

## Relationship between Knowledge and Compliance of Patients Undergoing Chemotherapy Treatment

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### Abstract

**Objective:** Chemotherapy is a common treatment for cancer; however, in developing countries, patient adherence rates for chemotherapy are low. Low adherence rate could be attributed to insufficient knowledge. The aim of the present study is to determine the relationship between knowledge about chemotherapy and adherence among patients undergoing chemotherapy.

**Methods:** This research used an analytical descriptive and cross-sectional approach and used purposive sampling to select 66 patients with cancer. We used the Leuven questionnaire for assessing patient knowledge about chemotherapy, and the adherence measurement form was used to identify the patient adherence of respondents.

**Results:** No significant relationship was observed between the level of knowledge and adherence ( $p = 0.422$ ;  $\alpha = 0.05$ ) among patients undergoing chemotherapy.

**Conclusion:** Other factors appear to affect the adherence of patients undergoing chemotherapy; additional research is warranted.

**Keywords:** adherence; cancer; chemotherapy; hospital; knowledge

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### Introduction

Cancer is a disease triggered by genetic mutations of DNA cells; it manifests as uncontrollable abnormal cell growth that starts controlling the function of the affected organs. The number of cancer patients in the world continues to increase every year. In 2000, the number of new cases reached 10.1 million and >6.2 million people worldwide succumbed to the disease<sup>1</sup>; in 2012, there were 14 million new cases and 8.2 million deaths from cancer<sup>2</sup>. It is estimated that >60% of all new annual cases in the world occur in Africa, Asia, and South America.

In Indonesia, it is estimated that there are 100 new cancer patients per 100,000 people every year. Cancer is the seventh deadliest disease among the ones present in Indonesia<sup>3</sup>.

According to the theories of *Thought and Feeling* and *Health Decision Model*, knowledge is a factor that can affect individual behavior, including compliance. Tachfouti, Slama, Berraho, and Nejari have shown that insufficient knowledge or understanding of disease and its treatment often causes treatment noncompliance<sup>4</sup>.

Treatment compliance is a complex and multifactorial problem that can change the result of therapy<sup>5</sup>. Bosworth has shown that patient compliance with treatment affects the long-term effectiveness and benefits gained from treatment<sup>6</sup>.

According to a WHO<sup>1</sup> report, in developing countries, patient compliance rates with long-term therapy or treatment might be <50%. Low compliance can be caused by several factors—one of which is knowledge.

Several studies have found a significant correlation between the level of knowledge about a treatment and patient compliance. However, no research has examined the relationship between two variables in Fatmawati and Gatot Soebroto Hospitals, particularly in patients with cancer undergoing chemotherapy. Consequently, the authors were interested in determining whether there exists a relationship between the level of knowledge about chemotherapy treatment and patient chemotherapy treatment compliance in Fatmawati and Gatot Soebroto Hospitals

## Methods

This descriptive correlational research used a cross-sectional approach with a purposeful sample of 66 people. The instrument used in this research was *The Leuven on Patient Knowledge of Chemotherapy* (L-PaKC) questionnaire to identify respondents' knowledge, and a respondents' compliance measurement sheet.

Prior to data collection, the research proposal received ethical approval from the Faculty of Nursing. This study involved 66 respondents who met the following criteria: patients with breast/ colorectal/ pulmonary/ cervical/ endometrial/ ovarian cancer stage 1–4, patients who undergo IV chemotherapy treatment, patients with breast/ colorectal/pulmonary/cervical/endometrial/ovarian cancer who had completed 75% of any type of treatment. All participants were aged 21–59 years old, able to communicate well, and willing to provide informed consent to participate in this study. We excluded patients with breast / colorectal/ pulmonary/ cervical/ endometrial/ ovarian cancer who had degenerating clinical conditions or in whom continuing chemotherapy was contraindicated. Before engaging in informed consent with prospective respondents, the researchers completely explained the research goals and objectives. If the prospective respondent was willing to participate, he or she was required to complete the subject approval form (informed consent).

## Results and Discussion

**Table 1. Characteristics of Respondents by Sex, Level of Education, and Income in 2017 (N = 66)**

Variable	Frequency (N)	%
<b>Sex:</b>		
Male	7	10.6
Female	59	89.4
<b>Total</b>	<b>66</b>	<b>100</b>
<b>Level of education:</b>		
Uneducated	2	3.0
Elementary School	6	9.1
Junior High School	11	16.7
Senior High School	27	40.1
Academy/Bachelor	20	30.1
<b>Total</b>	<b>66</b>	<b>100</b>
<b>Income:</b>		
>RMW Jakarta	32	48.5
≤RMW Jakarta	34	51.5
<b>Total</b>	<b>66</b>	<b>100</b>

The majority (N = 59) of the respondents were female (89.4%), and 27 (40.1%) had a senior high school level

education (Table 1). Majority of respondents (N = 34) had income lower than the Jakarta Regional Minimum Wage (51.5%). See Table 1.

**Table 2. Levels of Knowledge of Cancer Patients Taking Chemotherapy at Hospitals in 2017 (N = 66)**

Level of Knowledge	Frequency (N)	%
Low	21	31.8
High	45	68.2
<b>Total</b>	<b>66</b>	<b>100</b>

Of the respondents, 45 (68.2%) had high levels of knowledge (Table 2).

