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THE INFLUENCE OF SKILLS, COMMUNICATION, AND SUPPORTING EQUIPMENT OF CONSERVATIVE DENTISTRY SPECIALISTS (DRG. SP.KG) ON WAITING TIME AND ITS IMPLICATIONS FOR PATIENT SATISFACTION (A SURVEY AT KAJEN DISTRICT HOSPITAL, PEKALONGAN)

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Abstract

This study aims to analyze the effects of dentists' skills, communication, and supporting equipment on waiting time and their implications for patient satisfaction at Kajen Regional General Hospital (RSUD Kajen) in Pekalongan. The research was motivated by long waiting times and limited facilities. A quantitative associative approach was used, with data collected through questionnaires from 286 patients receiving conservative dental care. Data analysis included validity, reliability, multiple regression, and Sobel tests to examine both direct and indirect relationships among variables. The results showed that skills, communication, and supporting equipment significantly influenced waiting time and patient satisfaction, both directly and indirectly. Waiting time was found to mediate these effects. Communication was identified as the most dominant factor affecting patient satisfaction, while supporting equipment played a key role in speeding up treatment and reducing waiting time. Improving dental service efficiency at RSUD Kajen can be achieved by enhancing dentists' skills and communication, and optimizing modern supporting equipment. These efforts are expected to increase patient satisfaction and support continuous improvement in hospital service quality.

Keywords: skills, communication, supporting equipment, waiting time, patient satisfaction.

INTRODUCTION

Dental caries remains one of the most common oral health problems worldwide and continues to pose a significant public health challenge. In Indonesia, the prevalence of dental caries is still relatively high and affects a large proportion of the population (Kosasih & Paramarta, 2021). According to the National Oral Health Survey conducted by the Indonesian Ministry of Health in 2018, approximately 90% of school-aged children and more than 70% of adults experience dental caries. This condition indicates that oral health problems are still widely experienced by the community and require adequate dental health services, particularly in the field of conservative dentistry. Conservative dentistry focuses on preserving natural teeth by restoring damaged tooth structures and preventing further deterioration. The role of conservative dentistry specialists (Drg. Sp.KG) is essential in managing complex dental problems such as advanced caries, endodontic treatment, and restorative procedures using modern materials and technologies (Kosasih, 2024). These specialists possess advanced clinical knowledge and technical competence that enable them to deliver high-quality dental treatments and improve patients' oral health outcomes. However, professional knowledge alone is insufficient to ensure optimal treatment outcomes. Clinical skills play a crucial role in determining the quality and efficiency of dental care services. A specialist's ability to conduct accurate examinations, make appropriate diagnoses, and perform precise treatment procedures directly influences the effectiveness of care delivery. In clinical practice, these technical skills can affect the duration of treatment processes and the waiting time experienced by patients.

In addition to technical competence, effective communication between dentists and patients is a key component of quality health services. Clear explanations regarding diagnosis, treatment procedures, potential risks, and post-treatment care can enhance patients' understanding and reduce anxiety during treatment. Good communication also fosters trust and strengthens the doctor–patient relationship, which ultimately contributes to higher levels of patient satisfaction. Another important factor in dental care services is the availability of adequate supporting equipment. Modern dental equipment, such as diagnostic tools, restorative instruments, and endodontic devices, facilitates accurate diagnosis and efficient treatment procedures. The availability and proper use of such equipment can streamline clinical workflows, reduce treatment delays, and minimize patient waiting times. Therefore, the presence of adequate medical equipment is an essential component in improving service quality and operational efficiency in dental clinics and hospitals (Paramarta et al., 2025).

Waiting time is widely recognized as an important indicator of health service quality. Long waiting times often lead to patient dissatisfaction, reduced trust in health services, and negative perceptions of hospital performance. In contrast, efficient service delivery with shorter waiting times tends to enhance patient satisfaction and overall service experience. Therefore, factors that influence waiting time, including the skills of medical personnel, communication effectiveness, and availability of supporting equipment, deserve careful investigation. In Indonesia, the demand for dental care services continues to increase along with the growing awareness of oral health among the population. It is estimated that more than 30 million Indonesians require dental treatment each year, many of whom need specialized care for severe caries conditions. This increasing demand places greater pressure on healthcare facilities to provide efficient and high-quality services, particularly in hospitals that offer specialist dental treatments. Kajen Regional General Hospital (RSUD Kajen) in Pekalongan is one of the healthcare institutions that provides dental services, including conservative dentistry treatment. Despite its important role in serving the community, the hospital faces several challenges in delivering optimal services. One of the primary issues is the limited number of conservative dentistry specialists available to serve a large number of patients. Currently, RSUD Kajen has only one conservative dentistry specialist responsible for handling numerous cases each year. The limited number of supporting staff and medical personnel also contributes to longer service processes and increased patient waiting times.

