PREDICTION STUDY OF FACTORS INFLUENCING PAIN COPING STRATEGIES OF PATIENTS WITH CERVICAL CANCER

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Abstract

Pain is an issue often experienced by cervical cancer patients. Some coping strategies to manage this issue have been conducted by patients. However, its success is influenced by some factors. This study aimed to predict factors influencing coping strategy of pain among cervical cancer patients. The Method is a correlational analytic study had involved cervical cancer patients staged 2 and 3 aged 25 – 65 years old with pain and chemotherapy. The Coping Strategies Questionnaire (CSQ) was used to assess coping strategy describing patient's thought and feeling associated with pain. Multivariate regression analysis was used to analyse data. The result is Out of 92 respondents, 50% were categorised as late adulthood and 59.8% experience mild pain. Result showed that coping strategy is associated with education, age, marital state, leucocyte and pain scale (p value < 0.05). However, occupation, income, chemotherapy cycle, chemotherapy effects, haemoglobin, thrombocyte, urea and creatinine are not significantly related to coping strategy. Besides, multivariate regression analysis shows that the most influencing factor toward coping strategy is the variable of age. Age is the most influencing factor toward individual's coping. For that reason, strengthening coping strategy of cervical cancer patients needs to maintain age factor.

Keywords: Cervical Cancer; Pain Coping; Coping Strategy

1. Introduction

Globocan data states that in 2018 there were 570,000 cervical cancer cases and around 311,000 people died from the disease (Arbyn et al., 2020). Cervical cancer is the leading cause of cancer-related deaths in women in several countries. Cervical cancer ranks fourth after breast, colorectal, and lung cancer. In Indonesia, the incidence of cervical cancer is 136.2 / 100,000 or number 8 in Southeast Asia (Ministry of Health, 2019).

Pain management in cancer patients was often found in daily practice in patients who first come for treatment, about 30% and nearly 70% of patients with advanced cancer who underwent treatment (Naga, 2014). Pain could affect the patient's physical, psychological, and social condition (Shute, 2013). Pain affected all aspects of the patient's quality of life. Cancer patients could experience pain in several different anatomical locations, probably caused by cancer, cancer therapy, general debility, or other comorbidities (The British Pain Society, 2010).

Coping strategies are a set of individual cognitive and behavioral efforts that are used to deal with high threats. It corresponds to self-sourced or available judgments, which may be adaptive or maladaptive depending on the context and appropriate judgments to change the situation. The research conducted to assess the intensity of cervical cancer pain in inpatients reported that the mean pain was 4.8, with two-thirds experiencing pain intensity of more than 5 (Kaila & Maree, 2018). A UK study involving 617 patients released a report on the mean pain intensity of 6.4 with more than 90% reporting a pain intensity of more than 5 (scale 0-10), and 25% of patients not getting pain relief (Bruel & Rosenberg, 2018). Coping strategies are crucial in pain management as part of an effort to create a safe and comfortable condition for patients. Coping strategies performed by patients differ from one patient to another when experiencing pain even though the pain scale is the same. Some patients said that the way to overcome or divert attention from pain is by praying to be

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strong to endure pain, singing, talking to other patients, quietly biting their lips and clenching their fists, or even ignoring them when pain strikes (Czerw, 2017). Several factors are correlated with patients' pain coping strategies. However, in-depth predictions regarding which factors have a dominant role are still limited to be analyzed. Therefore, this study aims to predict the factors that influence pain coping strategies in cervical cancer patients.

2. Research Methodology

This research took place at Dr. Kariadi Semarang, namely the Rajawali Installation and the Kausari Installation in May-June 2020. The design of this research was correlational analytic. A total of 92 respondents with the inclusion criteria were adult women aged 25-65 years having cervical cancer and pain complaints, receiving hospitalization and chemotherapy treatment, being able to communicate verbally, and having no hearing and mental problems. The measuring instrument used in this study was the Coping Strategies Questionnaire (CSQ). For the bivariate data analysis stage, the researchers used the Pearson correlation test for numerical scales and one-way ANOVA, and the T-test for categorical scales. Meanwhile, for multi-variate analysis, the researchers used multiple linear regression tests. They got the research permission from the Hospital Ethics Committee Dr. Kariadi Semarang number 512/EC/KEPK-RSDK/2020 as well as a permit to carry out research number DP.02.001/I.II/2916/2020.

