., & Siburian, G.G. (2016). Gambaran Kecemasan Orang Tua Pada Anak Dengan Thalasemia. *Jurnal STIKES,* 9(1).

Baer, K. (2013). *A Guide to Living with Thalassemia.* Retrieved from http://www.cooleysanemia.org/updates/pdf/GuideToLivingWithThalassemia.pdf.

Banovcinova L., & Baskova, M. (2014). Role of the family, friends and significant others in providing social support and enhancing quality of life in cancer patients. *Intrenational Conference SOCIETY HEALT. WELFARE.* DOI: 10.1051/shsconf/20163000020.

Cheah, W.L., Ling, N.C., & Chang, K.H. (2015). The supportive care needs for prostate cancer patients in Sarawak. *China Clinnical Oncology, 5*(1):7. doi: 10.3978/j.issn.2304-3865.2016.02.01.

Dahnil, F., Mardhiyah, A., & Widianti, E. (2017). Kajian Kebutuhan Supportive Care Pada Orang Tua Anak Penderita Talasemia. *Nurse Line Journal,2*(1). p-ISSN 2540-7937 e-ISSN 2541-464X.

Davies, N. M., Dickson, M., Davey Smith, G., van den Berg, G. J., & Windmeijer, F. (2018). The Causal Effects of Education on Health Outcomes in the UK Biobank. *Nature human behaviour, 2*(2), 117–125. doi:10.1038/s41562-017-0279-y.

Documet, P., Bear, T.M., Flatt, J.D., Macia, L., et al. (2015). The Association of Social Support and Education with Breast and Cervical Cancer Screening. *Health Education & Behaviour, 42*(1) 55–64. DOI: 10.1177/1090198114557124.

Ekas, N.V., Whitman, T.L., & Shivers, C. (2009). Religiosity, Spirituality, and Socioemotional Functioning in Mothers of Children with Autism Spectrum Disorder. *Journal Autism Development Disorder, 39:*706–719. DOI 10.1007/s10803-008-0673-4.

Fahra, R.U., Widayati, N., & Sutawardana, J.H. (2017). Hubungan Peran Perawat Sebagai Edukator Dengan Perawatan Diri Pasien Diabetes Melitus Tipe 2 Di Poli Penyakit Dalam Rumah Sakit Bina Sehat Jember. *Nurse Line Journal ,2* (1), Mei 2017 p-ISSN 2540-7937 e-ISSN 2541-464X.

Fitch, M.I. (2008). Supportive care framework. *CONJ, 18*(1): 6–24.

Forouzi, M.A., Tirgari, B., Safarizadeh, M.H., & Jahani, Y. (2017). Spiritual Needs and Quality of Life of Patients with Cancer. *Indian Journal of Palliative Care, 23(*4): 437–444. https://dx.doi.org/10.4103%2FIJPC.IJPC 5317.

Frey, B.B., Daaleman, T.P., & Peyton, V. (2005). Measuring a dimension of spirituality for health research. *Research on Aging, 27*(5), 556-577. Doi: 10.1177/0164027505277847.

Galanello, R., & Origa, R. (2010). Beta-Thalassemia. *Orphanet Journal of Rare Diseases, 5*:11.

Gallo, A.M., Knafl, K.A., & Angst, D.B. (2009). Information Management in Families Who Have a Child with a Genetic Condition. *Journal of Pediatric Nursing,24*(3). doi:10.1016/j.pedn.2008.07.010.

Golics, C.J., Khurshid, M., Basra, A., Salek, M.S., & Finlay, A.Y. (2013). The impact of patients' chronic disease on family quality of life: an experience from 26 specialties. *International Journal of General Medicine*

,6, 787–798. http://dx.doi.org/10.2147/IJGM.S45156.

Habeeb, A.D., Hassan, M.K., & Ahmed, B. A. A. (2015). Psychosocial Impact of Sickle Cell Disease On Families in Basra, Southern Iraq; An Experience of Caregivers. International *Journal of Medicine and Pharmaceutical Sciences (IJMPS), 5*(4), 41–52.

Hamzah, I.F., Dewi, E.K., & Suparno (2014). Makna Sakit Pada Penderita Penyakit Jantung Koroner: Studi Fenomenologis. *Jurnal Psikologi Undip, 13*(1), 1–10.

Handian, F.I., Widjajanto, P.H., & Sumarni, (2017). Motivasi, hambatan dan
strategi orangtua keluarga miskin dalam merawat anak dengan leukemia limfoblastik akut (LLA). *Jurnal Care, 5*(1).

Hexem, K.R., Mollen, C.J., Carroll, K., Lanctot, D.A., & Feudtner, C. (2011). How parents of children receiving pediatric palliative care use religion, spirituality, or life philosophy in tough times. *Journal of Palliative Medicine, 14*(1), 39-44. Doi: 10.1089/jpm.2010.0256.

Ishfaq, K., Bhatti, R., & Bin Naeem, S. (2014). Mothers' awareness and experiences of having a thalassemic child: A qualitative approach. In: Proceedings of SOCIOINT14 *International Conference on Social Sciences and Humanities,* Istanbul, Turkey, 8–10 September (2014), pp. 660–669. Turkey: International Organization Center of Academic Research.

Ismail, M., Chun, C.Y., Yusoff, N.A.M., Shahar, S., Manaf, Z.A., et al. (2013).
Quality of life among thalassaemia children, adolescent and their caregivers. *Sains Malaysiana, 42*(3), 373–380.

Kaplan, I.H., Sadock, B.J., & Grebb, J.A. (2010). *Sinopsis psikiatri ilmu pengetahuann perilaku psikiatri klinis.* Tangerang: Binarupa Aksara.

Kati, R.K., Opod, H., & Pali, C. (2018). Gambaran emosi dan tingkat kecemasan pada pasien hipertensi di Puskesmas Bahu. *Jurnal e-Biomedik (eBm), 6*(1).

Kemenkes RI. (2017). *Skrining penting untuk cegah thalassemia.* Retrieved from http://www.depkes.go.id/article/view/17050900002/skrining-penting-untuk-cegah-thalassemia.html.

Kerr, L.M.J., Harrison, M.B., Medves, J., Tranmer, J.E., & Fitch, M.I. (2008). Understanding the supportive care needs of parents of children with cancer: An approach to local needs assessment. *Journal of Pediatric Oncology Nursing, 24*(5), pp 279–293.

Kim, Y., Kashy, D.A., Spillers, R.L., & Evans, T.K. (2010). Needs assessment of family caregivers of cancer survivors: Three cohorts comparison. *Psycho-Oncology, 19,* 573–582. DOI: 10.1002/pon.1597.

Klaassen, R., & Shaw, N.T. (2011). Understanding the health impact of caregiving: a qualitative study of immigrant parents and single parent of children with cancer. *Quality Life Research, 21,* 1595–1605. DOI: 10.1007/s11136-011-0072-8.

Kuo, D.Z., Houtrow, A.M., Arango, P., Kuhlthau, K.A., Simmons, J.M., & Neff, J.M. (2012). Family-centered care: Current application and future direction in pediatric health care. *Maternal Child Health Journal, 16,* 297–305. DOI: 10.007/s10995-011-0751.

Kyle, T., & Carman, S. (2014). *Buku ajar keperawatan pediatri.* Jakarta: EGC.

Lee, M.S., Nelson, A.M., Thompson, L.M.A., & Donovan, K.A. (2016). Supportive care needs of oral cancer survivors: Prevalence and correlates. *Oral Oncology, 53*, 85–90.

Liem, R.I., Gilgour, B., Pelligra, S., Mason, M., & Thompson, A. (2011). impact of thalasemia on southeast asian and asian indian families in the United States: A qualitative study. *Ethnicity & Disease, 21*, 361–369, Summer 2.

Marcdante, K.J., Kliegman, R.M., Jenson, H.B., & Behrman, R.E. (2011). *Nelson* *ilmu kesehatan anak esensial* (Edisi ke-6). Singapura: Saunders Elsevier.

Maunder, K. (2012). I*nvestigating supportive care needs of parents of children with cancer: Is a parent support group intervention a feasible solution?*. A thesis of Institute of Medical Sciences University of Toronto. Retrieved from https://tspace.library.utoronto.ca/bitstream/1807/33444/3/Maunder_Kristen_M_201211_MSc_thesis.pdf.

McKenna, K., Coller, J., Hewitt, M., & Blake, H. (2010). Parental involvement in paediatric cancer treatment decisions. *European Journal of Cancer Care, 19*(5), pp 621–630.

Mediani, H.S., Nurhidayah, I., Mardhiyah, A., & Panigoro, R. (2017). Indonesian mothers' and concerns about having a thalassemic child and its treatment: An exploratory qualitative study. *International Journal of Nursing Care, 1*(2), 1–7.

Mediani, H. S. (2014). *Indonesian nurses' management of pain in children: A grounded theory study.* Doctoral thesis, Curtin University. Retrieved from http://tinyurl.com/mpelq6k.

Mirbehbahani, N., Salehi, M., Jahazi, A., & Karimi, M. (2014). Prevalence and intensity of depression in mothers of chi ldren with beta-thalassemia major in Talghani Hospital of Gorgan, Iran. *JKIMSU, 3*(1).

Mundy, C.A. (2010). Assessment of family needs in neonatal intensive care units. *American Journal of Critical Care, 19*(2). Doi: 10.4037/ajcc2010130.

Nafafi, K., Borhani, F., Rabari, E., & Sabzevari, S. (2011). The effect of family-centered empowerment model on the mother knowledge and attitudes about thalassemia disorder. *Iran Journal Pediatric Hematologi Oncologi, 1,* 98–103.

