

ANALYSIS OF FACTORS ASSOCIATED WITH FASTING ADHERENCE BEHAVIOUR OF PREOPERATIVE PATIENTS

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ABSTRACT

Patient compliance with preoperative fasting instructions is essential to prevent perioperative complications such as pulmonary aspiration, which can have a serious impact on patient safety during surgery. Several factors such as age, gender, education, and understanding of medical instructions are thought to play a role in patient compliance with preoperative fasting. This study aimed to evaluate the relationship between these factors and patient compliance in a hospital in Banjarmasin. This study used a quantitative observational analytic design with a cross-sectional approach, involving 75 elective surgery patients selected based on inclusion criteria. Data were collected through interviews and questionnaires covering demographic information, education level, understanding of medical instructions, and compliance with pre-surgical fasting. Data were analysed using the Chi-Square test and logistic regression. The results showed that age ($p = 0.377$) and gender ($p = 1.000$) had no significant association with adherence to preoperative fasting. In contrast, there was a significant association between education ($p = 0.001$) and understanding of instructions ($p = 0.000$) with adherence. Patients with higher levels of education and good understanding of instructions tended to be more compliant than patients with basic education and poor understanding. Patients who had a good understanding of instructions were 29.96 times more likely to adhere to preoperative fasting compared to patients with poor understanding. Understanding of instructions is the most dominant factor in influencing patient compliance. The analysis showed a B coefficient of 3.599 with an OR of 36.556 (p -value = 0.000). This means that patients who have a good understanding of instructions are 36.5 times more likely to adhere to preoperative fasting compared to those with poor understanding. Good understanding significantly increased the likelihood of compliance, emphasising the importance of effective communication and clear education to patients about medical instructions. In conclusion, education and understanding of medical instructions are important factors associated with adherence to preoperative fasting. Meanwhile, age and gender showed no significant influence on adherence. Therefore, increased patient education and better understanding of medical instructions should be the focus of interventions to improve patient compliance, especially for those with lower education levels.

Keywords: Adherence, Preoperative Fasting, Education, Understanding, Demographic Factors

INTRODUCTION

Preoperative fasting guidelines are important recommendations that assist practitioners and patients in making decisions regarding preparation for surgery. The length of fasting depends on many factors, such as the type of surgery, time of last meal, type of food, and preoperative medication (PNPK Anaesthesiology, 2022). Studies show that non-compliance with this guideline can cause delays in surgery, increase costs, and jeopardise patient safety, especially if patients are not honest about their fasting time (Lim, 2014). Studies have also shown that many patients fast for more than 12 hours before surgery, which can cause discomfort, dehydration, insulin resistance, and even worsen postoperative clinical outcomes, such as nausea and vomiting (Xu, 2018). The length of the preoperative fasting time is also influenced by various factors, including poor understanding by medical personnel and ineffective communication (El Sharkawy et al, 2021).

In this context, previous studies have shown the need for a patient-centred, multidisciplinary approach to improve adherence to pre-surgical fasting guidelines (Newton et al, 2017).

A study at a hospital in Banjarmasin revealed that only 13.5% of patients had an appropriate fasting duration, while the remaining 86.5% had an inappropriate fasting duration (Hospital in Banjarmasin, 2023). This study also noted that 17.4% of surgery delays were due to insufficient fasting duration, and 29% of patients experienced a postoperative drop in systolic blood pressure, which may be related to prolonged fasting duration (Hajian, 2020).

Although fasting instructions have been given according to the guidelines, the low level of compliance suggests that there are

other factors that influence patient behaviour, either due to lack of understanding or ineffective communication. Therefore, this study aimed to analyse the factors associated with patient compliance with preoperative fasting in a hospital in Banjarmasin, to improve patient safety and surgical effectiveness.

OVERVIEW

Pre-surgical Fasting

Preoperative fasting is an important phase that patients go through before surgery, where they are prohibited from consuming food or drink for a certain period of time. The main purpose of fasting is to prevent pulmonary aspiration, a condition where gastric contents enter the airway, which can occur during anaesthesia or post-induction of anaesthesia. This risk of aspiration has been a concern since the mid-19th century, with early accounts of fatal aspiration in soldiers in Burma. Since then, various guidelines have been implemented to prevent aspiration during surgery, including the recommended practice of fasting before surgery (Rehatta et al., 2019; Hamid, 2014).