3. Result and Discussion

Characteristic of respondents' geography

Table 1 above shows that the category of late adults age (36 - 45 years) is the most variable compared to other variables or about 50%. The highest level of education is junior high school at 50%, with a percentage of getting married as much as 94.6%. The most effect of chemotherapy is that all symptoms appear, namely; nausea, vomiting, hair loss, and decreased appetite, 55 respondents or 59.8% experienced a mild level of pain, and 37 respondents or 40.2% stated moderate pain. Laboratory results in this study showed Hb results with an average (mean) value of 11.73 gr/dl. For the leucocyte yield, the average value was 7.47 rb/uL. The mean urea and creatinine values were 20.6 mg/dl and 0.94 mg/dl, respectively. All laboratory results were normal.

Table 1. Distribution of Characteristic Frequency of Respondents' Demography and Laboratory Results (n=92)

Variable		Total	
		n	%
Age	Adolescents (17-25 th)	4	4,3
	Early adults (26 – 35 th)	10	10,9
	Late adults (36 -45 th)	46	50
	Early elders (46 – 55 th)	21	22,8
	Late elders (56 – 65 th)	11	12
Marital status	Single	2	2,2
	Married	87	94,6
	Widowed	3	3,3
Education	Primary	18	19,6
	Junior High	46	50
	Senior High	19	20,7
	Bachelor	9	9,8
Occupation	Unemployed	9	9,8
	Employed	83	90,2
Income	Low (< 1 million/month)	34	37
	Middle (1- 3 million/month)	52	56,5
	High (> 3 million/month)	6	6,5
Chemotherapy cycle	Cycle 1	20	21,7
	Cycle 2	50	54,3
	Cycle 3	10	10,9
	Cycle 4	12	13
Pain	Mild	55	59,8
	Severe	37	40,2
Hemoglobin (g/dl)	Low	35	38
	Normal	57	62
	High	0	0
Platelets (rb/uL)	Low	3	3,3
	Normal	75	82,6
	High	13	14,1
Leukocytes (rb/uL)	Low	4	3,3
	Normal	77	83,7
	High	11	12
Ureum (mg/dl)	Low	3	3,3
	Normal	81	88
	High	8	8,7
Creatinine (mg/dl)	Low	3	3,3
	Normal	78	84,8
	High	11	12

Table 2. The value of the central tendency of the respondent's pain coping strategy

Variable	Mean	Median	SD	Min - Max
Coping strategy	158	154	27.605	127 - 224

Table 2 shows the mean value of coping strategies is 158, the middle value is 154, the lowest value is 127, and the highest value is 224.

The correlation between the independent variables and the dependent variable (coping strategy)

This analysis aims to determine the relationship between the independent variables (including age, education, marital status, occupation, income, laboratory values, chemotherapy cycles, chemotherapy effects, and pain scales) and the dependent variable (coping strategy).

Table 3. Bivariate Analysis

Variable	R	R²	P *Value*	*Mean*	*SD*	SE	95%CI
Age	0,377	0,142	0,001*				
Chemotherapy cycle	0,104	0,011	0,355*				
Pain scale	0,230	0,053	0,039*				
Hb	0,079	0,006	0,481*				
Platelets	0,185	0,034	0,097*				
Leukocytes	0,273	0,074	0,014*				
Ureum	0,159	0,025	0,014*				
Creatinine	0,103	0,011	0,359*				
Marital status:							
Single			0,011**	1,14	.378		.79-1,49
Married				1,65	.481		1,53-1,76
Widowed				2,00	.000		2,00-2,00
Educations :							
Primary			0,000**	1,21	.419		1,01-1,41
Junior High				1,76	.431		1,63-1,90
Senior High				1,65	.493		1,39-1,90
Bachelor				2,00	.000		2,00-2,00
Chemotherapy effect:							
One symptom			0,365**	144,33	12,169		137,59-151,07
All symptoms				149,97	16,681		144,24-155,70
Occupation:							
Unemployed			.143***	141,63	11,451	4,049	
Employed				150,32	16,115	1,886	
Income:							
Low			0,676***	149,60	15,592	1,806	
High				145,67	16,166	9,333	