Norberg, A.L., & Boman, K.K. (2008). Parent distress in childhood cancer: A comparative evaluation of posttraumatic stress symptom, depression and anxiety. *Acta Oncologica, 47,* 267–274. Doi: 10.1080/02841860701558773.

Norberg, A.L., Lindblad, F., & Boman, K. (2006). Support-seeking, perceived support, and anxiety in mothers and fathers after children's cancer treatment. *Psycho-Oncology, 15*, 335–343.

Novrianda, D., Yeni, F., & Asterina. (2014). Hubungan karakteristik ibu dengan pengetahuan tentang penatalaksanaan diare pada balita. *Ners Jurnal Keperawatan, 10*(1), 159 – 166.

Nur'aeni, A., Ibrahim, K., & Agustina, H.R. (2013). Eksplorasi makna spiritualitas pada klien dengan sindrom koroner akut yang menjalani perawatan di ruang intensif jantung. *Jurnal Keperawatan Padjadjaran, 1*(2), 2338–5324.

Nur'aeni, A., Nurhidayah, I., Hidayati, N., Sari, C.W.M., & Mirwanti, R. (2015). Kebutuhan spiritual pada pasien kanker. *Jurnal Keperawatan Padjadjaran, 3*(2).

Oers, H.A., Tacke, C.E., Haverman, L., Kuipers, I.M., Maurice-Stam, H., Kuijpers, T.W., & Grootenhuis, M.A. (2014). Health related quality of life and perceptions of child vulnerability among parents of children with a history of Kawasaki disease. *Acta Paediatr, 103,* 671–677.

Pelentsov, L.J., Dip, G., Laws, T.A., & Esterman, A.J. (2015). The Supportive Care Needs of Parents Caring for A Child with A Rare Disease: A Scoping Review. *Disability and Health Journal, 8,* 475–491. DOI: 10.1016/j.dhjo.2015.03.009.

Pelentsov, L.J., Fielder, A.L., Laws, T.A., & Esterman, A.J. (2016). The Supportive Care Needs of Parents with A Child with A Rare Disease: Results of An Online Survey. *BMC Family Practice, 17,* 88. DOI 10.1186/s12875-016-0488-x.

Pillitteri A (2010) *Maternal and child health nursing: Care of the childbearing and childrearing family.* Lippincott Williams and Wilkins.

Potts, N.L., & Mandleco, B.L. (2007). *Pediatric nursing: Caring for children and their families* (2nd Ed.). New York: Thomson Coorporation.

Rachmawati, P.D., Ranuh, R., & Arief, Y.S. (2016). Perilaku ibu dalam pemenuhan kebutuhan asah, asih dan asuh anak dengan leukemia. *Jurnal Ners, 11*(1), 63–72.

Retnaningsih, D., & Dini, I.K. (2016). *Analisa dukungan keluarga dengan beban orangtua dalam merawat anak penyandang cacat tingkat SD di SLB Negeri Semarang.* Retrieved fromfile:///C:/Users/ASUS/Downloads/364-882-1-PB.pdf.

Requena, G.C., Arnal, R.B., & Gil, F. (2015). The influence of demographic and clinical variables on perceived social support in cancer patients. *Revista de Psicopatología journal Psicología Clínica, 20*, 25–32, 2015. doi: 10.5944/rppc.vol.1.num.1.2015.14404.

Rijen, M., Spreeuwenber, P., Schippers, J., & Groenewegen P.P. (2013). The importance of illness duration, age at diagnosis and the year of diagnosis for labour participation chances of people with chronic illness: results of a nationwide panel-study in the Netherlands. *BMC Public Health, 13*, 803 http://www.biomedcentral.com/1471-2458/13/803.

Ririnisahawaitun, Prabandari, Y.S., & Gamayanti, I.L. (2015). *Kebutuhan dan pemberian informasi oleh perawat pada orangtua dari remaja kanker. Seminar dan Workshop Nasional Keperawatan "Implikasi Perawatan Paliatif pada Bidang Kesehatan".* Retrieved fromfile:///C:/Users/ASUS/Downloads/778-1383-1-PB.pdf.

Regar, J. (2009). Aspek genetik talasemia. *Jurnal Biomedik, 1*(3), 151–158.

Rezaei, M., Seyed Fatemi, N., Givari, A., & Hoseyni, F. (2009). Spiritual in cancer patients receiving chemotherapy. *Hayat, 4*(3, 4), 33–39. [in Persian].

Saldanha, S.J. (2013). Stress and Coping among Parents of Children Having Thalassemia. *International Journal of Science and Research (IJSR)*, 2319–7064.

Shahraki-vahed, Mohammadreza, Firouzkouhi, Abdolghani, Abdollahimohammad, & Ghalgaire, J. (2017). Lived experiences of Iranian parents of beta-thalassemia children. *Journal of Multidisciplinary Healthcare, 10,* 243–251.

Shosha, G.M.A. (2014). Needs and concern of jordanian mother with thalassemic children: A qualitative study. *Journal of American Science, 10(*1), 11–16.

Shosha, G.A., & Kalaldeh, M.A. (2017). Challenges of having a child with thalassaemia major: A phenomenological study. *Journal of Research in Nursing, 0*(0) 1–12. DOI: 10.1177/1744987117724497.

Sujana, E., Fatimah, S., & Hidayati, N.O. (2017). Kebutuhan spiritual keluarga dengan anak penderita penyakit kronis. *Jurnal Pendidikan Keperawatan Indonesia, 3*(1), 47–56.

Sultana, R., Humayun, S., Humayun, S., & Zafar, U. (2016). Psychosocial problems in parents of thalassaemia children. *J. Soc. Obstet. Gynaecol, 6*(2).

Suza, D.E. (2017). Family-centered care model untuk menurunkan dampak hospitalisasi anak dengan penyakit kanker di Medan, Sumatera Utara. *IDEA Nursing Journal, VI*(1), 15–24, e-ISSN: 2580-2445.

Viedebeck, S.L. 2008. *Buku ajar keperawatan jiwa*. Jakarta: EGC .

Wacharasin, C.P., Phaktoop, M., & Sananreangsak, S. (2015). A family empowerment program for families having children with thalassemia, Thailand. *Nursing and Health Science, 17,* 387–394. DOI: 10.1111/nhs.12201.

Wahab, J.A., Naznin, M., Nora, M.Z., Suzanah, A.R., et al. (2011). Thalassaemia: A study on the perception of patients and family members. *Medical Journal Malaysia, 66*(4).

Wilder, S.K. (2010). *Polytrauma family* *needs assessment.* Theses and Dissertations Virginia Commonwealth University. Retrieved fromhttp://Scholarcompass.vcu.edu/etd/2051.

Winstanley, J., Simpson, G., Tate, R., & Myles, B. (2006). Early indicators and contributors to psychological distress in relatives during rehabilitation following severe traumatic brain injury: Findings from the brain injury outcomes study. *Journal of Head Trauma Rehabilitation, 6*, 453-466.

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The Effect of Combination of Buteyko Breathing Technique and Walking Exercise on Forced Peak Expiratory Flow In Adult Asthmatic Patients

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Abstract

The Buteyko technique can reduce asthma symptoms, reduce the use of bronchodilators but few and not significant in reducing bronchial responsiveness. Physical exercise that complements breathing exercises in pulmonary rehabilitation can improve pulmonary physiology and control asthma. Physical exercise in the form of walking can improve pulmonary physiology and asthma control by reducing hyperesponsivity reactions and increasing cardiorespiratory endurance. But the combination of these two exercises has never been studied. The objective of this study was to analyze the effect of a combination of Buteyko breathing techniques and walking exercises on Peak Forced Expiration Flow. The design of this study was quasi experimental with pretest-posttest control group design. The location of the study was in the pulmonary clinic of Regional General Hospital of Sidoarjo Regency and Bangil Regional General Hospital in Pasuruan Regency, East Java. Respondents were selected by randomization by simple random sampling. Respondents in this study amounted to 76 respondents. Forced Expiration Peak Flow Data is measured using a peak flow meter. The intervention group was given a combination exercise with Buteyko breathing technique and walking exercise for 8 weeks, 3x per week, 55 minutes every training session. Giving a combination of Buteyko breathing technique and walking exercises using module and video media. FPEF measurements were carried out 3 times (pretest, week 4, week 8). Data were analyzed using SPSS 22 with GLM-RM (General Linear Model-Repeated Measure) ANOVA. The results showed a significant difference in the FPEF rate between before and after 4 weeks and 8 weeks of the combination intervention of the Buteyko breathing technique and walking exercises in the treatment group with ($p < 0.05$) with $p = 0.000$. The findings indicate that breathing exercises and physical exercise through a combination of Buteyko breathing techniques and walking exercise can increase the FPEF rate through the mechanism of increasing CO2 and producing nitric oxide which has bronchodilation effects and through decreasing inflammatory mediators so that it can reduce asthma symptoms. This exercise can be used as an alternative choice in supporting pharmacological therapy to improve FPEF.

Keywords: Asthma, asthma control, buteyko, forced expiration peak flow (FPEF), walking exercise.

Introduction

Chronic respiratory disease, one of them is asthma, is a major public health problem and will remain a challenge for the future but this disease still receives minimal attention and care (Renolleau-Courtois et al., 2014). One of the pulmonary function impairments is Forced Peak Expiration Flow in patients with asthma due to airway obstruction and weakness of respiratory muscles as a result of frequent inflammatory processes, dipsnea and the presence of obstacles in activity (Sahat, Irawaty and Hastono, 2011). The prevalence of asthma in the world is estimated at 334 million people of all ages (Phillips, 2014) and an estimated 235 million people live with asthma and countries with middle to lower income are about 80% of asthma associated with death (WHO, 2018) . In 2025 it is estimated that the prevalence of asthma in the world has increased to reach 400 million people (Masoli et al., 2004). Whereas according to Basic Health Research in 2013 asthma in Indonesia ranks highest for the non-communicable disease category of 4.5% and in East Java the prevalence of asthma is 5.1%.

