Indonesian Journal of Medicine (2023), 08(01): 59-67
Masters Program in Public Health, Universitas Sebelas Maret

Research

The Difference of Neiguan Acupressure Points (Pc6), Hypnotherapy, and Hypnopressure in Reducing Anxiety of Hemodialysis Patients

Hanung Prasetya, Sri Yatmihatun

Ministry of Health of Surakarta, Health Polytechnics Surakarta

ABSTRACT

Background: The anxiety felt by patients undergoing hemodialysis can decrease the quality of life, cause a sleep disorder, and even aggravate the disease. Acupressure, hypnotherapy, or hypnopressure have minimal side effects and are easy to do in reducing anxiety. The study aims to analyze the different effects of acupressure, hypnotherapy, and hypnopressure in reducing anxiety in patients undergoing hemodialysis programs.
Subjects and Method: It was an experimental study using a randomized controlled trial. It was conducted at Dr. Moewardi Hospital Surakarta, Central Java. The number of study subjects from March 2021 - July 2022 was 300 patients undergoing the hemodialysis program, with 75 subjects obtaining acupressure intervention, 75 subjects obtaining hypnotherapy intervention, 75 subjects obtaining hypnopressure intervention, and 75 subjects obtaining standard/control treatment. The sampling technique used was purposive sampling. The dependent variables in this study were acupressure, hypnotherapy, and hypnopressure, while the independent variable was the anxiety of patients who underwent a hemodialysis program for less than a year or less than 10 times. Anxiety was tested using the Hamilton Rating Scale for Anxiety questionnaire. Data analysis was conducted using an independent t-test, with the SPSS statistics program.
Results: Post-acupressure anxiety score (Mean= 17.31; SD= 3.22) was lower than pre-acupressure (Mean= 23.17; SD= 2.68) and the result was statistically significant ($p<0.001$). Post-hypnotherapy anxiety score (Mean= 15.13; SD= 2.83) was lower than pre-hypnotherapy (Mean= 23.09; SD= 2.38), and the result was statistically significant ($p<0.001$). anxiety score after hypnopressure (Mean= 12.64; SD= 2.23) was lower than before hypnopressure (Mean= 23.13; SD= 2.53) and the result was statistically significant ($p<0.001$).
Conclusion: Hypnopressure is more effective in lowering anxiety in patients undergoing a hemodialysis program.

Keywords: anxiety, acupressure, hypnotherapy, hypnopressure, hemodialysis

Correspondence:
Hanung Prasetya. Health Polytechnique of Health Ministry Surakarta. Jl. Letjend Sutoyo, Mojosongo, Surakarta 57127. Email: hanungprasetya168@gmail.com. Mobile: 08122638908

Cite this as:
Prasetya H, Yatmihatun S (2023). The Difference of Neiguan Acupressure Points (Pc6), Hypnotherapy, and Hypnopressure in Reducing Anxiety of Hemodialysis Patients. Indones J Med. 08(01): 59-67. https://doi.org/10.26911/theijmed.2023.08.01.06.

BACKGROUND

Chronic kidney disease is a global public health issue. The prevalence of chronic kidney failure escalates with the increasing number of the elderly population and the incidence of diabetes mellitus and hypertension with a poor prognosis and high cost. The results of a systematic review and meta-analysis conducted by Hill et al. (2016) dis-

cover a global prevalence of chronic renal failure of 13.4%.

The therapy applied for chronic kidney failure patients is by conducting renal replacement therapy (TPG). There are three modalities of TPG, namely hemodialysis, peritoneal dialysis, and kidney transplantation. Data from the Indonesian Renal Registry (IRR) shows that in 2015 a total of 249 renal units that reported, with 30,554 active patients undergoing dialysis, most of whom were chronic kidney failure patients. Data from the Indonesian Renal Registry (IRR) in 2017 shows that the number of patients actively undergoing hemodialysis is 77,892 people. Out of 30,843 new patients, 59% of them are of productive age 45-64 years. Deaths in chronic renal failure patients undergoing hemodialysis during 2015 are recorded at 1,243 people with a length of life with hemodialysis of 1-317 months. The proportion of patients who died according to the length of life with hemodialysis in 2015 was 5% less than one month, 22% one to less than three months, 18% three to less than six months, 33% six to less than 12 months, 14% 12 to less than 36 months and 8% more than 36 months.