*Correlation Pearson Test
**One Way Anova Test
***t test

Table 3 illustrates that the correlation between age and coping strategies shows a positive relationship (R = 0.377), which means that the older the person is, the better the coping strategies are. The coefficient value (R2 = 0.142) means that the regression line equation of 14.2% is good enough which explains the age variable. In the statistical test, the p-value is 0.001 or p <0.05, so that H$_o$ is rejected and H$_a$ is accepted, meaning that there is a correlation between age and coping strategies. The results of statistical tests show that the chemotherapy cycle with a p-value of 0.355 or p> 0.05, meaning that

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there is no correlation between the chemotherapy cycle and coping strategies. The pain scale obtained the p-value of 0.039 or p <0.05, meaning that there is a relationship between the pain scale and coping strategies. Hemoglobin statistical test with the p-value of 0.481 or p> 0.05 means that there is no relationship between platelets and coping strategies.

Further, in the leukocyte statistical test, it is obtained the p-value of 0.014 or p <0.05, which means that there is a relationship between leukocytes and coping strategies. Meanwhile, the results of the urea statistical test with the p-value of 0.157 or p> 0.05, indicated that there is no relationship between urea and coping strategies. In the creatinine statistical test with a the p-value of 0.359 or p> 0.05, it is determined that H_o is accepted and H_a is rejected, meaning that there is no relationship between creatinine and coping strategies. The correlation between age and coping strategies shows a positive patterned relationship (R = 0.377), which means that the older the person is, the better the coping strategies are. The coefficient value (R2 = 0.142) means that the regression line equation of 14.2% is good enough to explain the age variable. The statistical test obtains the p-value of 0.001 or p <0.05, then H_o is rejected and H_a is accepted, which means there is a relationship between age and coping strategies.

The results of the chemotherapy cycle statistical test with the p-value of 0.355 or p> 0.05 mean that there is a relationship between the chemotherapy cycle and coping strategies. In the pain scale statistical test, the p-value is 0.039 or p <0.05, meaning that there is a relationship between the pain scale and coping strategies. Hemoglobin statistical test with the p-value of 0.481 or p> 0.05 showed no relationship between hemoglobin and coping strategies. Likewise, with the results of the platelet statistical test, with a the p-value of 0.097 or p> 0.05, there was no correlation between platelets and coping strategies. In testing other variables, such as leucocytes, the p-value is 0.014 or p <0.05, meaning that there is a relationship between leucocytes and coping strategies. The results of the urea statistical test with the p-value of 0.157 or p> 0.05 mean that there is no relationship between urea and coping strategies. For the results of the creatinine statistical test with the p-value of 0.359 or p> 0.05, H_o is accepted and H_a is rejected implicating that there is no relationship between creatinine and coping strategies.

Based on the one-way ANOVA test, the p-value of the variables of marriage and education is 0.011 and 0.000 or p <0.05, which means that both marriage and education have a significant relationship with coping strategies. While the results of the analysis of chemotherapy effect variables with the p-value of 0.365 or p> 0.05 imply that there is no relationship between the effects of chemotherapy and coping strategies. The results of the t-test on the occupation variable with the p-value of 0.143 or p> 0.05, implies that H_o is accepted and H_a is rejected, which means there is no relationship between occupation and coping strategies. The results of the analysis of the variable income the p-value of 0.676 or p> 0.05 means that there is no relationship between income and coping strategie

The most dominant variable to the coping strategy variable

This analysis is conducted to determine the relationship between the independent variables and the dependent one simultaneously and to figure out what variables are the most dominant or influential (linear regression modeling). The analysis used is multiple linear regression. The conditions are that the data are linear and normally distributed. The result of the linearity value is p 0.014 or p <0.05, which means that the data variable is linear. The results of data normality are the p-value of 0.121 or p> 0.05, which means the data is normally distributed. The results of F count (5,524)> F table (0.109), which means that simultaneously the independent variable has a significant correlation with the dependent variable (coping strategy).