The importance of preoperative fasting is not only related to patient safety, but also to the overall quality of anaesthesia care. Adequate anaesthesia care goes a long way in reducing the risk of postoperative complications, such as regurgitation and aspiration pneumonia, known as Mendelson's Syndrome. In addition, excessive fasting duration can cause side effects such as dehydration, insulin resistance, dizziness, nausea, and increase preoperative anxiety (Fadhlurrahman et al., 2016; Aulia, Maharani & Winne, 2020). Therefore, good fasting guidelines

must be followed to ensure patient safety and comfort, both physically and psychologically (Rahman T, 2022).

Pre-Surgical Fasting Guidelines

Preoperative fasting guidelines were first introduced by Joseph Lister in 1883 and further developed by Dr Curtis Mendelson in 1946 after finding that consumption of food before surgery increased the risk of aspiration with serious consequences. Various anaesthesia associations, such as the American Society of Anesthesiologists (ASA) and the Canadian Anesthetists Society (CAS), have revised their guidelines for healthy patients undergoing elective surgery. They recommend a minimum fasting period of 2 hours for clear liquids, 4 hours for breast milk, and 6 hours for snacks or formula (McCracken GC et al., 2018). In Indonesia, preoperative fasting guidelines are regulated in the Minister of Health Decree Number HK.01.07/MENKES/1541/2022, which is adopted from international guidelines and adapted to local conditions (Rehatta et al., 2019).

Compliance Behaviour

Patient compliance with fasting instructions is a key factor affecting surgical outcomes. Adherence is defined as the degree to which a patient's behaviour conforms to the instructions given by a healthcare professional. This behaviour can be influenced by many factors, including the patient's understanding of the instructions, the quality of interactions with healthcare professionals, family support, and the patient's personal beliefs and attitudes (Niven, 2012; Riadi M, 2021).

Patient compliance can be classified into three main forms:

conformity, acceptance, and obedience. Conformity refers to changing an individual's behaviour to conform to social norms, acceptance occurs when patients happily accept instructions, while obedience is a form of behaviour influenced by the authority of medical personnel (Arifin et al., 2020). In addition, predisposing factors such as age, education, and understanding of patients play an important role in determining their level of compliance with medical instructions.

Factors Associated with Adherence

Many factors influence patients' adherence behaviour to pre-surgical fasting. These factors can be divided into predisposing factors, such as age, gender and education level; enabling factors, such as access to health facilities and social support; and reinforcing factors, such as family support (Arifin et al., 2020). Age, for example, affects a patient's level of maturity and decision-making. Young patients tend to be more flexible but less experienced, while older patients may be wiser but face physical challenges that affect their adherence (Wijaya & Cholid, 2018).

Gender is also a significant factor, with women generally being more compliant with medical instructions than men, who often tend to underestimate their health conditions (Amanda A et al., 2023). Education level also plays an important role, with patients with higher education tending to better understand medical instructions and be more compliant with recommended treatments (Pratiwi et al., 2020). A good understanding of medical instructions is essential to ensure compliance, as misunderstanding can lead to unintentional non-compliance and

increase the risk of complications during surgery (Neil, 2012).

Thus, understanding the factors that influence patient adherence to preoperative fasting is key to improving clinical outcomes and reducing the risk of perioperative complications. Previous studies have shown that a more individualised approach to instruction, as well as more effective communication between medical personnel and patients, is crucial in ensuring better adherence to preoperative fasting (Hamran, 2022).

RESEARCH METHODOLOGY

This study used a quantitative observational analytic design with a *cross-sectional* approach, which allows data collection of cause and effect variables simultaneously at one time. This design was used to assess the relationship between factors such as age, gender, education, and understanding of instructions with patient compliance in carrying out pre-surgical fasting quickly and efficiently.

The study was conducted in a hospital in Banjarmasin, which was chosen because it was considered representative and had secondary data that supported the issue of patient compliance with pre-surgical fasting. The study population was elective surgical patients at the hospital, with samples taken through *purposive sampling* method. A total of 74 samples were determined using the Slovin formula, based on the average population of elective surgery patients over the last three months.

