

The Relationship Between Service Quality, Waiting Time, and Service Effectiveness on Patient Satisfaction

*Service Quality,
Waiting Time, and
Satisfaction*

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ABSTRACT

Patient satisfaction and service quality are key indicators for assessing the performance of primary healthcare centers. Problems such as long waiting times, inconsistent service aspects, and varying service effectiveness can reduce patient satisfaction and affect service standard assessment. This study aimed to examine the relationships between service aspects, waiting time, and service effectiveness on patient satisfaction and service standard assessment. A quantitative approach with a cross-sectional design was used, involving 316 patients visiting the IMCI clinic, maternal and child health clinic, and general clinic in March 2025. Respondents were selected using proportional stratified quota sampling. Data were collected through a structured questionnaire and analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) in SmartPLS software, including both outer and inner model evaluations. The results showed significant positive relationships between service aspects, waiting time, and service effectiveness on patient satisfaction and service standard assessment. These findings provide a foundation for evidence-based quality improvement initiatives and can help identify priority areas for enhancing outpatient services.

Keywords: Patient Satisfaction, Primary Healthcare Center, Service Aspects, Service Effectiveness, Service Standard, Waiting Time.

ABSTRAK

Kepuasan pasien dan kualitas layanan merupakan indikator utama dalam menilai kinerja pusat kesehatan primer. Masalah seperti waktu tunggu yang lama, aspek layanan yang tidak konsisten, dan efektivitas layanan yang bervariasi dapat menurunkan kepuasan pasien dan memengaruhi penilaian standar layanan. Penelitian ini bertujuan untuk menganalisis hubungan antara aspek layanan, waktu tunggu, dan efektivitas layanan terhadap kepuasan pasien serta penilaian standar layanan. Pendekatan kuantitatif dengan desain cross-sectional digunakan, melibatkan 316 pasien yang berkunjung ke Klinik IMCI, klinik kesehatan ibu dan anak, serta klinik umum pada bulan Maret 2025. Responden dipilih menggunakan teknik proportional stratified quota sampling. Data dikumpulkan melalui kuesioner terstruktur dan dianalisis menggunakan Structural Equation Modeling (SEM) dengan pendekatan Partial Least Squares (PLS) menggunakan software SmartPLS, meliputi evaluasi model luar dan model dalam. Hasil penelitian menunjukkan adanya hubungan positif yang signifikan antara aspek layanan, waktu tunggu, dan efektivitas layanan terhadap kepuasan pasien dan penilaian standar layanan. Temuan ini dapat

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INTRODUCTION

Community health centers, are primary healthcare facilities that organize and coordinate promotive, preventive, curative, rehabilitative, and/or palliative health services, with a strong emphasis on promotive and preventive measures within their service areas (Republic of Indonesia Law, 2023). As essential components of the national health system, they aim to improve public health status through programs designed to reduce morbidity and enhance overall community well-being (Umboh et al., 2023). High-quality primary healthcare services not only improve health outcomes but also shape public perceptions of the healthcare system, contributing to trust and engagement in health programs (Anawati et al., 2023; Asamoah, 2025).

Despite their strategic role, community health centers face multiple challenges in delivering high-quality services that can influence patient visits and satisfaction. Service quality and waiting time have been consistently highlighted as critical determinants of patient satisfaction and perceived service effectiveness (Darzi et al., 2023; Rachmawati, 2024; Seif et al., 2025; Clement & Taiwo, 2025). Rizaldy et al. (2024) reported that service quality significantly affects patient satisfaction. Outpatient services, a core unit within community health centers, provide care for patients who do not require hospitalization for more than 24 hours and encompass all diagnostic and therapeutic procedures. These services are required to maintain consistent service quality, particularly regarding waiting times that adhere to established standards (Ramadhanty, 2021; García-Corcheró & Jiménez-Rubio, 2022; Darzi et al., 2023; Guzmán-Leguel & Rodríguez-Lara, 2025).

Waiting time is a widely recognized factor affecting patient satisfaction; research by Pienti et al. (2024) and Manalu and Hutagaol (2024) demonstrated a significant negative effect of prolonged waiting times on satisfaction in outpatient settings. Similarly, Ihsanul et al. (2022) highlighted a positive direct relationship between service quality and service effectiveness on patient satisfaction in outpatient units (Maarif et al., 2023). Although prior research has investigated service quality or waiting time separately, there is a research gap regarding the integrated analysis of service aspects, waiting times, and service effectiveness on both patient satisfaction and service standard assessment in the Indonesian primary healthcare context, specifically in the Bekasi District. Addressing this gap is crucial, as Technical Implementation Unit (*Unit Pelaksana Teknis/UPT*) UPT Mekarmukti Community Health Center, one of 51 community health centers in Bekasi, provides a representative case for understanding outpatient service dynamics in an urban setting (Satudata, 2023).