Pharmacological management of asthma is very useful in the event of an asthma attack. The disadvantage of using long-term pharmacological therapy is that it has side effects especially if it does not control treatment (Ducharme dan Hicks, 2000). Asthma patients who do not do breathing exercises regularly can aggravate the symptoms of shortness of breath that arise during an attack because these patients do not know the correct breathing technique. This can cause ventilation-perfusion imbalance in the lungs. Breathing training and physical activity or exercises that are not carried out by asthma patients have an impact on the weakness of the respiratory muscles so that there is a decrease in lung function, in addition to respiratory disorders and symptoms of shortness of breath will increase and tolerance to activity decreases (Sahat, Irawaty and Hastono, 2011).

Nonpharmacological management can be done through physical activity and breathing training (GINA, 2018). Physical exercises that complement breathing training in pulmonary rehabilitation can improve lung function and control asthma (Juhariyah et al., 2012). Breathing training recommended for asthma is Buteyko breathing technique (Godfrey, 2010). A study conducted by Mohamed, Riad dan Ahmed (2013) showed that Buteyko breathing technique could increase the Forced Expiration Peak Flow and control of asthma. The advantage of Buteyko breathing technique is the control pause which can reduce excessive CO2 expenditure which will regulate breathing through the medulla respiratory center, producing nitric oxide (NO) which has bronchodilating effects. Walking exercises can improve lung function and control asthma by reducing hypersensitivity reactions and increasing cardiorespiratory endurance (Pakhale et al., 2013). The objective of the study is to analyze the effect of a combination of Buteyko breathing techniques and walking exercises on Peak Forced Expiration Flow.

Method

The design of research was quasi-experimental with pretest-posttest control group design. APEP values were measured in the pre-test and post-test twice, on 4th week and 8th week. The treatment group was given a combination of Buteyko breathing techniques and walking exercises for 8 weeks conducted independently at home. Before intervening independently at home, respondents were given a combination training in Buteyko breathin technique and walking exercise using media module training and video.

The steps of the Buteyko breathing technique:

1) Sit up straight and try to position as comfortable as possible, then start breathing normally through the nose.
2) Hold your breath until you first feel the desire to breathe then release the pinch on the nose, then start breathing gently through the nose.
3) Then sit in a comfortable position with your back straight and feet and knees shoulder width apart, then close your eyes. then start breathing normally and calmly through the nose.
4) Then take a break for 20-30 seconds

5) Repeat actions 2 and 3 for 3 minutes.
6) Then take a short rest for 20–30 seconds.
7) Repeat actions 2 and 3 for 3 minutes.
8) Then take a short rest for 20-30 seconds.
9) Repeat actions 2 and 3 for 3 minutes
10) Then take a long rest for 2 minutes.
11) Repeat action 2

The steps of walking exercise:

Walking exercises are carried out at temperatures that are not too cold or hot or between 6-8 o'clock in the morning and are carried out in an environment free of air pollution

1. Warm up for 5 minutes by moving or stretching a group of muscles, such as head muscles, arms, back, and legs
2. Perform 30 minutes of continuous walking or continuous exercise with relaxation or relaxation. Do it walking on a flat surface (Renolleau-Courtois et al., 2014).
3. Walking exercises are done by adjusting the speed yourself to be comfortable and do not get tired or tight.
4. Exercise is stopped if the patient feels breathing too fast and deeply.
5. Training can be resumed if you have a wife and feel comfortable.
6. Cooling down for 5 minutes by stretching slowly in the leg and hand muscles

Researchers taught how to assess exercise tolerance, which is 60–80% maximum heart rate. Maximum heart rate calculation using the 220-age. Assessment of tolerance limits is carried out every 6 minutes during walking exercise.

The exercises which included Buteyko breathing technique were carried out for 15 minutes, the walking exercise for 40 minutes (5 minutes warming up, 30 minutes walking, 5 minutes cooling-down) so that the total exercise was 55 minutes. Exercise was done 3 times a week for 8 weeks. The researcher made a home visit every 1x / week to evaluate the accuracy of the exercise being carried out and the development patient's condition. The potential danger in doing this exercise is the low category because the intensity of the exercise is adjusted to the ability of the respondent. Potential danger that can occur was exercise induce asthma. If exercise induce asthma occurs that is fatigue, tightness, increased breathing effort, cough, the respondent can rest 50-10 minutes and exercise can be resumed if the respondent feels relaxed and comfortable. If the sign and symptom of exercise induced asthma does not decrease or persist with rest, respondents can use pharmacological therapy bronchodilator spray class SABA (Short Acting Beta 2 Agonist), reliever that has been given a pulmonary specialist at the Pulmonary Clinic. Researchers also provided respondents with a small portable oxygen supply that could be used during exercise if tightness arises. Patients in the intervention group and the control group continued to carry out pharmacological therapy from the Lung Specialist doctor at the Pulmonary Clinic Poly Hospital. If with the above procedure the condition of the respondent does not improve, the family can deliver the respondent to the nearest hospital emergency room to get emergency treatment.

The researcher recommended the respondent to fill out the exercise checklist format according to the training schedule. The researcher reminded respondents both by telephone, sms, and social media to do the exercises independently according to the direction of the researcher. The researcher also involved the respondent's family in reminding respondents to do the exercises. The treatment group was conducted at the pulmonary Clinic in the Regional General Hospital of Sidoarjo Regency. All respondents in this study continue to undergo asthma treatment and the selected respondents are asthma patients who have never taken breathing exercises or physical training for asthma patients. The control group was not permitted to do breathing exercises and other physical exercises but they had the right and permission do breathing exercises and or other physical exercises during the study but respondents will be included in the drop out criteria.The control group was conducted at the Pulmonary Clinic in the Bangil Regional General Hospital in Pasuruan Regency.

The population in this study were adult patients with asthma by respirologist in the the pulmonary clinic of Regional General Hospital of Sidoarjo Regency and Bangil Regional General Hospital in Pasuruan Regency by using history taking, physical examination, and spirometry tests.

The sample in this study was taken from the population with inclusion and exclusion criteria, such as:

1. Inlusion criteria
    1) Asthma patients aged 18-60 years.
    2) Stable asthma
    3) Good hearing and vision function
    4) Having a physical and mental health
    5) Patients have never participated in breathing exercises and or physical exercise

2. Exclusion criteria
    1) Smoking patients
    2) Asthma patients who are obese
    3) Asthma in pregnancy
    4) Having other pulmonary diseases such as pulmonary TB, COPD, pulmonary carcinoma
    5) Having hypertension, heart failure, epilepsy, musculoskeletal disorders

3. Drop out criteria
    1) Respondents did breathing exercises and other physical exercises during the study
    2) Respondents did not complete the intervention phase
    3) Respondents resigned for various reasons
    4) Respondents who experienced recurrence during training

The sample technique used probability sampling with simple random sampling. The sample size was obtained through a large sample formula for hypothesis testing different proportions of 2 groups of data pairs (Dahlan, 2013). The sample size in this study was 38 respondents for the treatment group and 38 respondents for the control group. Samples were taken using Measurement of Peak Forced Expiration Flow using a wright standard peak flow meter.

Measurements of Peak Forced Discharge performed using a peak flow meter carried out on the morning before 7 before the use of bronchodilator or 6 hours after the use of bronchodilators, the researcher gave one disposable mouthpiece for one measurement. The stages in carrying out FPEF measurements using a peak flow meter according to Adeniyi and Erhabor (2011), were :

1) Install the mouthpiece to the tip of the peak flow meter
2) Position the patient to stand or sit with his back upright and hold the peak flow meter horizontally without touching or disturbing the marker movement. Make sure the marker is in the lowest scale position (zero)
3) Encourage the patient to breathe as deep as possible, put it in the mouth
4) With the lips close tightly around the mouthpiece, exhale immediately as strong as possible
5) When exhaling, the marker moves and shows the number on the scale, noting the results.
6) Return the marker to zero position and repeat steps 2–4, 3 times, and select the highest value.
7) Compare this value with the previous patient's best value or predictive value.

Statistical tests using the General Linear Model-Measured Measured ANOVA within subjects to determine the difference in Peak Forced Examination values pre-test and post-test in each group. General Linear Model-Measured Measured ANOVA between subjects was used for showing effect of the combination of Buteyko breathing technique and walking exercise on FPEF between treatment groups and control groups (Dahlan, 2014). The researcher did not put covariate (age, sex, education, Body Mass Index) in statistical test.