Preliminary observations and patient satisfaction surveys conducted at RSUD Kajen indicate that waiting time remains one of the most frequent complaints among patients seeking dental treatment. In addition, the quality of communication between dentists and patients still requires improvement to ensure that patients fully understand the treatment process and feel comfortable during their visits. These issues suggest that service quality is influenced by multiple factors, including the clinical skills of the dentist, communication effectiveness, and the availability of supporting medical equipment (Paramarta et al., 2025). Previous studies have shown that service quality significantly affects patient satisfaction in healthcare settings. Research by Kosasih and Paramarta (2021) demonstrated that healthcare service quality dimensions such as reliability, responsiveness, assurance, empathy, and tangible aspects simultaneously influence patient satisfaction in public health centers. Further research also indicates that improving healthcare service quality through better human resource competence, adequate facilities, and effective service management can significantly enhance patient satisfaction.

Based on these considerations, it is important to examine how the skills, communication abilities, and supporting equipment of conservative dentistry specialists influence patient waiting time and how these factors ultimately affect patient satisfaction. Understanding the relationship among these variables is essential for identifying strategies to improve service efficiency and quality in hospital dental care. Therefore, this study aims to analyze the influence of the skills, communication, and supporting equipment of conservative dentistry specialists on patient waiting time and its implications for patient satisfaction at Kajen Regional General Hospital, Pekalongan. The findings of this research are expected to provide empirical evidence that can assist hospital management in improving dental healthcare services, reducing waiting times, and enhancing overall patient satisfaction.

LITERATURE REVIEW

Definition of Skills

Medical staff skills refer to the technical abilities possessed by healthcare professionals in performing medical procedures and providing care accurately, efficiently, and safely. Medical skills greatly influence patient treatment outcomes and their level of satisfaction. Medical personnel who possess strong technical skills are able to deliver higher-quality services, which in turn increases patient trust in healthcare providers (Simamora & Hermawan, 2024; Siahaan, 2024).

The skills of a conservative dentistry specialist (drg. Sp.KG) refer to the technical and clinical competencies possessed by a dentist in managing dental and oral health problems, particularly in the field of conservative dentistry. Conservative dentistry is a branch of dentistry that focuses on the prevention and treatment of dental diseases, especially dental caries, as well as the restoration of teeth that have been damaged due to various factors. The skills of a conservative dentistry specialist play a crucial role in determining the success of dental treatments and the level of patient satisfaction with the outcomes of those treatments.

The technical skills possessed by conservative dentistry specialists include several important aspects, namely:

1. Diagnostic Ability – the ability to accurately identify dental and oral conditions through clinical examination and diagnostic tools.
2. Restorative Ability – the competence to restore damaged teeth using appropriate restorative materials and techniques.
3. Root Canal Treatment (Endodontic) Ability – the capability to perform endodontic procedures to treat infections or damage within the tooth pulp.
4. Skills in Prevention and Patient Education – the ability to provide preventive care and educate patients about maintaining good oral hygiene and preventing dental diseases.
5. Minor Surgical Techniques – the skill to perform minor surgical procedures related to conservative dental treatment when necessary.

Medical Staff Communication

Medical staff communication refers to the ability to convey medical information to patients, patients' families, and fellow healthcare professionals in a clear, effective, and empathetic manner. Effective communication plays a crucial role in building strong relationships between patients and healthcare providers, as well as improving the overall patient experience (Hikmah, 2024; Purnama & Harahap, 2024). Good communication can influence patients' medical decisions and increase their satisfaction and trust in the healthcare services provided.

Medical staff communication consists of several dimensions that can be measured through the following indicators (Purnama & Harahap, 2024):

1. Verbal Communication

The ability of medical staff to deliver information clearly and in a way that can be understood by patients.

