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## PERCEPTION OF CANCER PATIENTS ON CHEMOTHERAPY SIDE EFFECTS

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### Abstract

Chemotherapy causes various side effects that can affect the patient's physical or non-physical condition. Patients' perceptions or ratings of these side effects vary. This study aimed to identify cancer patients' perceptions of the side effects of chemotherapy they are undergoing. The descriptive study was conducted on 84 samples, namely cancer patients aged > 20 years who had undergone chemotherapy at least once before. Data collection using a questionnaire that has been tested for validity and reliability. Data analysis was carried out descriptively with frequency distribution. The results showed that the perception of the physical side effects of chemotherapy that was considered very disturbing by the patient (severe symptoms) was nausea (59.5%), feeling of weakness (36.9%), hair loss (35.7%), vomiting. (29.8%), loss of appetite (28.6%). %, weight loss (27.4%), insomnia and skin discoloration (19% each), headache (16.7%) and fever (15.5%). When the perception of non-physical side effects was fear of death, affecting work/household duties and feeling fear (15.5% each), feeling anxious about my life, and the presence of family members I have to take care (14.3% each). The most disturbing side effects of chemotherapy are physical problems. The health service is expected to increase interventions to minimize the side effects of chemotherapy.

**Keywords:** cancer; perception; side effects

### 1. Introduction

Cancer is a disease that occurs due to abnormal and uncontrolled cell proliferation that can occur anywhere in the body. According to the 2018 GLOBOCAN survey, the incidence of cancer in the world is estimated at 18.1 million cases with the number of deaths reaching 9.6 million deaths (Bray et al., 2018).

In Indonesia, based on the results of Riskesdas 2018, the prevalence of cancer based on a doctor's diagnosis in a population of all ages is 1.79 per mil, and in Riau Province it is 1.67 per mil. This number increased when compared to

the 2013 Riskesdas results which were only 1.4 per mil in Indonesia and 1.3 per mil in Riau (Kemenkes RI, 2018; Kementerian Kesehatan RI, 2013). Based on medical record data of Arifin Achmad Hospital in Riau Province in 2019, the prevalence of cancer was found as many as 5,676 cases, which previously in 2018 was only 5,203 cases.

Various medical actions can be done as a treatment for cancer patients. Most cancers are treated with surgery, then chemotherapy, radiation or other therapies. One of the therapies that are often given to cancer patients with metastases is chemotherapy. About 24.9% of cancer patients in Indonesia were treated with chemotherapy, while in Riau around 22.7% of

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cancer patients were treated with chemotherapy (Kemenkes RI, 2018).

Chemotherapy is a process of using cytotoxic (anticancer) drugs that aim to reduce or stop the growth of cancer cells in the body (Yarbro, Wujcik, & Gobel, 2010). The use of chemotherapy drugs is not without side effects because even though they have the ability to kill cancer cells, these drugs also have an effect on normal cells of the body such as bone marrow depression, disorders of the digestive tract from mouth to intestines, hair loss, and others (Anwar, Harsono, Sasotya, Amaraullah, & Hidayat, 2013).

In addition to affecting the physical condition, recent research such as that conducted by Gurung and Pandey in Nepal or Sasaki, et al in Japan stated that chemotherapy also affects the patient's non-physical condition such as work, household duties or the patient's partner, this is even more complained by patients than physical problems (Gurung & Pandey, 2016; Sasaki et al., 2017). This indicates a possible shift from the impact of chemotherapy that is experienced based on the patient's own perceptions.

Perception is an experience produced by the senses, each individual has a different perception of the same object (Pieter & Lubis, 2012). Likewise with cancer patients who undergo chemotherapy. The perception or assessment of each patient regarding the side effects experienced is also different (Gurung & Pandey, 2016).

Short interviews were conducted with 10 cancer patients who were undergoing chemotherapy, 3 people stated that chemotherapy had a good effect on the body and their disease so that they were more enthusiastic about undergoing the next chemotherapy. While 7 other people experienced side effects that interfere with their daily activities. Based on this, a good perception of the side effects of chemotherapy or the therapy that is being undertaken will influence the patient's adherence to continuing therapy and as a whole will have an effect on the patient's quality of life. This study aims to analyze patients' perceptions of the side effects of chemotherapy they experience.

## 2. Method

This research was a descriptive study with a cross-sectional study approach. The study was conducted in the Seruni Room of Arifin Achmad Hospital, Riau Province, with a population of all cancer patients undergoing one day care

chemotherapy in that room. Sampling of 84 people from the population was carried out by purposive sampling technique with the criteria of being willing to be respondents, aged  $\geq 20$  years, at least having undergone onetime chemotherapy before and the patient's vital signs were within the normal range.