Ethical approval was issued by the Health Research Ethics Committee (KEPK) of Sidoarjo Regency Hospital with Number: 893.3/0332/438.6.7/2019 and by the Health Research Ethics Team of Bangil Hospital Pasuruan Regency with Number: 445.1/570.2/424.202/2019

Results

Table 1 shows that the age characteristics of respondents in the treatment group were almost partially in the age range of 36–45 years, namely 17 (44.7%) while in the control group more than half of the respondents were in the age range of 46–60 years ie 22 (57.9%)

Table 1 Respondent's characteristic

Characteristic	Treatment Group		Control Group		p
	f	%	f	%	
Age (Years)					
18–25	1	2.6	1	2.6	0.510
26–35	8	21.1	7	18.4	
36–45	17	44.7	8	21.1	
46–60	12	31.6	22	57.9	
Total	38	100	38	100	
Sex					
Male	10	26.3	13	34.2	0.144
Female	28	73.7	25	65.8	
Total	38	100	38	100	
Education					
Junior High School	3	7.9	17	44.7	0.098
High School	13	34.2	12	31.6	
College	22	57.9	9	23.7	
Total	38	100	38	100	
Occupation					
Private	8	21.1	6	15.8	0.574
Enterpreneur	8	21.1	8	21.1	
Civil Servant	15	39.5	9	23.7	
Others (Housewife, student, retiree)	7	18.4	15	39.5	
Total	38	100	38	100	
Body Mass Index					
Underweight: ≤ 18.5	2	5.3	4	10.5	0.267
Normal: 18.6–24.9	18	47.4	13	34.2	
Overweight: 25–29.9	18	47.4	21	55.3	
Total	38	100	38	100	
Family history of Asthma					
Yes	32	84.2	34	89.5	0.504
No	6	15.8	4	10.5	
Total	38	100	38	100	

Table 2 Forced Peak Expiration Flow Data Distribution (%) Treatment Groups and Control Groups

(%)	Treatment Group						Control Group					
	Pre test	%	4th week	%	8th week	%	Pre test	%	4th week	%	8th week	%
80–100	5	13.2	7	18.4	10	26.3	5	13.2	4	10.5	4	10.5
50–80	17	44.7	21	55.3	20	52.6	16	42.1	18	47.4	17	44.7
≤ 50	16	42.1	10	26.3	8	21.1	17	44.7	16	42.1	17	44.7

Total	38	100	38	100	38	100	38	100	38	100	38	100

Table 3 Forced Peak Expiration Flow value (L / min) in the treatment and control groups

Group	Time	Mean ± SD	Average difference	p-value
Treatment	Pre vs 4th week	256.05±109.952	30.79	0.000
	Pre vs 8th week	286.84±103.613	64.21	0.000
	4th week vs 8th week	320.26±101.462	33.42	0.000
Control	Pre vs 4th week	243.03±92.908	0.79	0.337
	Pre vs 8th week	243.81±92.105	0.65	0.590
	4th week vs 8th week	243.68±92.105	0.14	0.864

Table 4 GLM-RM test results (General Linear Model-Measured Measure) ANOVA between subject

FPEF (L/min)	Treatment Mean ± SD	Control Mean ± SD	Difference (confidence interval 95 %)	p-value
Pretest	256.05±109.952	243.03±92.908	13.02 (-33.50-59.55	0.579
4th week	286.84±103.613	243.82±92.610	43.02 (-1.678-87.73)	0.059
8th week	320.26±101.462	243.68±92.105	76.58 (32.286-120.872)	0.001

GLM Test p = 0.000 (post hoc analysed)

. Characteristics of respondents by sex both in the treatment group and the control group were more than part of the female sex, namely 28 respondents (73.7%) in the treatment group and 25 respondents (65.8%) in the control group. In the characteristics of the education level of respondents in the treatment group more than a portion of tertiary education were 22 respondents (57.9%) while in the control group almost half of them had junior high school education as many as 17 respondents (44.7%). On the job characteristics of respondents in the treatment group, almost half worked as civil servants as many as 17 respondents (39.5%) and in the control group 17 respondents (39.5%) worked as IRTs and retirees. The characteristics of respondents based on Body Mass Index (BMI) in the treatment group were almost partially in the normal (18.6–24.9) and obese (25–29.9) categories of 18 respondents (47.4%) and in the control group more than half in the fat category (25–29.9) 21 respondents (55.3%). Characteristics of respondents based on family history who have asthma in the treatment group almost all have a family history that has asthma as many as 32 respondents (84.2%) and the control group almost all have a family history of asthma as many as 34 respondents (89.5%).

Table 2 shows that in the treatment group, the FPEF rate (%) of a small number of respondents was in the green category (80–100% compared to predictive values) which meant that breathing function was good in the pre test as many as 5 respondents (13.2%) and the numbers tended to increase after 4 week of intervention as many as 7 respondents (18.4%), and after 8 weeks of intervention as many as 10 respondents (26.3%). Almost part of it is in the yellow zone category (50–80% compared to the predicted value), which means that the respiratory tract constriction starts at 17 (44.7%), whose numbers tend to rise after 4 weeks of intervention by 21 respondents (55.3%), and after 8 weeks of intervention there were 20 respondents (52.6%). A small number of respondents were in the red category (≤ 50% compared to predictive values) which means that there was a narrowing of the large respiratory tract in the pre test as many as 5 respondents (13.2%) and the number tended to increase after 4 weeks of intervention by 7 respondents (18.4%), and after 8 weeks of intervention as many as 10 respondents (26.3%).

Table 3 In the control group, the FPEF value (%) of a small number of respondents was in the green category (80-100% compared to predictive values) which meant that breathing function was good in the pre test as many as 5 respondents (13.2%) and the numbers tended to decline after 4 weeks and after 8 weeks of evaluation 4 respondents (10.5%). Almost part of it is in the yellow zone category (50–80% compared to predictive value), which means it indicates a narrowing of the respiratory tract, namely in the pre test as many as 16 respondents (42.1%), whose numbers tend to remain after 4 weeks of intervention by 18 respondents (47.4%), and after 8 weeks of intervention there were 17 respondents (44.7%). Almost half of the respondents were in the red category (≤ 50% compared to the predicted value) which means that there was a narrowing of the large respiratory tract in the pre test as many as 17 respondents (44.7%) and the numbers tended to remain after 4 weeks of intervention as many as 16 respondents (42.1%), and after 8 weeks of intervention there were 17 respondents (44.7%).

Table 3 The results of the GLOV-RM (General Linear Repeated Measure) ANOVA within subject showed that in the treatment group there were significant differences in FPEF before and after 4 weeks of combined training Buteyko breathing technique and walking exercises with a value of $p = 0.000$ ($p < 0.05$) , there were significant differences in FPEF before and after 8 weeks of combined training of Buteyko breathing techniques and walking exercises with a value of $p = 0.000$, there were significant differences in FPEF between week 4 and week 8 with a value of $p = 0.000$. In the control group there were no significant differences in FPEF before and after 4 weeks of evaluation with $p = 0.337$ ($p < 0.05$), there were no significant differences in FPEF before and after 8 evaluations with a value of $p = 0.590$, no difference in meaningful FPEF between week 4 and week 8 with the value $p = 0.864$.

Table 4 The GLM-RM (General Linear Model Measured) ANOVA between subject test results showed there were differences in the APEP value between the treatment group and the control group on one measurement with a value of $p = 0.000$. The difference in the APEP value between the treatment group and the control group occurred in the 8th week measurement with a value of $p = 0.001$.

Discussion

The results showed that a combination of Buteyko breathing techniques and walking exercises affect in increasing FPEF rate (L/ minute). The increase in APEP (L / min) after 4 weeks of performing a combination of Buteyko breathing technique and walking exercises is suitable with research conducted by Utama (2018) which states that The combination Active Cycle Breathing Technique and Buteyko Therapy are given a minimum of 4 weeks of intervention with the frequency 3 times a week increases the Forced Peak Expiratory Flow and asthma control. The increase in FPE occurs simultaneously until the end of week 8. Research conducted by Juhariyah et al., (2012) which provides a combination of physical exercise and breathing exercises for 8 weeks, 5 exercises per week, each 30-minute training session is proven effective in increasing the status functional especially FPEF daily variability.

In asthma, there is an inability to reach the value of normal breathing air flow, especially in expiration, as indicated by the FPEF rate. FPEF is the achievement of maximum expiratory air flow from maximum expiration to assess the presence and severity of airway obstruction (Barnes et al., 2009). Giving physical therapy and breathing exercises is part of pulmonary rehabilitation which is expected to improve functional status, immunological status, and quality of life for asthma patients (Juhariyah et al., 2012). Physical exercise is an important component of comprehensive pulmonary rehabilitation because peripheral muscles in patients with chronic disease not only wasted but also experience changes in muscle fiber distribution and decreased metabolic capacity. Physical exercise improves endurance, improves performance of daily activities, reduces anxiety associated with shortness of breath due to activity (Celli et al., 2004; Mason et al., 2010; Juhariyah et al., 2012).

Hyperventilation that occurs in asthma can reduce levels of CO2 in the blood (Ritz et al., 2008; Prem et al, 2013). Research conducted by Grover and Afle (2014) stated that Buteyko's breathing technique can increase FEV1 (Forced Expiratory Vital in one second), FEV1 / FVC (forced Vital Capacity) and Forced Peak Expiratory Flow through a control pause mechanism that can increase CO2 concentration which will regulate breathing through the respiratory center in the medulla (Courtney, 2013), nasal breathing that produces nitric oxide (NO) which has bronchodilating effects, reduces breathing volume by using a combination of increased abdominal muscle and relaxation of respiratory accessory muscles, long breath can restore carbon dioxide gas exchange, cerebral vasodilation as a result of oxygen depletion and increased CO2 (Grover & Afle, 2014).

Asthma is a chronic inflammatory disease of the airways characterized by airway obstruction and bronchial hypersensitivity (GINA, 2018). Exercises that can reduce airway hyperresponse and systemic inflammation by reducing the value of IL-6 and monocyte chemoattractan protein 1 (CMP-1) is aerobic (França-Pinto et al., 2015). Aerobic exercise that is easy to do and control is a walking exercise (Hall et al., 2017). A study conducted by Boyd et al., (2012) shows that walking exercises can improve asthma control and cardiopulmonary fitness levels without causing interference with adult asthma sufferers. Physical activity such as walking is classified as aerobic, especially for the muscles of the lower extremities which require an increase in energy requirements so that cardiorespiratory work increases with increasing heart rate and the contents of the stroke (Hall et al., 2017). Other studies have shown that aerobic exercise can increase functional capacity, FPEF, maximum inspiratory and expiratory pressure (Andrade et al. 2014), pulmonary function and VO2max (Abdelbasset et al, 2018). To prevent exercise induced asthma that occurs in physical exercise, adjustments can be made to exercise with the patient's condition and warm up before exercise (Zega, et al, 2011). If physical exercise is used as a habit, it should be easy to do without unwanted side effects to improve fitness which indirectly improves asthma (Zega, et al, 2011).