The research procedure began with secondary data collection, applying for a research permit, and testing the validity and reliability of the instrument. Data collection was carried out through interviews, filling

out questionnaires, and observation of patients who met the criteria in the premedication room. This research was approved by the Ethics Commission of Lambung Mangkurat University with number No.092/KEPK-FKIK ULM/EC/VII/2024. Respondents were given informed consent before participation.

The research instruments included consent forms, forms, checklists, and questionnaires that had been proven valid and reliable with alpha cronbcah. The questionnaire was designed to measure patient understanding of instructions and compliance with preoperative fasting, with indicators based on the 2022 PNPk Anesthesiology and Intensive Therapy guidelines. To ensure that the questionnaire used in this study was able to measure variables accurately and consistently, validity and reliability tests were carried out at another similar hospital on 15 to 20 July 2024 with 30 respondents who met the criteria. The results of validity and reliability tests showed that the questionnaire of understanding of instructions consisting of 6 questions proved to be valid, with a calculated r value greater than r table ($r = 0.3061$) and reliable with a *Cronbach alpha* value of 0.823 (*reliable* ≥ 0.68). Meanwhile, the questionnaire on compliance behaviour with preoperative fasting consisting of 10 questions was also valid, with an r value greater than r table ($r=0.361$), and reliable with a *Cronbach alpha* value of 0.725 (*reliable* ≥ 0.68).

Data processing was done through editing, coding, scoring, and tabulation. Data analysis was performed with the latest version of SPSS software, using univariate analysis for frequency distribution and bivariate analysis with the Chi-Square test to test the relationship between variables. Multivariate

analysis used logistic regression to identify the factors that most influenced patient compliance with preoperative fasting.

RESULTS

This study began with the preparation of instruments, namely questionnaires and questionnaires that have been tested for validity and reliability in hospitals that have the same characteristics as the research site. After that, an ethical clearance check was carried out through the Health Research Ethics Commission of FKIK Lambung Mangkurat University, with ethical clearance number No.092/KEPK-FKIK ULM/EC/VII/2024. After permission from Prodi was obtained, the researcher applied for a research permit at the Hospital in Banjarmasin by completing administrative requirements, including submission of proposals and interviews related to the research.

Data were collected in three general surgical inpatient rooms in a

hospital in Banjarmasin from 22 July to 10 August 2024. These inpatient rooms were chosen because they were the place for patients to prepare and postoperate. A total of 75 respondents who met the inclusion criteria were collected, exceeding the minimum target of 74 samples.

Univariate Analysis

Univariate analysis was conducted to describe the characteristics of respondents and the distribution of research variables. The majority of respondents were middle-aged adults (41-65 years old) as many as 47 people (62.7%), while 28 people (37.3%) were early adults (18-40 years old). In terms of gender, 41 respondents (54.7%) were female, and 34 respondents (45.3%) were male. The respondents' education level was evenly distributed, with 36 people (48%) having primary education and 39 people (52%) having advanced education.

Table 1. Distribution of Respondents

Research Variables	Total	Percentage (%)
Age		
Early Adulthood	28	37,3 %
Middle Adult	47	62,7 %
Total	75	100 %
Gender		
Male	34	45,3 %
Women	41	54,7 %
Total	75	100 %
Education		
Primary Education	36	48 %
Further Education	39	52 %
Total	75	100 %
Understanding		
Good	43	57,3 %
Not good	32	42,7 %
Total	75	100 %
Compliance		
Compliant	54	72 %

Non-compliant	21	28 %
Total	75	100 %

In terms of understanding the pre-surgical fasting instructions, 43 respondents (57.3%) had a good understanding, while 32 respondents (42.7%) had a poor understanding. In terms of compliance, 54 respondents (72%) showed compliance with the pre-surgical fasting instructions, while 21 respondents (28%) were not compliant. This analysis shows that most respondents understood the medical instructions well and complied with the pre-surgical fasting, although there were

a small number who were not compliant.

Bivariate Analysis

The bivariate analysis in this study aimed to evaluate the relationship between demographic variables (age, gender, education) and patient understanding with their compliance with the preoperative fasting instructions. The chi-square test was used to examine the relationship between independent and dependent variables.

