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Quantitative Research Article

The Influence of Health Promotion with Video Media on Increasing Healthy Relationship Knowledge of Students of SMA "A" South Jakarta in 2023

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Abstract

Background/ problem: *Serious attention is currently focused on reproductive health issues among adolescents, especially related to the phenomenon of behavior in risky relationships. This is a major concern because it tends to trigger premarital sexual behavior and toxic relationships. This study aims to analyze the differences in the level of knowledge and attitudes before and after health promotion with video regarding healthy relationships in Class XI Students of SMA "A" South Jakarta 2023.*

Design and Methodology: *The research design used was Quasi-experimental, the two-group pretest-posttest design. The study population included all students of Class XI SMA "A" South Jakarta, with a sample of 252 respondents selected randomly using the simple random sampling method. Students of class XI SMA "A" South Jakarta became research respondents if they were willing and present, while those who were not present during the study were excluded. Data were collected through a pretest-posttest questionnaire (Google Form) and analyzed using the Wilcoxon test.*

Results: *The results showed that there was an increase in knowledge and attitudes of high school students related to healthy relationships. The results of this study indicate that there is a significant difference in the level of knowledge and attitudes regarding healthy relationships before and after exposure to videos about healthy relationships (p-value 0.000).*

Conclusion and Implications: *Based on these results, it is recommended that respondents disseminate this educational video, while SMA "A" can continue continuing education using video media or other reliable sources for the next batch.*

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Introduction

Adolescence, derived from the Latin word adolescere and the English word adolescence, refers to a period of growth towards maturity [(1)]. The World Health Organization (1999) defines adolescence as the phase of life between childhood and adulthood, which is in the age range of 10 to 19 years. This phase is considered a significant period in the formation of the basis for optimal health. Meanwhile, according to Kementerian Kesehatan RI, adolescents are individuals aged 10 to 18 years [(3)]. According to UNICEF the number of adolescents worldwide reaches 1.3 billion [(4)]. In Indonesia, based on the latest data from the National Socio-Economic Survey (Susenas) by
[(5)] here are an estimated 65.82 million adolescents. This figure has increased by 1.39% compared to the previous year, where in 2021 the number of adolescents in Indonesia was around 64.92 million. It is important to note that DKI Jakarta's population data shows that there are 1,628,024 adolescents in the 10-19 age group in 2022 [(6)]. In addition, the population of South Jakarta in 2021 in the age range of 7 - 12 years is 193,020, age 13 - 15 years is 99,245, and age 16 - 18 years is 92,563 [(7)].

During teenage years or puberty, significant changes occur. The teenage growth process includes physical, cognitive and psychosocial aspects. The impact of these developments affects various areas of adolescent life, such as feelings, thinking, decision-making and social life [(8)]. Teenagers experience transformations that include reproductive maturity, interest in the opposite sex, increased sensitivity, reluctance to open up to parents, a drive for independence, and greater attention to personal appearance [(9)]. A trademark of this teenage phase is the urge to feel love and to love others [(1)]. These changes create attraction to the opposite sex, which is reflected in emotional involvement and the development of affectionate relationships in some teenagers.

The definition of relationship according to Knys (1986) [(10)] is the emotional involvement between two individuals of different types, influenced by the feelings in each other's hearts. According to Jacob Orlofsky (1976) in [(11)] there are five relationship styles, including intimate, preim, stereotyped, pseudo-intimate, and isolated, with factors such as knowledge, attitudes, parental roles, relationships, and exposure to sexual information influencing the type of relationship that may be unhealthy. According to Hutagalung (2008), healthy relationships formed by adolescents provide many benefits such as giving and getting mutual support and motivation [(12)]. In contrast, behaviors in toxic relationships, which include risky physical acts, can lead to premarital sexual behavior as a way to prove love [(13)].

A study conducted by Marliani (2015) showed that about 88.3% of the total 300 participants, stated that they had experienced or were in a relationship [(14)]. Of these, around 38% or around 101 participants considered that the relationship had a positive impact, such as increasing motivation to learn and active attendance at school. On the other hand, about 61.8% or about 164 participants thought that their current relationship had a negative impact, especially related to behaviors related to aspects of sexuality. Adolescents engage in risky behaviors that tend to lead to sexual activity due to the urge to fulfill sexual desires, pressure from the surrounding environment, and high curiosity, as described in the Indonesian Child

Protection Commission adolescent reproductive health survey (2012). The survey showed that Indonesian teenagers began to engage in relationships since 12 years old, with increasingly open behavior, such as holding hands (92%), kissing (82%), and petting (63%). This is associated with an increased propensity to engage in intercourse.

Furthermore, 2016 BKKBN's survey [15], reported that seven out of ten teenagers had been in a relationship, with an average starting age of 15.7 years, and about 3.9% were involved in sexual intercourse before marriage, especially in DKI Jakarta with a rate of 82.5%. When compared to the results of the 2017 BKKBN's Survey [16], it shows that four out of ten adolescents have been in a relationship, with an average start at age 16. Eight out of ten teenagers express affection through holding hands, and about 7.7% of male teenagers and 2.5% of female teenagers are involved in sexual relations before marriage, with the highest percentage level being at the high school education level at 51%. If this direction of development continues without preventive measures being taken early on, it can result in serious consequences on the psychological side, increase the risk of premarital pregnancy, lead to abortion, increase the transmission of Sexually Transmitted Infections (STIs), and expand the spread of HIV/AIDS [17]. In addition, the results of a study conducted by Putra et.al (2023), stated that engaging in toxic relationships can have a negative impact on physical health, such as decreased physical health, symptoms of headaches, excessive fatigue, and lethargy [18].

The results of this study highlight how the level of stress caused by unhealthy relationships can affect their performance and social integration, exacerbating the challenges they face during this period (Nguyen & Brown, 2021). In addition to the psychological impact, attachment style plays a significant role in how young adults experience and cope with toxic relationships. Individuals with insecure attachment styles are more vulnerable to harmful relationships, which can worsen their experiences in those relationships (Williams & Davis, 2020). Toxic relationships are characterized by destructive dynamics such as emotional manipulation, excessive control, verbal abuse, and demeaning behavior. In young adulthood, the context of toxic relationships can be more complex due to high emotional dependency and difficulty in setting healthy boundaries (Whitney & Lloyd, 2010).

In a high school environment, student involvement in a relationship, especially if it tends to have negative traits, can result in the emergence of toxic relationship behavior. The results of a preliminary study conducted by researchers at SMA "A" South Jakarta on 23 May 2023, 12 July 2023, and 25 July 2023, showed that eight out of ten students admitted to having experienced and been involved in several activities that could be categorized as toxic relationships. Therefore, this study was conducted to determine the effect of health promotion with video media on increasing the knowledge of healthy relationships of high school students "A" South Jakarta in 2023 in order to increase insight and information about how healthy relationships.

Methods

The research was conducted at SMA "A" South Jakarta in December 2023. The research was conducted with a Quasi-Experimental quantitative research design and the two-group pretest-post-test design. There were two groups in this study, the intervention group and the control group.

The sampling technique used simple random sampling method with inclusion criteria all students of class XI SMA "A" South Jakarta who are willing to become respondents and are present during the implementation of the study. Exclusion criteria were students of class XI SMA "A" South Jakarta who were not present when the research was being conducted. The sample size uses the Lemeshow WHO Sample Size formula. Based on the results of the calculation, the minimum sample size was 58 respondents. The hypothesis in this study used two tailed, so the minimum sample calculation result is multiplied by two to 116 respondents. To anticipate errors in the implementation of filling out the questionnaire, the minimum sample size was increased by 10%. The final result of the minimum sample size in this study was 126 respondents in each intervention group and control group. Thus, the total respondents in this study were 252 respondents.

The method of data collection in this study is by conducting interviews with respondents and using a mobile phone as a recording device. The analysis consists of three processes that take place simultaneously, data reduction, data presentation and drawing conclusions/verification (Miles & Huberman, 2010). A more detailed explanation of the three processes is as follows: a) Data Reduction, the data that has been obtained will then be analysed through the data reduction process. Reducing data is summarizing, selecting, and sorting the main aspects, and focusing on significant things to find themes and patterns. b) Data Display, the presentation of data commonly used in qualitative research is in the form of text that is narrative/in the form of words and easy to understand. c) Conclusion Drawing or Verification, the conclusion drawn by the author based on the information that has been analysed through data simplification and data presentation.

The study used primary data. Data collection was carried out by filling out questionnaires using pretest and post-test which have been tested for validity and reliability. This research questionnaire consisted of 10 questions for the knowledge variable and 15 questions for the attitude variable (there were positive and negative questions) with multiple choice answers and a Likert scale. After filling out the pretest questionnaire, respondents in the Intervention group will be given health promotion in the form of educational video media about healthy relationships. This video media includes the definition of relationship and healthy relationship, how the characteristics of healthy relationship and toxic relationship. The video used in this study is a 9-minute video. This research has undergone Validity Test, Reliability Test, and Normality Test. The research has also been approved by the Health Research Ethics Commission (KEPK) of the Faculty of Public Health, Muhammadiyah University of Jakarta with **No.10.288.B/KEPK-FKMUMJ/XII/2023**.

Results

Univariate Analysis

To show the distribution and frequency of respondent characteristics as well as independent and dependent variables, univariate analysis was conducted in this study. The following are the results of univariate analysis that has been processed using statistical-based software. The results of research on the characteristics of Class XI students of SMA "A" South Jakarta (including age, gender, age of first relationship, information about healthy relationships, and sources of information) can be seen as below:

Table 1. Frequency distribution of characteristics of students in class XI of SMA "A" South Jakarta (N = 252)

Respondent Characteristics	Intervention Group (n = 126)		Control Group (n = 126)	
	n	(%)	n	(%)
Age				
15 Years	2	1.6	1	0.8
16 Years	62	49.2	49	38.9
17 Years	42	33.3	58	46.0
18 Years	18	14.3	16	12.7
19 Years	2	1.6	2	1.6
Gender				
Male	67	53.2	66	52.4
Female	59	46.8	60	47.6
Age at first relationship				
Never	60	47.6	52	41.3
Early teens	20	15.9	21	16.7
Middle teens	46	36.5	53	42.1
Healthy Relationship Information				
Ever	84	66.7	84	66.7
Never	42	33.3	42	33.3
Source of Healthy Relationship Information	42	33.3	42	33.3
Never	4	3.2	3	2.4
Siblings/Family	8	6.3	13	10.3
Parents	10	7.9	12	9.5
Friends	1	0.8	6	4.8
Partners	14	11.1	14	11.1
School Environment (Teachers/Library)	2	1.6	3	2.4
Newspapers/Books/Magazines	32	25.4	30	23.8
Radio/TV/Internet	13	10.3	3	2.4
Other				
Total	126	100.0	126	100.0

The majority of respondents are 16 years old and 17 years old, there are more male students than female students, the number of those who have never been in a relationship is more than the number of respondents who have been or are in a relationship, most of the respondents who have experienced relationships mostly started their first relationship in middle adolescence, and the majority of respondents have received information about healthy relationships from Radio / TV / Internet.

Table 2. Frequency distribution of healthy relationship knowledge among students in class XI SMA "A" South Jakarta

Knowledge Level	Intervention Group				Control Group			
	Pre	%	Post	%	Pre	%	Post	%
Good	81	64.3	114	90.5	73	57.9	76	60.3
Enough	22	17.5	7	5.6	13	10.3	14	11.1
Less	23	18.3	5	4.0	40	31.7	36	28.6
Total	126	100.0	126	100.0	126	100.0	126	100.0

From the results of Table 2, it can be seen that before receiving health promotion on healthy relationships, the majority of respondents' knowledge in the intervention and control groups were in the good category. After the health promotion, there was a significant increase in the knowledge of the intervention group respondents, while the control group only experienced a slight increase.

Table 3. Results of correct answers on the pretest and posttest of knowledge variables for students in class XI SMA "A" South Jakarta.