In the control group there was no difference in the FPEF value before and after the evaluation. This occurs because asthma patients who do not do regular breathing exercises can aggravate the symptoms of shortness of breath that arise during an attack because these patients do not know the correct breathing technique. This can cause ventilation-perfusion imbalance in the lungs. Breath training and physical activity or exercises that are not carried out by asthma patients have an impact on the weakness of the respiratory muscles so that there is a decrease in lung function, in addition to respiratory disorders and symptoms of shortness of breath will increase and tolerance to activity decreases (Sahat, Irawaty and Hastono, 2011).

There were differences in the FPEF values in the 8th week measurement between the treatment group and the control group. This happens because asthma patients who exercise longer, the tolerance to exercise will increase. Increased tolerance for training can increase the value of FPEF (Sahat, Irawaty and Hastono, 2011).

Conclusion

The combination of Buteyko's breathing techniques and walking exercises is a combination of Buteyko breathing techniques and relaxing walking exercises. The findings indicate that breathing exercises and physical exercise through a combination of Buteyko breathing techniques and walking exercise can increase the FPEF rate through the mechanism of increasing CO2 and producing nitric oxide which has bronchodilation effects and through decreasing inflammatory mediators so that it can reduce asthma symptoms.This exercise can be used as an alternative choice in supporting pharmacological therapy to improve FPEF.

References

Adeniyi, B. O. and Erhabor, G. E. (2011) 'The peak flow meter and its use in clinical practice', *African Journal of Respiratory Medicine,* pp. 5–8.

Alsubaie, S. F. (2018) 'Evaluating pulmonary function , aerobic capacity , and pediatric quality of life following a 10-week aerobic exercise training in school-aged asthmatics : *a randomized controlled trial'*, pp. 1015–1023.

Andrade, B. De et al. (2014) 'ScienceDirect The efficacy of aerobic training in improving the inflammatory component of asthmatic', *Respiratory Medicine*, pp. 1438–1445. doi: 10.1016/j.rmed.2014.07.009.

Barnes, P. J. et al. (2009) Asthma and COPD: basic mechanisms and clinical management. Elsevier.

Boyd, A. et al. (2012) 'Feasibility of exercising adults with asthma: a randomized pilot study', Allergy, Asthma & Clinical Immunology, *8*(1), p. 13. doi: 10.1186/1710-1492-8-13.

Celli, B. R. et al. (2004) 'Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper', *European Respiratory Journal. Eur Respiratory Soc, 23*(6), pp. 932–946.

Courtney, R. (2013) *Buteyko breathing method. Second Edi, Recognizing and Treating Breathing Disorders: A Multidisciplinary Approach.* Second Edi. Elsevier Ltd. doi: 10.1016/B978-0-7020-4980-4.00023-X.

Dahlan, M. S. (2014). *Statistik untuk Kedokteran dan Kesehatan, Deskriptif, Bivariat, dan Multivariat Dilengkapi Aplikasi dengan Menggunakan SPSS,* pp. 1–47.

Dahlan, M. S. (2013) 'Besar sampel untuk desain khusus', Dalam: Aklia S, penyunting. Besar sampel dan cara pengambilan sampel dalam penelitian kedokteran dan kesehatan. *Seri evidence based medicine, 2*, pp. 81–115.

Ducharme, F. M. and Hicks, G. C. (2000) 'Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma.', *The Cochrane database of systematic reviews,* (3), pp. CD002314–CD002314.

França-Pinto, A. et al. (2015) 'Aerobic training decreases bronchial hyperresponsiveness and systemic inflammation in patients with moderate or severe asthma: a randomised controlled trial', *Thorax, 70*(8), pp. 732–739. doi: 10.1136/thoraxjnl-2014-206070.

GINA (2018) '*Global Strategy for Asthma Management and Prevention'.*

Godfrey, K. (2010) 'The Buteyko technique in asthma management', *Practice nursing, 21*(5), pp. 238–242. Available at: http://www.resmedjournal.com/article/S0954-6111(07)00511-2/fulltext.

Grover, G. M. A. S. K. (2014) 'Gauri Mayank Afle 1 *Sumeeta Khaund Grover 2', 1*(3), pp. 116–119. doi: 10.15621/ijphy/2014/v1i3/53464.

Hall, C. et al. (2017) 'Nonpharmacologic Therapy for Severe Persistent Asthma', The *Journal of Allergy and Clinical Immunology: In Practice. Elsevier, 5*(4), pp. 928–935. doi: 10.1016/j.jaip.2017.04.030.

Juhariyah, S. et al. (2012) 'Efektivitas Latihan Fisis dan Latihan Pernapasan pada Asma Persisten Sedang-Berat', *J Respir Indo, 32*(1), pp. 17–24.

Masoli, M. et al. (2004) 'The global burden of asthma: executive summary of the GINA Dissemination Committee report', Allergy. *Wiley Online Library, 59*(5), pp. 469–478.

Mason, R. J. et al. (2010) *Murray and Nadel's Textbook of Respiratory Medicine E-Book:* 2-Volume Set. Elsevier Health Sciences.

Mohamed, Z., Riad, N. M. and Ahmed, F. H. (2013) 'Effect of Buteyko breathing technique on patients with bronchial asthma', Egyptian *Journal of Chest Diseases and Tuberculosis. The Egyptian Society of Chest Diseases and Tuberculosis, 61(*4), pp. 235–241. doi: 10.1016/j.ejcdt.2012.08.006.

Pakhale, S. et al. (2013) 'Effect of physical training on airway inflammation in bronchial asthma: A systematic review', BMC

Pulmonary Medicine. *BMC Pulmonary Medicine, 13*(1), p. 1. doi: 10.1186/1471-2466-13-38.

Phillips, S. (2014) *Global Asthma Report 2014*. Available at: http://www.globalasthmanetwork.org/news/GAR2014.php (Accessed: 26 September 2018).

Prem, V., Sahoo, R. C. and Adhikari, P. (2013) 'Comparison of the effects of Buteyko and pranayama breathing techniques on quality of life in patients with asthma - A randomized controlled trial', *Clinical Rehabilitation, 27*(2), pp. 133–141. doi: 10.1177/0269215512450521.

Renolleau-Courtois, D. et al. (2014) 'Home-based respiratory rehabilitation in adult patients with moderate or severe persistent asthma', *Journal of Asthma, 51*(5), pp. 552–558. doi: 10.3109/02770903.2014.885039.

Ritz, T. et al. (2008) 'Hyperventilation symptoms are linked to a lower perceived health in asthma patients', Annals of Behavioral Medicine. *Oxford University Press, 35*(1), pp. 97–104.

Sahat, C. S., Irawaty, D. and Hastono, S. P. (2011) 'Peningkatan kekuatan otot pernapasan dan fungsi paru melalui senam asma pada pasien asma', *Jurnal Keperawatan Indonesia, 14,* pp. 101–106.

Utama, J. E. P. (2018) '*Kombinasi Active Cycle Breathing Technique Dan Buteyko Therapy Terhadap Pefr Dan Kontrol Asma Di Puskesmas Kedungkandang Dan Puskesmas Kendalsari Kota MalanG*'. Univeritas Airlangga.

'WHO | Asthma' (2013) WHO. *World Health Organization.* Available at: http://www.who.int/respiratory/asthma/en/ (Accessed: 26 September 2018).

Zega, C. T. A., Yunus, F. and Wiyono, W. H. (2011) 'Perbandingan manfaat klinis senam merpati putih dengan senam asma Indonesia pada penyandang asma', *Jurnal respirologi indonesia, 31*(2), pp. 72–80.

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Nurses' Life Experiences As Persons In Charge of Mental Health Programs In Community Health Centers

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Abstract

At present, Mental health issue becomes one of the main issues in public health issues in community health centers such as the complexity of the issues in the work of nurses in charge of mental health programs. The purpose of this study was to explore the nurse's life experience as a person in charge of mental health programs in community health centers. The research design used descriptive phenomenology. The study population was nurses responsible for mental health programs in community health centers, experienced in taking care of people with mental disorders for at least six months, and at least had a Diploma in nursing. The number of participants was determined by purposive sampling technique to obtain seven participants. The experiences of nurses were explored through in-depth interviews, and data were analyzed using the Colaizzi method of analysis. Study results found five themes: (1) feeling burdened by the responsibility for mental health programs; (2) feeling insecure due to the lack of knowledge; (3) feeling there were many barriers and constraints in caring for people with mental illness during the recovery period; (4) hoping to collaborate with relevant government institutions; and (5) being more grateful for caring for people with mental illness. In conclusion, nurses are responsible for mental health programs even though they feel burdened with their workload, but they can still do their jobs because they always have hope and are grateful. The nurses are trained nurses and can collaborate with relevant government institutions.

Keywords: Mental illness, nurse's experience, phenomenology study.

Introduction

The mental health program remains a neglected problem, as evidenced by the small number of funds allocated by the government; therefore, it also lacks attention (Russell, 2010). This condition is reinforced by WHO (2005), which claims that middle and low-income countries get a smaller allocation of funds for mental health programs. The lack of public and municipal concerns regarding mental health issues make an impact on its implementation, irregular monitoring and evaluation, and government campaigns tending to focus on physical illness (Abdulmalik, Kola, & Gureje, 2016).