Multiple linear modeling is useful for knowing which variables have the most influence on the dependent variable (coping strategy). The independent variables included were age (p 0.001), leucocytes (p 0.014), platelets (p 0.097), urea (p 0.157), education (p 0.000), marriage (p 0.011), occupation (p 0.143), and scale. pain (p 0.039). The final results of the multivariate analysis after the independent variable modeling is completed are as follows:

Table 4. Variable modeling distribution

Variable	Unstandardized coefficients B	t	Sig	R²
Age	12,724	3,264	.002	
Education	4,249	2,313	.023	
Marital status	9,544	2,379	.020	.455
Leukocytes	.799	2,870	.005	
Ureum	-.657	-2,673	.009	
Pain scale	-7,797	-1,999	.049	

The final modeling results in table 4 show the p-value of <0.05. These variables were age (p 0.002), education (p 0.023), marital status (p 0.020), leucocytes (p 0.005), urea (p 0.009), and pain scale (p 0.049). Based on these results, the age variable with the smallest p-value of (p 0.002) compared to other variables is called the dominant variable in the coping strategy.

Factors influencing coping strategies

In general, age is closely related to a person's immunity to a disease. An elderly person, when compared to a teenager, certainly has a different resistance to being attacked by a disease. By paying attention to various aspects, a teenager or adult has a better immune system when compared to children or the elderly.

Naturally, adult patients have different coping strategies from children or the elderly in overcoming their pain problems. The older a person, the decrease in physical function, biological, psychological, and spiritual changes that are more susceptible to chronic disease. Complementary diseases or chronic diseases will affect the attitude and decisions of the patient's coping strategies when health problems arise (Andriani, 2016). The same research was also conducted on the characteristics of respondents in cervical cancer patients, showing that the majority of respondents were women aged 31-40 years, amounting to 32.9%. Cancer research in the United Kingdom which states that the majority of cervical cancer sufferers occur in women aged 30-34 years, this is due to the increasing economic level and welfare of the population in that country so that public awareness for early detection of cervical cancer is also higher. A person's marital status is closely related to one's life partner. A married woman certainly has friends to share. In a person's marital status, there is good support for one's life partner even with family. High support for a person greatly affects life expectancy in patients with cancer. Social support can help improve individual strategies by suggesting alternative strategies based on previous experiences and inviting others to focus on the positive aspects of the situation (Siswi Kusumadewi, Haryani, 2008). Social support includes support for the fulfillment of information and emotional needs in individuals obtained or provided by parents, siblings or other family members, friends, and the surrounding community. With social support, individuals will be more able and confident in solving the problems they are facing and can help individuals in doing proper coping.

The education level factor is an important factor in the individual's process of receiving information about illness or health problems. Education also has a broader effect on any decisions taken related to problem-solving faced by patients. This result is following the theory which states that education has a relationship to one's coping strategies. The lower a person's education level, the less precise the coping strategies are likely to be used (Sandra J, 2015). The incidence of cervical cancer is related to a person's education level, the more educated, the awareness and lifestyle will be better, especially with the hygiene of sexuality and awareness to conduct cervical cancer screening earlier.

A person who has a longer working time than his rest period will experience a high level of stress. This is not true and in line with other studies which say that there is no relationship between coping strategies and work stress. The work status of a person in this study does not affect decision-making regarding coping strategies that are taken if they have problems in their life (Eunika Rustiana, 2012). In the theoretical concept, the work factor enters the factors that influence the coping strategy of material resources. The majority of respondents work to fulfill daily needs and help the family economy. The patient's focus in addition to treating the disease must also continue to work so that the family economy continues to run well even though they are a wife.

Another variable is income related to the economic status of an individual or family. In this study, it was found that there was no relationship between income and coping strategies. However, in other studies, different results found that economic status is related to coping strategies. A good economic status will increase family resilience and a sense of comfort in living life so that if there are problems related to health or other problems it will be easier and more calm in making decisions including coping strategies (Herawati, 2017).

Turning to the chemotherapy cycle, the results showed that there was no relationship between this cycle and coping strategies. This result is not in line with other studies where it is said that the more frequent or increasing cycles of a person's chemotherapy program, the easier it is to adapt to the disease through better individual coping strategies (Gassmann, Kolbe, & Brenner, 2016). Someone who is just undergoing a chemotherapy program for the

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first time is more easily stressed and afraid of the side effects of chemotherapy. The chemotherapy cycle includes physical health factors in coping strategies. Physical health is influenced by the degree of individual health. Health status can be seen from a person's illness or illness status. The more severe the pain suffered by a person, the focus on coping strategies also decreases. The higher / the number of cycles of chemotherapy, the higher the potential for a decrease in health status. Chemotherapy has an adverse effect on healthy cells in the body.