Table 2. Bivariate Analysis Results

Research Variables	Adherence Behaviour towards Pre-surgical Fasting						(p-value)	Conclusion
	Compliant		Non-compliant		Total			
	n	%	n	%	n	%		
Fasting Adherence	54	72	21	28	75	100		
	Age						0,377	Unrelated
Early Adulthood	18	64,3	10	35,7	28	100		
Middle Adult	36	76,6	11	23,4	47	100		
	Gender						1,000	Unrelated
Male	24	70,6	10	29,4	34	100		
Women	30	73,2	11	26,8	41	100		
	Education						0,001	Related
Primary Education	19	52,8	17	47,2	36	100		
Further Education	35	89,7	4	10,3	39	100		
	Understanding						0,000	Related
Good	41	95,3	2	4,7	43	100		
Not good	13	40,6	19	59,4	32	100		

From the results of the chi-square test, it can be seen that age and gender do not have a significant relationship with preoperative fasting compliance, with p-values of 0.377 and 1.000, respectively. This indicates that neither age nor gender influences the level of patient compliance with pre-surgical fasting instructions.

However, patient education and understanding showed a significant association with preoperative fasting compliance. The p-value for the education variable was 0.001, indicating that education level was associated with patient compliance. Patients with advanced education had a higher level of compliance compared to patients with

only basic education. In addition, understanding of instructions was also significantly associated with patient compliance, with a p-value of 0.000. Patients who have a good understanding of the preoperative fasting instructions tend to be more compliant than patients who have a poor understanding.

In conclusion, patients' education and understanding had a significant effect on their adherence to preoperative fasting, while age and gender had no significant effect.

Multivariate Analysis

This study used multivariate analysis with logistic regression method to evaluate the factors affecting adherence to preoperative fasting. As the dependent variable was binary, i.e. "Adherent" or "Non-adherent," logistic regression was chosen as the appropriate method. Only independent variables with a p-value of less than 0.25 were included in the regression model to ensure only significant variables were analysed further. The variables that qualified for this analysis were Education (p-value = 0.003) and Understanding of Instructions (p-value = 0.000).

Table 3. Independent variable selection analysis results

Variables	p-value	Description
Age	0,337	Not eligible for logistic regression
Gender	1,00	Not eligible for logistic regression
Education	0,003	Eligible for logistic regression
Understanding the Instruction	0,000	Eligible for logistic regression

Table 4. Analysis of Dominant Factors Affecting Compliance Behaviour

Variables	B	Exp(B)	p-value
Education	-2.328	0.097	0.003
Understanding the Instruction	3.599	36.556	0.000
Constant	-3.456	0.32	0.39

The results of the analysis showed that education plays a significant role in influencing adherence to preoperative fasting. Education had a B coefficient of -2.328 and an Odds Ratio (OR) of 0.097 (p-value = 0.003), meaning that individuals with higher education had a 90.3% lower likelihood of being non-compliant compared to individuals with lower education. In other words, the higher an individual's level of education, the more likely they are to comply with pre-surgical fasting instructions, demonstrating the role of education in improving understanding and acceptance of medical instructions.

Understanding the instructions is the most dominant factor in influencing patient compliance. The analysis showed

a B coefficient of 3.599 with an OR of 36.556 (p-value = 0.000). This means that patients who have a good understanding of instructions are 36.5 times more likely to adhere to preoperative fasting compared to those with poor understanding. Good understanding significantly increased the likelihood of compliance, emphasising the importance of effective communication and clear education to patients about medical instructions.

Thus, from the logistic regression results, it can be concluded that Understanding Instructions is the strongest factor influencing adherence to preoperative fasting, followed by Education. Interventions aimed at improving patient adherence to pre-

surgical fasting should focus on improving patient understanding through better communication and clear education on the importance of following medical instructions. In

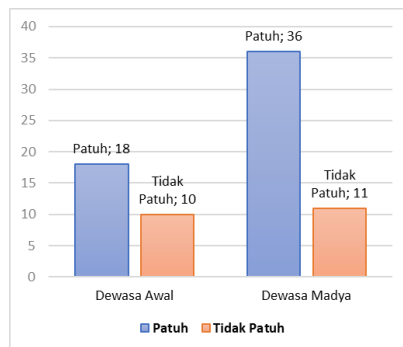
addition, paying attention to the patient's education is also important as their level of education can affect how well they understand and comply with the instructions given.