The results of preliminary studies conducted by researchers through interviews with nurses in charge of mental health programs, in one of the community health centers in Cimahi, namely a nurse with the initial D found the phenomenon that the role of nurses in charge of mental health programs is only recording data and reporting the number of patients visiting community health center and made home visits.

Nurse D said that during her experience, she was confused about the coordination flow when dealing with people with mental illness in the neighborhood. According to her, dealing with people with mental illness required communication with regency and social workers. Besides, the community health center did not provide particular space for consultation and special days for mental health examinations.

The researcher's observation results confirmed this phenomenon during field experience at community health centers. Nurse D was not only responsible for mental health programs but also handled the immunization program at the Maternal and Child Health Center (Posyandu). She recorded data of visiting patients to the community health center and home visitors. However, schedule adjustments, a particular room for a check-up, and a consultation room for mental health service were unavailable at the moment.

Based on the policy regulation of the Minister of Health Republic of Indonesia No. 406 (2009), community mental health is an approach to people-based mental health service. The people are involved actively. This service includes aspects of promotion, prevention, curative, and rehabilitation. Currently, mental health service has changed fundamentally from a closed treatment to extensive treatment and the handling of the mental problem from clinical-individual to productive-social.

The coverage of mental health service in community health center of Cimahi City reaches 1.58%, according to the Health Agency of Cimahi City in 2017. This number is far from the 100% target. In the same year, the number of people with mental illness in 13 community health centers in Cimahi reaches 2.139 people, while those doing check-up and treatment in the same locations reach 3043. The total of patients visit with a mental problem in 2017 reaches 327.344, and the number of patients with an acute mental problem is 492.

Community mental health services require quality human resources. At present, their role is passive and focuses only on people with mental illness. Promotional efforts and prevention in dealing with psychological problems are not holistic because nurses only wait for patients to come and then refer them to the Mental Institution (Suryani, 2012).

Mental health nurses can assist in the recovery of mentally challenged individuals. Suryani (2013) points out that this effort can recover patients by reducing the number of possible recurrences in recovered patients. Also, that recovery was a journey--a lengthy process faced by an individual with chronic mental problems, so that that person can fight for a better life, despite his/her limitations.

In its implementation, mental health nurses have a vital role in the recovery process of people with mental illness in society. Therefore, adequate knowledge about being in charge of mental health programs is more than necessary. What they need, the problems that will arise, and how they solve the problem. This research aimed to explore the experiences of Indonesian nurses as the person in charge of mental health programs in community health centers.

Method

This study used the qualitative method with a phenomenological approach to gain an understanding of phenomena in social-natural contexts by promoting the process of deep interaction between researchers and scientific aspects (Polit & Beck, 2005). However, Patton (2005) states that qualitative research studies real-world settings inductively, producing specific patterns and themes.

Phenomenology was proposed by Husserl (Giorgi & Giorgi, 2008). It has human phenomena as its background and focuses on explaining life experiences and constructing meaning (Streubert & Carpenter, 2007). In this study, phenomenology aimed to get actual meaning through broad involvement of reality (Laverty, 2003 in Lopez & Willis, 2004).

The aim of phenomenology, strengthened by Suryani, Welch, and Cox (2016), is to gain subjective understanding meaning from daily experiences in the language of the individual. Therefore, this research applied phenomenology to reveal the lived experience of a person in charge of mental health in community health centers.

This research conducted from May to August 2018 at seven community health centers in Cimahi city and received ethical approval from the Faculty of Medicine in the field of Health Studies at Padjadjaran University in Bandung with number 571 / UN6.KEP / EC / 2018. The study involved seven participants and conducted in-depth interview. Criteria for participants were as follows; the person was in charge of the mental health program in the community health center, experienced in handling people with mental illness for at least six months, and having a Nursing diploma.

The interviews were conducted for 60 to 90 minutes while taking a break or relaxing at the community health center where the participants worked. Previously, they were informed about the purpose and use of this research. The main question raised by the researchers was "In your opinion, what do you think is required to be in charge of the mental health program during the recovery process of individuals with mental illness in the community health center?" This question was followed by exploring issues to anticipate if the researcher faced obstacles or unanswered questions. The researcher also applied focusing techniques when participants responded aggressively.

This study applied the Colaizzi method for data analysis indicating validation is the result of the participant, meaning that whatever the outcome, it must be in line with the interviewee's intention. According to Colaizzi (1978) in Polit and Beck (2008), and Suryani, Welch, and Cox (2016), there are seven phases to get the essence of each transcription namely, extract relevant statements, formulate meaning from significant statements, organize definitions to be formulated into a series of themes, write full descriptions of the phenomenon, describe the basic structure of the phenomenon, and carry out checking.

During data collecting and analyzing, the researcher applied the bracketing principle to get subjectivity value or neutrality by casting aside understanding and stigma about the observed phenomenon (Giorgi, 2011). The researcher also observed the basic principles of ethics during the time of research, including benefits, autonomy, anonymity, and justice (Polit and Beck, 2010).

Results

The findings of the study showed that the life experience of participants in seven community health centers as the person in charge of mental health programs lasted from 1 to 9 years. All participants were female and Muslims. The age range of participants was from 31 to 41 years old. All participants had pursued the education level of D3 of nursing, and one participant completed the Bachelor of Nursing. The working period for all participants in the community health center lasted about 1 to 13 years. All the participants were married.

Study results found five themes including feeling burdened by responsibility for the mental health program, feeling insecure due to the lack of knowledge, feeling many obstacles and constraints while caring for people with mental illness during the recovery period, hoping to collaborate with the relevant government institutions, and being more grateful for caring for people with mental illness (Table 1).

In the first theme, all participants revealed that they felt burdened in handling people with mental illness during the recovery process. Three participants said that they were exhausted and irritated when handling them. All these showed that caring for people with mental illness was not an easy task. Participant 4 also had a similar view:

“... The burden is unbearable. Expectations for my workload are too hard to do alone. “(P4.16)

Based on the analysis results and transcripts of participants, the researcher found it essential to raise this theme, not only because all participants have expressed similar opinions but also because it is in line with the purpose of this research, namely to find new insights. Although previous studies have discussed the heavy workload, none has considered the heavy workload faced by the person in charge of the mental health program in handling people with mental illness during recovery in the community health center.

In the second theme, the participants felt insecure due to the lack of knowledge. Two participants revealed that they were not confident when doing assignments. However, another participant told something different, as he felt confident when completing the task because he had participated in the training. Besides, three other participants revealed that they did not know anything during their duties. Four other participants expressed fear during the task, and two participants expressed confusion in carrying out assignments.

The study result showed that the lack of experience of the participants in addressing people with mental illness, family, and society was due to the lack of knowledge about roles and responsibilities while implementing community mental health programs so that participants felt fearful and confused.

Based on the analysis result and repeated readings of participant transcripts, this theme was a new insight with characteristics. If a person lacked knowledge in performing its duties, it would appear as a sense of lack of confidence, fear, and confusion so that it can hinder the implementation of mental health programs. As claimed by participant 2:

“I am almost not confident. I will get a company for a home visit. Otherwise, I am stranded.” (P2.20).

However, participant 5 gave a distinct comment because he attended the training. The following was the participant’s statement:

“Early detection training makes me confident. It improves my performance.” (P5.61)

In the third theme, the focus was on obstacles in handling the recovery of people with mental illness. There were three sub-themes in this theme, namely the obstacles in the implementation of references and evacuation of patients, unavailable time and experience handling people with mental illness, and obstacles on the facilities, human resources, and fund. There were three participants with the protagonist view, which was due to the low substance of mental health nurses and the feeling of fear while handling acute patients during the evacuation.

Four participants revealed the lack of a nurse’s time and experiences while handling people with mental illness. Another reason was that the workload was too heavy so that they could not explore their work more deeply. This condition became the nurse’s obstacle while performing their duties in mental health programs.

Five participants complained about the infrastructure, facilities, human resource, and funds. This was because there were no training programs for patients to get their own money, lack of nurses for mental health in community mental health centers, no male nurses at work, lack of referral hospitals with inpatients, no rooms and special times for people for mental illness counseling, and lack of funds to carry out activities. Participants 1, 2, 3, and seven said as follows:

“Our time collides/clash. We always lack focus. We have to do one program while doing another here.…”. (P1.27)

“We cannot explore more deeply; then it becomes difficult. Maybe because we lack experience “(P2.18)

“We do not have any program or training whatsoever that can make our patients make a living on their own” (P3.44)

“Evacuating mentally disabled people? Who wants to fund it? “(P7.83)

In the fourth theme, the focus was on the hope of having good cooperation among relevant stakeholders to handle people with mental illness. There were three sub-themes as follows: collaboration with patients and family in the process of patient’s recovery, the government’s institution regarding training and cooperation to handle recovery of people with mental illness, and hoping that the society and public figures support the entire process.

The first sub-theme: expect to work with patients and their families. Four participants expressed their concern so that patients would take medication regularly and get active again. As one of them claimed:

“Of course, I have my hopes. He must be useful for his family and neighbors. He must be independent and productive, even though he still consumes drugs”. (P1.22).