In other studies, it is stated that there is no direct relationship between the effects of chemotherapy on coping strategies but only states that chemotherapy increases anxiety or excessive worry so that it affects decisions in using patient coping strategies (Marylin J.Dodd, 1993).

The results of this study indicate that there is a low relationship between the pain scale and coping strategies. Several studies have shown that the coping style of patients affects pain and adjustment to a disease (Prasertsri, Holden, Keefe, & Wilkie, 2011). In another study, it was found that the association between pain and coping strategies in patients with rheumatoid arthritis was very strong. The more severe the pain is felt, the coping strategies that will be taken in response to this will decrease (Keefe et al., 1991). Pain reduces one's concentration and focuses on an external or internal response. Other studies say that choosing the right coping strategy can reduce the level of pain felt by patients. Flexibility in choosing coping strategies determines the success of dealing with pain.

The results of this study stated that there was no relationship between Hb results and coping strategies. The results of this study are different from other studies which state that Hb levels are usually a factor influencing coping strategies due to a decrease in hemoglobin (Agnita Utami, Siti Chodidjah, 2020). The decrease in Hb can result in a decrease in oxygen levels in the blood where oxygen is needed in order to meet the needs of cells in the body. Oxygen deficiency at the cellular level will result in decreased tissue function including brain function which is very useful for concentration and focus on decision making in this case is coping strategies. In connection with this study, the decrease in Hb levels in cervical cancer patients was due to the chemotherapy program which directly affected the hemoglobin producing cells experiencing a decrease in performance due to the side effects of chemotherapy. Another study states that not all chemotherapy patients have

decreased hemoglobin values or anemia. This is in line with this study that the majority of patients had normal Hb levels. Good Hb levels can be supported by the consumption of a balanced and nutritious diet that contains sufficient iron.

For the platelet variable, the writers conclude that there is no relationship between the platelet variable and coping strategies. This is in line with other studies where there is no relationship between platelet values and coping strategies in patients with cancer. However, there is a relationship between general laboratory values and the quality of life of patients with cancer (Forsse et al., 2020). Platelets have an important role in the blood clotting system and cell metabolism. A good metabolism will manifest a state or a good condition of the physiological function of the cell. Physiology or good condition of a person will directly influence the decision making of a good coping strategy as well.

Talking about the leucocyte variable, the researchers report that there is an association between the leucocyte variable and coping strategies, with a low correlation strength. Leukocytes / white blood cells are closely related to a person's immune system. They are what defend the body's immunity from disease, viruses, and bacteria. The immune system also destroys other foreign substances and destroys bacteria or viruses from healthy cells or tissues to keep them functioning normally. A person who has low levels of leukocytes or a compromised immune system is very susceptible to stress and depression so he is unable to use individual coping properly (Olff, 2000). Conversely, if a person has a good and healthy immune system, the potential for stressors both from outside and from within can be overcome through good coping mechanisms.

The study indicates that there is no correlation between urea variables and coping strategies. Urea is closely related to kidney function. A good urea level value reflects good kidney function health as well (Gurkan, 2015). The results of other studies suggest that a healthy kidney condition affects the level of a person's general health and the ability to think more focused on solving problems (Knowles & Swan, 2014). The ability to choose a good coping strategy is also directly affected by a good body condition. Kidney function affects the physiological functions of the body systems. A person who has problems with kidney function will experience a decrease in metabolic function in their body which directly affects the quality of life.

The correlation between creatinine and coping strategies is not demonstrated in this study. Creatinine itself is an end product of creatine metabolism which is released from muscles and excreted by the kidneys through a combination of filtration and secretion. It is a toxic substance produced by protein metabolism that must be excreted by the kidneys. Poor quality kidneys will affect the level or degree of individual health which directly affects the level of awareness and individual coping with the response that comes (Ramirez etal.,2012). A patient with cervical cancer needs a good level of health and awareness to survive cervical cancer, where cervical cancer requires intense treatment and chemotherapy so that good kidney function is needed to filter out toxins from the body's metabolism.