DISCUSSION

Relationship between Age and Pre-surgical Fasting Adherence Behaviour

In this study, an analysis was conducted to evaluate the relationship between age and adherence behaviour towards preoperative fasting. Age is often considered as a factor that may influence adherence to medical instructions, including pre-surgical

fasting, due to differences in maturity, understanding and experience among different age groups. Therefore, this study divided the respondents into two age categories, namely Early Adulthood (18-40 years) and Middle Adulthood (41-65 years), to see if there was a significant difference in the level of adherence between the two groups



	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,319 ^a	1	0,251		
Continuity Correction ^b	0,779	1	0,377		
Likelihood Ratio	1,298	1	0,255		
Fisher's Exact Test				0,294	0,188
Linear-by-Linear Association	1,301	1	0,254		
N of Valid Cases	75				

Figure 1. Age Distribution and Chi Square Test Results

In this study, the relationship between age and adherence behaviour towards pre-surgical fasting was analysed to evaluate whether there were differences in adherence levels based on age categories, namely Early Adulthood and Middle Adulthood. Based on the results of the bivariate analysis, a

p-value of 0.377 was obtained, indicating that there was no significant relationship between age and adherence to pre-surgical fasting. In other words, differences in age do not affect a person's tendency to comply with preoperative fasting instructions.

Table 5. Relationship Strength of Age x Preoperative Fasting Adherence

Risk Estimate	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Age X1	0,550	0,197	1,535
For cohort Adherence Y = Adherent	0,839	0,611	1,154
For cohort Adherence Y = Non-adherent	1,526	0,745	3,126
N of Valid Cases	75		

OR = 0.550 (95% CI :0.197 - 1.535)

Furthermore, the risk estimate analysis gave an Odds Ratio (OR) of 0.550 for the Early Adult age group compared to the Middle Adult, with a 95% confidence interval (CI: 0.197 - 1.535). Although this OR value was not statistically significant as the confidence interval included a value of 1, this result indicated that patients from the Early Adult group had 0.55 times lower odds of complying with the pre-surgical fasting instructions compared to the Middle Adult group. However, this lack of significance underscores that age difference is not a strong determinant in influencing adherence to preoperative fasting.

This result is in line with other studies that show that age is not always the main variable in influencing adherence to medical instructions. For example, a study by Ulfa NM and Darmawan R (2021) on medication adherence in patients with diabetes and hypertension also found that age did not affect patient adherence to medication. However, some other literature suggests a relationship between age and adherence in certain contexts, such as in a study on hand hygiene adherence in a surgical ward (Komariyah N et al., 2024), which found a significant relationship between age and adherence behaviour.

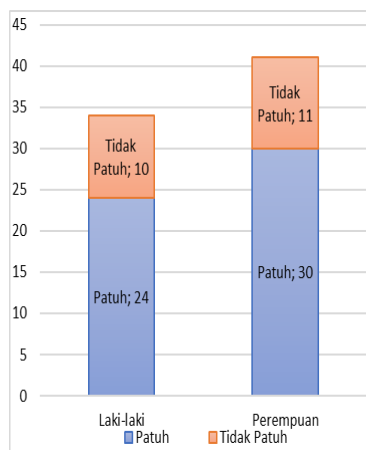
In the context of pre-surgical fasting, the absence of a significant

association in this study may be due to a similar understanding among different age groups of the importance of following fasting instructions. This may indicate that presurgical fasting is a relatively simple instruction and does not require complex behavioural changes, such that patients from different age groups show similar levels of compliance.

In conclusion, although age is a demographic variable often considered in adherence studies, in this study, age was not shown to be a significant factor in influencing adherence to preoperative fasting. Therefore, interventions to improve adherence to preoperative fasting should focus on other factors, such as understanding instructions and patient education, which may have a greater impact than age.

Relationship between Gender and Pre-surgical Fasting Adherence Behaviour

This study also analysed the relationship between gender and compliance behaviour towards preoperative fasting. The distribution of respondents showed that out of a total of 75 patients, 34 were male, with 24 patients (70.6%) compliant and 10 patients (29.4%) non-compliant. While of the 41 female patients, 30 patients (73.2%) were compliant and 11 patients (26.8%) were non-compliant.