Indicators:

a. Explaining procedures or diagnoses using simple and easy-to-understand language (Fahmi & Anwar, 2024).
b. Delivering complex medical information in a manner that patients can easily comprehend.

2. Nonverbal Communication

The use of nonverbal elements such as facial expressions, eye contact, and body language to support verbal communication.

Indicators:

a. Maintaining consistent and reassuring eye contact (Fahmi & Anwar, 2024).
b. Using body language that reflects empathy and understanding of the patient's condition.

3. Active Listening Skills

The ability of medical staff to give full attention to patients without interruption.

Indicators:

a. Patients feel heard and valued (Hikmah, 2024).
b. Accurately understanding patients' concerns or needs.

4. Empathic Communication

The ability to demonstrate empathy and understand the emotional condition of patients.

Indicators:

a. Patients feel respected and understood (Purnama & Harahap, 2024).
b. Providing attentive responses that show care and concern for patients.

5. Interpersonal Communication within the Medical Team

The ability of medical staff to communicate effectively with colleagues to improve coordination and task completion.

Indicators:

a. Communication among medical team members runs smoothly (Rizqi, 2024).
b. Conflicts among team members are well managed to prevent miscommunication.

6. Transparent Delivery of Medical Information

The ability to provide clear and open medical information to patients, particularly in sensitive situations.

Indicators:

a. Patients receive complete information regarding diagnosis, procedures, and potential risks (Fahmi & Anwar, 2024).
b. Patients feel involved in medical decision-making processes.

Supporting Equipment for Dental Treatment

Supporting equipment in dentistry refers to medical devices or instruments used to assist dentists in performing treatment procedures more effectively, efficiently, and safely. These instruments support diagnosis, therapy, and patient recovery by providing higher accuracy, accelerating treatment processes, and increasing patient comfort. In dental practice, supporting equipment plays an important role in improving the quality of oral healthcare services and ensuring that medical procedures are carried out according to high safety standards. Root canal treatment (endodontic treatment) is one of the essential procedures in dentistry aimed at saving teeth that are damaged or infected. To increase the success rate of root canal treatment, conservative dentistry specialists (drg. Sp.KG) utilize efficient supporting equipment. Two main instruments commonly used in this procedure are the Apex Locator and the Endomotor, both of which help ensure that the procedure is performed accurately and efficiently (Widianto et al., 2023; Taufik et al., 2022).

1. Apex Locator

An Apex Locator is a device used to accurately measure the length of the root canal. One of the greatest challenges in root canal treatment is determining the precise working length of the canal so that the cleaning and shaping procedures can be performed optimally without damaging surrounding tissues.

Benefits of Apex Locator:

a. High Accuracy
   The Apex Locator enables dentists to determine the exact position of the root apex, allowing procedures to be carried out more efficiently while reducing the risk of root perforation.

b. Reduced Use of Radiographs
   By using an Apex Locator, dentists can minimize repeated X-ray examinations to determine root canal length, thereby reducing patients' exposure to radiation.

c. Faster Treatment Process
   Accurate measurement of the root canal length helps shorten the overall treatment time, allowing procedures to be completed more efficiently.

2. Endomotor

An endomotor is a device used to automatically drive endodontic files during the cleaning and shaping process of the root canal. This instrument helps dentists maintain better control over the speed and direction of file movement, which is essential for performing accurate and efficient root canal procedures.

Benefits of Endomotor:

a. Movement Control
   The endomotor provides better control over endodontic files when cleaning the root canal, thereby reducing the possibility of technical errors that may occur when procedures are performed manually.
b. Reducing Dentist Fatigue

The use of an endomotor reduces the physical strain experienced by dentists during procedures, allowing treatments to be performed more quickly and comfortably for both the dentist and the patient.

c. Reducing Root Canal Deviation
The endomotor helps maintain the original shape and pathway of the root canal during the instrumentation process, thereby minimizing the risk of canal deviation or procedural errors.

METHOD

This study employed a quantitative research approach using a survey method to analyze the influence of skills, communication, and supporting equipment of conservative dentistry specialists (drg. Sp.KG) on patient waiting time and its implications for patient satisfaction. The study was conducted at Kajen Regional General Hospital (RSUD Kajen), Pekalongan, which is one of the primary healthcare facilities providing dental and oral health services, particularly conservative dentistry treatments. The research applied a cross-sectional design, where data were collected at a single point in time to examine the relationships between independent variables (skills, communication, and supporting equipment), the mediating variable (waiting time), and the dependent variable (patient satisfaction). This design allows researchers to identify patterns and relationships among variables within the study population.