Soal	Intervention Group				Control Group			
	Pre	%	*Post*	%	*Pre*	%	*Post*	%
1. What is a relationship that is more than just friends?	58	46.0	102	81.0	51	40.5	72	57.1
2. What is a healthy relationship?	100	79.4	119	94.4	93	73.8	89	70.6
3. A romantic relationship that is free from all forms of physical abuse, emotional abuse, and bullying is called?	107	84.9	117	92.9	94	74.6	101	80.2
4. Healthy relationship characteristics, except?	91	72.2	109	86.5	90	71.4	91	72.2
5. A relationship that refers to things that are abusive in nature, whether physically, emotionally, or sexually is called?	109	86.5	119	94.4	98	77.8	97	77.0
6. Psychological problems, premarital pregnancy, abortion, STIs, and HIV/AIDS transmission are some of the impacts of relationship styles?	106	84.1	120	95.2	100	79.4	104	82.5
7. What behaviors are included in a Toxic Relationship?	108	85.7	122	96.8	101	80.2	100	79.4
8. A girl feels that her relationship feels like a burden rather than a joy, and does not feel safe. So, this student is in a relationship?	110	87.3	119	94.4	103	81.7	106	84.1
9. If in a relationship there is an argument, but the partner responds to the argument fairly, wisely, and resolves it with a discussion. This is relationship behavior?	88	69.8	110	87.3	79	62.7	82	65.1

10. A student in a relationship tries to control his partner when playing with his friends at school. Only the student can give his partner permission to play with whom at school. This is relationship behavior?	92	73.0	118	93.7	87	69.0	90	71.4

During the pretest, the intervention group showed the highest rate of wrong answers on questions regarding the definition of relationships and behavior in relationships when faced with arguments. Meanwhile, the control group had the highest level of wrong answers also on questions about the definition of relationships and also on questions about relationships involving arguments. Furthermore, during the post-test, the intervention group showed significant improvement with the highest level of correct answers on questions regarding behaviors included in toxic relationships and the impact of relationship styles. On the other hand, the control group showed the highest level of correct answers on questions about a girl who felt her relationship was a burden, did not bring happiness, and did not feel safe.

Table 4. Frequency distribution of healthy relationship attitude on of 11th grade students of SMA "A" South Jakarta

Attitude Category	Intervention Group				Control Group			
	Pre	%	Post	%	Pre	%	Post	%
Positive	70	55.6	82	65.1	75	59.5	77	61.1
Negative	56	44.4	44	34.9	51	40.5	49	38.9
Total	126	100.0	126	100.0	126	100.0	126	100.0

Table 4 related to the attitudes of Class XI students of SMA "A" South Jakarta, it was found that most respondents in the intervention group before the health promotion on healthy relationships were in the positive category, as well as in the control group. After receiving health promotion on healthy relationships, the majority of respondents' attitudes increased significantly in the positive category for the intervention group and for the control group there was not too much significant improvement. Table 5 shows the percentage of correct answers for each question on the attitude variable:

Bivariate Analysis

Bivariate analysis in this study aims to determine the effect of health promotion with educational video media on knowledge and attitudes about healthy relationships in respondents, namely Class XI High School Students "A" South Jakarta. The normality test results show that the data is not normally distributed. Therefore, bivariate analysis was performed with the Wilcoxon Test using a significance level of 5% (95% confidence). The Wilcoxon test was only conducted on groups that received special treatment or intervention groups. The following are the results of the Wilcoxon Test in this study:

Table 5. Non-parametric test (Wilcoxon test) variable knowledge of healthy relationships in respondents before and after the intervention.

No	Healthy Relationship Knowledge	N	*p-value*	Z
1	After the intervention is worse than before the intervention	11	0.000	-6.306
2	After the intervention is better than before the intervention	71		
3	After the intervention is the same as before the intervention	44		
Total		126	0.000	-6.306

The results of the Wilcoxon test in Table 5 of the knowledge variable show that out of a total of 126 respondents before and after the intervention with health promotion through educational videos about healthy relationships, the majority of respondents experienced an increase in knowledge, showing a better understanding after the intervention. Table 5 also shows a p-value of 0.000, that is, there is a difference in the level of knowledge and attitudes regarding healthy relationships before and after being given health promotion in the form of video media regarding healthy relationships in high school students "A" South Jakarta 2023.

Table 6. Non-parametric test (Wilcoxon test) attitude variables of healthy relationships in respondents before and after intervention

No	Healthy Relationship Attitude	N	*p-value*	Z
1	After the intervention is worse than before the intervention	38	0.000	-4.054
2	After the intervention is better than before the intervention	77		
3	After the intervention is the same as before the intervention	11		
Total		126	0,000	-4.054

In the attitude variable, the Wilcoxon test results showed changes in attitude after intervention with educational video media on healthy relationships. Of the 126 respondents, the majority of respondents experienced an increase in attitude for the better. The p-value of 0.000 indicates a significant difference before and after the intervention. Thus, it can be concluded that there are differences in the level of knowledge and attitudes about healthy relationships before and after being given health promotion in the form of video media about healthy relationships in high school students "A" South Jakarta 2023.

Discussion

From the results obtained, the total number of respondents in this study was 252 high school students in grades XI 1 - XI 7 at one of the public high schools in the Kebayoran Lama area in South Jakarta. The number of respondents in each intervention group and control group was 126 respondents. respondents aged between 15-19 years or included in the teenage phase. Teenagers become respondents in this study because

the adolescent phase includes an important period, namely adolescents experiencing development that takes place faster in this phase, the environment is increasingly more decisive, a transitional period that requires self-adjustment of the teenager himself, and one of the characteristics in this phase is the feeling to be loved and loved by others such as starting a relationship [(1) (1)]. Distribution and frequency analysis showed that the majority of respondents in the intervention group were 16 years old, while in the control group the majority were 17 years old. The intervention group was dominated by males, while the control group was. Regarding starting a relationship, the intervention group respondents had never been in a relationship, while the majority of the control group started at the age of 15-19 years. This is in line with 2017 BKKBN's Survey [(16)], which found that the average age of teenagers starting a relationship is 16 years old. Also reinforced by research [(19)] found that six out of ten teenagers stated that they had been in a relationship with a median age of first relationship of 16 years, and most respondents also claimed to start a relationship in the age range of 15 to 17 years. Furthermore, the study found that most respondents in both groups had received information about healthy relationships. The main source of information was Radio/TV/Internet in the intervention group and control group. A research stating that rapid advances in communication technology have a significant impact on adolescent mindset and adolescent social interaction [(20)]. The results in this study are in line with research [(21)], showing that most respondents have received information about healthy relationships, with the majority of information sources coming from Radio/TV/Internet.

Based on the research, it shows that the pretest value of knowledge of respondents from the intervention group and control group is classified as good. This is due to most respondents who already have information about healthy relationships from various sources such as Radio / TV / Internet. Supported by research [(22)] shows that along with technological advances, digital media literacy in teenagers is increasing. Also in line with research [(23)] which states that internet use makes a positive contribution to task completion and skill competence. Internet use increases the ability to think creatively and think more about social relationships. Further strengthened by the results of research [(24)], there is a significant influence between the amount of mass media and the level of reproductive health knowledge in class X students of SMAN 1 Purwokerto. The mass media most widely used by students of class X SMAN 1 Purwokerto is the internet. From both groups of respondents during the pretest, most of them answered incorrectly on the question about the definition of relationship. Respondents may have chosen the wrong answer because the question asked could be interpreted or understood in different ways by each respondent. In this context, it is possible that "relationship" can mean different things to different people, so what is meant by the question can be interpreted variously, leading to answers that may not match expectations. There is research that found that teenagers do have different meanings related to relationships, including as a lifestyle or trend that must be followed, as an instinctual sexual need, and to fulfill financial needs that can create a state of give and take [(25)]. After the pretest, respondents will fill out the post-test questionnaire. The intervention group was given health promotion in the form of educational video media about healthy relationships. While the control group was not given any treatment. From the results of the post-test, the intervention group found an increase

in knowledge in the good category, and at the level of sufficient and insufficient knowledge decreased. These results can be assumed that respondents get clear and structured information about healthy relationships through educational videos, so there is an increase in knowledge that can help respondents understand what should be in a healthy relationship. In line with the statement [26], namely health promotion is a program created with the aim of producing changes or improvements in health and includes increasing the knowledge and attitudes of an individual or community. Research conducted by [27] strengthens these results, with the results showing that the use of audio-visual media (video) has a positive effect on increasing respondents' understanding of sexual and reproductive health rights at SMKN 1 Ponorogo.

Based on the results of the study, it is known that the pretest value of the respondent's attitude variable, both groups, namely the intervention group and the control group, are classified in the positive attitude category. This can occur with the possibility that respondents already have an understanding or experience of healthy relationships and can come from personal experience, upbringing in the family environment, or information and knowledge obtained from the internet and school environment. In line with research [28] found that students at SMA Negeri 2 Kairatu tend to undergo healthy relationships because of the motivation to avoid the risk of rejection of invitations to have sex. This internal factor is supported by the role of the family, including giving advice, setting dating rules, and supervising nighttime activities. The results of the pretest before education showed that the percentage of answers that showed the most negative attitude in the intervention group was on attitude question number 1, which can be interpreted that respondents tended to express affection by holding hands. In line with research conducted by [29] , it was found that teenagers who held hands when dating. Furthermore, the post-test was filled in for both groups. The intervention group was given treatment, namely health promotion in the form of educational video media about healthy relationships. While the control group was not given any treatment. From the results of the post-test can be seen in table 11, the intervention group found an increase in attitude in the positive attitude category, and in the negative category decreased. These results can be interpreted that the health promotion treatment through educational videos given can produce meaningful changes in the positive attitude category. According to research [30], the use of methods and types of media in delivering information during health promotion has a significant influence on the level of knowledge and attitudes. These results are also in line with research conducted by [31] showing that after receiving health promotion through video media, there was a significant increase in changes in respondents' attitudes to be more positive.

In this study, it was found that health promotion interventions through educational video media on healthy relationships can improve the knowledge and attitudes of students of SMA “A” South Jakarta. Analysis using the Wilcoxon test on the intervention group showed a significant increase in knowledge, where the majority of respondents experienced an increase in knowledge. With a p-value of 0.000 which is smaller than the significance threshold of 0.05, the hypothesis can be accepted. This result indicates a difference in the level of knowledge and attitude regarding healthy relationships before and after the intervention. Although there were a small number who experienced a decrease in knowledge, the majority

of respondents experienced an increase, showing the effectiveness of health promotion interventions through video media in increasing understanding of healthy relationships in high school students "A" South Jakarta 2023. This is in line with research [21] which shows that there are differences in the knowledge of teenagers before and after they get counseling about healthy relationships through video media. Similar research was also conducted by [32] which showed that video has a significant effect on differences in knowledge, both in the pretest and post-test, with a p-value <0.001 which is smaller than 0.005. Furthermore, on the attitude variable, it shows that of these, the majority of respondents experienced an increase in attitude. Statistical test results with a p-value of 0.000, which is smaller than the significance threshold of 0.05, indicate that the hypothesis can be accepted. This means that there is a difference in the level of knowledge and attitude regarding healthy relationships before and after being given health promotion in the form of video media for students of SMA "A" South Jakarta 2023. Although knowledge tends to decrease after the intervention on the attitude variable, the results show that health promotion interventions using educational video media on healthy relationships have a significant impact on changes in respondents' attitudes. The decrease in knowledge on the attitude variable can be explained by the complexity and depth of the attitude change process, which takes longer than changes in knowledge. These results are in line with research conducted by Anggraini et.al (2022), showing that the average attitude before the intervention using video media was 33.09 and after the intervention increased to 43.56 [33]. Further analysis with the Wilcoxon test obtained a p-value (0.000) < (0.05), meaning that there is an effect of educational videos on the attitudes of early adolescents about reproductive health at SMP Bani Tamin Tangerang Regency. Similar research was also conducted by [34], showing that the use of educational videos can improve respondents' attitudes towards reproductive health, STDs, HIV/AIDS, and pre-marital examination.

Conclusion

This study involved participants with the majority aged 16 years and 17 years (46.0%), and was dominated by male. Most of the participants had never been involved in a relationship before, but the majority of them started their first relationship at the age of 15-19. Respondents received information about healthy relationships mostly through Radio/TV/Internet channels. Before the health promotion session, participants' knowledge was generally quite good. After receiving health promotion in the form of educational video media on healthy relationships, the intervention group experienced a significant increase in knowledge. On the other hand, the control group that did not receive special treatment also experienced an increase, although only a slight increase. Then, the respondents' attitudes before health promotion tended to be positive. After receiving health promotion through educational video media, the intervention group experienced an increase in positive attitudes. Meanwhile, the control group without special treatment only slightly increased in positive attitude. Statistical analysis showed a significant difference in knowledge before and after health promotion among students in Class XI of SMA "A" South Jakarta 2023. Similar with attitude, there was a significant difference. Overall, health promotion through educational video media on

healthy relationships has a positive impact on the knowledge and attitudes of respondents.