Jenis Kelamin X Kepatuhan Puasa Prabedah					
Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,061 ^a	1	0,804		
Continuity Correction ^b	0,000	1	1,000		
Likelihood Ratio	0,061	1	0,804		
Fisher's Exact Test				1,000	0,503
Linear-by-Linear Association	0,061	1	0,805		
N of Valid Cases	75				

Figure 2. Gender Distribution and *Chi Square* Test Results

In this study, the relationship between gender and adherence to pre-surgical fasting was analysed to determine if there was a significant difference in adherence rates between men and women. The results of the analysis showed that there was no

significant association between gender and adherence to preoperative fasting instructions, with a p-value of 1.000. This means that both men and women showed relatively similar levels of adherence to the pre-surgical fasting instructions.

Table 6. Strength of Relationship between Gender x Preoperative Fasting Adherence

Risk Estimate	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Gender X2	0,880	0,320	2,418
For cohort Adherence Y = Adherent	0,965	0,725	1,283
For cohort Adherence Y = Non-adherent	1,096	0,531	2,265
N of Valid Cases	75		
OR = 0.550 (95% CI :0.197 - 1.535)			

Furthermore, the risk estimate analysis showed that the Odds Ratio (OR) for male compared to female gender was 0.880, with a 95% confidence interval (CI: 0.320 - 2.418). This indicates that males have 0.88 times lower odds of complying with the pre-surgical fasting instructions compared to females. However, the confidence interval that includes a value of 1 indicates that this difference is not statistically significant.

This result is consistent with some previous studies that show that gender is not always a significant factor in adherence to medical instructions. For example, a study conducted by Kurniati Prihatin et al. (2022) found that gender had no significant relationship with adherence in hypertension treatment. However, some other studies have shown different results in certain contexts, such as in patients with type 2 diabetes mellitus, where women tend to be more compliant than men.

In the context of pre-surgical fasting, the absence of significant differences between men and women in terms of compliance may be explained by the nature of the instructions themselves, which are

specific, direct and do not require complex behavioural changes. Therefore, both men and women may have a similar level of understanding of the importance of complying with such instructions for the success of the medical procedure.

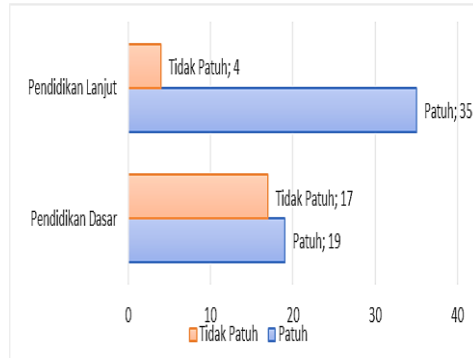
Overall, the results of this study suggest that gender is not a factor that influences adherence to pre-surgical fasting. Thus, interventions aimed at improving patient adherence to pre-surgical fasting should focus on other more influential factors, such as education and understanding of medical instructions. This confirms that effective education and communication efforts from medical personnel should be applied universally, without the need for specific adjustments based on patient gender.

Relationship between Education and Pre-surgical Fasting Adherence Behaviour

In this study, the relationship between education level and adherence to pre-surgical fasting was analysed to determine whether

education is a factor influencing adherence to medical instructions. From the results of the study, the distribution of respondents showed that 36 people had primary education, with 19 people (52.8%) who were compliant and 17 people (47.2%) who

were not compliant with preoperative fasting instructions. On the other hand, out of 39 patients with advanced education, 35 people (89.7%) were compliant and only 4 people (10.3%) were non-compliant.



Pendidikan x Kepatuhan Puasa Prabedah					
Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12,689 ^a	1	0,000		
Continuity Correction ^b	10,921	1	0,001		
Likelihood Ratio	13,354	1	0,000		
Fisher's Exact Test				0,001	0,000
Linear-by-Linear Association	12,519	1	0,000		
N of Valid Cases	75				

Figure 3. Education Distribution and Chi Square Test Results

Statistical analysis showed a significant association between education level and adherence to preoperative fasting, with a p-value of 0.001. This finding indicates that patients with higher education levels are significantly more likely to comply with medical instructions regarding

preoperative fasting compared to patients with basic education levels. The Odds Ratio (OR) of 0.128 (95% CI: 0.038 - 0.434) supports this, indicating that patients with basic education have 0.128 times lower odds of adherence than patients with advanced education.