**Table 3. Compliance Level of Cancer Patients Undergoing Chemotherapy in the Hospitals in 2017 (N = 66)**

Compliance	Frequency (N)	%
Obedient	40	60.6
Disobedient	26	39.4
<b>Total</b>	<b>66</b>	<b>100</b>

As seen in Table 3, 40 respondents (60.6%) were identified as obedient.

**Table 4. Compliance Level of Cancer Patients Undergoing Chemotherapy in the Hospitals in 2017 (N = 66)**

Variable	Compliance		P value
	Obedient	Disobedient	
<i>Level of Knowledge</i>	<i>n</i>	<i>%</i>	
High	29	43.9	0.422
Low	11	16.7	
<b>Total</b>	<b>40</b>	<b>60.6</b>	<b>26</b>
			<b>39.4</b>

The result of the analysis from Table 4 found that  $p = 0.422$  (i.e.,  $p > \alpha = 0.05$ , which means  $H_0$  accepted). No correlation was observed between the level of knowledge and compliance of patients with cancer undergoing chemotherapy at Fatmawati and Gatot Soebrato Hospitals.

### Characteristics of Respondents

The average age of the respondents was 45.62 years old. This result is in agreement with data from Indonesia's Ministry of Health, which stated that individuals aged 45–54 years had a high of prevalence of cancer. The risk of cancer became higher in this age due to behavioral and diet factors.

Cancer is more prevalent in women (2.2%) compared to men (0.6%). These data are in agreement with the results of this research, where the majority of the respondents were women (89.4%). Our results are supported by research from Oemiati, Rahajeng, and Kristanto<sup>7</sup> who

found that cancer risk was higher in females than in males. The large number of female respondents in this study was attributable to the number of cases of breast cancer that were part of the inclusion criteria set by the researchers. Breast cancer has the highest percentage of new cases of all the cancers (43.3%).

The majority of respondents had high school levels of education. This result agrees with Riskesdes<sup>3</sup> who see a high prevalence of cancer among respondents with a high school level education (1.8%), and who graduated from vocational schools or university (3.1%). The prevalence was smaller among respondents who did not complete either elementary or middle high school.

The result of the research on income level found that the majority of respondents had incomes level  $\leq$  RMW Jakarta (51.5%). This indicates that although of the patients in the present study did not have high income, they still got health services, especially chemotherapy, with BPJS insurance support.

### **Relationship Between the Level of Knowledge and Compliance**

Forty-five respondents (68.2%) had high levels of knowledge. This agrees with research from Adenipekun, Kuoluyi, Omoyeni, and Soyannwo<sup>8</sup> who examined patients with cancer at the Educational Hospital in Nigeria. They found that the majority of patients who responded had high levels of knowledge about the side effects of chemotherapy. Information availability can influence respondents' levels of knowledge.

Another factor that influenced the high level of knowledge of the majority of respondents was the level of education. This study found that the majority of respondents had a high school education (40.1%) or Diploma/Bachelor (30.1%) level. According to Mubarak<sup>9</sup>, education affects individual knowledge. The higher an individual's education, the easier the individual receives the information, resulting in increased levels of knowledge<sup>9</sup>.

Of the respondents, 40 (60.6%) had good chemotherapy compliance, presenting for treatment in accordance with the schedule. This agrees with Wells, Strickland, Dalton and Freeman's (2015) studies on compliance in Caucasian and African-American females with breast cancer. According to this research, 90% of the respondents were compliant maintaining their chemotherapy schedules.

Compliance could be influenced by internal factors within the patient him- or herself. According to Bosworth<sup>6</sup>, one internal factor that can affect patient's compliance is poor memory. Notably, we did not use elderly participants, who are known to be more susceptible to memory degeneration due to decreased cognitive function. Based

on these observations, we concluded that most respondents were compliant because they were supported by good memory.

According to Bosworth<sup>6</sup>, a second internal factor that can affect patients' compliance is the inability to pay for treatment. Patients' abilities to pay for medical expenses can be supported by the BPJS, the national health insurance, making it easier for the patients to undergo chemotherapy. Therefore, the patients can be more obedient.

The next factor that can influence patients' compliance according to Bosworth<sup>6</sup> is the relationship between the patients and the health workers. During research in both hospitals, the researchers' observation found that the patients and the nurses had a good relationship.

Another factor that may affect patients' compliance is knowledge<sup>1</sup>. According to Varavikova and Tulchinsky (2014) an individual's behavior can be triggered by the attention and knowledge of the person. This led the researchers to conclude that one of the factors that knowledge contributed to patients' high compliance.

The results of the present study disagree with those of Okuyan, Sancar, and Izzetin's<sup>10</sup> study that showed a significant relationship between the knowledge scores of treatments with medication compliance in patients with chronic disease in pharmacy settings. This could be due to the age factor, which is also a confounding variable. In addition, the researchers concluded that the dissonance of the relationship between knowledge and compliance was also due to other internal factors of motivation and general conditions.

### **Conclusions**

We found no relationship between the level of knowledge about chemotherapy and compliance with chemotherapy schedules among patients with cancer at Fatmawati and Gatot Soebroto Hospitals.

Therefore, hospitals should focus on other factors that could potentially affect patient compliance while undergoing chemotherapy. Future research can explore the relationship between characteristics of the respondents and compliance of patients via a bivariate analysis. In addition, further research is expected to identify the relationship between psychosocial factors such as motivation, with the compliance of patients undergoing treatment for cancer.

## Acknowledgment

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