Data collection was carried out using a perception questionnaire of chemotherapy side effects adapted from Sasaki et al. (2017) which consists of 2 parts, namely section A which examines perceptions of non-physical chemotherapy side effects, consists of 42 statements and section B examines perceptions of physical side effects of chemotherapy, consisting of 52 statements. The questionnaire used a Likert scale with 5 choices, namely severe symptoms (code 1), moderate symptoms (code 2), mild symptoms (code 3), minimal symptoms (code 4) and no symptoms (code 5). The questionnaire has been tested for validity and reliability on 20 different respondents from the research respondents, conducted in the same place as the study.

The test results found that the validity value of the questionnaire was in the range of 0.449 to 0.695 (the questionnaire was valid) and the results of the reliability test were that the Cronbach alpha value was 0.924 (the questionnaire is reliable). Then the data obtained were analyzed univariately using a frequency distribution. This research has also passed the ethical review of the Ethics Commission for Health Research STIKes Hang Tuah Pekanbaru with number 668/KEPK/STIKes-HTP/X/2020.

## 3. Result and Discussion

The occurrence of cancer is a long-lasting process consisting of an induction phase, an in situ phase, an invasion phase and a dissemination phase. The induction phase can last for 15 years where this phase is a predisposing phase for cancer. The in situ phase where the cancer cells already exist but have not spread anywhere. The invasion phase can last for 2-3 years, the last stage is the dissemination phase, where the cancer cells have spread to other organs, which takes 2-3 years (Yarbro et al., 2010). Therefore, the incidence of cancer is often found in individuals aged  $> 40$  years, as in this study, the mean of respondents was found to be 51.3 years old with a standard deviation of 6.66 years. The lowest age is 28 years and the highest age is 68 years. Other characteristics of respondents can be seen in table 1 below

**Table 1.** Distributions of Respondents characteristic

No	Characteristic	Quantity (%)
1	Gender	
	Male	10 (11.9)
	Female	74 (88.1)
2	Marital status	
	Unmarried	2 (2.4)
	Married	69 (82.1)
	Widow	12 (14.3)
	Widower	1 (1.2)
3	Education	
	Primary school	6 (7.1)
	Secondary school	10 (11.9)
	Senior high school	44 (52.4)
	Diploma	2 (2.4)
	Undergraduated	20 (23.8)
	Postgraduated	1 (1.2)
4	Occupation	
	Teacher	8 (9.5)
	Retired	2 (2.4)
	Farmer	8 (9.5)
	Civil servant	8 (9.5)
	Unemployed	51 (60.7)
	Self-employed	7 (8.3)
5	Medical diagnosis	
	Breast cancer	61 (72.6)
	Bone cancer	3 (3.6)
	Ovarian cancer	6 (7.1)
	Nasopharyngeal cancer	4 (4.8)
	Cervical cancer	1 (1.2)
	Leukemia	5 (6)
Endometriosis	4 (4.8)	
6	Frequency of chemotherapy	
	2nd	18 (21.4)
	3rd	26 (31)
	4th	22 (26.2)
	5th	12 (14.3)
	6th	5 (6)
	7th	1 (1.2)
	Total	84 (100)

Table 1 shows that the majority of respondents in this study were female, as many as 74 people (88.1%), with a married marital status of 69 people (82.1%), high school education level of 44 people (52.4%), the employment status was not working as many as 51 people (60.7%), the medical diagnosis of breast cancer was 61 people (72.6%), and 26 people had undergone chemotherapy 3 times (31.0%).

In this study, the majority of respondents were female with breast cancer. Breast cancer is main cancer experienced by women worldwide with an incidence of 11.6% and a mortality rate of 6.6% (Bray et al., 2018). Similar results were also obtained by the Global Cancer Statistics 2020 that breast cancer is the most diagnosed cancer, beating lung cancer (Sung et al., 2021).

Likewise in Indonesia, breast cancer is the most diagnosed cancer in all cancers and is also the most commonly found in women (Pangribowo, 2019). Breast cancer is related to the activity of estrogen which is predominantly found in women (Yarbro et al., 2010).

The frequency of chemotherapy that was undertaken by the respondents of this study was at most in the third cycle. Chemotherapy is usually given for several months with a time lag between recovery. The administration of chemotherapy is attempted to be as effective as possible with minimal to moderate toxicity levels (Sinaga, Hasibuan, & Setia, 2015).