Based on this background, the study is motivated to examine the influence of service aspects on patient satisfaction and service standard assessment in the outpatient unit of UPT Mekarmukti Community Health Center, to analyze the effect of waiting time on patient satisfaction and service standard assessment in the same unit, and to evaluate the impact of service effectiveness on patient satisfaction and service standard assessment in the outpatient clinic. The primary objective of this research is to analyze the relationships between service aspects, waiting times, and service effectiveness, and their impact on patient satisfaction and service standard assessment in the outpatient clinic of the UPT Mekarmukti Community Health Center. By identifying the most influential factors, the findings are expected to provide evidence-based guidance for developing policies, strategies, and improvement programs aimed at enhancing outpatient service quality.

This study also contributes to the broader literature on primary healthcare management in Indonesia by providing empirical evidence on how multiple service delivery factors jointly affect patient satisfaction and service quality assessments. The

results are expected to support informed decision-making in improving service delivery, reducing waiting times, and enhancing the effectiveness of outpatient care at the UPT Mekarmukti Community Health Centers, thereby promoting patient satisfaction and adherence to healthcare standards. The study may serve as a model for other community health centers in implementing strategic interventions that optimize patient experiences and healthcare quality in primary care settings.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Service Aspects

Service quality in healthcare can be defined as the facilities and/or equipment the healthcare has, their reliability in delivering consistent care, and their responsiveness towards the needs of patients. In a study done by Darzi et al. (2022), healthcare service providers need to deliver high-quality services to be perceived as trustworthy in the eyes of patients. The evaluation of service quality differs between providers and recipients. Service professionals assess it based on the design and delivery processes, whereas patients judge it through their overall experience and perception after receiving the service (Chen et al., 2022; Conlan et al., 2023; Zhang et al., 2025). A positive healthcare environment, characterized by well-maintained infrastructure, attentive staff, and clear communication, fosters a sense of trust and comfort that strengthens patient confidence in the care provided (Dinur et al., 2025). Ultimately, patient satisfaction emerges as a reflection of both technical excellence and the interpersonal aspects of service delivery, highlighting the importance of a holistic approach to quality management in healthcare settings (Dwijayanti et al., 2024; Guzman-Leguel & Rodriguez-Lara, 2025).

The establishment of clear service standards is crucial in healthcare delivery, as it provides a measurable framework for evaluating care quality and ensuring accountability (Anawati et al., 2023). Healthcare regulation plays a vital role in standardizing service delivery processes and protecting patient interests (Asamoah, 2025). When service aspects meet or exceed established standards, patients are more likely to perceive the healthcare system as trustworthy and competent (Noël et al., 2022). Furthermore, the implementation of clinical practice guidelines and quality assessment frameworks helps healthcare providers maintain consistency in service delivery, which directly influences both patient satisfaction and the overall assessment of service standards (Pereira et al., 2022). This systematic approach to quality management ensures that healthcare services align with evidence-based practices and regulatory requirements.

H1: Service aspects have a positive effect on patient satisfaction.

H2: Service aspects have a positive effect on service standard assessment.

The Effect of Waiting Time

Waiting time is a key indicator of service delivery efficiency and significantly shapes how patients perceive the quality of care (Seif et al., 2025; AlShammari et al., 2025; Yaqoob et al., 2025). Extended waiting periods often lead to frustration, decreased satisfaction, and a diminished sense of professionalism within healthcare facilities (Moore, 2022). Several factors contribute to prolonged waiting times, including limited resources, inefficient scheduling systems, and excessive staff workload (Garcia-Corchero & Jimenez-Rubio, 2022). To address these challenges, many healthcare centers have adopted time management strategies such as digital queue systems, appointment scheduling optimization, and task delegation to improve patient flow (Demba & Bilal, 2023; Niu et al., 2024; Clement & Taiwo, 2025; Andriani, 2025). By reducing waiting times, healthcare providers can enhance the overall patient experience, demonstrating respect for patients' time and reinforcing the institution's commitment to effective and patient-centered care.

Research consistently demonstrates that waiting time significantly impacts patient satisfaction and perception of service quality across healthcare settings (Maulana et al., 2019; Rachmawati, 2024). Studies in Indonesian healthcare facilities reveal a strong

correlation between waiting duration and patient dissatisfaction, particularly in outpatient services (Syaifullah, 2018; Fajrin & Ahri et al., 2021; Manalu & Hutagaol, 2024). The principle of equal treatment for equal need emphasizes that excessive waiting times can undermine healthcare equity and quality standards (García-Corchero & Jiménez-Rubio, 2022). Implementing systematic appointment scheduling and workflow optimization has proven effective in minimizing delays and improving patient experience (Niu et al., 2024). These improvements not only enhance patient satisfaction but also reflect positively on the healthcare facility's adherence to service standards, demonstrating organizational efficiency and patient-centered care delivery (Clement & Taiwo, 2025).