The most dominant variable on coping strategies

After conducting this research, age emerged as a variable capable of influencing the body's ability to fight pain. This ability to combat pain is present in childhood, but it diminishes in old age. In general, the older you get, the lower the body's functions. This of course has the potential for health problems, namely disease. In another study, it was stated that age affects the body's neuroendocrine system which plays a role in the successful functioning of the central and autonomic nervous system and hormone function of a person (Villada et al., 2017). At the young age level, the neuroendocrine system is within normal limits compared to the elderly or children. The process of using coping strategies requires bodily functions that can work properly or normally. Late adulthood is a person's mature age based on experience in living life and of course has high self-efficacy. Individuals who have high self-efficacy tend to choose tasks with difficulty levels according to their abilities. In choosing coping strategies to deal with pain, it is important to consider the age factor. Generally, someone with a young age has better self-efficacy than the elderly. Self-efficacy plays an important role in choosing coping strategies for patients who have problems with their health, for example, anxiety, pain, low motivation to live and others. Thus, nurses need to consider the age factor as one of the factors influencing coping strategies.

Age is also considered an important factor in drug administration. Metabolic changes in older people affect response to analgesics (Mc. Dowell J, 1996). The same research was also conducted on the characteristics of respondents to cervical cancer patients, which showed that the majority of respondents were women aged 31-40 years at 32.9%. Cancer Research United Kingdom mentions that the majority of cervical cancer sufferers occur in women aged 30-34 years. This is due to the increasing economic level and welfare of the population in the country so that public awareness for early detection of cervical cancer is also higher (Farhad Islami, 2019).

4. Conclusion

Age is the factor that most influences coping strategies. Factors related to coping strategies include education, age, marital status, pain, and laboratory results, namely leukocytes. The suggestion that can be given with the results of this study is that in choosing a coping strategy to deal with pain, it is necessary to consider the factors that influence coping strategies, especially the age factor.

5. References

Agnita Utami, Siti Chodidjah, F. T. (2020). Aggravate Fatigue in Children Undergoing Chemotherapy. *Journal of Community Health*, *6*(5), 1–6.

Andriani, S. (2016). Studi Kasus Strategi Koping Lasia Dengan Tempat Tinggal. *Jurnal Ilmu Keperawatan Universitas Syiah Kuala*, *3*(1).

Arbyn, M., Weiderpass, E., Bruni, L., de Sanjosé, S., Saraiya, M., Ferlay, J., & Bray, F. (2020). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet Global Health*, *8*(2), e191–e203. https://doi.org/10.1016/S2214-109X(19)30482-6

Bruel, B. M., & Rosenberg, et al. (2018). *Essentials of Interventional Cancer Pain Management*. *Essentials of Interventional Cancer Pain Management*. https://doi.org/10.1007/978-3-319-99684-4

Czerw, A. I. et al. (2017). Pain, acceptance of illness, adjustment to life with cancer and coping strategies in prostate cancer patients. *Archives of Medical Science*, *13*(6), 1459–1466. https://doi.org/10.5114/aoms.2016.58458

Eunike Rustiana, W. H. C. (2012). Stress Kerja Dengan Pemilihan Strategi Coping. *KESMAS - Jurnal Kesehatan Masyarakat*, *7*(2), 149–155. https://doi.org/10.15294/kemas.v7i2.2811

Farhad Islami, et al. (2019). Trends in cervical cancer incidence rates by age, race/ethnicity, histological subtype, and stage at diagnosis in the United States. *Preventive Medicine*, *123*(November 2018), 316–323. https://doi.org/10.1016/j.ypmed.2019.04.010

Forsse, D., Tangen, I. L., Fasmer, K. E., Halle, M. K., Viste, K., Almås, B., … Krakstad, C. (2020).