The majority of respondents in this study are also no longer working, with high school education level and married marital status. According to Syse and Lyngstad, (2017), cancer patients who are married, have a high education level or partner's education level have healthier lives and behaviors and are more tolerant of cancer treatment. In addition, having a partner will affect the patient's income even though the patient himself is no longer working.

The side effects of chemotherapy include physical and non-physical side effects. Table 2 shows that all respondents in this study experienced nausea as a side effect of the chemotherapy they were undergoing. Nausea was a physical symptom in the category of severe symptoms that most patients felt (59.5%), followed by feelings of weakness (36.9%), hair loss (35.7%), vomiting (29.8%), and loss of appetite (28.6%), weight loss (27.4%), insomnia and skin discoloration (19% each), headache (16.7%) and fever (15.5%).

Previous research states that there has been a shift in patient perceptions of the side effects of chemotherapy where the focus of patient attention is psychosocial problems such as affecting the patient's family / partner (Carelle et al., 2002;Sasaki et al., 2017). However, this study has a different result, where physical problems such as nausea, weakness, hair loss and vomiting are problems for patients related to chemotherapy side effects. This is in line with the research of Chan and Ismail, (2014) which found nausea and vomiting to be very disturbing side effects of chemotherapy for chemotherapy patients in Malaysia. A survey in Italy conducted by Lorusso et al., (2017) also found nausea and vomiting to be the most disruptive side effects of patients' quality of life. Research by Ataseven et al., (2017) also reported physical problems as a

side effect of chemotherapy that disturbs patients, namely difficulty sleeping/insomnia.

Chemotherapy also causes feelings of weakness. One of the underlying mechanisms is the developing state of oxidative stress. Many chemotherapy agents directly produce a state of oxidative stress or indirectly produce a state of

oxidative stress by lowering antioxidant levels, paralyzing cell defenses against increased. Oxidants. And in skeletal muscle, there is increased exposure to oxidants known to cause muscle weakness and speed up the pace fatigue (Gilliam & St. Clair, 2011).

**Table 2.** Distribution of Respondents' Perceptions of Physical Side Effects of Chemotherapy

No	Physical side effects	Grade of symptom*				
		1	2	3	4	5
1	Nausea	50 (59.5)	18 (21.4)	14 (16.7)	2 (2.4)	0 (0)
2	Feelings of weakness	31 (36.9)	24 (28.6)	20 (23.8)	5 (6)	4 (4.8)
3	Skin discoloration	16 (19)	24 (28.6)	25 (29.8)	11 (13.1)	8 (9.5)
4	Hair loss	30 (35.7)	27 (32.1)	16 (19)	2 (2.4)	9 (10.7)
5	Loss of appetite	24 (28.6)	19 (22.6)	19 (22.6)	8 (9.5)	14 (16.7)
6	Fever	13 (15.5)	24 (28.6)	27 (32.1)	5 (6)	15 (17.9)
7	Insomnia	16 (19)	29 (34.5)	15 (17.9)	6 (7.1)	18 (21.4)
8	Vomiting	25 (29.8)	16 (19)	11 (13.1)	12 (14.3)	20 (23.8)
9	Headache	14 (16.7)	17 (20.2)	22 (26.2)	10 (11.9)	21 (25)
10	Weight loss	23 (27.4)	19 (22.6)	9 (10.7)	8 (9.5)	25 (29.8)

\*1 = severe symptoms, 2= moderate symptoms, 3= mild symptoms, 4= minimal symptoms, 5= no symptoms

**Table 3.** Distribution of Respondents' Perceptions of Non-physical Side Effects of Chemotherapy

No	Non-physical side effects	Grade of symptom*				
		1	2	3	4	5
1	Fear of death	13 (15.5)	26 (31)	26 (31)	11 (13.1)	8 (9.5)
2	Medical cost	6 (7.1)	21 (25)	20 (23.8)	5 (6)	32 (28.1)
3	Feeling sick	8(9.5)	29(34.5)	25(29.8)	14(16.7)	8(9.5)
4	Feeling fearful	13(15.5)	21(25)	25(29.8)	12(14.3)	13(15.5)
5	Feeling anxious about my life	12 (14.3)	18 (21.4)	25 (29.8)	14 (16.7)	15 (17.9)
6	Affect my work/household duties	13 (15.5)	13 (15.5)	42 (50)	9 (10.7)	7 (8.3)
7	Feeling anxious about treatment	9 (10.7)	17 (20.2)	30 (35.7)	14 (16.7)	14 (16.7)
8	Cannot concentrate	4(4.8)	20(23.8)	27(32.1)	19(22.6)	14(16.7)
9	Forget things	10 (11.9)	6(7.1)	13(15.5)	16(19)	39(46.4)
10	presence of family members I have to take care of	12 (14.3)	16 (19)	19 (22.6)	7 (8.3)	30 (35.7)

\*1 = severe symptoms, 2= moderate symptoms, 3= mild symptoms, 4= minimal symptoms, 5= no symptoms

Table 3 shows the effects of non-physical chemotherapy that "fear of death", "affect my work/household duties", and "feeling fearful" were the severe symptoms that concern the patient (15.5% each), followed "feeling anxious about my life" and "presence of family members I have to take care of" (14.3% each). The most of these symptoms felt by patients are in the moderate and mild symptom categories.