H3: Waiting time has a positive effect on patient satisfaction.

H4: Waiting time has a positive effect on service standard assessment.

The Effect of Service Effectiveness

Standardized procedures are essential for ensuring uniformity, fairness, and accountability in public health service delivery (Assanti, 2024; Jalilvand et al., 2024; Asamoah, 2025). By following established guidelines and protocols, healthcare providers can deliver consistent care that minimizes variations in service quality across different regions or personnel (Soenksen, 2022; Anawati et al., 2023). These procedures also help protect patients' rights, ensuring that everyone receives equal treatment regardless of socioeconomic or demographic differences (Soenksen, 2022; Lubis et al., 2024). In addition, standardized processes provide a clear operational framework that promotes transparency and strengthens the credibility of public health institutions. Evaluation systems serve as critical tools to measure how effectively these standards are implemented (Noel et al., 2022; Pereira et al., 2022). Through instruments such as patient satisfaction surveys, service quality audits, and performance evaluations, healthcare facilities can gather feedback and identify areas for improvement. The insights gained from these assessments allow decision-makers to refine procedures, enhance efficiency, and foster a culture of continuous improvement.

Effective service delivery in healthcare requires alignment between operational processes and patient outcomes, ensuring that care is both clinically sound and patient-centered (Dama et al., 2024; Guzmán-Leguel & Rodríguez-Lara, 2025). Studies indicate that service effectiveness directly influences patient perceptions of care quality, as patients evaluate healthcare based on tangible results and their overall experience (Chen et al., 2022; Langi & Winarti, 2023). Indonesian research demonstrates that service quality significantly correlates with patient satisfaction across various healthcare settings (Maarif et al., 2023; Rizaldy et al., 2024). When healthcare providers implement evidence-based practices and adhere to clinical guidelines, they not only improve patient outcomes but also strengthen institutional credibility (Pereira et al., 2022). This systematic approach to service effectiveness ensures that healthcare facilities meet regulatory standards while maintaining high levels of patient satisfaction and trust (Noël et al., 2022).

H5: Service effectiveness has a positive effect on patient satisfaction.

H6: Service effectiveness has a positive effect on service standard assessment.

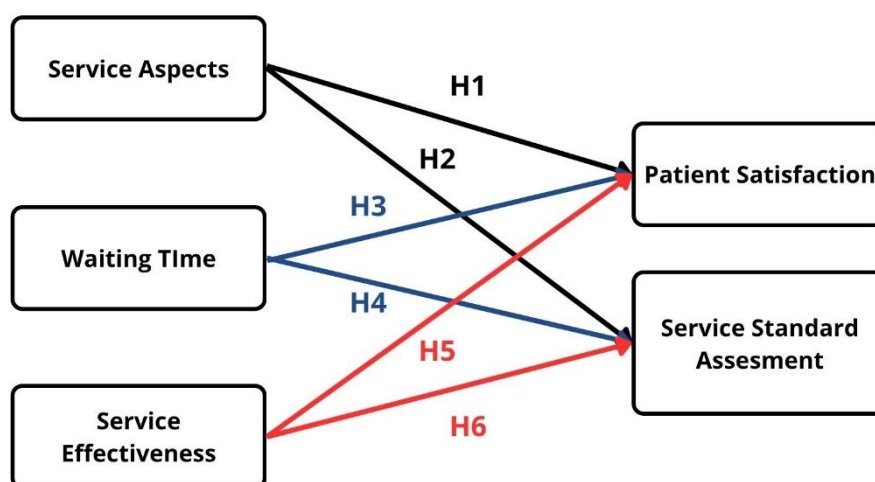


Figure 1. Conceptual Framework

Figure 1 illustrates the conceptual framework of this study. It shows how three independent variables, service aspects, waiting time, and service effectiveness, are hypothesized to influence two dependent variables: patient satisfaction and service standard assessment. Each hypothesis (H1–H6) represents a proposed relationship between the variables.

RESEARCH METHODS

This study was conducted in March 2025 at UPT Mekarmukti Community Health Center, employing a quantitative approach with an analytic observational design using a cross-sectional method (Creswell & Creswell, 2018). Data collection took place over one month on working days (Monday to Saturday) across three outpatient units: the Integrated Management of Childhood Illness (*Manajemen Terpadu Balita Sakit/MTBS*) clinic, the Maternal and Child Health (*Kesehatan Ibu dan Anak/KIA*) clinic, and the general outpatient clinic. An online questionnaire distributed via Google Forms was utilized to gather data from patients. The study was purely observational with no interventions, focusing on analyzing relationships between service aspects, waiting time, service effectiveness, patient satisfaction, and service standard assessment through structured survey instruments (Babbie, 2020).