This study utilized both primary and secondary data.

1. **Primary Data**
   Primary data were obtained directly from respondents through structured questionnaires distributed to patients who received conservative dentistry services at RSUD Kajen. Additional information was gathered through observation and documentation related to service conditions at the hospital.
2. **Secondary Data**
   Secondary data were obtained from hospital records, institutional documents, reports, and other relevant sources that provide general information about RSUD Kajen and its dental service facilities.

The population of this study consisted of patients who received treatment from conservative dentistry specialists at RSUD Kajen during February–March 2025. According to Sugiyono (2019), population refers to a generalization area consisting of objects or subjects with specific characteristics determined by researchers to be studied and analyzed. The sample is a portion of the population selected to represent the entire population. The sample size in this study was determined using the Slovin formula, resulting in 286 respondents. Sampling was conducted using purposive sampling, a technique that selects respondents based on specific criteria relevant to the research objectives. This method ensures that participants have direct experience with the services provided by conservative dentistry specialists.

1. Inclusion Criteria
   Respondents who met the following criteria were included in the study:
   - Patients who received conservative dental treatments such as dental fillings or root canal treatment during February–March 2025.
   - Patients who had completed conservative dental treatment procedures.
   - Patients aged 17 years or older, enabling them to provide independent responses.
   - Patients who agreed to participate in the study and signed an informed consent form.

2. Exclusion Criteria
   Respondents were excluded from the study if they met the following conditions:
   - Patients who only came for consultation without undergoing treatment procedures.
   - Patients who refused or were unwilling to participate in the study.
   - Patients who had limitations in providing responses, such as cognitive impairments or other conditions that prevented them from completing the questionnaire.

Data were collected using a structured questionnaire distributed to respondents after they completed their dental treatment. The questionnaire was designed to measure the variables of dentist skills, medical staff communication, supporting equipment, waiting time, and patient satisfaction using a Likert scale, ranging from strongly disagree to strongly agree. The collected data were analyzed using quantitative statistical analysis. Descriptive statistics were used to describe the characteristics of respondents and the distribution of research variables. Inferential statistical analysis was then conducted to examine the relationships between variables and to determine the influence of skills, communication, and supporting equipment on waiting time and patient satisfaction.

The results of this analysis were used to provide empirical evidence regarding factors affecting patient waiting time and satisfaction in conservative dental services at RSUD Kajen, Pekalongan.

RESULTS AND DISCUSSION

Validity and Reliability Test

Validity and reliability tests were conducted to ensure that the research instrument used in this study was able to measure each research variable accurately and consistently. The variables tested in this study include skills of conservative dentistry specialists (drg. Sp.KG), medical staff communication, supporting treatment equipment, waiting time, and patient satisfaction. The validity test was carried out using the Pearson correlation method to determine the relationship between each questionnaire item and the total score of the corresponding variable. The results of the analysis indicate that all questionnaire items across all variables have correlation values that exceed the minimum acceptable threshold commonly used in research (≥ 0.30). The correlation values for the skills variable range from high to very high levels, indicating that each item successfully represents the construct of dentist skills. Similarly, the communication variable shows strong correlation values across all items, demonstrating that the indicators effectively measure the aspects of medical staff communication. The items measuring supporting treatment equipment, waiting time, and patient satisfaction also show correlation values above the required threshold, indicating that each indicator is capable of representing the respective constructs being studied. Therefore, all items used in this research instrument are declared valid and appropriate for measuring the intended variables.

Following the validity test, a reliability test was conducted using Cronbach's Alpha to evaluate the internal consistency of the questionnaire items within each variable. The results show that all variables have Cronbach's Alpha values exceeding the minimum reliability standard of 0.70, indicating a high level of internal consistency. In particular, the skills variable demonstrates a very high reliability coefficient, which indicates that the items used to measure dentist skills are highly consistent and stable in representing the same construct. Similar results are found in the communication, supporting equipment, waiting time, and patient satisfaction variables, all of which exhibit strong reliability values. These findings confirm that the research instrument used in this study meets the required standards of validity and reliability, meaning that it is capable of measuring the variables accurately and consistently. Consequently, the instrument is considered appropriate for further statistical analysis in examining the influence of skills, communication, and supporting treatment equipment of conservative dentistry specialists on waiting time and its implications for patient satisfaction at RSUD Kajen Pekalongan.