The second sub-theme: government institutions organize training programs and good cooperation. One of the participants hoped that health institutions could conduct training programs on mental health. The training required a follow-up after conducting early detection, counseling, training to improve nurses’ skills to deal with people with mental illness, training trainers, environment and hamlets about mental health, and empowering people with mental illness. One participant exclaimed:

“We must carry out holistic socialization, starting from training, workshops, and education” (P3.74)

The third sub-theme: the community and community leaders must support the recovery process of people with mental illness as told by all participants. They hoped people would pay more attention to people with mental illness. Participant 4 said:

“We hope that nothing is hidden. There are still people out there who think that mental illness is a kind of curse.” (P4.26)

In the fifth theme, the participants felt grateful while caring for mental health patients. Two participants were grateful while caring for people with mental illness. After

Table 1 Schemes of Research Themes: Nurses’ Life Experiences as Persons in Charge of Mental Health Programs in Community Health Centers

1st Theme	2nd Theme	3rd Theme	4th Theme	5th Theme
Feeling burdened by responsibility for mental health programs	Feeling insecure due to lack of knowledge.	Feeling there were many obstacles and constraints in caring for individuals with mental illness during the recovery period.	Hoping to collaborate with relevant government institutions.	Being more grateful for caring for people with mental illness
		sub-themes:	sub-themes:	
		1. Barriers to Implementation of Referral and Patient Evacuation	1. Hope can cooperate with patients and families in the recovery process of people with mental illness	
		2. Lack of time and experience of nurses dealing with people with mental illness in the recovery period	2. Related government institutions can conduct training and cooperation in dealing with people with mental illness in the recovery period	
		3. Constraints on facilities, infrastructure, human resources (HR), and funding assistance	3. Communities and community leaders can support the recovery process for people with mental illness	

the in-depth analysis and frequent reading of scripts, this theme seemed quite vital as it showed new insights, though few participants said so. It was very close to religion in Indonesia, and the participant's religious characteristics, of whom the majority are Muslim.

When caring for people with mental illness, participants felt grateful for having better conditions and did not get the obstacles of life like them. Quoted thoroughly: "We are grateful. Thank God that I am healthy, and not being "tested" like those people with mental illness." (P1.40).

Discussion

Feeling burdened by the responsibility for mental health programs

The study result showed that during the assignment, mental health community nurses had a difficult task since they must check patients through many programs (Marchira, 2011). Carayon and Gurses (2008) state that not only community nurses experience heavy workloads but also nurses in hospitals. Nurses have heavy workloads due to four main reasons: (1) increased demand for nurses, (2) inadequate supply of nurses, (3) reduced staffing and increased over time and (4) reducing inpatient length of stay (Carayon & Gurses, 2008).

The nurses' heavy workloads can have an impact on themselves. Edwards, Burnard, Coyle, Fothergill, and Hannigan (2008) confirms that many mental health nurses face stress and fatigue due to the increasing workload, lack of human and financial resources, and increased administrative work, time management, misguided references, do not have enough time for independent learning, and general working conditions.

Besides, the heavy workload may impact on nurses' job satisfaction, and the result can contribute to service quality and lack of human nursing resources (Duffield & O'Brien, 2013). Other impacts also affect patients, as confirmed by Lang, Hodge, Olson, Romano, and Kravitz (2004).

Feeling insecure due to lack of knowledge

The healthcare staff in community health centers requires adequate knowledge and skill. Lack of both will impact to the quality service. It is one of their responsibilities to empower patients so that they can tackle problems on their own and maintain a healthy condition (Pinilih, Astuti, & Amin, 2015).

In Gale and Lucette (2011), we found that the gap in the perception of capability and confidence of nurses in recovery-oriented practices are taught academically. Therefore, nursing education should focus more on the model of recovery and its implementation for care delivery. The preparation of adequate resource must be conducted, so that the recovery process can be performed holistically, especially in mental health services. Thus, there will be a healthy society both physically and emotionally (Pinilih, Astuti & Amin, 2015).

Improving nurses' knowledge is essential by attending training on community mental health. This is confirmed by Bangun and Soewadi (2014) that there are significant differences before and after training in mental health programs on knowledge of nurses $p = 0,000$ ($p < 0.05$). Besides training, the main requirement for being responsible for mental health programs is to have competence in education. Levin, Hennessy, and Petrilia (2010) claim that the education background of the community mental health nurse must be at least a bachelor's degree, with a specialization in psychology. This is to ensure that the nurses can foster, educate, and advise individuals with mental illness about mental health. However, in this study, the educational characteristic of all participants was a Nursing Diploma. Therefore, the Indonesian government can assign a person in charge with an undergraduate degree as the minimum requirement.

Feeling many obstacles and constraints in caring for people with mental illness during the recovery period

Mental health resources and facilities are still scarce, and it is not possible if the government provides nurses and mental health nurses in a relatively short time. Therefore, one thing to be done is to attend mental health training for healthcare staff in primer services (Marchira, 2011). There are two skills for teaching mental health nurses, especially on mental and psychosocial health (Ignacio, 2000).

Based on study results, the main obstacle during referring and evacuating patients was the lack of focus when evacuating, while referring that it clashed with other tasks, besides that they were afraid of dealing with male patients. The role of mental health nurses is as a placement co-coordinator, nurses referring clients to their place can accept additional help like shelters, rehabilitation, and long-term life treatment (Huang, Ma, Shih, & Li, 2008).

Factors that can hinder the recovery process of people with mental illness are the people's negative stigma, inadequate human resources, negative attitudes towards patients, lack of confidence, failure to take and resolve problems in critical situations, poor listening skills, symptom-based treatment and not need-based treatment (Happell, 2008).

The negative perception causes many obstacles and problems faced by the community health nurse in handling people with mental illness, namely poor time management and less focus on doing the program and feeling fear of dealing with people with mental illness, and lack of handling experiences. The success of handling people with mental illness during the recovery process can be carried out by refreshing about the role of mental health. Assignment of the nurse' responsibilities in community mental health and people with mental illness recovery toward all nurses can be done through supervision, monitoring, and evaluation to ensure the sustainability of this activity. Junardi, Keliat, and Daulima (2017) confirm in their study that there is a significant relationship between nurses' perceptions of community mental health nursing and stakeholders relevant to the successful implementation of community mental health nursing in the District of Aceh Besar and Kota Banda Aceh.

Expecting to collaborate with relevant government institutions

Collaboration between mental health nurses, other medical staff, and individuals with mental illness aims to provide support shown by mutual respect and trust. Besides, community mental health nurses are a source of support for inspiration and education (Mancini, Hardiman, & Lawson, 2005).

Orchard, Curran, and Kabener (2005) state that interdisciplinary collaboration is a partnership between a team of health professionals and clients with a participatory, collaborative, and coordinated approach to make joint decisions about health. Besides, while building community mental health services, Widowati (2018) emphasizes the importance of the role of various regional stakeholders, from the governor who makes make the policy to the village head who executes it through the village head of Desa Siaga Sehat Jiwa (Healthy Soul Alert Village). The responsibility of the health agency includes budget planning, providing medicines, conducting training led by psychiatrists and psychologists and social workers from mental hospitals and mental health nurses.

The performance of community mental health nurses (CMHN) involves families, mental health figures, community leaders, and religious leaders. Sari and Fina (2017) support family involvement in the performance of community mental health nurses, claiming that there is a significant relationship between family support and prevention of relapse in schizophrenic patients (p-value 0,000), the relation between family emotional support and relapse prevention in schizophrenic patients (p-value 0.0005), relationship between information support from family and relapse prevention in schizophrenic patients (p-value 0.002), relationship between family instrumental support and schizophrenic prevention (p-value 0000), and relationship between family assessment support and schizophrenia (p-value 0.014).

Farkhah, Suryani, and Hernawaty (2017) claim, the most dominant factor in the occurrence of a patient's relapse is the caregiver's quality of life. Therefore, nurses have active roles in improving the quality of caregivers and emphasizing the importance of a caregiver support group.

Being more grateful for caring for people with mental illness

Being grateful means realizing everything we have as God’s blessings (Yusuf, Nihayati, Iswari, and Okviasanti, 2016). This is a feeling of being fascinated, grateful, and appreciating life (Emmons & Shelton, 2005). Also, Watkins, Woodward, Stone, and Kolts (2003) claim that it shows individual characteristics that are full of emotions, respect for others, and simple things.

According to Listiyandini et al. (2015), an individual has emotional and interpersonal privileges of being grateful. They can improve coping skills, whether they realize it or not, by seeing at and feeling sufferings as something positive. Besides, McCullough, Tsang, and Emmons (2004) claim that grateful people have a positive coping mechanism, which can be useful in dealing with life’s difficulties, seeking support, interpreting experiences from other angles, and solving problems.

Harbaugh and Vasey (2014) elaborate that the practice of gratitude can reduce symptoms of depression and stress in the workplace. This is supported by Ningrum (2016), who states that the practice of gratitude is beneficial to reduce the stress level of employees.

Conclusion

Based on the study results and discussion about the life experience of the person in charge of the mental health program for people with mental illness who are in the recovery process, the conclusion is that there are five themes and three sub-themes which emerged as new insights. Being the person in charge of the mental health program is a difficult task; nurses are often embarrassed due to lack of knowledge, and various obstacles in caring for people with mental illness recovery. However, they hold on to their expectations and are consistently grateful that the program can run until these days.

The researcher proposes five suggestions: the first is for the person in charge of the mental health program: to sharpen their knowledge and attend mental health training, collaborate with various stakeholders to deal with people with mental illness during recovery, and be grateful for their job. The second is for patients: to consult to community health center regularly, take medicines, and be active at home, then for their families, to support the patient to take drugs daily, take good care of them, and motivate them to do activities at home or in the community.

The third is for formal institutions such as community health center, hospitals, health services, social services, TRC, and the government. The researcher suggests that community health center provides more human resources, preferably male to help handle people with acute mental illness, reduces the workload of the person in charge of the mental health program, provides SOP about people with mental illness handling, and provides a place and time for medication and consultation for people with mental illness. Moreover, it is also suggested that hospitals cooperate better in terms of evacuation, referrals, and dealing with people with acute mental illness, providing communication channels about patients from hospitals to all parties at community health center to check-up patients.