For respondents, it is recommended that they utilize and disseminate educational videos on how to overcome and avoid toxic relationships. The aim is to raise awareness of the importance of having a healthy relationship. The video can be disseminated to relatives, relatives, or friends through various channels, such as group chat, in person, or shared on social media and other platforms. In addition, SMA "A" South Jakarta is expected to continue to provide education to the next generation by using the video provided in this study or utilizing reliable sources of information. This approach is expected to help reduce and prevent the emergence of risky or toxic relationships. Educational videos can also be integrated into Guidance and Counselling subjects for all classes at school. For future research, it is recommended that researchers continue similar studies at other educational levels, such as elementary, junior high, vocational, MTs, MA, and universities. The aim is to understand knowledge and attitudes about healthy relationships at various levels of education. Future research should also consider using other media as a means of health promotion to complement the sources of information that support the study of healthy relationships.

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Quantitative Research Article

Determining The Appropriate Screening Method As A Basis For Policy Making On Tuberculosis Control In Hospitals

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Abstract

Background: In order to ascertain the maximum validity of the screening test for invention of TB case, it is important to assess the screening value in order to observe the effectiveness of the screening method for invention undetection sufferer

Objective: Finding the best TB screening technique for the family of a medical patient at Bahtera Mas Hospital was the aim of this study

Design and Methodology: The purpose of this comparative descriptive study was to evaluate the efficacy of sputum and rontgen inspection (thoraks) for diagnostic maintenance of TB lungs. The population consisted of the relatives of all TB patients with lungs who had treatment or endured it, up to 28 respondents.

Results: Sensitivity and specificity values from sputum microscopy inspection were found to be between 0% and 100%. The rontgen photo thoraks inspection yielded sensitivity and specificity values of 22% and 68%, respectively. The results showed that rontgen photo thoraks examination was more successful than sputum microscopy inspection

Conclusion and Implications: The skill and quality of health workers, particularly those in laboratories, must be continuously improved in order to detect TB cases and complete the tuberculosis disease treatment program with the best possible outcome.

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Introduction

Tuberculosis remains one of the most prevalent diseases worldwide, with an estimated 10.6 million cases and 1.3 million deaths by 2022, according to the World Health Organization (WHO). Despite efforts to combat it, TB remains a major health problem worldwide, especially in middle- and low-income countries, such as Indonesia. Treatment resistance (MDR-TB) can worsen the situation, with around 410,000 cases unresponsive to first-line treatment. Other topics include diagnostic limitations, the effectiveness of early detection, and the risk of transmission in health facilities, such as hospitals. Without effective screening strategies, the TB response will be hampered, potentially increasing the chain of transmission and increasing health-related economic growth (WHO, 2020).

Controlling tuberculosis (TB) requires an accurate and timely diagnosis, but hospitals continue to struggle to set up the best diagnostics. One of the main issues with diagnostic techniques is their inconsistent

sensitivity and specificity. For instance, the sensitivity of microscopic sputum examination (BTA) is approximately 50–60% in patients with pulmonary tuberculosis, and it is significantly lower in minors or patients with HIV (Yayan et al., 2024). Even though they are more accurate (around 90% sensitivity for pulmonary TB), newer technologies like GeneXpert MTB/RIF are not yet equally available in all hospitals, particularly in places with limited resources. An further issue is the delay in diagnosis brought on by the lengthy wait for culture findings (2–8 weeks) or the lack of quick molecular diagnostics. This could lead to an increase in nosocomial transmission, particularly in intensive care unit and inpatient settings. Furthermore, incorrect interpretation of test results such as false positives in BTA or false negatives in immunocompromised patients often results in overdiagnosis or underdiagnosis (Aslan, 2024).

Finding TB lesions can now be done practically using a chest radiographic examination. Although this test is more expensive than a sputum test, it can be useful in some situations, such as miliary and pediatric tuberculosis. While a sputum examination is nearly always negative, a radiographic examination of the chest can provide the diagnosis in both situations (World Health Organization (WHO), 2022). It is stated that tuberculosis is the greatest imitator since its radiological image frequently presents an odd image. Many times, infiltrations and tuberculomas are mistaken for bronchial cancer, metastatic carcinoma, pneumonia, or pulmonary mycosis. Increased morbidity, mortality, and the possibility of medication resistance as a result of improper care are the effects of this issue. To speed up TB identification, particularly in susceptible populations including children, HIV patients, and extrapulmonary TB cases, integrated diagnostic approaches, frequent training for healthcare professionals, and improved laboratory networks are therefore required (World Health Organization, 2015).

In order to identify the most reliable screening technique for TB case discovery, it is necessary to measure the utility of screening in order to assess how well screening techniques identify patients who have not been identified. In order to minimize a rise in TB morbidity and death rates, it is believed that accurate early case detection through suitable screening technologies can lower the number of TB cases over time. Treatment can therefore be initiated right away. In tackling TB, the right policy is needed, starting from screening patients. Therefore, data and research are needed to prove the best screening method in order to make the right policy. Based on this description, the researcher is interested in taking the title Determination of the appropriate screening method in preventing an increase in TB morbidity and mortality rates as a basis for policy making to overcome TB.

Methods

Research type, population, and sample

This study uses secondary data from diagnostic tests and is comparative descriptive in nature. Families of all pulmonary tuberculosis patients who were admitted to or had previously been admitted to Bahtera Mas Hospital in Southeast Sulawesi Province made up the study's population. where 28 inpatients were admitted during the third quarter. Patients with pulmonary TB symptoms who were admitted to or had

previously been admitted to the General Hospital of Southeast Sulawesi Province comprised the study's sample. 28 respondents made up the study's sample, which was determined by the hospital's average monthly inpatient volume. Purposive sampling was used to select the sample for this study, which requires that the sample have signs of tuberculosis and be one of the family members who interacts with the patient the most.

Data Collection and Analysis

Medical records, laboratory, radiology, and internal medicine poly at Bahtera Mas Hospital in Southeast Sulawesi Province, as well as relevant organizations in this case, the Southeast Sulawesi Provincial Health Office and publications pertaining to this study were examined in order to gather secondary data.

By examining the frequency distribution, descriptive analysis was used to determine the traits of the respondents who served as samples and variables in the research. The methodology used to examine the comparison of the independent variables under investigation is known as bivariate analysis. Sensitivity and specificity are the two ratios utilized in this diagnostic test to gauge a diagnostic method's effectiveness.

Results

Respondent Characteristics

Table 1 displays the characteristics of the respondents who were the subject of the study. The study's age group characteristics showed that respondents between the ages of 15 and 25 had the highest percentage of respondents who performed sputum examination (microscopy) and X-rays (radiology), with 13 respondents (46.4%), while respondents between the ages of 36 and 45 and 56 had the lowest percentage, with only 1 respondent (3.6%). Sputum examination and X-rays were most frequently performed by respondents with incomes between Rp 500,000 and Rp 1,000,000 (11 respondents, or 39.3%), and least frequently by respondents with incomes between Rp 1,000,000 and Rp 2,000,000 (one respondent, or 3.6%).

Seven (25.0%) and eight (28.6%) of the 28 respondents who performed X-rays (radiology) and sputum examinations (microscopy) were self-employed. and additional occupations like motorbike taxi drivers, traders, etc., as 13 respondents (46.4%) said. Among respondents who performed sputum examination (microscopy) and X-rays (radiology), those who completed college had the highest level of education (3 respondents, 10.7%), while those who did not fall into any school category had the lowest level of education (3 respondents, 3.6%).

Tabel 1. Distribution of Characteristic respondents)

Characterstic	Frequency (n)	Percentage (%)
Age groups		
15-25 years	13	46.4
26-35 years	10	35.7
36-45 years	1	3.6
46-55 years	3	10.7
➢ 56 years	1	3.6
Family Income		
< Rp.500.000	8	28.6
Rp 500.000 – Rp 1.000.000	11	39.3
Rp 1.000.000 – Rp	1	3.6
2.000.000	8	28.6
None		
Ocuupation		
None	8	28.6
Self-employed	7	25.0
others	13	46.4
Education		
None	1	3.6
Primary	3	10.7
Secondary	5	17.9
High School	16	57.1
College	3	10.7

Clinical Diagnostic

In this study, a symptom or suspect is defined as an individual who exhibits clinical indications of pulmonary tuberculosis disease, such as persistent coughing up phlegm for at least two weeks. If a respondent coughs up phlegm for two weeks or longer, they are considered suspects; if they do not cough up phlegm for two weeks or longer, they are considered non-suspects. More respondents had no symptoms than those who did, according to table 2 of the symptom/suspect disease variables from the families of the patients analyzed. Examining specimen samples taken from sputum, pleural fluid, or throat smears is known as sputum examination. If BTA germs can be detected in the sputum specimen, the respondent is considered BTA positive; if not, the respondent is considered BTA negative.

Tabel 2. Distribution of respondents according to the results of sputum examination (microscopic) with symptom s of disease (suspected)

Scrining	Symtomps				Frequency (n)	Percentage (%)
	Suspect		None			
	n	%	n	%		
Sputum						
Positive	–	–	–	–	–	–
Negative	9	32.1	19	67.9	28	100
Thoraks						
TB Active	2	7.1	4	14.3	6	21.4
TB non active	7	25.0	15	53.6	22	78.6

Sensitivity specifity of Sputum

$$\text{Sensitifitas} = \frac{(0)}{(0) + (9)} 100 = 0$$

$$\text{Spesifisitas} = \frac{(19)}{(0) + (19)} 100 = 100$$

Sensitivity specifity of Rontgen

$$\text{Sensitifitas} = \frac{(2)}{(2) + (7)} 100 = 22\%$$

$$\text{Spesifisitas} = \frac{(15)}{(4) + (15)} 100 = 68\%$$

All of the respondents received negative results from the microscopic inspection of the patient's family's sputum. The examination known as "observation of thoracic X-rays" (radiology) involves examining the findings of chest X-rays (thorax). More respondents displayed symptoms of dormant TB than those with active TB, according to the findings of the observation of thoracic X-rays (radiology) from the families of the patients analyzed. According to Table 3's analysis of the microscopic sputum examination findings with suspected pulmonary tuberculosis symptoms in the patient's family, all responders had negative results, and the majority did not exhibit any suspected pulmonary tuberculosis symptoms. More responders were not suspected of having pulmonary tuberculosis, even though the analysis of the observation of thoracic X-rays (radiology) with symptoms of the disease (suspected) of the patient's family revealed X-rays displaying indicators of dormant TB.

Discussion

Although all of the respondents in this study had negative results from the sputum examination, several of them continued to exhibit clinical symptoms that could be indicative of pulmonary tuberculosis. This situation suggests the existence of false negatives, in which the patient's coughing up phlegm is not accompanied by any bacteriological results. Numerous variables could contribute to this phenomena, including low bacterial load (particularly in patients with impaired immune systems or in the early stages of infection), poor sputum sample quality, or insufficient microscopic sensitivity that only detects 50– 60% of pulmonary TB cases (Murwaningrum et al., 2017). However, the majority of asymptomatic respondents who had negative findings may be classified as true negatives, indicating that their cough symptoms were not brought on by an infection with Mycobacterium TB.

Clinically, these results support the notion that microscopic examination alone is insufficient for diagnosing tuberculosis, particularly in individuals who have severe symptoms but provide negative results. To lower the chance of misdiagnosis, WHO advises using radiological scans or molecular diagnostics (such GeneXpert)(World Health Organization (WHO), 2022). Furthermore, when making a differential diagnosis, non-infectious causes such chronic bronchitis, COPD, or other airway infections must be taken into account. This study emphasizes the value of a thorough diagnostic method that combines clinical evaluation, sophisticated laboratory testing, and routine monitoring to guarantee diagnosis accuracy and prevent incorrect treatment.

The likelihood of false positive results is one of the special features of sputum microscopic examination for the diagnosis of pulmonary tuberculosis. Because the process necessitates a sputum sample from the patient, this method virtually never results in false positives, in contrast to other diagnostic tests. This mechanism functions as a natural filter with not coughing productively or is not producing any sputum, they cannot test positive for TB using sputum microscopy(Ockhuisen et al., 2024). With a specificity score of 100%, the diagnostic test analysis results in this study demonstrated features in line with the fundamentals of sputum inspection(Castro et al., 2015). Nevertheless, a sensitivity of 0% was discovered, suggesting a significant drawback of this approach. This result is consistent with the medical literature, which claims that sputum microscopy can only identify TB cases under specific circumstances. The study's primary drawback is its limited sample size, which could limit how far the results can be applied. However, conceptually, these findings confirm the knowledge that, despite its high specificity, sputum microscopy is insufficient as a diagnostic tool when used alone without additional supporting examination modalities.