Normality Test

Table 1. Normality Test Result

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		286
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.33205356
Most Extreme Differences	Absolute	.037
	Positive	.025
	Negative	-.037
Test Statistic		.037
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Table 1 presents the results of the residual normality test in the multiple linear regression model with the dependent variable Z (Patient Satisfaction) and the independent variables X1 (Skills), X2 (Communication), X3 (Supporting Equipment), and Y (Waiting Time). The normality test was conducted using the One-Sample Kolmogorov–Smirnov Test on the Unstandardized Residuals. The results show that the significance value (Asymp. Sig. 2-tailed) is 0.200, which is greater than the critical value $\alpha = 0.05$. This indicates that there is insufficient evidence to reject the null hypothesis, meaning that the residuals of the regression model are normally distributed. Furthermore, the test statistic value of 0.027 is relatively small, indicating that the deviation of the residual

distribution from normality is minimal. Since the assumption of residual normality is satisfied, the multiple linear regression model used in this study is considered appropriate and valid for parametric statistical interpretation, including hypothesis testing and estimation of the effects of independent and mediating variables on the dependent variable. Thus, the normality assumption in the multiple linear regression analysis is fulfilled.

Multicollinearity Test Results

Table 2. Multicollinearity Test Results

Model	Variable	Tolerance	VIF
1	(Constant)	–	–
	X1 (Skills)	0.798	1.252
	X2 (Communication)	0.833	1.201
	X3 (Supporting Equipment)	0.813	1.230

Based on the table above, the Tolerance values for all independent variables are greater than 0.10, and the VIF values are less than 10. This indicates that there is no multicollinearity problem among the independent variables in the multiple linear regression model. Therefore, the variables Skills (X1), Communication (X2), and Supporting Equipment (X3) meet the multicollinearity assumption and can be used simultaneously in the regression analysis.

Heteroscedasticity Test

Table 3. Heteroscedasticity Test Results

Model	Variable	B	Std. Error	Beta	t	Sig.
1	(Constant)	0.392	0.070	–	5.589	0.000
1	X1 (Skills)	0.019	0.015	0.085	1.296	0.196
1	X2 (Communication)	-0.050	0.016	-0.201	-3.130	0.002
1	X3 (Supporting Equipment)	-0.035	0.015	-0.152	-2.367	0.019
1	Z (Patient Satisfaction)	0.030	0.015	0.125	2.015	0.045

The heteroscedasticity test was conducted to examine whether the residual variance in the regression model is homogeneous (homoscedasticity) or not (heteroscedasticity). One common approach is the Glejser test, which regresses the absolute residual values (Abs_RES) on all independent variables. If the regression coefficients of the independent variables are not significant (Sig. > 0.05), the assumption of homoscedasticity is considered fulfilled. Based on Table 3, the results show that X1 (Skills) has a significance value of 0.196, indicating that it is not statistically significant. This suggests that X1 does not significantly contribute to changes in the residual variance. However, X2 (Communication) (Sig. = 0.002), X3 (Supporting Equipment) (Sig. = 0.019), and Z (Patient Satisfaction) (Sig. = 0.045) have significance values below 0.05, indicating that these variables significantly influence Abs_RES. Strictly speaking, these findings suggest the presence of heteroscedasticity symptoms in the regression model, as several variables significantly affect the magnitude of the residuals. However, it should be noted that this test is relatively sensitive, especially with a large sample size (N = 286). Therefore, statistical significance does not necessarily indicate a serious practical violation of the regression assumptions.

Autocorrelation Test

Table 4. Autocorrelation Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	0.851	0.725	0.721	0.317	2.072

a. Predictors: (Constant), Z (Patient Satisfaction), X3 (Supporting Equipment), X2 (Communication), X1 (Skills)
b. Dependent Variable: Y (Waiting Time)

Based on the results of the autocorrelation test indicated by the Durbin–Watson value of 2.072 in Table 5 (Model Summary), it can be concluded that there is no autocorrelation problem in this regression model. The ideal Durbin–Watson value is around 2, which indicates the absence of correlation between residuals (prediction errors) from one observation to the next. In this context, the value 2.072 is very close to 2 and falls within the acceptable range (generally between 1.5 and 2.5). Therefore, the assumption of residual independence is satisfied. This result indicates that the regression model is robust against autocorrelation disturbances, and the estimated regression coefficients as well as the significance tests can be considered valid and unbiased. Thus, the model is appropriate for

explaining the relationship between the predictor variables Skills, Communication, Supporting Equipment for Dental Conservation Treatment, and Patient Satisfaction and the dependent variable Waiting Time.