Table 7. Relationship Strength of Education x Preoperative Fasting Adherence

Risk Estimate	Value	95% Confidence Interval	
		Lower	Upper
<i>Odds Ratio</i> for Education X3	0,128	0,038	0,434
<i>For cohort</i> Adherence Y = Adherent	0,588	0,424	0,815
<i>For cohort</i> Adherence Y = Non-adherent	4,604	1,710	12,397
N of Valid Cases	75		

This difference in compliance may be explained by the fact that individuals with higher education tend to have better health literacy, which allows them to understand medical instructions better and follow health recommendations with more discipline. Patients with advanced education may be more

accustomed to seeking additional information about their healthcare and better understand the importance of preoperative fasting as part of surgery preparation. In contrast, patients with basic education may face difficulties in understanding the instructions

given, which may impact their level of compliance.

This finding is consistent with previous studies showing that education level is associated with adherence to various medical instructions. Higher health literacy is often associated with a better ability to evaluate the risks and benefits of a medical procedure, which in turn increases the level of adherence. However, not all studies have found a strong association between education and adherence. Some studies suggest that other factors such as family support, motivation or personal experience also play an important role.

From the results of this study it can be concluded that the level of education has a significant influence on compliance with pre-surgical fasting instructions. Patients with advanced education tend to be more compliant than patients with basic education. Therefore, efforts to improve compliance with medical instructions, especially preoperative

fasting, should focus on improving health literacy and providing more intensive education to patients with lower education levels. This will help them understand the importance of adherence to medical instructions and reduce the risk of complications during surgical procedures.

Relationship between understanding of instructions and preoperative fasting adherence behaviour

This study also examined the relationship between patients' understanding of the pre-surgical fasting instructions and their compliance with the instructions. Of the total 75 patients involved in the study, 43 patients had a good understanding of the preoperative fasting instructions, and of these, 41 (95.3%) were compliant, while only 2 (4.7%) were non-compliant. In contrast, of the 32 patients who had a poor understanding of the instructions, only 13 (40.6%) complied, while 19 (59.4%) did not.

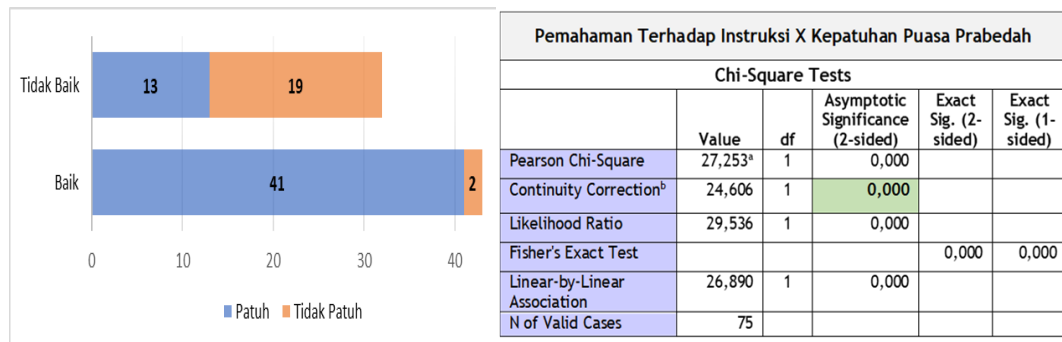


Figure 4. Distribution of Understanding of Instruction and *Chi Square* Test Results

Statistical analysis using the chi-square test showed that there was a highly significant association between understanding of instructions and adherence to pre-surgical fasting, with a p-value of 0.000. These results indicate that a good understanding of

the pre-surgical instructions significantly increases the likelihood of patients complying with the instructions. Conversely, a lack of understanding of instructions contributes to a higher rate of non-compliance.

Table 8. Strength of Relationship between Understanding of Instruction x Adherence to Preoperative Fasting

Risk Estimate	Value	95% Confidence Interval	
		Lower	Upper
<i>Odds Ratio</i> for Understanding of instruction X4	29,962	6,141	146,185
For cohort Adherence Y = Adherent	2,347	1,536	3,587
For cohort Adherence Y = Non-adherent	0,078	0,020	0,312
N of Valid Cases	75		

OR = 29.962 (95% CI: 6.141 - 146.185)

Further analysis of the strength of the association between understanding of instructions and adherence to preoperative fasting showed highly significant results. Based on the Risk Estimate, the Odds Ratio (OR) value of 29.962 with a 95% confidence interval (CI: 6.141 - 146.185) indicates that patients who have a good understanding of instructions are almost 30 times more likely to be compliant with preoperative fasting compared to patients who have a poor understanding. This is a very strong indication that understanding of instructions plays an important role in promoting adherence.