The findings of diagnostic tests indicate that sputum microscopic examination has a contrasting image in terms of its detection capabilities, with a sensitivity of 0% and a specificity of 100%. When the test is positive, this complete specificity means that the patient is unquestionably TB-infected. Zero sensitivity, however, validates the method's primary flaw, which is its incapacity to identify actual positive situations.This problem happens because a relatively high number of bacteria roughly 10,000 to 100,000

bacilli per milliliter of sputum are needed for the direct smear method of conventional microscopic analysis to be considered positive. Many TB patients, particularly those who are in the early stages or have immunocompromised conditions, frequently have a germ load below this detection threshold in routine clinical practice, which leads to false negative results(Susilawati & Larasati, 2019).

This screening method is still commonly utilized in many healthcare facilities since it offers a number of benefits, including a rather quick process and low cost(Ockhuisen et al., 2024). Its reliance on operator skill and sample quality, however, is a significant drawback. Results are frequently erroneous because of inadequate sampling methods or differences in how laboratory staff interpret the data. The clinical consequences of these discoveries are significant. Sputum microscopy results should not be the only foundation for diagnosis by clinicians or other health professionals, particularly when dealing with patients who exhibit severe symptoms that raise a high suspicion of tuberculosis. To confirm the diagnosis, these patients need to be evaluated further using additional supportive tests such radiological examinations or GeneXpert molecular assays (Sumual et al., 2017).

Some significant conclusions about the use of x-rays in the diagnosis of tuberculosis were drawn from the results of the thoracic radiological examination in this study. 78.6% of responders had no indications of disease activity, whereas 21.4% had radiological characteristics compatible with active TB. This implies that although thoracic radiology is a valuable diagnostic technique, there are still some restrictions on its capacity to identify active tuberculosis. Subsequent examination of the diagnostic test revealed a 68% specificity and 22% sensitivity (Jimmy et al., 2022). Less than 25% of real active TB cases can be detected by the test, according to the poor sensitivity score (WHO, 2016). This might be caused by a number of things, such as an early stage of the disease, unusual lesion features, or difficulties interpreting radiological images. However, the 68% specificity suggests that thoracic radiography can effectively rule out the diagnosis of tuberculosis in people who are not afflicted (Sorsa, 2020).

This result supports the body of research suggesting that radiographic examination alone should not be the only method used to diagnose tuberculosis. On x-rays, certain illnesses like pneumonia, pulmonary fibrosis, or even artifacts from the examination process can appear to be TB. On the other hand, certain types of tuberculosis, particularly in people with impaired immune systems, may exhibit unusual symptoms that are challenging to detect using standard radiography. The significance of a thorough diagnostic strategy is the clinical meaning of these findings. Although thoracic radiography is still a useful first screening method, its findings should always be compared to patient risk factors, clinical findings, and microbiological investigation. Other supporting tests, like molecular tests or thoracic CT scans, should be taken into consideration to confirm the diagnosis in instances with high clinical suspicion but unsupporting radiological results (Campbell et al., 2022).

There is a difference between the results of sputum examination and X-ray observations, as evidenced by the diagnostic test results, which show that the sensitivity of sputum examination is 0% while that of thoracic photos is 22%. All respondents gave negative results from sputum examination, but X-ray examination revealed that some respondents had signs of active TB symptoms. The suspicion of early pulmonary TB disease can be reinforced by radiological characteristics. Clinical symptoms typically follow radiological abnormalities of the lung caused by the TB process (Central Tuberculosis Division India, 2016). However, because many other lung diseases have characteristics similar to those of tuberculosis, a conclusive diagnosis of pulmonary tuberculosis cannot be made solely based on radiographic evidence. In order to diagnose pulmonary tuberculosis disease in all 28 respondents who were sampled for this study, microscopic examination (sputum examination) and radiographic examination (thoracic X-ray) were performed. To ascertain the sensitivity and specificity values of each tuberculosis examination method, a diagnostic test was conducted based on the examination results (Murwaningrum et al., 2017).

The necessity of providing radiologists and general practitioners with ongoing training to enhance the caliber of radiological interpretation is also highlighted by this study. The accuracy of TB diagnosis by radiological examination can be increased with the use of a standardized scoring system and comprehensive evaluation of clinical variables (Susilawati & Larasati, 2019). Therefore, even with its drawbacks, thoracic radiology is still a crucial part of the pulmonary tuberculosis diagnostic algorithm and need to be applied sparingly and in conjunction with clinical evaluation.

Because sputum testing and thoracic radiology have fundamentally different properties, they have varying sensitivity when it comes to diagnosing pulmonary tuberculosis. Because it takes between 10,000 and 100,000 bacilli per milliliter of sputum to provide a positive result, the direct smear method of sputum testing has limited sensitivity and frequently misses patients with a low germ load or in the early stages of infection. Bacilli (BTA) in sputum continue to be the gold standard of diagnosis because, unlike radiography, which is merely suggestive, it offers precise microbiological confirmation (Aslan, 2024). As a result, the two procedures work in tandem: radiography aids in early screening and complication assessment, whereas sputum analysis (particularly using molecular techniques).

Statistically, sputum microscopy and thoracic radiology, two screening techniques for the diagnosis of pulmonary tuberculosis, demonstrated greater specificity values than sensitivity, making them appropriate for usage in Southeast Sulawesi Province, which has a low prevalence of TB (13.72%). Even in individuals with symptoms, sputum microscopic examination cannot detect positive cases because of its 0% sensitivity, which makes it useless as a screening method even though it has 100% specificity. However, even though the radiological image is not specific for tuberculosis, thoracic radiography is better at identifying lung abnormalities early on, with a sensitivity of 22% and a specificity of 68%. High specificity techniques are given priority in low incidence settings like Southeast Sulawesi in order to prevent

Over diagnosis, while ideally a combination of the two tests.

Research findings and reliable data should serve as the foundation for any policies that are implemented in a medical facility. The findings of this study provide a solid foundation for hospital policymakers as they decide how to screen for tuberculosis patients. According to the study's findings, radiological analysis of thoracic X-rays is the most effective technique available. Diagnostic service quality remains a problem. Due to the BLK's limited ability to supervise and provide rapid feedback, many laboratories have yet to implement the cross-check on a regular basis, which limits the external quality assurance system. As Southeast Sulawesi's community referral hospital, Bahteramas Hospital has to improve

The ability and quality of health workers, particularly laboratory personnel, to detect TB cases must be improved in order to maximize the success of the TB disease control program. This is because the best screening approach for TB prevention is radiological evaluation of thoracic X-rays. A program to standardize laboratory personnel competencies or health analyst competency standards is necessary to improve laboratory staff. Competency standards are declarations that specify the knowledge and abilities that must be applied when working in compliance with industry (workplace) standards.

Conclusions

The sensitivity and specificity of the sputum microscopic examination results in this study are 0% and 100%, respectively, and the sensitivity and specificity of the radiological examination of thoracic X-rays are 22% and 68%, respectively, according to the findings of previous research. The study's findings indicated that radiological analysis of thoracic X-rays was superior to microscopic analysis of sputum. Standardizing the proficiency of health analyzers is one way that Bahteramas Hospital may increase the caliber of its laboratory staff.

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Quantitative Research Article

Coffee Consumption and Screen Time with College Students' Sleep Quality

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Abstract

Background/ problem: The rise of coffee shops has made coffee consumption a lifestyle among college students, especially during the pandemic. Coupled with screen time activities, using gadgets for a long time can affect sleep quality and health.

Objective/ purpose: This study aims to analyze the relationship between coffee consumption, screen-time activity duration, and sleep quality of university students during the new normal period.

Design and Methodology: This study used a cross-sectional study design involving 267 students of the Faculty of Health Sciences of Universitas Pembangunan Nasional Veteran Jakarta (UPNVJ) who were selected using the Proportionate Stratified Random Sampling technique. The research instrument used questionnaires to measure coffee consumption, screen time, and the Pittsburgh Sleep Quality Index (PSQI).

Results: Most respondents had poor sleep quality (53.6%), were heavy coffee consumers (56.2%), and did excessive screen time activities (57.3%). There was a significant relationship between coffee consumption and student sleep patterns (p = 0.006; POR = 2.053, 95% CI: 1.256- 3.356) and a significant relationship between screen-time and sleep patterns of Health Science UPNVJ students (p = 0.018; POR = 1.863, 95% CI: 1.140- 3.044).

Conclusion and Implications: Coffee consumption and duration of excessive screen time activities are closely related to students' sleep quality.

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Introduction

The COVID-19 pandemic has significantly impacted the sleep quality of college students, exacerbating prevalent sleep disorders that afflict the student's demographic. According to Santos et al., only 24.4% of college students reported good sleep quality during remote learning, while 62.8% suffered from poor sleep quality and 12.8% were diagnosed with sleep disorders. This indicates a significant decline from pre-pandemic statistics, where 34.1% of students reported good sleep quality in the USA (Santos et al., 2023).

Coffee can now be served in a variety of ways beyond the traditional method of brewing coffee beans in hot water and then adding sugar or milk. Sales of coffee increased along with the introduction of various coffee-making methods. For people who live in large cities, coffee has become a need and a new way of

life, and is increasingly popular among young people and in corporate circles (Anand, 2008).

The everyday routines of college and university students have significantly changed because of the COVID-19 pandemic, including their use of screens, coffee consumption, and sleep patterns. In the new normal era, the new academic implementation, which began in August 2020, has seen students and educators carry out the learning process online. In the implementation of online learning, there may be obstacles that arise. Online learning needs supporting technology facilities, because all attributes of its implementation require the use of existing technology (Pradana & Syarifuddin, 2021).One of the obstacles to online learning is the internet, which not all students have at home. So many of them do campus assignments or projects by going to coffee shops that provide Wi-Fi or internet facilities (Titiek Murniati et al., 2022)

In a study by Muhammad and Hussain (2021), it was discovered that among college and university students, screen time and sleep quality are significantly correlated. (Muhammad et al., 2021). The study discovered that college students who use screens more often have less restful sleep. This is in line with another study by Garret et al. (2016) that discovered that college students who use social media also get little sleep(Garett et al., 2018) .

College and university students frequently consume caffeine, which has been shown to have an impact on how well they sleep. In a 2013 study, Lohsoonthorn et al. discovered a link between frequent caffeine consumption and poor sleep quality among Thai college students (Lohsoonthorn et al., 2013). Another study by Choi (2020) found that abusing caffeinated beverages may lead to poor sleep quality among Korean college students (Choi, 2020).

Apart from the caffeine contained in coffee, one's sleep quality can also be affected by screen-time. In today's adults, screen time is a concern, especially at night, which can reduce sleep duration (Kadita & Wijayanti, 2017).The current COVID-19 pandemic makes students undergo online learning using laptops, tablets, and smartphones through applications such as Schoology, Google Classroom, and Zoom so that screen time activities increase(Pratiwi & Sodik, 2018) .

Using devices can increase screen time. One study revealed that 53.92 percent of people reported increased screen time during the pandemic (Bhutani et al., 2021). Studies of students in India and Spain have shown an increase in screen time before and during the pandemic (Trott et al., 2022). A study in Italy proved that the prevalence of students with poor sleep quality increased from 58 percent to 73.3 percent (Marelli et al., 2021).

Research by Bambangsafira and Nuraini (2017), regarding the quality of sleep of health science students in Indonesia, found that 74.8% of students have poor sleep quality (Bambangsafira & Nuraini, 2017). Meanwhile, research by Tasya (2021) regarding the comparison of screen-time based on the quality and quantity of sleep of FK UPN Veteran Jakarta students during the COVID-19 pandemic states that 56.9%

of students have poor sleep quality, and students with high screen time tend to have poor sleep quality (Bambangsafira & Nuraini, 2017).

Some previous research on student sleep quality has shown that there is still less than ideal quality of sleep among students in Indonesia (Arum Meiranny & Avida Muanisatul Chabibah, 2022; Hanifah et al., 2023; Purdiani, 2014). Based on preliminary studies of FIKES UPN Veteran Jakarta students, the average student has a habit of drinking coffee and screen time. Among the 19 students, only four (21%) are not fond of drinking coffee, and 15 students (79%) are fond of drinking coffee.