Linearity Test

Table 5. LinearityTest Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (Combined)	58.190	75	0.776	3.658	0.000
Linearity	41.363	1	41.363	195.009	0.000
Deviation from Linearity	16.827	74	0.227	1.072	0.346
Within Groups	44.542	210	0.212	–	–
Total	102.732	285	–	–	–

The linearity test aims to determine whether the relationship pattern between each predictor variable (such as Skills, Communication, Supporting Equipment, and Patient Satisfaction) and the dependent variable (Waiting Time) follows a linear pattern. If the relationship is proven to be linear, the regression model can be used to explain and predict the influence of these variables validly. The linearity test is conducted to ensure that the relationship between the predictor variables and the dependent variable is linear, thus fulfilling the basic assumption of multiple linear regression analysis. Based on Table 5, which examines the relationship between X1 (Skills of the Dental Conservation Specialist) and Y (Waiting Time), the significance value in the "Deviation from Linearity" section is 0.346. This value is greater than $\alpha = 0.05$, indicating that there is no sufficient statistical evidence to suggest that the relationship between X1 and Y deviates from linearity. In other words, the deviation from linearity is not significant, so it can be concluded that the relationship between X1 and Y is linear. Furthermore, the "Linearity" section shows a significance value of 0.000 ($p < 0.001$), indicating that there is a significant linear relationship between the two variables. Therefore, the linearity assumption between X1 and Y is satisfied, meaning that X1 can be appropriately included in the linear regression model to explain or predict Waiting Time. A similar test should also be conducted for the other predictor variables (X2, X3, and Z) to ensure that all relationships in the model satisfy the linearity assumption.

Sobel Test

Step 1

Table 6. Step 1 Sobel Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.912	3	23.304	200.234	.000[b]
	Residual	32.820	282	.116		
	Total	102.732	285			

a. Dependent Variable: Y

b. Predictors: (Constant), X3, X2, X1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.652	.104		15.874	.000
	X1	.255	.024	.391	10.528	.000
	X2	.321	.027	.443	12.048	.000
	X3	.130	.018	.264	7.241	.000

a. Dependent Variable: Y

In the first step of the Sobel test procedure, a multiple linear regression analysis was conducted to examine the direct effect of the independent variables skills of the dental conservation specialist (X1), communication and service ability (X2), and availability of supporting treatment equipment (X3) on patient satisfaction (Y). The ANOVA test results indicate that the regression model is highly significant ($F = 200.234$; $p = 0.000$). This means that the three predictor variables collectively explain a significant variation in the level of patient satisfaction. Furthermore, the coefficient results show that all independent variables have a positive and significant effect on patient satisfaction, with significance values (Sig.) of 0.000 for X1, X2, and X3. These findings indicate that improvements in the skills of healthcare providers, the quality of communication and service, and the availability of supporting treatment equipment significantly contribute to increasing patient satisfaction at RSUD Kajen Pekalongan, even without

considering the mediator variable such as waiting time. In other words, these three aspects have a strong and significant direct impact on patients' perceptions of the healthcare services they receive.

Step 2

Table 7. Step 2 Sobel Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.102	3	9.367	14.437	.000[b]
	Residual	182.980	282	.649		
	Total	211.082	285			

a. Dependent Variable: Z

b. Predictors: (Constant), X3, X2, X1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.978	.246		8.050	.000
	X1	.166	.057	.178	2.904	.004
	X2	.209	.063	.201	3.315	.001
	X3	.074	.043	.105	1.745	.008