The suggestion is that health institutions and the government make a Bachelor’s degree or competence in mental health as a minimum requirement for nurses in charge of mental health programs. Moreover, they are expected to conduct training on how to be grateful and about mental health for nurses, community leaders, religious leaders, and the community. The fourth suggestion is for the community and community leaders such as environmental, neighborhood and regency cadres, together with religious leaders to enhance cooperation in handling people with mental illnesses and removing the negative stigma toward them.

The fifth suggestion is for the development of Nursing Studies so that students understand the concept of community mental health nurses and people with mental illness recovery so that they can improve their practices in their community. Finally, the sixth suggestion is for further research; to conduct a comprehensive study on the knowledge of community mental health nurses about people with mental illness recovery, barriers, and success factors in the improvement of people with mental illness, and the importance of being grateful.

References

Abdulmalik, J., Kola, L., & Gureje, O. (2016). Mental health system governance in Nigeria: Challenges, opportunities, and strategies for improvement. *Global Mental Health, 3*(9).

Bangun, S.R., & Soewadi, H. (2014). *Pengaruh pelatihan kesehatan jiwa pada tenaga kesehatan terhadap pengetahuan dan kolaborasi pelayanan kesehatan jiwa di Puskesmas Kota Yogyakarta (Doctoral Dissertation, Universitas Gadjah Mada)*. Electronic Theses & Disertations (ETD) Gajah Mada University. Diakses di: http://etd.repository.ugm.ac.id/index.php?mod=penelitian_detail&sub=PenelitianDetail&act=view&typ=html&buku_id=69213 pada tanggal 24 Juli 2018 pada Pkl. 17.27.

Carayon, P., & Gurses, A.P. (2008). *Nursing workload and patient safety - a human factors engineering perspective.*

Duffield, C., & O'Brien-Pallas, L. (2003). The causes and consequences of nursing shortages: A helicopter view of the research. *Australian Health Review, 26*(1), 186–193.

Edwards, D., Burnard, P., Coyle, D., Fothergill, A., & Hanniga, B. (2000). Stress and burnout in community mental health nursing: A review of the literature. *Journal of Psychiatric and Mental Health Nursing, 7*, 7–14.

Emmons, R.A., & Shelton, C.M. (2005). *Gratitude and the science of positive psychology.* Dalam C.R. Synder, & S.J. Lopez (Eds.). Handbook of positive psychology (h. 459–471). New York: Oxford University Press.

Farkhah, L., Suryani., & Hernawaty, T. (2017). Faktor caregiver dan kekambuhan klien skizofrenia. *Padjadjaran Nursing Journal, 5*(1), DOI: https://doi.org/10.24198/jkp.v5i1.348.g149.

Gale, J., & Lucette, S.M. (2011). Community mental health nurses' perspectives of recovery oriented practice. *Journal of psychiatric and mental health nursing, 19*(4), 348-353.

Giorgi, A., & Giorgi, B. (2008). Phenomenology in J.A. Smith (Eds.). *Qualitative psychology: A practical guide to research method* (pp.26-51). London: Sage publications.

Giorgi, A. (2011). IPA and science: A response to Jonathan Smith. *Journal of Phenomenological Psychology, 42,* 195–216.

Happell, B. (2008). Determining the effectiveness of mental health services from a consumer perspective: Part 2: Barriers to recovery and principles for evaluation. *International Journal of Mental Health Nursing, 17*(2), 123–130.

Harbaugh, C.N., & Vasey, M.W. (2014). When do people benefit from gratitude practice?. *The Journal of Positive Psychology, 9*(6), 535-546.

Huang, Y.X., Ma, F.W., Shih, H.H., & Li, F.H. (2008). Roles and functions of community mental health nurses caring for people with schizofrenia in Taiwan. *Journal of Clinical Nursing, 17,* 3030-3040. Doi: 10.1111/j.1365-2702.2008.2426.x.

Ignacio, L. (2000). Mental health care in the community. *Paper presented in expert course JSPS NCD Seminar* in Jakarta, Indonesia, March 13th.

Junardi., Keliat, B.A., Daulima, N.H.C. (2017). Analisis faktor – faktor yang berhubungan dengan keberhasilan pelaksanaan kegiatan community mental health nursing di Aceh. *Idea Nursing Journal, VIII*(1). ISSN: 2087-2879, e-ISSN: 2580 – 2445.

Lang, T.A., Hodge, M., Olson, V., Romano, P.S., & Kravitz, R.L. (2004). Nurse–patient ratios: A systematic review on the effects of nurse staffing on patient, nurse employee, and hospital outcomes. *Journal of Nursing Administration, 34*(7), 326–337.

Levin, B.L., Hennessy, K.D., & Petrila, J. (2010). *Mental health services: A public* *health perspective* (3rd Ed.). New York: Oxford University Press.

Listiyandini, R.A., Nathania, A., Syahniar, D., Sonia, L., & Nadya, R. (2017). Mengukur rasa syukur: Pengembangan model awal skala bersyukur versi Indonesia. *Jurnal Psikologi Ulayat: Indonesian Journal of Indigenous Psychology, 2*(2), 473–496.

Lopez, K.A., & Willis, D.G. (2004). Descriptive versus interpretive phenomenology: Their contributions to nursing knowledge. *Qualitative health research, 14*(5), 726–735.

Mancini, M.A., Hardiman, E.R., & Lawson, H.A. (2005). Making sense of it all: Consumer providers' theories about factors facilitating and impeding recovery from psychiatric disabilities. *Psychiatric Rehabilitation Journal, 29*(1), 48.

Marchira, C.R. (2011). Integrasi kesehatan jiwa pada pelayanan primer di indonesia: Sebuah tantangan di masa sekarang. *Jurnal Manajemen Pelayanan Kesehatan,* 14(3), 120–126.

McCullough, M.E., Tsang, J.A., & Emmons, R.A. (2004). Gratitude in intermediate affective terrain: Links of grateful moods to individual differences and daily emotional experience. *Journal of personality and social psychology, 86*(2), 295.

Ningrum, R.F. (2016). *Menurunkan stres kerja karyawan dengan pelatihan kebersyukuran. Universitas Islam Indonesia.*

Orchard, C.A., Curran, V., & Kabene, S. (2005). Creating a culture for interdisciplinary collaborative professional practice. *Medical Education Online, 10*(1), 4387.

Patton, M.Q. (2005). *Qualitative research. Encyclopedia of statistics in behavioral science.*

Peraturan Menteri Kesehatan Republik Indonesia No. 406/Menkes/SK/VI/2009 *Tentang Pedoman Pelayanan Kesehatan Jiwa Komunitas.*

Pinilih, S.S., Astuti, R.T., & Amin, M.K. (2015). Manajemen kesehatan jiwa berbasis komunitas melalui Pelayanan keperawatan kesehatan jiwa komunitas di Wilayah Dinas Kesehatan Kabupaten Magelang. *The 2nd University Research Coloquium 2015*. ISSN 2407-9189.

Polit, D.F., & Beck, C.L (2005) *Essentials of nursing research: Methods, appraisal, and utilization* (6th Ed.). Lippincott Williams & Wilkins, Philadelphia.

Polit, D.F., & Beck, C.L. (2008). *Nursing research: Generating and Assessing Evidence for Nursing Practice* (8th Ed.). Lippincott Williams & Wilkins.

Polit, D.F., & Beck, C.L. (2010). *Nursing research: Principle and methods* (7th Ed.). Philadephia: Lippincott Williams& Wilkins.

Russell, L. (2010). *Mental health care services in primary care tackling the issues in the context of health care reform.* Center for American Progress.

Sari, H., & Fina, F. (2017). Dukungan keluarga dalam mencegah kekambuhan pasien skizofrenia di Poliklinik Rawat Jalan RSJ Aceh. *Idea Nursing Journal, 2*(3), ISSN : 2087–2879.

Streubert, H., & Carpenter, D. (2007). *Qualitative research in nursing: Advancing the humanistic imperative* (4th Ed.). Lipincott Williams& Wilkins, Philadelphia.

Suryani. (2012). *Chaotic soul-messy heart: The phenomenon of experiencing auditory hallucinations. Tesis.* QUT Queensland University of Technology School of Nursing and Midwifery.

Suryani. (2013). *Orasi Ilmiah Fakultas Ilmu Keperawatan Universitas Padjadjaran*. Tema: Trend & Issue Gangguan Jiwa, Pemulihan Pasien Skizofrenia.

Suryani, S., Welch, A., & Cox, L. (2016). The Application of Colaiizi's Method in Conducting Research Across Two Language. *Malaysian Journal of Psychiatry, 25*(1), 19–

28.

Watkins, P.C., Woodward, K., Stone, T., & Kolts, R.L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality: an international journal, 31*(5), 431–451.

Widowati, A. (2017). Pemberdayaan masyarakat dalam membangun kesehatan jiwa komunitas (studi kasus di Kabupaten Magelang). *Jurnal Impuls, 3*(1), 219–224, ISSN 2442-7039.

World Health Organization. (2005). *Mental health atlas 2005*. Diakses dari: http://www.who.int/mental_health/evidence/mhatlas05/en/ pada tanggal 17/1/2018 pada Pkl. 15.00 WIB.

Yusuf, A., Nihayati, H.E., Iswari, M.F., & Okviasanti, F. (2017). *Kebutuhan spiritual konsep dan aplikasi dalam asuhan keperawatan*. Jakarta: Mitra Wacana Media.