Hemodialysis is a process of filtering metabolic waste using a semipermeable membrane that aims to correct fluid and electrolyte balance disturbances, as well as eliminate protein metabolism residual products (Kallenbach, 2005). Hemodialysis cannot cure or restore kidney disease and is unable to compensate for the loss of metabolic or endocrine activity carried out by the kidneys, so patients will still experience various complications both from the disease and also the therapy (Mollaoglu, 2006; Parker, 2009).

Individuals with long-term hemodialysis often feel anxious about their unforeseen pain condition which leads to disruptions in their lives. They usually face financial problems, difficulties in maintaining their job, loss of sexual drive as well as impotence, and depression due to chronic pain and fear of death (Smeltzer and Bare, 2008).

Chronic kidney failure and hemodialysis (HD) are events that generate negative emotional experiences or stressors. A well-responded stressor makes individuals grow more and more mature. On the contrary, stressors that are not properly responded will trigger the occurrence of negative psychological responses in the form of anxiety, depression, anger, fear, guilt, and even death (DeLaune and Ladner, 2011; Caninsti, 2007; Farida, 2010; Kimmel, 2001). This response involves two mechanisms, namely biological and psychological that depend on age, gender, education, marital status, living environment, and occupation (Kimmel, 2001). Doenges (2010) posits that anxiety in patients undergoing hemodialysis is caused by the situational crisis, death threats, and not knowing the final outcome of the therapy. This becomes a physical stressor that affects various dimensions of life due to ailments of physical weakness. Sabry, et al (2010) and Rosdiana (2014) discover that patients undergoing hemodialysis experienced insomnia caused by the feeling of anxiety. Even patients who experience severe anxiety have a 3.3 times risk of experiencing insomnia compared to patients who experience mild anxiety (Rosdiana, 2014).

Stress or anxiety experienced by patients can stimulate the sympathetic nervous system to secrete catecholamines, glucagon, and cortisol-steroid hormones that affect the CNS in increasing anxiety, frustration, rapid breathing, hypertension, and muscle tension. Anxiety is an emotional response to judgment that describes a state of worry, anxiety, and fear, unsettled and accompanied by various physical ailments.

These circumstances can occur in a variety of life situations as well as ailments. In addition, anxiety can cause body reactions that will occur repeatedly, such as feeling empty in the stomach, shortness of breath, palpitations, excessive sweating, headaches, and the feeling to urinate/defecate. Psychologically, excessive anxiety conditions will worsen one's endurance and immunity (Prasetya, 2018). Ignoring anxiety conditions and mental health problems is a very high-cost investment in health burden with negative impacts on physical and psychological levels that threaten throughout the patient's life cycle (Chilcot et al., 2008).

Various ways can be done to manage anxiety including hypnotherapy and acupressure (Prasetya, 2018). Hypnotherapy is an application of hypnosis in curing mental disorders and alleviating physical disorders (Arter, 2014). Hypnosis can alter sensations, perceptions, thoughts, feelings, or behaviors after being suggested (Ng and Lee, 2008). The brain that has been affected by the suggestion will order the central nervous system to directly stimulate the Reticular Activating System to decrease its performance so that it has an impact on the release of serotonin from specific cells in the pons and brainstem, called the Bulbar Synchronizing Regional (BSR) (Tarwoto and Wartonah, 2011). When the client is in a relaxed condition, it subsequently decreases RAS activation and BSR will take over, causing the client to fall asleep (Potter and Perry, 2005). The positive suggestion given can influence the perception of a person who is in a hypnotic state to behave or perceive according to the suggestion given.

In addition to hypnotherapy, acupressure is also believed to be able to reduce anxiety. Acupressure is a finger press therapy by applying pressure and massage at a certain point in the body based on the principles of acupuncture science (Fengge, 2012). Pressing the fingertips of the hand on certain areas of the skin surface that have a positive impact on physical, mental, and social conditions (Hartono, 2012). Acupressure on acupuncture points scientifically has a positive effect, particularly in accordance with the function of those acupuncture points.

The preliminary study conducted at the hemodialysis unit of dr. Moewardi Hospital Surakarta, obtained data an average of 300 patients per month with 1500 to 1700 hemodialysis procedures. Based on the study, it is known that anxiety problem dominates among patients undergoing hemodialysis. Hypnotherapy and acupressure scientifically have the ability to reduce anxiety, the author was interested to study "Use of Neiguan Point Acupressure (Pc 6) And Hypnotherapy Against Hemodialysis Patient Anxiety at Dr. Moewardi Surakarta Hospital?"