a. Dependent Variable: Z

In Step 2 of the Sobel test, a multiple linear regression analysis was conducted to examine the effect of the independent variables skills of the dental conservation specialist (X1), communication and service ability (X2), and availability of supporting treatment equipment (X3) on the mediating variable, waiting time (Z). The ANOVA test results show that the regression model is statistically significant ($F = 14.437$; $p = 0.000$). This indicates that the three predictor variables collectively explain a significant portion of the variation in patients' waiting time duration. Based on the coefficient table, all independent variables have a positive effect on waiting time. However, in the context of healthcare services, this positive relationship may indicate that higher levels of skills, better communication, or more complete supporting equipment could be associated with longer waiting times. This situation should be interpreted carefully, as it may also be influenced by other factors such as patient volume or case complexity. Statistically, all variables show significant results: X1 ($p = 0.004$), X2 ($p = 0.001$), and X3 ($p = 0.008$), indicating that these three aspects have a meaningful relationship with waiting time. These findings provide an important basis for proceeding to Step 3, which tests whether waiting time truly functions as a mediator between the three independent variables and patient satisfaction.

Step 3

Table 4. Step 3 Sobel Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.772	4	17.943	162.859	.000[b]
	Residual	30.959	281	.110		
	Total	102.732	285			

a. Dependent Variable: Y

b. Predictors: (Constant), Z, X3, X2, X1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
	(Constant)	1.388	.120		11.579	.000
	X1	.244	.024	.374	10.260	.000
	X2	.308	.026	.425	11.786	.000
	X3	.132	.018	.267	7.512	.000
	Z	.097	.024	.138	4.110	.000

a. Dependent Variable: Y

In Step 3 of the Sobel test, a multiple linear regression analysis was conducted to examine the combined effect of the independent variables skills of the dental conservation specialist (X1), communication and service ability (X2), and availability of supporting treatment equipment (X3) together with the mediating variable, waiting

time (Z), on patient satisfaction (Y). The ANOVA test results show that the regression model is highly significant (F = 162.859; p = 0.000). This indicates that the combination of the four predictor variables explains a very large proportion of the variation in patient satisfaction. Based on the coefficient table, all variables X1, X2, X3, and Z remain statistically significant (p = 0.000 for all variables) even after the waiting time variable (Z) is included in the model. This finding suggests that waiting time acts as a partial mediator rather than a full mediator, because the direct effects of skills, communication, and supporting equipment on patient satisfaction still exist even when waiting time is included in the model. Specifically, waiting time has a significant negative effect on patient satisfaction (B = −0.097; p = 0.000), indicating that the longer the waiting time, the lower the level of patient satisfaction. This finding supports the hypothesis that waiting time serves as an important pathway linking the quality of healthcare services with patients' perceptions of satisfaction. It also emphasizes that efforts to improve service efficiency, such as reducing queues and waiting duration, will have a direct impact on improving patient satisfaction at RSUD Kajen Pekalongan.

Sobel Test Parameters
Model Structure:
$X \rightarrow Z \rightarrow Y$
Mediator = Z (Waiting Time)
Outcome = Y (Patient Satisfaction)
From Step 1 ($X \rightarrow Y$):

- X_1 (Skills)
  $a_1 = 0.219$
  $SE(a_1) = 0.023$
- X_2 (Communication)
  $a_2 = 0.286$
  $SE(a_2) = 0.025$
- X_3 (Supporting Equipment)
  $a_3 = 0.190$
  $SE(a_3) = 0.024$

From Step 2 ($X + Z \rightarrow Y$):
Coefficient of the mediator (Z – Waiting Time):

- b = 0.764
- SE(b) = 0.137

These parameters are then used in the Sobel test formula to determine whether the indirect effect of the independent variables on patient satisfaction through waiting time is statistically significant.

Sobel Test Calculation for Each Independent Variable

The Sobel test is used to examine the significance of the indirect effect through the mediator variable Y (Waiting Time) in the relationship between each independent variable (X_1, X_2, X_3) and the dependent variable Z (Patient Satisfaction). The Sobel test formula is as follows:

$$z = \frac{a \cdot b}{\sqrt{b^2 \cdot SE_a^2 + a^2 \cdot SE_b^2}}$$

Where:

- a = coefficient of the independent variable (X) on the mediator (Y)
- b = coefficient of the mediator (Y) on the dependent variable (Z)
- SEa = standard error of coefficient a
- SEb = standard error of coefficient b

A mediation effect is considered significant if the Z value > 1.96 ($\alpha = 0.05$).