Cancer has a negative perspective on society. Patients who know that they have cancer will feel anxious and feel that they will die quickly in a sad condition and only become a burden for

others (Sudana, Chrisnawati, & Maratning, 2016). Research conducted by Sofia, Tahlil, and Marthoenis, (2018) on cancer patients found that cancer has an effect on the patient's life, making patients unproductive due to repeated chemotherapy, fear of death threats, fear of being alone and uncertainty, anxiety, stress, optimism about treatment and life after chemotherapy.

Research by Khamidah, Indra, and Lita, (2019), also found that the majority of breast cancer patients have a negative stigma against their disease and feel that they will soon die. Research Yılmaz et al., (2019) also found that in

Turkish society there is a belief that cancer is incurable, cancer is fatal, patients with cancer are disabled, cancer patients cannot return to work, and cancer sufferers are incompetent. According to the researchers' assumptions, the development of this kind of assumption among the community is due to the often late arrival of cancer patients to health care centers so that they are already in an advanced stage where treatment options are limited and their life expectancy decreases.

Being diagnosed with cancer can cause various negative feelings in the patient such as anxiety, or fear (Ayurini & Parmitasari, 2015). The results of the research by Andinata, Marni, dan Erianti, (2020) found that 54.2% of cancer patients undergoing chemotherapy experienced moderate anxiety and 36.5% experienced severe anxiety. Meanwhile, research by Pratiwi, Widiati, dan Solehati, (2017) found that the majority of patients undergoing chemotherapy experienced moderate anxiety. One of the causes of this anxiety is a change in the status of the role in the family, such as a wife or mother is unable to take care of her husband or child properly (Pratiwi et al., 2017 ; Andinata et al., 2020).

When compared between the two chemotherapy side effects experienced by patients, it can be seen that physical side effects are still the most severe symptom with the severity of the patient's complaint compared to non-physical side effects. This can be seen from the percentage for physical symptoms which are at  $\geq 15.5\%$  while non-physical symptoms are at  $\leq 15.5\%$ .

This study has limitations, namely that it was conducted in a government hospital with a small sample size, so the findings of this study may not represent the condition of patients in other hospitals, especially private hospitals whose patient characteristics may differ. Further research can be explored further on how patients' perceptions of chemotherapy side effects using qualitative methods, using a larger sample, or comparing the perceptions of cancer patients between government hospitals and private hospitals.

#### 4. Conclusion and Suggestion

Patients' perceptions of chemotherapy side effects which were very severe were still dominated by physical symptoms. It is hoped that nurses will provide interventions related to prevention and efforts to minimize the side effects of chemotherapy experienced by patients

in addition to medical therapy that has been obtained by patients.

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#### 6. References

- Andinata, A., Marni, E., & Erianti, S. (2020). Hubungan mekanisme coping dengan tingkat kecemasan pasien kanker yang menjalani kemoterapi. *Jurnal Cakrawala Promkes*, 2(2), 45–52.
- Anwar, A. D., Harsono, A. B., Sasotya, R. M. S., Amaraullah, M. N., & Hidayat, D. (2013). Prinsip Dasar Kemoterapi. *Bandung Controversies and Consensus in Obstetrics & Gynecology*, 253–273.
- Ataseven, B., Frindte, J., Harter, P., Göke, G., Holtschmidt, J., Vogt, C., ... du Bois, A. (2017). Change of patient perceptions of chemotherapy side effects in breast and ovarian cancer patients. *Annals of Oncology*, 28(September), v644. <https://doi.org/10.1093/annonc/mdx440.069>
- Ayurini, R. I., & Parmitasari, D. L. N. (2015). Kepatuhan pengobatan pada pasien kanker. *Psikodimensia*, 14(2), 83–95.
- Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68(6), 394–424. <https://doi.org/10.3322/caac.21492>
- Carelle, N., Piotto, E., Bellanger, A., Germanaud, J., Thuillier, A., & Khayat, D. (2002). Changing patient perceptions of the side effects of cancer chemotherapy. *Cancer*, 95(1), 155 – 163. <https://doi.org/10.1002/cncr.10630>
- Chan, H. K., & Ismail, S. (2014). Side effects of chemotherapy among cancer patients in a Malaysian general hospital: Experiences, perceptions and informational needs from clinical pharmacists. *Asian Pacific Journal of Cancer Prevention*, 15(13), 5305 – 5309. <https://doi.org/10.7314/APJCP.2014.15.13.5305>