SUBJECTS AND METHOD

1. Study Design

It was an experimental study using a Randomized Control Trial. The study was conducted at Dr. Moewardi Hospital Surakarta in 2021-2022.

2. Population and Sample

The population of this study was all patients undergoing hemodialysis at Dr. Moewardi Surakarta Hospital from March 2021 - July 2022. The sample was 300 patients divided by 4 randomly into intervention groups of hypnotherapy, acupressure, hypnopressure, and standard care /control.

3. Study Variables

The independent variables were hypnotherapy and acupressure. The dependent variable is the level of anxiety.

4. Operational definition of variables

Hypnotherapy is the administration of therapeutic interventions using hypnotherapy to patients who were undergoing

hemodialysis in the hemodialysis unit of dr. Moewardi Surakarta Hospital, that was administered during the hemodialysis implementation. Hypnotherapy was carried out by giving suggestions in the form of an invitation to accept and deal with his problems by remaining grateful even though it was difficult. Hypnotherapy was administered by using audio recordings recorded using the patient's cellphone.

Acupressure is the administration of a therapeutic intervention using acupressure to patients who were undergoing hemodialysis in the hemodialysis unit of dr. Moewardi Hospital Surakarta, that was carried out during the hemodialysis implementation, and/ or it was possible to conduct it by themselves at any time whenever the person concerned wanted to do.

Anxiety Level is the patient's unpleasant feeling or psychological condition due to physiological changes that caused instability of the psychological condition that occurred after the individual underwent hemodialysis.

5. Study Instruments

Anxiety was tested using the Hamilton Rating Scale for Anxiety questionnaire.

6. Data analysis

Differences in anxiety levels were measured before and after treatment and then analyzed with a t-test on the SPSS program.

7. Research Ethics

The study obtained its ethical clearance from the research ethics committee of the Polytechnique Ministry of Health Surakarta with the number: LB.02.02/1.1/2544/2021

RESULTS

1. Sample Characteristics

The description of univariate analysis describes the general characteristics of the sample data of each variable including data on age, education, and occupation. Univariate analysis can be seen in table 1.

Based on the characteristics of the samples in table 1 above, it can be seen that a total of 8 respondents aged ≤20 years (2.7%), 6 people aged 21-30 years (2.0%), 29 people aged 31-40 (9.7%), 83 people aged 41-50 (38.0%), 114 people aged 51-60 years (38.0%), and 60 people aged ≥61 years (20.0%). Respondents with primary school educational backgrounds were 100 people (33.3%), secondary school 55 people (18.3%), high school 98 people (32.7%), and university were 47 people (15.63%). A total of 138 male respondents (46%), and 164 female respondents (54%). Respondents who underwent 1st HD procedure were 63 people (21%), 2nd HD 85 people (28.3%), 3rd HD 77 people (25.7%), and 4th HD 75 people (25.1%).

2. Bivariate Analysis

The bivariate analysis in this study used an independent t-test to assess the mean difference between independent and dependent variables. The test results of different anxiety levels in the intervention group of hypnotherapy, acupressure, hypnopressure, and standard treatments are presented in table 2.

Table 2 shows the anxiety score after acupressure (Mean= 17.31; SD= 3.22) was lower than before acupressure (Mean= 23.17; SD= 2.68) and the result was statistically significant ($p<0.001$). Anxiety score after hypnotherapy (Mean= 15.13; SD= 2.83) was lower than before hypnotherapy (Mean= 23.09; SD= 2.38) and the result was statistically significant ($p<0.001$). Anxiety score after hypnopressure (Mean= 12.64; SD= 2.23) was lower than before hypnopressure (Mean= 23.13; SD= 2.53) and the result was statistically significant ($p<0.001$).

Based on table 3 post-hoc test results on the interventions, there were differences and meaningful, significant values between the Acupressure group and hypnotherapy 2,173 ($p<0.001$), acupressure and hypnopre-

ssure 4,666 (p<0.001), acupressure and control 5,306 (p<0.001). Hypnotherapy and hypnopressure 2.493 (p 0.025), Hypnotherapy and control -9. 973 (p<0.001), hypnopressure, and control -9.973 (<0.001). It means that there was an influence of the intervention on the reduced anxiety levels. The hypnopressure group had the greatest decrease in anxiety levels compared to the hypnotherapy, acupressure, and control groups.