A total of 13 students (68.5%) drink coffee less than three times a week, and six others (31.5%) drink coffee more than 3 times. The time of consumption also varies, namely at night, as many as six students (31.5%), during the day, two students (10.5%), in the afternoon, one student (5%), and 10 other students (53%) at all three times. Students' sleep patterns after consuming coffee on average became irregular, as many as 13 students (68.5%), while the other six (31.5%) were regular. As for screen-time, 100% of respondents did screen-time for more than two hours and seven of them (37%) experienced irregular sleep patterns, while the other 12 students (63%) had regular sleep patterns. The preliminary study data can describe the phenomenon that occurs in FIKES UPN Veteran Jakarta students, namely the habit of consuming coffee and high screen-time that which can cause irregular sleep patterns. Therefore, this study investigates the relationship between coffee drinking habits, screen time activities, and student sleep quality in the new normal era since 2020 and continues to this day (since COVID-19, the learning system is via online and anywhere, mostly done in cafes). until now, still using gadgets. At UPNVJ, there is an electronic platform for the learning process, and it continues to this day (since COVID-19, the learning system is via online and anywhere, mostly done in cafes). until now, still using gadgets. At UPNVJ, there is an electronic platform for the learning process so that students are required to use gadgets such as cellphones or laptops in accessing learning materials, and this has led to an increase in a sedentary lifestyle.

Methods

This research utilized a cross-sectional study design, which was conducted from November to January 2022. The population of this study was all active students of the Faculty of Health Sciences UPN Veteran Jakarta, which amounted to 1,614 students. The sample number used in this study amounted to 267 students based on the Proportionate Stratified Random Sampling technique. The inclusion criteria of this study are active students Faculty of Health Sciences UPN Veteran Jakarta in 2021. The dependent variable of this study is sleeping pattern quality, measured by the Pittsburgh Sleep Quality Index (PSQI) questionnaire. According to Setyowati & Chung (2020), the PSQI index is valid for Indonesian adolescent sleep quality measurement (Setyowati & Chung, 2021). Because of the data being un-normally distributed, the cutoff using median value, if the total score is <31, then the sleep pattern is good, and if the total score is ≥ 32, then the sleep pattern is bad.

The independent variables in this study consisted of coffee consumption (light or heavy) and screen

time (moderate or excessive). The cut-off on the coffee consumption variable was determined by looking at the median value, which is 9. So it can be said that light coffee consumption if the total score on the questionnaire is ≤ 8 and poor coffee consumption the total score is ≥ 9, which is measured by the frequency of consuming coffee (1-3 cups or > 3 cups), the type of coffee consumed (black coffee, mixed coffee or other types of coffee drinks), the dose of coffee used (1 tea spoon, 2 tsp, 3 tea spoon or 1 pack) and the time of consuming coffee (morning, afternoon, evening or night). Cut off Screen-time based on media value is moderate if the total score on the questionnaire is < 12, and for excessive screen-time, the total score is≥ 13.

This study used univariate to bivariate analysis. In univariate analysis, we use analysis to see the distribution and frequency of the variables studied, and chi-square for bivariate analysis to see the relationship of independent variables to the dependent variable.

Results

This research found that based on PSQI score measurements, as many as 143 students (53.6%) experienced poor sleep patterns, while respondents who suffered from good sleep patterns numbered as many as 124 students (46.4%). Most respondents are female (80.5%) and come from 6 study programs. Most students have heavy coffee consumption habits (56.2%) and excessive screen time activity (57.3%) (see Table 1).

Table 1. Respondent Characteristics, Coffee Consumption, Screen Time and Sleep Quality Score

Respondent Characteristics	n	%
Gender		
Male	52	19.5
Female	215	80.5
Study Program background		
Nursing Profession	16	6.0
Public Health	82	30.7
	56	21.0
Nutrition	22	8.2
Physiotherapy	23	8.6
Nursing Diploma	68	25.5
Nurse bachelor Program		
Coffee Consumption		
Light	117	43.8
Heavy	150	56.2
Screen time		
Moderate	114	42.7
Excessive	153	57.3
Sleep Quality		
Good	124	46.4
Poor	143	53.6

Description: n = number of samples / frequencies

The percentage of students who consume heavy coffee is greater in having poor sleep patterns, namely 92 students (61.3%), compared to students who consume light coffee, as many as 51 students (43.6%). The chi-square test on light coffee consumption showed a p-value of 0.006, which means $p < 0.05$. These results show a correlation between coffee consumption and sleep patterns. From the statistical test results, the value of POR is = 2.053 (95% CI: 1.256 - 3.356). So it can be said that students who consume heavy coffee have a 2.053 times greater risk of having poor sleep patterns compared to students who consume light coffee.

The research obtained that most students of the Faculty of Health Sciences UPN Veteran Jakarta do excessive screen time. The statistical test resulted in a p-value of 0.018; POR value of 1.863 (95% CI: 1.140 - 3.044), which means that there is a significant correlation between screen-time and sleep patterns. Based on its nature, screen time is categorized as interactive screen time and passive screen time (see Table 2).

Table 2. Association of Respondent's Gender, Coffee Consumption, and Screen Time Activity

Respondent's Gender, Coffee Consumption, and Screen Time Activity		Sleep Quality		Chi square
		Good	Bad	
Gender	Male	32 (61.5%)	20 (38.5%)	0.141
	Female	92 (42.8%)	123 (57.2%)	
Coffee consumption	Light	66 (56.4%)	51 (43.6%)	0,006 (POR:2,05; CI:1.26—3.36)
	Heavy	58 (38.7%)	92 (61.3%)	
Screen time activity	Moderate	63 (55.3%)	51 (44.7%)	0,018 (POR:1,863 CI:1.14 – 3.04)

This research found that based on PSQI score measurements as many as 143 students (53.6%) experienced poor sleep patterns, while respondents who suffered from good sleep patterns as many as 124 students (46.4%). Most respondents are female (80.5%) and comes from 6 study program. Most students have heavy coffee consumption habits (56.2%) and excessive screen time activity (57.3%) (seen Table 1). Marelli et al., (2021) study in Italy found that the prevalence of sleep disorders in college students had increased significantly during the COVID-19 pandemic before 24% to reaching 40%, while administrative staff before the COVID-19 pandemic experienced sleep initiation difficulties of only 15% now increased to 42% (Marelli et al., 2021).

Sleep problems have a clear correlation with mental health, psychiatric illness, and disorders related to anxiety and mood. In addition, it was found that spending a lot of time on the Internet is associated with poor sleep quality and may further lead to increased psychological distress (i.e., stress, anxiety, and depression) among young adults. Poor use of the internet can also negatively affect circadian rhythms

causing insomnia as well as circadian rhythms leading to insomnia as well as other sleep disorders. As a result of the COVID-19 pandemic, there has been a decrease in face-to-face social interactions and an increase in time spent indoors, resulting in time spent indoors, resulting in an increased reliance on social media and reliance on social media and online entertainment platforms for social interaction, which affects which also affects one's sleep patterns (Tahir et al., 2021).

Sleep quality is a significant factor in academic performance among college and university students. A study by Paudel et.al (2022) found that poor sleep quality is associated with lower academic performance among non-depressed university students (Paudel et al., 2022). Another study by Hershner (2020) found that sleep quality is associated with academic performance among first-year medical students (Hershner, 2020). Therefore, college and university students must be concerned about their sleep quality to improve their academic performance.

Coffee consumption has a significant correlation with sleep quality because the caffeine in coffee has a stimulating effect on the central nervous system and metabolic system. Coffee consumption can lead to sleep disturbances. According to Drake et.al (2013) research, there was severe sleep disturbance regarding the 400 mg caffeine consumption 30 minutes before bedtime. Lifestyle influences have encouraged students to the consumption of caffeinated products, especially coffee and energy drinks (Drake et al., 2013).

Similarly, a nationally representative study in the United States found that regular caffeine use decreased subjective sleep quality and increased sleep latency (Chaudhary et al., 2016). However, the effects of caffeine on sleep can depend on the timing and amount of consumption (Weibel et al., 2021).

Caffeine can have both positive and negative side effects on body metabolism processes. A study by Oktaria (2019) among 13 men and 11 women found that 20% of consumers suffered from heart palpitations, 5.7% of consumers suffered from headaches, 10% of consumers suffered from insomnia, 5.7% suffered from tremors, 2.8% suffered from anxiety, and 4.2% experienced nausea and vomiting (Oktaria, 2019).

According to Liveina (2014), there are a variety of alibis for individuals to consume coffee or caffeine-containing beverages, among others, not sleeping the night before, habit or to increase energy, before exams the night before, habit or to increase energy, before exams or completing assignments, recreational and others or completing assignments, recreational and others. Another reason is to reduce drowsiness while driving or to improve mood (Liveina, 2014).

This study also found that 57.3% of students have excessive screen time activities. Higher education learning during the COVID-19 pandemic is conducted online. Therefore, it can increase the use of screen-time in students, namely mobile phones, tablets and computers or laptops. The gadgets are not only used for learning activities, but are used for other activities such as entertainment (Tasya et al., 2021).

In the past year, there has been an increase in the availability and use of electronic media such as mobile phones, TVs, laptops and video games. use of electronic media such as mobile phones, TVs, laptops, and video games. Screen-time is the time spent in front of a screen. One of the activities that can disrupt sleep patterns is screen time. This can occur if screen time is done > 2 hours per day (Julia, 2017). Screen

time with excessive time allocation, namely ≥ 2 hours per day will cause sleep disturbances in the form of shortened sleep time, impaired individual sleep quality, shortened sleep time, shortened sleep time, and shortened sleep time. shortening, impaired individual sleep quality, delayed sleep time, and other sleep disorders. other sleep disorders.

The results showed that most students of the Faculty of Health Sciences UPN Veteran Jakarta do excessive screen time. The statistical test resulted in a p-value of 0.018; POR value of 1.863 (95% CI: 1.140 - 3.044), which means that there is a significant correlation between screen-time and sleep patterns. Based on its nature, screen time is categorized as interactive screen time and passive screen time. Some hypotheses state that screen time that is (chatting, surfing the internet, playing video games) will have a greater influence in reducing sleep time when compared to passive screen time (watching television or films) (Istiqomah & Lisiswanti, 2017).

The results of the study are also in line with a study conducted by Su et.al (2022) that students' screen time for both academic and non-academic purposes increased during both school closures and after schools' reopening compared to the pre-pandemic time (So et al., 2022). In line with Balbina (2021), who reports that most respondents with low levels of gadget use—26 people (89.6%)—had good sleep quality, whereas just a tiny percentage of respondents with low levels of gadget use—3 people (10.3%)—had poor sleep quality. On the other side, 21 respondents (87.3%) with high levels of device use reported having poorer-than-average sleep. 21 individuals (87.5%). According to the analysis's findings, there is a substantial association between kids at Citra Bangsa Christian Elementary School in Kupang 30's quality of sleep and their usage of gadgets, with a p value of 0.000 (p 0.05) indicating this (Balbina, 2021).

As for what is crucial to be carried out so that students can regulate themselves from addiction to internet use, namely by making a schedule for using the internet and must be able to control according to the needs of adolescents where internet usage should not be allowed until late at night so that it can improve adolescents' sleep patterns become good (Diarti et al., 2017).

Limitations

This study did not examine the serving type of coffee consumed by respondents, so it could not explain the effect of coffee consumption based on the type of coffee and its dose.

Conclusion

There is a significant relationship between coffee consumption and screen time with sleep quality among health sciences faculty at the college. Therefore, controlling coffee consumption and screen time activities is necessary for good sleep quality. This study recommended that university management reduce screen time for their students.

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A.A; writing—review and editing, A.A & R.W.; visualization, N.A.; supervision, A.A.; project administration, N.S.; funding acquisition, N.S. All authors have read and agreed to the published version of the manuscript."