- Gilliam, L. A. A., & St. Clair, D. K. (2011). Chemotherapy-induced weakness and fatigue in skeletal muscle: The role of oxidative stress. *Antioxidants and Redox Signaling*, 15(9), 2543 – 2563. <https://doi.org/10.1089/ars.2011.3965>
- Gurung, S., & Pandey, R. A. (2016). Perception of Side Effects of Chemotherapy among Cancer Patients in. *Journal of College of Medical Sciences-Nepal*, 0657(4), 15–20.
- Kemenkes RI. (2018). *Hasil Utama Riskesdas 2018*. Retrieved from [www.litbang.depkes.go.id](http://www.litbang.depkes.go.id)
- Kementerian Kesehatan RI. (2013). *Penyajian Pokok-Pokok Hasil Riset Kesehatan Dasar 2013*. Jakarta. Retrieved from [www.litbang.depkes.go.id](http://www.litbang.depkes.go.id)
- Khamidah, A. N., Indra, R. L., & Lita, L. (2019). Gambaran Stigma Pada Pasien Kanker Payudara Di Rsud Arifin Achmad Pekanbaru. *Jurnal Keperawatan Abdurrab*, 3(1), 34 – 43. <https://doi.org/10.36341/jka.v3i1.668>
- Lorusso, D., Bria, E., Costantini, A., Di Maio, M., Rosti, G., & Mancuso, A. (2017). Patients' perception of chemotherapy side effects: Expectations, doctor-patient communication and impact on quality of life - An Italian survey. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/28004440/>
- Pangribo, S. (2019). *Beban Kanker Di Indonesia. InfoDATIN Pusat Data dan Informasi Kementerian Kesehatan RI*. Jakarta Selatan.
- Pieter, H. Z., & Lubis, D. N. L. (2012). *Pengantar Psikologis dalam Keperawatan*. Jakarta: Prenada Media Grup.
- Pratiwi, S. R., Widiati, E., & Solehati, T. (2017). Gambaran faktor-faktor yang berhubungan dengan kecemasan pasien kanker payudara dalam menjalani kemoterapi. *Jurnal Pendidikan Keperawatan Indonesia*, 3(2), 167–174.
- Sasaki, H., Tamura, K., Naito, Y., Ogata, K., Mogi, A., Tanaka, T., ... Takamatsu, Y. (2017). Patient perceptions of symptoms and concerns during cancer chemotherapy: 'affects my family' is the most important. *International Journal of Clinical Oncology*, 22(4), 793 – 800. <https://doi.org/10.1007/s10147-017-1117-y>
- Sinaga, S., Hasibuan, J., & Setia, R. (2015). *Hubungan Frekuensi Kemoterapi Terhadap Tingkat Kecemasan pada Pasien Kanker Payudara di RSUD Ibnu Sina*.
- Sofia, R., Tahlil, T., & Marthoenis. (2018). Pengalaman Pasien Kanker dalam Menghadapi Kemoterapi. *Jurnal Ilmu Keperawatan*, 6(2), 81–91.
- Sudana, I. K., Chrisnawati, C., & Maratning, A. (2016). Gambaran Harga Diri Pada Pasien Kanker Payudara Yang Menjalani Kemoterapi Di Rsud Ulin Banjarmasin. *Jurnal Keperawatan Suaka Insan (Jksi)*, 1(1), 1–6.
- Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*. <https://doi.org/10.3322/caac.21660>
- Syse, A., & Lyngstad, T. H. (2017). In sickness and in health: The role of marital partners in cancer survival. *SSM - Population Health*, 3(May 2016), 99 – 110. <https://doi.org/10.1016/j.ssmph.2016.12.007>
- Yarbro, C. H., Wujcik, D., & Gobel, B. H. (2010). *cancer nursing: Principles and practice* (7th ed.). Sudbury, Massachusetts: Jones and Bartlett Publishers.
- Yılmaz, M., Dissiz, G., Usluoglu, Ayse, K., Iriz, S., Demir, F., & Alacacioglu, A. (2019). Cancer - Related Stigma and Depression in Cancer Patients in A Middle - Income Country, 95 – 102. <https://doi.org/10.4103/apjon.apjon>