Table 1. Sample characteristics

Characteristics	Category	Frequency	Percentage
Age	≤ 20	8	2.7%
	21 – 30	6	2.0%
	31 – 40	29	9.7%
	41 – 50	83	27.7%
	51 – 60	114	38.0%
	≥ 61	60	20.0%
Education	Primary School	100	33.3
	Secondary School	55	18.3
	High School	98	32.7
	University	47	15.63
Sex category	Male	138	46
	Female	164	54
Hemodialysis	1	63	21
	2	85	28.3
	3	77	25.7
	4	75	25.1

Table 2. Changes in Anxiety Levels after Intervention

Variable	Pre		p	Post		p
	Mean	SD		Mean	SD	
Acupressure	23.17	2.68	0.993	17.31	3.33	0.001
Hypnotherapy	23.09	2.38		15.13	2.83	
Hypnopressure	23.13	2.53		12.64	2.23	
Control	23.21	2.83		22.61	2.44	

Table 3. Post Hoc Test of Anxiety Variable in Acupressure, Hypnotherapy, Hypnopressure, and Control Groups

Groups	Groups							
	Acupressure		Hypnotherapy		Hypnopressure		Control	
	Mean	p	Mean	p	Mean	p	Mean	p
Acupressure	-	-	2.1730	0.001	4.666	0.001	5.306	0.001
Hypnotherapy	-2.1730	0.003	-	-	2.493	0.001	7.480	0.001
Hypnopressure	-4.666	0.001	-2.493	0.001	-	-	-9.973	0.001
Control	5.3066	0.001	7.4800	0.001	9.9733	0.001	-	-

DISCUSSION

The study was carried out with a total of 300 hemodialysis patients at the Regional General Hospital (RSUD) dr. Moewardi Surakarta who had met the inclusion criteria. Subjects' anxiety levels were measured with the Hamilton Rating Scale for Anxiety (HRS-A) in the standard care group and in patients who received acupressure, hypnotherapy, and hypnopressure interventions. Measurement of anxiety levels was carried out before and after the intervention, in

groups with standard care, the measurement was taken before and after standard care with the same interval of data collection as the treatment groups.

The results of the study obtained the probability value of differences in the level of anxiety in the acupressure group, hypnotherapy, hypnopressure, and control before the interventions were carried out was 0. 993. It means, statistically there was no significant difference among the acupressure, hypnotherapy, hypnopressure, and the control groups before the treatments ($p > 0.001$).

The characteristics of the subjects in the study include age, education, and occupation. The results of the study using an independent t-test for the influence of the intervention on the control group and treatment group based on the data in Table 2 showed that as expected, patients who obtained the intervention had lower average values of anxiety levels compared to the control group or the group that only received standard care. The value of $p<0.001$ indicates there was a significant difference between the administration of acupressure, hypnotherapy, and hypnopressure interventions, or treatment groups, and the control group (obtaining standard care). The result of the post-hoc test on the intervention was that there were differences and meaningful, significant values between the Acupressure group and hypnotherapy 2,173 ($p<0.001$), Acupressure and hypnopressure 4,666 ($p<0.001$) acupressure and control 5,306 ($p<0.001$). Hypnotherapy and hypnopressure 2,493 ($p<0.001$), Hypnotherapy and control -9,973 ($p<0.001$), hypnopressure and control -9.973 ($p<0.001$) which means that there was an influence of the intervention on the reduced anxiety levels.

Anxiety conditions in patients undergoing hemodialysis are shown in table 2 with the average anxiety score in all groups before treatment was 23.15 or belonged to the criteria of moderate anxiety. After obtaining interventions, either acupressure, hypnotherapy, or hypnopressure, all levels of anxiety in patients undergoing hemodialysis showed a decrease and belonged to the category of mild anxiety.

Intervention in the acupressure group was performed by massaging the Neiguan point (Pc6) using the thumb (Chopra, 2006). The Neiguan point is three fingers above the crease of the wrist on the side of the palm, and the forearm. In accordance with table 4.8, there were different levels of anxiety before and after the administration of acupressure interventions. In patients who obtained acupressure intervention at the Neiguan point (Pc6) the initial average anxiety assessment score was 23.17 or belonged to the moderate anxiety category with an SD of 2.68. After acupressure treatment at the Neiguan point (Pc6) there was a decrease in the anxiety score to 17.31 or belonged to the category of no anxiety with SD 3,329. The change in anxiety score corresponds to the theory that anxiety can be overcome by acupressure massage at Pc 6 Neiguan point. Some studies have shown that acupuncture stimulation at Pericardium point 6 (Pc 6) has a calming effect. This shows the effect of acupressure administration at the neiguan point (Pc6) on reducing the anxiety of patients who are undergoing a hemodialysis program. Patients who obtained acupressure intervention had lower average anxiety levels than the control group, the difference in the average levels of this anxiety was statistically significant. It is in accordance with the opinion of Chopra (2006) that massage at the point of neiguan decreases anxiety. Acupressure has several advantages such as lower risk, easy to learn and perform, beneficial in relieving pain, and improving relaxation (Roza et al., 2019), Acupressure also makes patients feel not alone, due to the presence of other

people who accompany them when undergoing hemodialysis while administering acupressure.