Declarations

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Qualitative Article

Evaluation of Waiting Time for Outpatient Drugs on Service Quality in Pharmacy Installation of Cempaka Putih Islamic Hospital, 2024

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Abstract

Background: Drug waiting time is one of important services in pharmaceutical services. The number of patients who come and number of prescriptions that must be served makes Cempaka Putih Islamic Hospital have obstacles in serving outpatients including BPJS and Non BPJS patients so waiting time for drugs still long and has impact on reducing the quality of Pharmaceutical Installation services. **Objective:** This study aims to evaluate waiting time for outpatient drugs on service quality at Cempaka Putih Islamic Hospital Pharmacy Installation**.**
Design and Methodology: This research was conducted using descriptive qualitative method with selection of informants using purposive sampling technique. The informants involved included Head of Pharmacy, Pharmacists, officers, and patients.
Findings: The results showed that average waiting time for concoctions was 80.5 minutes, which is not accordance with Minimum Service Standards, which is less than 60 minutes. The average waiting time for non-concocted drugs is 101.7 minutes and is not accordance with the Minimum Service Standards of less than 30 minutes.
Conclusion and Implications: The long waiting time because adjustment of information system, number of prescriptions, incompatibility of prescriptions with the National Formulary, and unavailability of drugs. Strategies that can be maximizing Drug Procurement Plan, training on SIMRS, and conducting patient satisfaction surveys on Pharmacy Installation.

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Introduction

In attempt to serve patients, all units engaged in a hospital must maximize service to patients in accordance with Standard Operating Procedures (SOP) and be able to reach all patients including outpatients and inpatients, including the Hospital Pharmacy Installation (IFRS) in optimizing its services. Pharmacy services are one of the services that can support the quality of quality services realized by pharmacy services and short waiting times for taking concoctions and non concoctions (Nurjanah et al., 2016). When redeeming or waiting for compounded and noncompounded drugs for a relatively long time, patients will feel bored, tired, and stressed. These complaints can create a negative perception of the quality

of Pharmacy Installation services, reduce the quality of hospital services, and affect patient trust (Arini et al., 2020). According to Permenkes No.30 of 2022 concerning National Indicators of Health Service Quality, quality services are health services for the community that are able to improve health outcomes optimally, referring to established service standards, to fulfill patient rights and obligations.

Waiting time in pharmaceutical services is the time required to complete a prescription drug process starting from the submission of a prescription to the delivery of the drug (Purwanto et al., 2015). Discrepancies in patient waiting time can be caused by the delay component, namely Pharmacy Installation officers working on previous prescriptions or carrying out other activities. Other influencing factors are Human Resources (HR) who are not yet dexterous, empty drug stocks and mechanisms that are not in accordance with established procedures (Faramita & Wiyanto, 2016).

World Health Organization (WHO) created guidelines on Quality Assurance of Pharmaceuticals to serve as a reference in ensuring timely and efficient prescription services. According to the guidelines, the Pharmacy Installation must complete prescriptions in a timely manner and prevent delays that may affect waiting times without compromising the accuracy of the prescribed drugs. Good Pharmacy Practice (GPP) principles emphasize the importance of optimal pharmacy service standards. Staff must ensure that the drugs given to patients improve patient safety and well-being (World Health Organization, 2023).

According to the Decree of the Minister of Health Number 129 of 2008 concerning Minimum Service Standards (SPM) for Pharmaceutical Services, the waiting time for non-concocted drugs is a maximum of 30 minutes while concocted drugs are a maximum of 60 minutes (Purwanto et al., 2015). The long duration of drug waiting time can reflect the process of pharmaceutical labor in providing services to patients. Decree of the Minister of Health Number 129 of 2008 concerning Hospital Pharmacy Service Standards, states that the Hospital Pharmacy Installation is one part of hospital services that focuses on patient services, drug provision, and provides services that can be reached by all levels of society (Nurjanah et al., 2016).

Based on the description above, it can be concluded that drug waiting times that are not in accordance with Minimum Service Standards (MSS) are important matters related to service quality in health institutions. Long waiting times for drugs are included in wasting time. Wasting time occurs due to various factors, one of which is the number of patients and the number of prescriptions that must be served. This is in accordance with the results of a preliminary study conducted by researchers on November 2, 2023 at the Cempaka Putih Islamic Hospital. Information was obtained that the number of prescriptions that must be served in the January-October 2024 timeframe is 168,688 prescriptions for outpatients.

The number of prescriptions that must be served makes the Cempaka Putih Islamic Hospital have obstacles in serving outpatients so that the waiting time for drugs is not as it should be. Cempaka Putih Islamic Hospital is a privately owned type B hospital. Preliminary studies conducted by researchers on 2 patients, the waiting time for patient A's medicine with the type of non-recombinant medicine was 2 hours

29 minutes 57 seconds while the waiting time for patient B's medicine with the type of compounded medicine was 2 hours 54 minutes 18 seconds. This is of course with the Minimum Service Standards (SPM) KEPMENKES No.129/Menkes/SK/II/2008. And there has never been research on this matter. Therefore, researchers feel the need to conduct research on evaluating drug waiting times that affect service quality at the Cempaka Putih Islamic Hospital Pharmacy Installation.

Methods

Study Design

This type of research is a qualitative approach. The selection of qualitative methods is in accordance with the research objectives to gain an in-depth understanding of the waiting time for outpatient drugs on service quality.

Study Setting and Period

This research was conducted at the Pharmacy Installation of Cempaka Putih Islamic Hospital, Central Jakarta City. The research time was during November-December 2024.

Participants and Sampling

Pemilihan informan menggunakan teknik purposive sampling dengan kriteria inklusi dan kriteria ekslusi sehingga menghasilkan 13 informan yang terdiri dari Kepala Farmasi Rawat Jalan, Apoteker, Petugas, Pasien BPJS dan Pasien Non BPJS pada Rumah Sakit Islam Cempaka Putih.

Data Collection

Selection of informants using purposive sampling technique with inclusion criteria and exclusion criteria resulted in 13 informants consisting of the Head of Outpatient Pharmacy, Pharmacists, Officers, BPJS Patients and Non BPJS Patients at Cempaka Putih Islamic Hospital.

Data Analysis

The first step is to collect research results using document review techniques, in-depth interviews, and observation. The second step is to reduce data that is not relevant to the research topic. The third step is to present the data in the form of graphs, tables, or narrative text. The last step used was to compile research conclusions and verify the data.

Ethical Consideration

This research has been approved by the Research Ethics Committee of the National Development University “Veteran” Jakarta with number 520/XII/2024/KEP.

Results & Discussion

Waiting time for medication is the time it takes for a patient to submit a prescription until they receive their medication. Long waiting times can cause dissatisfaction because they reflect how the hospital manages various aspects of service according to the needs and expectations of patients. In addition, waiting time can reflect the efficiency of the service system in the hospital (Bustani et al., 2015). Long waiting times will affect the quality of service provided to patients as evidenced by the Service Quality (SERQUAL) method, namely Tangibles, Reliabiility, responsiveness, assurance, Empathy (Lestari, 2018).

Input

Human Recources

Pharmaceutical workers at the outpatient Pharmacy Installation consist of 12 Pharmacists and 11 Officers with a total of 23 people for Al-Falah Pharmacy and 2 Pharmacists and 7 Officers with a total of 9 people for Raudhah Pharmacy. Then, the total pharmacists and officers in the outpatient pharmacy installation are 14 pharmacists and 18 officers with a total of 32 people. All officers have carried out their duties in accordance with their respective job desks and work together to serve patients in accordance with established procedures. The number of officers involved in pharmaceutical services is appropriate. According to the Regulation of the Minister of Health of the Republic of Indonesia Number 72 of 2016 concerning Pharmaceutical Service Standards in Hospitals, an outpatient pharmacist should ideally handle 50 patients in 1 day including pharmaceutical services for making drug prescriptions and delivering drugs (Kemenkes RI, 2016).

Cempaka Putih Islamic Hospital requires every Pharmacy Officer to attend a minimum of 20 hours of training within 1 year with a target of 3-4 times a year. This training system is carried out by all officers in turn at each training. Every day pharmacists must serve 400-600 prescriptions handled by 14 pharmacists for BPJS and Non BPJS patients with the number of outpatient prescriptions that must be served in the January-October 2024 timeframe is 168,688 prescriptions including BPJS and Non BPJS patients.

Humans involved in the waiting time process including prescription receipt, drug packaging, and drug delivery require a supportive educational background, as well as adequate work experience to be able to perform tasks efficiently and on time. Officers with educational backgrounds that are relevant to their fields have better knowledge because these officers understand their duties and functions (Prilia Hia, 2022). The work experience possessed will support the service process to be faster and more efficient (Dhinta Feritsya Chita et al., 2022).

Financial Resources

The allocation of funds used in the process of pharmaceutical services and drug procurement to support drug waiting times at the Outpatient Pharmacy Installation has been running well. Every year there will be a budget plan which will then be reported at the end of the year how it is implemented. This

allocation of funds is used for the procurement of drugs and the needs of the Pharmaceutical Installation that support services. If the drug stock has run out, then submit a purchase to the Logistics Party. The role of finance is related to drug procurement management, which if the fulfillment of drug procurement is not carried out properly, then spending cannot be controlled properly (San et al., 2020).

Information Resources

Regulations, procedures, and Standard Operating Procedures (SPO) are used as a reference in carrying out pharmaceutical services, including regarding drug waiting times and monitoring and evaluation activities carried out. The Operational Service Standards (SPO) are included in the Unit Quality Indicators reported by the Pharmacy Manager every month or every week. Based on the document review conducted with Document Number SPO/RSIJCP/FMS/019, the target set in the Unit Quality Indicator is that the waiting time for BPJS patients for concocted drugs is less than 120 minutes, BPJS patients for non concocted drugs is less than 90 minutes, Non BPJS patients for concocted drugs is less than 45 minutes and Non BPJS patients for non concocted drugs is less than 20 minutes. Maximum implementation of Standard Operating Procedures will have an impact on the quality of patient health (Ikhsan, 2022).

In serving patient prescriptions, the Pharmacy Installation refers to the Hospital Formulary for JKN (National Health Insurance) patients. The information technology system used is SIMRS, which functions to speed up patient waiting times in obtaining health services in outpatient clinics and pharmacies. This system is expected to improve efficiency and overall service quality, but the Pharmacy Installation is still adapting to the latest system so that the waiting time for drugs becomes longer than usual (Suriani et al., 2023).

Material Resources

The facilities and infrastructure used are not yet adequate, there are still things that need to be improved and added to minimize the waiting time for medicine. Officers need new computer equipment because there are changes to the SIMRS system that require more adequate equipment so that there are no errors or loss of signal when performing services. Research by (Arini et al., 2020) that inadequate facilities and infrastructure can affect waiting times to be longer.

Procurement of drug stocks is sometimes unavailable, especially for BPJS patients. The hospital is having difficulty getting the Miniaspi drug to help prevent blood clots. This is partly because drug distributors prioritize government hospitals to supply drugs. The solution is to provide other drugs of the same type to BPJS patients because there is a shortage of stock of the drug. However, the Cempaka Putih Islamic Hospital always plans drugs in the RKO (Drug Needs Plan) every year.

Process

Compounded Medicine Waiting Time

Compounded medicine waiting time is the service of compounded prescriptions involving the compounding of additional drugs as part of the process. From the time the prescription is given until the medicine is received by the patient, the waiting time is a maximum of 60 minutes.

No.	Patient Code	Category	Length of Waiting Time
1.	P1	BPJS	200 Minutes
2.	P5	Non BPJS	26 Minutes
3.	P6	Non BPJS	48 Minutes
4.	P7	Non BPJS	48 Minutes
	Average		**80.5 Minutes**

Based on the table above, the average waiting time required by patients from submitting prescriptions to getting concoction-type drugs is 80.5 minutes. This is not in accordance with the Minimum Service Standards KEPMENKES No.129/Menkes/SK/II/2008, namely the maximum waiting time for concoction drugs is served in a period of less than 60 minutes. Based on the table, it is known that outpatients using BPJS have a longer waiting time compared to Non BPJS outpatients. BPJS patients wait longer for medicine because of the large number of prescriptions every day. This occurs because of differences in the administrative flow that must be carried out (Cikra Ikhda Nur Hamidah Safitri et al., 2024).

Then, the waiting time for compounded drugs tends to be longer than the waiting time for non-compounded drugs because it requires calculating the drug dose, weighing the drug ingredients, and compounding the drug (Citraningtyas & Gayatri Jayanto, 2021). As well as adjustments to the dosage listed in the National Formulary. As the results of research conducted by (Sa'diyah & Nuraini, 2021) that the suitability of prescriptions with the National Formulary is very important because it can improve the quality of health services. According to KEPMENKES No.129/Menkes/SK /II/2008 that the target of prescription conformity with the National Formulary is 100% for health service standards in hospitals (Kemenkes, 2008).