This highly significant OR value reinforces previous findings that understanding medical instructions is a key factor influencing patient compliance behaviour. Good understanding makes patients more aware of the importance of following instructions, especially in relation to medical procedures such as preoperative fasting that are risky if ignored. Patients who understand the importance of preoperative fasting are more likely to be disciplined in following the instructions given, thereby minimising the risk of medical complications during the procedure.

In addition, the OR of 2.347 for the compliant cohort with a 95% confidence interval (CI: 1.536 - 3.587) confirmed that the risk of complying with instructions was higher in patients with good

understanding. In other words, good comprehension increases the chances of patients consistently complying with medical instructions. In contrast, in the non-compliant cohort, an OR of 0.078 (95% CI: 0.020 - 0.312) indicated that patients with poor understanding had a lower risk of complying with instructions. Thus, patients' lack of understanding of medical instructions was the main factor leading to non-compliance.

These results also provide practical insight that improving patients' understanding of medical instructions, through better education and more effective communication, can significantly improve compliance rates. Patients who are given a deep understanding of the medical consequences of non-compliance are likely to be more motivated to adhere to the given rules, particularly in the context of surgery preparation such as preoperative fasting.

Logically, patients who have a good understanding of the preoperative fasting instructions are more likely to adhere to the rules as they understand the rationale behind the instructions and the importance of adhering to the rules for the safety and success of the surgical procedure. A good understanding allows patients to avoid behaviours that may harm their health during medical procedures, such as the risk of aspiration during anaesthesia. Therefore, the clearer and easier to understand the instructions given,

the higher the likelihood of patients following them correctly.

This finding is in line with the literature which states that understanding medical instructions is crucial in ensuring patient compliance. Patients who have good knowledge and understanding of their medical condition and treatment instructions are more likely to follow medical recommendations consistently. This shows the importance of clear and effective communication from medical staff to patients, especially when providing instructions related to risky medical procedures such as preoperative fasting.

From the results of this study, it can be concluded that understanding of pre-surgical instructions plays a very significant role in determining patient compliance with pre-surgical fasting. Patients with a good understanding of instructions tend to be more compliant compared to patients who have a poor understanding. Therefore, to improve compliance with medical instructions such as preoperative fasting, medical personnel need to provide more comprehensive explanations and ensure that patients truly understand the importance of these instructions. More intensive educational efforts could be a key strategy in improving patient compliance and reducing the risk of complications during medical procedures.

CONCLUSIONS

The conclusion of this study shows that there are several factors that influence patient compliance with preoperative fasting in hospitals in Banjarmasin. This study used a quantitative observational analytic design with a cross-sectional approach to evaluate the relationship between demographic factors such as

age, gender, education, and understanding of medical instructions on patient compliance behaviour.

The analysis showed that age and gender did not have a significant association with adherence to preoperative fasting. Both Early Adult and Middle Adult age groups showed similar levels of adherence. Likewise, gender was not shown to influence adherence to medical instructions, with both men and women having relatively similar levels of adherence. This indicates that demographic factors such as age and gender are not major determinants in influencing patient adherence to preoperative fasting.

However, education showed a significant influence on patient compliance. Patients with higher levels of education tended to be more compliant with preoperative fasting compared to those with basic education. This confirms the importance of health literacy in helping patients understand and comply with medical instructions. Better education allows patients to better understand the importance of preoperative fasting, which ultimately improves their compliance.

Understanding medical instructions proved to be the most dominant factor in influencing patient compliance. Patients who have a good understanding of medical instructions are almost 30 times more likely to be compliant compared to patients with poor understanding. These results emphasise the importance of effective communication and clear education from medical personnel to patients. When patients fully understand medical instructions, they are more likely to follow fasting procedures appropriately, which in turn can help reduce the risk of complications during surgery.

Overall, this study concludes that education and understanding of medical instructions are key factors that influence patient adherence to preoperative fasting. Therefore, interventions that focus on improving health literacy and patient understanding of the importance of preoperative fasting are highly recommended. While demographic factors such as age and gender did not significantly influence compliance, efforts to improve patient understanding and education should remain a top priority in improving the quality of compliance and patient safety during surgical procedures.

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