The study strengthens the opinion that a program in the mind that has been instilled through affirmations or suggestions in hypnotic conditions, can serve as a trigger for a permanent change. According to Beebe (2014) hypnotherapy is an integrative technique between mind and body with therapeutic potential in various healthcare applications, including anxiety in patients undergoing a therapy program. The results of this study are also in accordance with the opinion of Fitriani and Achmad (2017) that hypnotherapy is the art of communicating with the subconscious, which is carried out on a person who is in a hypnotic state so that it can turn negative mindsets into positive mindsets and can modify the subject's behavior, attitudes, emotional contents, and also states such as dysfunctional habits, anxiety, as well as pain management. Lindayani, et al (2018), also support the results of their study that hypnotherapy can be a form of self-hypnosis which can result in a relatively high relaxation effect that will reduce anxiety, tension, and stressful thoughts.

In this study, the reduced anxiety levels in hypnopressure interventions were better than a single acupressure intervention or hypnotherapy intervention. This is shown in table 2 which shows a significant change in anxiety levels in patients after obtaining acupressure. This study supported that the combined treatment of acupressure plus hypnotherapy is more effective in reducing anxiety in patients who are undergoing a hemodialysis program. The effects of acupressure and the effects of hypnotherapy become a positive accumulation of an intervention to reduce anxiety.

Based on table 2, it obtained data on the decrease in anxiety in the control group, it was indicated by a change in the average anxiety from 23.21 or belonged to the moderate anxiety category with SD 2.83, to 22.61 or belonged to the moderate anxiety category with SD 2,438. However, this change was statistically included in the significant criteria with a p-value of 0.000, despite it statistically decreasing significantly, the decrease in anxiety levels in the control group was relatively smaller compared to the group that obtained acupressure, hypnotherapy, or hypnopressure interventions, as presented in table 3. A decrease in the level of anxiety in the control group occurred probably because the patient had already begun to accept his condition. The majority of clients undergoing hemodialysis therapy in Indonesia undergo therapy 2 times a week with 4–5 hours per procedure. According to Kubler-Ross (2009) theory, when a person is faced with the reality of bad news, he will experience serial stages of emotions in the form of denial, anger, bargaining, depression, and acceptance.

These five phases may vary among individuals. Some individuals may be able to quickly go through this process and can immediately come into the acceptance phase. But some individuals are repeatedly locked in a circle of denial, anger, bargaining, and depression, and return to anger, bargaining, and depression without ever reaching the acceptance phase with the help of the support of families, nurses, or health workers, certainly, patients undergoing a hemodialysis program are expected to soon reach the acceptance phase.

AUTHOR CONTRIBUTIONS

Hanung Prasetya was the main author who wrote the manuscript, processed data, and formulated a hypnotherapy audio instrument. Sri Yatmihatun formulated the study method and collected study material and its discussion.

ACKNOWLEGDEMENT

Acknowledgments were conveyed by the authors to the director of dr. moewardi hospital for allowing this study to be carried out. thank you to all the health personnel for helping in data collection. thank you to all patients who have been willing and cooperative to become the study subjects .

FINANCIAL AND SPONSORSHIP

The study was funded by Riset Pembinaan Tenaga Kesehatan (Health Workers Development Research) Health Ministry of the Republic of Indonesia.

CONFLICT OF INTEREST

There was no conflict of interest in the study.

REFERENCE

Arter D (2014). Hypnotic Power.Yogyakarta: Mantra Books as factors of test anxiety among undergraduates in Nigeria. Int. J. Sustain. Dev. Plan. 2(2): 704-710.

Beebe KR (2014). Hypnotherapy for labor and birth. Nurs Womens Health. 18-(1):48-59. Doi: 10.1111/1751-486X.120-93.