Waiting Time for Non-Compounded Drugs

Waiting time for noncompounded drugs is a noncompounded drug prescription service that refers to a drug prescription service that does not involve the process of compounding additional drugs. Starting from the provision of drug prescriptions until the drug is received by the patient, the maximum is 30 minutes.

No.	Patient Code	Category	Length of Waiting Time
1.	P2	BPJS	153 Minutes
2.	P3	BPJS	151 Minutes
3.	P4	BPJS	93 Minutes
4.	P8	Non BPJS	10 Minutes
	Average		101.7 Minutes

Based on the table above, the average waiting time required by patients from the submission of prescriptions to the collection of non-recipe drugs is 101.7 minutes. This is not in accordance with the Minimum Service Standards (SPM) KEPMENKES No.129/Menkes/SK/II/2008, namely the waiting time required for patients to wait for non-recipe drugs is less than 30 minutes.

The surge of patients usually occurs around 10 am to 2 pm because at that time many hospital clinics open their practices at the same time. Then on Monday there is a surge of patients exceeding the usual day, especially if it is at the end of the month, the patients will increase because many patients do routine monthly controls at the end of the month. For Non BPJS patients, there is a surge of patients every Saturday because the majority of Non BPJS patients come during the weekend. The waiting time for medicine or pharmaceutical services will be influenced by the day of service (Muyasarroh et al., 2020).

Output

Tangibles

Direct evidence is the ability to provide real services in the form of physical facilities that can support patient comfort and affect service quality. In this waiting time pharmaceutical service, the patient's waiting room is something that must be considered in ensuring comfort while waiting for medication. Patients feel that the facilities in the pharmacy are good and clean. Then if patients are surging, the Pharmacy waiting room is not enough to accommodate all patients so there are still many patients waiting by standing or sitting in the hospital hallway. Improvement of facilities and infrastructure is carried out so that patients feel comfortable and satisfied with the service (Asti et al., 2024).

Reliabiility

Reliability is the ability of service providers to provide the right service which will affect the quality of service to achieve patient satisfaction. The service provided by the officer is good and no patient has ever experienced drug errors or side effects from the drugs given. This is indicated by the thoroughness of each drug and dose listed on the prescription and ensuring that each patient gets drugs that are in accordance with the patient's medical needs. No patient has ever experienced an error in drug administration in terms of the type of drug, dose, or method of use.

To date, there have been no reported cases of adverse events caused by the drugs administered by the Officers. This reflects a high level of accuracy, professionalism and responsibility in carrying out their

duties in providing safe and quality health services. Based on the observation of the calculation of drug waiting time, there is a significant difference between the drug waiting time of BPJS and Non BPJS patients. This can be caused by several factors such as human resources, type of prescription, number of prescriptions, and drug availability (Najib et al., 2024).

Responsiveness

Responsiveness is showing readiness in providing services and assistance to patients and providing accurate information that will have an influence on service quality. Officers provide services and respond to patient questions quickly, and patient requests are fulfilled immediately while still following procedures and service flow. In addition, there are patients who complain about the long waiting time for the drug to the officer. In response to the complaint, the officer quickly provided a clear and informative explanation of the situation, one of which was by showing the queue on the monitor screen so that the patient could easily monitor the extent to which the drug was being processed. When officers are alert to meet the needs of patients including providing the information needed, it will improve service quality (Manta et al., 2024).

Assurance

Assurance is the ability of service providers to build patient trust. Such as compliance with Standard Operating Procedures (SPO) to carry out pharmaceutical services in ensuring patient comfort and safety. The delivery of information about drugs such as dosage, side effects, and how to use them must be conveyed to the patient so that the patient has knowledge about the drugs consumed. If this information is not conveyed, it can cause a decrease in service quality because it is not in accordance with SPO and can endanger the patient's condition if serious side effects occur (Asti et al., 2024).

Empathy

Empathy is paying attention to the patient's needs and understanding the patient's condition. Officers are good at showing their concern for the patient's condition, such as being treated politely and kindly and listening to the patient's complaints. This attitude can show empathy and build trust between patients and staff. Motivation provided from officers plays an important role in the patient's recovery and understanding how to maintain their health so that the disease does not recur. There is a need for soft skills development training for officers to increase social awareness (Nuraini et al., 2021).

Supporting Factors

Adequate Human Resources will be a supporting factor in reducing waiting times. Based on the results of the study, the quality of officers can be seen based on educational backgrounds that are in accordance with their fields and length of work also affects because officers will better understand the workflow and service process. The number of pharmaceutical personnel is one of the important supporting factors in realizing optimal pharmaceutical services, so as to shorten the waiting time for patients to receive drugs (Citraningtyas & Gayatri Jayanto, 2021). To overcome the long waiting time for medicine, the Cempaka Putih Islamic Hospital has created several solutions to overcome this. First, there is a Home service service. This Home service is a service offered to deliver medicine to the patient's address for

a fee according to the distance traveled without the patient having to wait at the hospital. Second, there is a drug collection the next day. This drug collection is carried out in the room next to the Mushola.

Inhibiting Factors

In the implementation of the service process, there are factors that can hinder the drug waiting time process. The first factor is the Information Resources component, namely the adaptation of the new SIMRS (Hospital Management Information System) system which was just implemented in November. This makes officers still in the stage of adaptation or introduction to the new system so that it takes longer to input data. Problems with software and hardware errors will extend the waiting time for drugs, especially if there are problems inputting drugs into the system (Roselina et al., 2021).

The second factor that inhibits waiting time for drugs is the number of prescriptions that spike at certain hours. At the Jakarta Islamic Hospital Cempaka Putih Pharmacy Installation, the number of visiting patients will spike at 10 am to 2 pm. One of the factors that affect waiting time is the doctor's practice schedule which takes place simultaneously (Bachtiar et al., 2022). The third factor that inhibits waiting time is the incompatibility of prescriptions with the National Formulary. If the prescription is not in accordance with the National Formulary, it will have an impact on the quality of service provided by the Pharmacy Installation (Putri S, 2023).

Another factor that hampers the waiting time for drugs is the unavailability of drug stocks in the Pharmaceutical Installation. Often the Pharmacy Installation runs out of drugs or drugs are still in the Pre Order stage, making Officers have to change to other drugs of the same type. Pharmaceutical installations must maximize the Drug Procurement Plan (RPO), which is an estimate of one year's drug needs based on the calculation of the average annual drug usage and the remaining stock at the end of the year (Kemenkes RI, 2019).

Strategy

Strategies that can be carried out in strengthening the understanding and ability of officers require training related to the use of the Hospital Management Information System (SIMRS), especially for officers in charge of inputting data. By improving the ability and understanding of officers through training, it is expected that it can be applied optimally which will have an impact on waiting times that are not too long. Education and training related to SIMRS needs to be carried out in order to improve the ability of Human Resources so that they can provide services more optimally (Ode et al., 2024).

In the Material Resources component, the procurement of drug stocks should be given more attention so that there are no drug vacancies for a long period of time. Planning for drug needs needs to be optimized in supporting pharmaceutical services and reducing waiting times (Sabrina et al., 2024). Pharmaceutical service facilities and infrastructure must be able to guarantee the provision of quality services and in accordance with the provisions of the applicable legislation in Permenkes No.72 of 2016 (Shulihah, 2024).

The patient's experience in waiting for medication needs to be surveyed on patient satisfaction and the quality of service provided by the Pharmacy Installation, including aspects of waiting room comfort, service speed, and communication between officers and patients. The survey results can be used as a basis for continuous evaluation and improvement, such as increasing workflow efficiency or procuring technology that supports the pharmacy installation.

Conclusions

The implementation of pharmaceutical services for drug waiting time for outpatients, which includes BPJS and Non BPJS patients, is calculated from the time the patient submits the prescription until the patient gets the medicine. This process starts from data entry, prescription verification, drug compounding, rechecking drug dosage, drug packaging, and drug delivery. The waiting time for compounded drugs averaged 80.5 minutes for BPJS and Non BPJS patients and the waiting time for noncompounded drugs averaged 101.7 for BPJS and Non BPJS patients. This is not in accordance with KEPMENKES No.129/Menkes/SK/II/2008, namely the waiting time for concoction drugs is less than 60 minutes and the waiting time for non-recoction drugs is less than 30 minutes.

Waiting times that are not yet appropriate are caused by inhibiting factors, namely the adaptation of the new information system through SIMRS, the large number of prescriptions, the incompatibility of prescriptions with the National Formulary and the unavailability of drugs. However, this service process is supported by the quality of officers who can be reviewed from the length of work and the appropriate educational background to be able to understand the duties and functions and the flow of services will shorten the waiting time and maximize the utilization of Homeservice and collection the next day. The strategy carried out by the Jakarta Cempaka Putih Islamic Hospital to minimize waiting time is the Homeservice program whose price is in accordance with the distance traveled and the next day drug collection program which can be taken a maximum of three days after submission of the prescription. Then, maximize the Drug Procurement Design (RKO) so that there are no drug vacancies for a long period of time and conduct training on the SIMRS information system for officers.

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Qualitative Article

Evaluation of Patient Safety Goals Implementation for Postoperative Inpatient Protection at Bhakti Kartini Hospital, 2023

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Abstract

Background: Patient safety is one of the foundational elements in strengthening health system resilience, particularly in hospital-based care. In Indonesia, the implementation of Patient Safety Goals (PSGs) is mandated as part of national standards to reduce preventable incidents such as infections, complications, and falls—especially among postoperative inpatients who are clinically vulnerable.

Objective: This study aimed to evaluate the implementation of PSGs and their role in protecting postoperative inpatients at Bhakti Kartini Hospital in 2023.

Design and Methodology: This qualitative study employed a descriptive design using triangulated data sources: in-depth interviews with five informants (including health personnel and patients), non-participant observation, and document analysis. Data were analyzed thematically to identify patterns in PSG implementation and factors influencing their application.

Findings: The hospital consistently implemented five out of six PSGs, including patient identification, effective communication, medication safety, surgical accuracy, and infection prevention. However, follow-up assessments related to fall risk were not conducted systematically, potentially affecting patient safety outcomes. Contributing factors included human resource competence and structured SOPs, while barriers involved incomplete incident reporting, communication challenges with elderly or local-language-speaking patients, and infrastructure limitations.

Conclusion and Implications: Strengthening monitoring systems for fall-risk patients, enhancing communication strategies, and optimizing the reliability of material resources are essential for sustaining patient protection practices. These efforts should be positioned as part of broader strategies to improve institutional resilience and quality of care.

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Introduction

Patient safety is increasingly recognized as a critical component of health system resilience. The World Health Organization (2023) estimates that one in ten patients experiences harm during care, with over three million deaths globally attributed to unsafe healthcare annually. These figures underline not

only the magnitude of the issue but also the urgent need to embed safety as a core institutional practice. In low- and middle-income countries, including Indonesia, the challenge of ensuring safe and standardized care is compounded by resource constraints, service variability, and fragmented monitoring systems.

To address this challenge, Indonesia has formalized patient safety within national policy through the Ministry of Health Regulation No. 11 of 2017 concerning patient safety implementation. This regulation requires all healthcare facilities to adopt structured measures, including the six Patient Safety Goals (PSGs) as outlined in the National Hospital Accreditation Standards (SNARS). These goals include: (1) correct patient identification, (2) effective communication, (3) safe use of high-alert medications, (4) accuracy in procedures, (5) prevention of healthcare-associated infections, and (6) reduction of fall risks (Komisi Akreditasi Rumah Sakit, 2018). The systematic application of these goals is integral not only to reducing Patient Safety Incidents (PSIs), but also to enhancing care reliability and institutional sustainability.

Bhakti Kartini Hospital, a Class C private hospital in Bekasi, serves a substantial volume of postoperative inpatients who are inherently at higher risk of experiencing PSIs due to factors such as limited mobility, compromised immunity, and the complexity of post-surgical recovery. Initial documentation in 2023 indicated that while no fall-related incidents were reported among inpatients, follow-up assessments for fall risks were inconsistently performed, raising questions about the reliability of preventive measures. Conversely, other PSG components—such as infection prevention and medication safety—were reportedly implemented with higher consistency.

Given the elevated vulnerability of postoperative inpatients, evaluating how PSGs are implemented in practice is essential to identify potential gaps and inform strategic improvements. This study aims to assess the extent to which Bhakti Kartini Hospital implements PSGs to protect this patient group, while identifying supporting and inhibiting factors in the process. The findings are expected to contribute to institutional learning, while reinforcing the importance of PSG compliance as a pathway toward sustainable and resilient patient care.