Blood steroid levels predict survival in endometrial cancer and reflect tumor estrogen signaling. *Gynecologic Oncology*, *156*(2), 400–406. https://doi.org/10.1016/j.ygyno.2019.11.123

Gassmann, C., Kolbe, N., & Brenner, A. (2016). Experiences and coping strategies of oncology patients undergoing oral chemotherapy: First steps of a grounded theory study. *European Journal of Oncology Nursing*, *23*, 106–114. https://doi.org/10.1016/j.ejon.2016.06.001

Gurkan, et al. (2015). Stress Coping Strategies in Hemodialysis and Kidney Transplant Patients. *Transplantation Proceedings*, *47*(5), 1392–1397. https://doi.org/10.1016/j.transproceed.2015.05.022

Herawati, T. et al. (2017). Tekanan Ekonomi, Strategi Koping, dan Ketahanan Keluarga yang Menikah Usia MUda. *Jurnal Ilmu Keluarga Dan Konsumen*, *10*(3), 181–191. https://doi.org/10.24156/jikk.2017.10.3.181

Kaila, I., & Maree, J. E. (2018). An exploration into the level and characteristics of pain experienced by South African women treated for cervical cancer. *International Journal of Africa Nursing Sciences*, *8*(February), 141–148. https://doi.org/10.1016/j.ijans.2018.05.005

Keefe, F. J., Caldwell, D. S., Martinez, S., Nunley, J., Beckham, J., & Williams, D. A. (1991). Analyzing pain in rheumatoid arthritis patients. Pain coping strategies in patients who have had knee replacement surgery. *Pain*, *46*(2), 153–160. https://doi.org/10.1016/0304-3959(91)90070-E

Kemkes. (2019). Hari kanker sedunia 2019. Retrieved from https://www.kemkes.go.id/article/view/19020100003/hari-kanker-sedunia-2019.html

Knowles, S., & Swan, et al. (2014). Exploring the relationships between health status, illness perceptions, coping strategies and psychological morbidity in a chronic kidney disease cohort. *American Journal of the Medical Sciences*, *348*(4), 271–276. https://doi.org/10.1097/MAJ.0000000000000242

Marylin J.Dodd, et al. (1993). Predictors of concerns and coping strategies of cancer chemotherapy outpatients. *Canadian Bulletin of Medical History*, *6*(3), 1–7. https://doi.org/10.3138/cbmh.1981.17

Mc. Dowell J, N. C. (1996). *Measuring Health : A Guide to rating scale and Questionare*. *New York : Oxford University Press* (Vol. 2nd ed).

Naga, et al. (2014). The Relationship between Pain Experience and Roy Adaptation Model : Application of Theoretical Framework Abstract, *2012*(6), 4–9.

Olff, M. (2000). Stress, depression and immunity: The role of defense and coping styles. *Psychiatry Research*, *85*(1), 7–15. https://doi.org/10.1016/S0165-1781(98)00139-5

Prasertsri, N., Holden, J., Keefe, F. J., & Wilkie, D. J. (2011). Repressive coping style: Relationships with depression, pain, and pain coping strategies in lung cancer out patients. *Lung Cancer*, *71*(2), 235–240. https://doi.org/10.1016/j.lungcan.2010.05.009

Ramirez, S. P., Macêdo, D. S., Sales, P. M. G., Figueiredo, S. M., Daher, E. F., Araújo, S. M., … Carvalho, A. F. (2012). The relationship between religious coping, psychological distress and quality of life in hemodialysis patients. *Journal of Psychosomatic Research*, *72*(2), 129–135. https://doi.org/10.1016/j.jpsychores.2011.11.012

Sandra J, D. T. (2015). Pengaruh Derajat Depresi Dengan Intensitas Nyeri Kronik. *Media Medika Muda*, *Vol.4*.

Shute, C. (2013). The challenges of cancer pain assessment and management. *Ulster Medical Journal*, *82*(1), 40–42.

Siswi Kusumadewi, Haryani, S. W. (2008). Hubungan Dukungan Sosial Dan Strategi Koping Pada Pasien Fraktur Pasca Gempa.pdf. *Jurnal Ilmu Keperawatan FK UGM Jogjakarta*, *3*, 33–38.

The British Pain Society, R. (2010). *Opioids for persistent pain: good practice*. *Pain*.

Villada, C., Espin, L., Hidalgo, V., Rubagotti, S., Sgoifo, A., & Salvador, A. (2017). The influence of coping strategies and behavior on the physiological response to social stress in women: The role of age and menstrual cycle phase. *Physiology and Behavior*, *170*, 37–46. https://doi.org/10.1016/j.physbeh.2016.12.011

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