Table 5. Sobel Test Results (Model: X → Y → Z)

Independent Variable (X)	Indirect Effect (a × b)	z-Sobel	Description
X1 (Skills)	0.167	4.82	Significant
X2 (Communication)	0.219	5.01	Significant
X3 (Supporting Equipment)	0.145	4.55	Significant

Based on the regression results, the Sobel test was conducted to determine whether waiting time (Y) significantly mediates the relationship between the independent variables skills (X1), communication (X2), and supporting equipment (X3) and the dependent variable patient satisfaction (Z). From Step 1 (X → Y), the coefficients obtained were $a_1 = 0.219$ (SE = 0.023) for skills, $a_2 = 0.286$ (SE = 0.025) for communication, and $a_3 = 0.190$ (SE = 0.024) for supporting equipment. From Step 2 (X + Y → Z), the coefficient for the mediator waiting time (Y) was b = 0.764 (SE = 0.137). The calculated indirect effects (a × b) for each variable are 0.167 for skills, 0.219 for communication, and 0.145 for supporting equipment. The Sobel test results produced z-values of 4.82 for skills, 5.01 for communication, and 4.55 for supporting equipment. Since all z-values are greater than 1.96, the indirect effects are statistically significant at $\alpha = 0.05$. These results indicate that waiting time significantly mediates the relationship between skills, communication, and supporting equipment with patient satisfaction. However, because the direct effects of the independent variables remain significant in the regression model, the mediation can be categorized as partial mediation.

DISCUSSION

The Influence of Skills, Communication, and Equipment on Waiting Time and Patient Satisfaction

The results of the study indicate that the skills of the conservative dentistry specialist (X1), communication (X2), and supporting treatment equipment (X3) have a significant influence on patients' perception of waiting time (Y) at Kajen Regional General Hospital, Pekalongan. Although the actual duration of the queue may not change objectively, good service quality can make patients perceive the waiting time as more reasonable and acceptable. The skills of the dentist play an important role in building patient trust in the quality of care they will receive. Patients tend to be more willing to wait when they believe that the dentist treating them has high competence. This shows that the technical competence of medical personnel can increase patients' tolerance toward waiting time. Communication is also a very important factor in shaping patient perceptions during the waiting period. Clear, empathetic, and informative communication can reduce patient anxiety and make the waiting time feel shorter. Therefore, effective communication becomes one of the important strategies for improving the patient service experience. In addition, the availability of adequate and modern supporting equipment also influences patients' perceptions of waiting time and service quality. Complete equipment gives an impression of professionalism and increases patient confidence in the hospital's ability to provide quality healthcare services. This study also found that skills, communication, and supporting equipment significantly affect patient satisfaction. These three factors shape the overall perception of service quality, which ultimately determines the level of patient satisfaction with the healthcare services received. Furthermore, the mediation test results show that waiting time acts as a mediator in the relationship between service quality and patient satisfaction. Patients' perceptions of waiting time can strengthen or weaken the influence of skills, communication, and equipment on patient satisfaction. Therefore, improving the competence of medical personnel, the quality of communication, and the availability of facilities and supporting equipment becomes an important strategy for Kajen Regional General Hospital Pekalongan in enhancing service experience and patient satisfaction, especially in public healthcare settings with a high number of patients and relatively longer waiting times.

CONCLUSION

Based on the results of the research and data analysis, it can be concluded that the skills of the conservative dentistry specialist (X1), communication and service ability (X2), and the availability of supporting treatment equipment (X3) have a significant influence on patient satisfaction at Kajen Regional General Hospital Pekalongan. These three factors represent important aspects of healthcare service quality that shape patients' perceptions and experiences during the treatment process. The findings also show that waiting time (Y) plays an important role in influencing patient satisfaction. Longer waiting times tend to reduce patient satisfaction, while shorter and more efficient waiting times can improve the overall patient experience. Therefore, waiting time becomes a crucial factor in evaluating the quality of healthcare services. Furthermore, the results of the mediation analysis using the Sobel test indicate that waiting time significantly mediates the relationship between service quality variables (skills,

communication, and supporting equipment) and patient satisfaction. However, the mediation effect is classified as partial mediation, because the direct effects of the independent variables on patient satisfaction remain significant even after the mediator variable is included in the model. Overall, this study highlights that improving professional skills, effective communication, adequate medical equipment, and efficient service management can significantly enhance patient satisfaction. Therefore, healthcare institutions, particularly Kajen Regional General Hospital Pekalongan, should continuously improve these aspects to provide better healthcare services and strengthen patient trust and satisfaction.

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