Methods

Study Design

This study employed a qualitative descriptive approach to explore the implementation of Patient Safety Goals (PSGs) in the context of postoperative inpatient care. The design was chosen to capture the depth of institutional practices, perceptions of health personnel, and contextual challenges that may not be reflected in quantitative metrics.

Study Setting and Period

The study was conducted at Bhakti Kartini Hospital, a Class C private hospital located in Bekasi, West Java. Data collection was carried out between August and December 2023.

Participants and Sampling

Five informants were selected using purposive sampling, consisting of three health personnel involved in inpatient care and two postoperative inpatients. Inclusion criteria included experience with PSG-related practices and willingness to participate. Informants were chosen to represent both the provider and patient perspectives, thereby allowing for triangulated insight into PSG implementation.

Data Collection

Primary data were collected through in-depth interviews, non-participant observation, and document review. Interviews were guided by a semi-structured protocol, recorded with consent, and conducted in a private setting to ensure confidentiality. Observations were carried out in inpatient wards, focusing on safety practices such as patient identification, communication, medication handling, surgical protocols, hygiene, and fall risk prevention. Hospital documents, including standard operating procedures (SOPs) and internal audit records, were reviewed to support and verify interview findings.

Data Analysis

Data were analyzed thematically through a systematic process of coding, categorization, and interpretation. Transcripts and field notes were reviewed manually, and emerging patterns were grouped under major themes aligned with the six PSG domains. To enhance trustworthiness, both source triangulation (comparing data from patients, staff, and documents) and method triangulation (interviews, observations, and document review) were applied.

Ethical Consideration

This study was approved by the Research Ethics Committee of Universitas Pembangunan Nasional "Veteran" Jakarta, with reference number: 420/XI/2023/KEP. All participants provided written informed consent prior to data collection. Confidentiality and anonymity were maintained throughout the research process.

Results

The results of this study are presented based on thematic categories aligned with the six Patient Safety Goals (PSGs), as well as factors supporting and hindering their implementation at Bhakti Kartini Hospital. These categories reflect both the hospital's current practices and the contextual realities that influence patient safety among postoperative inpatients.

Efforts to ensure correct patient identification were observed to be consistently applied. Patients were provided with identity wristbands containing full name, medical record number, and date of birth. Health personnel routinely verified these identifiers before administering services. This routine was supported by daily handover briefings and reinforced in the unit's operational culture. A nurse explained,

"We check the patient's identity before every intervention, as part of our standard operating procedures."

(**Nurse, Interview #2**)

Communication among health workers was largely effective. SBAR (Situation, Background, Assessment, Recommendation) was adopted as a structured communication tool during shift handovers. Additionally, the TBaK method (Write, Read, Confirm) was integrated into electronic documentation to reduce miscommunication. However, staff reported difficulties in maintaining communication clarity with elderly patients and those who spoke local dialects. One nurse described,

"Sometimes the patient doesn't understand us well, especially older patients or those who speak a different language." **(Nurse, Interview #1)**

The hospital maintained compliance with medication safety protocols, particularly concerning high-alert and LASA (look-alike, sound-alike) medications. The pharmacy unit applied clear visual labels—red for high- alert drugs and yellow for LASA items—and storage was arranged according to risk classification. These measures were monitored under the supervision of the pharmacy head, and any revisions required director-level approval.

"The label colors and storage system really help us avoid confusion, especially for LASA medications."

(Pharmacist, Interview #5)

Surgical safety procedures followed a structured verification process. This included the use of a checklist for confirming the patient, procedure, and surgical site. The preoperative protocol incorporated sign-in, time-out, and sign-out steps, and patients were actively involved in verifying the procedure through site marking and informed consent.

"Before surgery, we go through a full checklist with the patient, including marking the correct surgical site."

(Surgeon, Interview #3)

Infection prevention efforts were supported through adherence to hand hygiene protocols. Health personnel received routine training in line with WHO's six-step handwashing technique. The practice was extended to patients and their families, who were educated by the nursing staff during hospitalization. Observational data confirmed the use of hand hygiene at key care moments.

"We don't just apply it ourselves—we also teach families how to wash their hands properly." **(Nurse, Interview #2)**

However, the most significant gap was observed in the implementation of fall risk assessments. While initial assessments were conducted upon admission, follow-up assessments were often overlooked during the inpatient stay. Some patients classified as at risk did not receive further evaluation or tailored preventive measures. One patient shared,

"They only assessed me at the beginning. After that, no one checked again if I was still at risk." **(Patient, Interview #4)**

This inconsistency in fall-risk follow-up represents a critical shortfall in the hospital's overall safety

performance. A summary of the observed implementation across all six PSG components is presented in Table 1, highlighting the relative strength and weakness areas within the hospital's patient safety system.

Table 1. Summary of Patient Safety Goals Implementation at Bhakti Kartini Hospital

PSG Component	Implementation Status	Supporting Observations
Patient Identification	Consistently implemented	Verified via wristbands; reinforced during handovers
Effective Communication	Largely effective	Use of SBAR and TBaK; some issues with elderly patients
High-Alert Medication Safety	Compliant	Clear labeling and pharmacy oversight
Surgical Procedure Accuracy	Well implemented	Checklist and site marking performed with patient input
Infection Prevention	Adequately applied	WHO-standard hand hygiene enforced and taught
Fall Risk Assessment and Follow-up	Inconsistent	Initial assessment done; follow-up often missing

Additional findings revealed that the implementation of PSGs was supported by competent human resources and structured operational planning. All nurses and doctors held valid licenses and had completed the mandatory 20-hour annual training requirement. Furthermore, the nursing department prepared annual budget plans for PSG-related resources, which were approved by the hospital director.

"We plan for everything in advance—wristbands, disinfectants, and documentation tools are all accounted for."

(Head Nurse, Interview #1)

Conversely, several barriers were noted. Reporting of minor safety incidents was found to be inconsistent.

Some nurses hesitated to report events they considered insignificant, leading to underreporting.

"We often leave out minor incidents because they don't seem urgent." **(Nurse, Interview #3)**

Infrastructure constraints were also highlighted, including noisy air conditioning units, weak internet signals that disrupted documentation systems, and emergency trolleys that locked automatically and delayed response times.

"Sometimes we can't open the emergency trolley fast enough because it locks by itself." **(Nurse, Interview #2)**

These barriers are synthesized in **Table 2** to provide a concise overview of operational limitations impacting PSG implementation.

Table 2. Barriers to PSG Implementation Identified in the Field

Barrier Category	Description	Illustrative Quote

Reporting gaps	Incomplete incident reporting among staff	*"Minor incidents are often left unreported."*
Communication challenges	Elderly and regional-language patients face comprehension difficulties	*"It's hard to communicate when the patient doesn't understand us."*
Infrastructure issues	Noisy ACs, weak internet, self-locking trolleys disrupting workflow	*"Sometimes the emergency trolley just locks itself and can't be used quickly."*

To address these issues, the hospital conducted monthly and quarterly monitoring and evaluation (monev) meetings involving representatives from each unit. While this provided a platform to identify and address challenges, several staff members expressed the need for more targeted and practical training—especially regarding fall-risk assessment and communication strategies with vulnerable patient groups.

"We would benefit from more focused training on fall prevention and how to communicate better with older patients." **(Nurse, Interview #3)**

Discussions

This study aimed to evaluate the implementation of Patient Safety Goals (PSGs) at Bhakti Kartini Hospital and how they contribute to the protection of postoperative inpatients. The findings show that while five out of six PSGs were implemented adequately, the inconsistency in follow-up assessments for fall risk highlighted a critical gap that requires attention. This discussion interprets those findings in light of existing literature, regulatory frameworks, and broader policy relevance.

The consistent application of patient identification protocols, effective communication practices, and compliance with medication safety standards aligns with previous evaluations of safety culture in accredited hospitals (Ahmed et al., 2022; Jodjana et al., 2023). These elements reflect basic structural readiness and adherence to national accreditation guidelines (Komisi Akreditasi Rumah Sakit, 2018). As suggested by WHO (2023), establishing such core safety mechanisms is a fundamental step in minimizing avoidable harm and building institutional resilience.

The engagement of patients and families in surgical verification procedures demonstrates a commitment to patient-centered care. This aligns with national and international guidelines that recommend shared decision-making and patient involvement in safety practices (Kementerian Kesehatan RI, 2017; WHO, 2023). Similar models have been applied in other Indonesian hospitals, including Labuang Baji Hospital, which adopted site marking and KIE protocols as part of standard surgical preparation (Haritsa & Haskas, 2021).

Infection prevention through hand hygiene, though operationally implemented, remains vulnerable to behavioral inconsistency. Training initiatives and supervision have played a critical role in reinforcing compliance, consistent with earlier findings that emphasized education as a key enabler of hygiene

practices (Hadiarto et al., 2021). Nonetheless, challenges persist in ensuring that such practices become an embedded institutional culture rather than periodic compliance behavior.

The most salient finding in this study was the lack of consistency in follow-up assessments for fall risk. Although initial screening was conducted at admission, the failure to maintain periodic reassessment indicates a procedural gap with potentially significant implications. Elderly postoperative patients are especially vulnerable to falls, and the absence of targeted follow-up could compromise recovery and patient trust. Previous studies in public hospitals reported similar challenges, where fall prevention strategies were either reactive or documentation-driven rather than preventive in practice (Wijayanti et al., 2022; Damanik et al., 2021).

This issue highlights a broader systemic concern—the translation of written SOPs into sustained clinical action. Health system resilience is not solely about the availability of procedures but about the system's capacity to adapt, respond, and improve under varying conditions (Dhamanti et al., 2019). From this perspective, resilience depends on the presence of mechanisms such as ongoing risk monitoring, staff empowerment, and feedback loops that ensure dynamic improvement rather than static compliance.

Supporting factors identified in this study—including human resource competence and structured budgeting—suggest that institutional readiness is present. However, readiness alone is insufficient without behavioral reinforcement and accountability. The gap in incident reporting, for instance, indicates a weakness in feedback culture. A resilient system encourages open communication, even about minor incidents, as part of continuous learning (Miandi & Peristiowati, 2022).

Barriers related to communication with elderly or linguistically diverse patients illustrate the intersection between clinical protocols and sociocultural realities. In a multicultural setting such as Indonesia, patient safety initiatives must consider language sensitivity, cognitive limitations, and caregiver involvement. Strategies that promote clearer communication—such as using non-medical terms or engaging family members—have been found effective in bridging this gap (Anzani et al., 2020; Sugiyarto et al., 2020).

From a sustainability standpoint, patient safety is not merely a regulatory obligation but an investment in long-term service quality. The inability to address small procedural failures can lead to costlier corrective measures, reputational loss, and ultimately, diminished trust in health institutions. Incorporating safety into the operational core—rather than treating it as an external compliance metric—enhances sustainability through reduced adverse events and higher patient satisfaction (Huang et al., 2022).

Overall, the findings of this study support the argument that patient safety practices—especially in high-risk groups such as postoperative inpatients—must be maintained as part of a larger institutional framework that values adaptability, communication, and continuous improvement. Addressing observed gaps in fall risk management and incident reporting is not only a matter of protocol adherence but a

necessary step toward building a resilient and sustainable health service delivery model.

Conclusions

This study reveals that Bhakti Kartini Hospital has made substantial progress in implementing five out of six Patient Safety Goals (PSGs), particularly in patient identification, effective communication, high-alert medication safety, surgical accuracy, and infection prevention. These achievements reflect the hospital's commitment to safety standards and its structural readiness in supporting patient care.

However, the inconsistency in follow-up assessments for fall risk among postoperative inpatients remains a significant concern. Despite the availability of protocols and resources, gaps in routine reassessment and preventive intervention indicate weaknesses in operational continuity and patient-centered monitoring. This shortfall is particularly critical for high-risk groups, where safety lapses can lead to preventable harm.

The presence of competent health workers, structured planning, and ongoing evaluations suggests that the foundation for safe care delivery is in place. Nevertheless, the effectiveness of these measures depends on behavioral compliance, interprofessional communication, and proactive safety culture. Constraints such as limited incident reporting, communication barriers with elderly patients, and technical disruptions further highlight the need for adaptive systems that promote continuous vigilance and responsiveness.

Improving patient safety requires not only compliance with standards but also a resilient health service model that integrates routine monitoring, staff engagement, and inclusive communication. Strengthening these areas will not only improve patient outcomes but also contribute to the sustainability and credibility of healthcare delivery in similar institutional settings.

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