Caninsti R (2007). Gambaran kecemasan dan depresi pada penderita gagal ginjal kronis yang menjalani terapi hemodialisa). Depok: Pascasarjana Fakultas Psikologi UI.

Chopra, Deepak, David S, Vicki A (2006). Magical beginnings, panduan holistik kehamilan dan kelahiran. Penerbit Kaifa: Bandung.

Chilcot J, Wellsted D, Da Silva-Gane M, Farrington K (2008). Depression on dialysis. nephron clin pract. 108(4): 256–264. Doi: 10.1159/000124749.

DeLaune SC, Ladner PK (2011). Fundamentals of nursing: Standars and practice (4th Ed). USA: Delmar, Cengage Learning.

Doengoes ME, Et. Editor Monica E (2010). Nursing care plans guidelines for planning and documenting patient care, Edisi 3. Alih Bahasa: Kariasa IM. Jakarta: EGC.

Farida A (2010). Pengalaman klien hemodialisis terhadap kualitas hidup dalam konteks asuhan keperawatan di RSUP Fatmawati Jakarta. Pascasarjana Fakultas Ilmu Keperawatan Kekhususan Keperawatan Medikal Bedah Universitas Indonesia, Depok, Jawa Barat, Indonesia.

Fengge A (2012). Terapi akupresur manfaat dan teknik pengobatan. Yogyakarta: Crop.

Fitriani H, Achmad (2017). Perbedaan efektivitas relaksasi otot profresif dan hipnoterapi terhadap dismenore primer pada remaja. Jurnal Keperawatan BSI. 5: 89-95.

Hartono RIW (2012). Akupresur untuk berbagai penyakit. Yogyakarta: Rapha Publishing.

Hill NR, Fatoba ST, Oke JL, Hirst JA, O'Callaghan CA, Lasserson DS (2016). Global prevalence of chronic kidney disease a systematic review and meta-analysis. PLoS ONE 11(7): e0158765. Doi: 10.1371/journal.pone.0158765.

Kallenbach (2005). Review of hemodialysis for nurses and dialysis personel (ed) Elsevier. USA.

Kimmel PL (2001). Psychosocial factors in dialysis patients. Kidney International. 59: 1599-1613. Doi: 10.1046/j.1523-17-55.2001.0590041599.x.

Kubler-Ross E (2009). On death and dying: What the dying have to each doctor, nurses, clergy and their own families. London: routledge.

Lindayani, Irma D, Heni P (2018). Conference book. International conference on healthcare and management: Evidence to inform action on supporting

and implementation of SDG's: Bandung: PPNI JABAR.

Mollaoglu M (2009). Perceived social support, anxiety, and self-care among patients receiving hemodialysis. Dyalisis and Transplantation. 35(3): 144-155. Doi: 10.1002/dat.20002.

Ng BY, TS Lee (2008). Hypnotherapy for sleep disorders. Ann Acad Med Singapore. 37: 683-8.

Potter PA, Perry AG (2005). Buku ajar fundamental keperawatan: konsep, proses, dan praktik.Edisi 4.Volume 2.Alih Bahasa : Renata Komalasari, dkk. Jakarta: EGC.

Prasetya H (2017). Efektifitas medikal hipnosis untuk meningkatkan kepatuhan minum obat. disertasi. PPS Universitas Sebelas Maret.

Prasetya H, Murti B, Anantanyu S, Syamsulhadi M (2018). The effect of hypnosis on adherence to antituberculosis drugs using the health belief model, international. J Clin Exp Hypn. 66(2): 211-227. DOI: 10.1080/00207144.2018.1421361.

Rosdiana I, Yetty K, Sabri L (2014). Kecemasan Dan Lamanya Waktu Menjalani Hemodialisis Berhubungan Dengan Kejadian Insomnia Pada Pasien Gagal Ginjal Kronik. Jurnal Keperawatan Indonesia, 17(2):39-47. pISSN 1410-4490, eISSN 2354-9203.

Sabry AA, Abo-Zenah H, Wafa E, Mahmoud K, El-Dahshan K, Hassan A, Abbas TM (2010). Sleep disorders in hemodialysis patients. Saudi J Kidney Dis Transpl. 21:300-5.

Smeltzer SC, Bare BG, Hinkle JL, Cheever KH (2008). Textbook of medical-surgical nursing (11th Ed.). Philadelphia: Lippincott William & Wilkins.

Tarwoto, Wartonah (2011). Kebutuhan Dasar Manusia dan Proses Keperawatan. Jakarta: Salemba Medika.