The target population consisted of all patients visiting the outpatient department during March 2025. The accessible population included patients from the three designated clinics within the same period. Sample size was calculated using Cochran's formula for known populations, yielding 316 respondents. Proportional stratified quota sampling was applied, stratifying samples based on clinic type according to average monthly patient visits. The distribution resulted in 51 respondents from MTBS, 43 from KIA, and 222 from the general clinic.

The study examined five variables: three independent variables, Service Aspects (X1), Waiting Time (X2), and Service Effectiveness (X3), and two dependent variables, Patient Satisfaction (Y1) and Service Standard Assessment (Y2). All constructs were measured using a 7-point Likert scale. Service Aspects evaluated quality dimensions, including tangibles, reliability, and responsiveness. Waiting Time is measured by the duration from patient registration to medicine collection (Fajrin & Ahri et al., 2021). Service Effectiveness assessed the achievement of treatment objectives. Patient Satisfaction captured patient perceptions after comparing the received service against expectations (Kotler & Keller, 2015). Service Standard Assessment evaluated compliance with minimum community health center service standards.

Data analysis employed Structural Equation Modeling with Partial Least Squares (SEM-PLS) using SmartPLS software. SEM-PLS was chosen for its ability to

simultaneously analyze complex relationships among multiple variables, accommodate both formative and reflective measurement models, and perform effectively with smaller sample sizes without requiring strict multivariate normality assumptions (Cheah et al., 2018; Sarstedt et al., 2021). The analysis comprised two main stages: the outer model evaluation to assess measurement validity and reliability, and the inner model assessment to examine structural relationships and estimate path coefficients between latent variables (Ghozali & Latan, 2021).

RESULTS

Based on Table 1, it can be concluded that the majority of respondents were female, comprising 224 individuals or 70.9% of the total sample. In terms of age, the largest group of respondents was between 26 and 35 years old, totaling 112 individuals or 35.4%. Regarding educational background, most respondents held a senior high school diploma or equivalent, accounting for 186 respondents or 58.9%. Professionally, the majority were housewives, with 158 respondents or 50%. Most of the respondents, amounting to 224 or 70.9%, visited the general outpatient clinic, and the majority had made one visit within the past six months (118 respondents or 37.3%).

Table 1. Respondent Profile

Criteria	Category	Frequency	Percentage
Gender	Male	92	29.1%
	Female	224	70.9%
Age	17-25 years	109	34.5%
	26-35 years	112	35.4%
	36-45 years	54	17.1%
	46-55 years	29	9.2%
	>55 years	12	3.8%
Education	Elementary School/Equivalent	29	9.2%
	Junior High School/Equivalent	68	21.5%
	Senior High School/Equivalent	186	58.9%
	Diploma (D1/D3)	11	3.5%
	Bachelor's Degree	22	7.0%
Occupation	Housewife	158	50.0%
	Private Employee	62	19.6%
	Student	27	8.5%
	Retiree	3	0.9%
	Civil	3	0.9%
	Servant/Military/Police		
	Entrepreneur	46	14.6%
Polyclinic Visited	Others	17	5.4%
	KIA Polyclinic	42	13.3%
	MTB Polyclinic	50	15.8%
	General Polyclinic	224	70.9%
Visit Frequency in Last 6 Months	1 time	118	37.3%
	2-3 times	108	34.2%
	4-5 times	46	14.6%
	>5 times	44	13.9%

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Dev.
Service Aspects	316	3.86	7.00	5.9645	0.55764
Waiting Time	316	3.00	7.00	5.7302	0.73800
Service effectiveness	316	3.00	7.00	5.9921	0.62005
Patient Satisfaction	316	2.67	7.00	5.8950	0.65396
Service Standard Assessment	316	3.00	7.00	5.9956	0.57513

The value of N indicates the number of data points analyzed. The mean represents the average score for each variable, and the standard deviation reflects the spread of the data, indicating whether the data is homogenous or heterogeneous and the degree of fluctuation. Based on the descriptive statistical analysis in Table 2, the Service Aspect variable demonstrates that respondents generally perceived the services provided as good, with a mean score of 5.9645. Similarly, the Waiting Time variable received favorable evaluations, reflected by a mean of 5.7302. The Service Effectiveness variable also showed a positive perception among respondents, with a mean score of 5.9921, indicating that the services were considered effective in achieving their intended outcomes. Furthermore, the Patient Satisfaction variable revealed that patients were generally satisfied with the services they received, as indicated by a mean of 5.8950. The Service Standard Assessment variable suggests that the services delivered were perceived to meet the minimum service standards, with the highest mean score among all variables at 5.9956.

This study employed variance-based Structural Equation Modeling (SEM) to address the research questions. The steps taken to satisfy the assumptions of variance-based SEM guided both the data collection and analysis process, which was performed using SmartPLS 3 software. Figure 1 presents the results of the full model estimation.

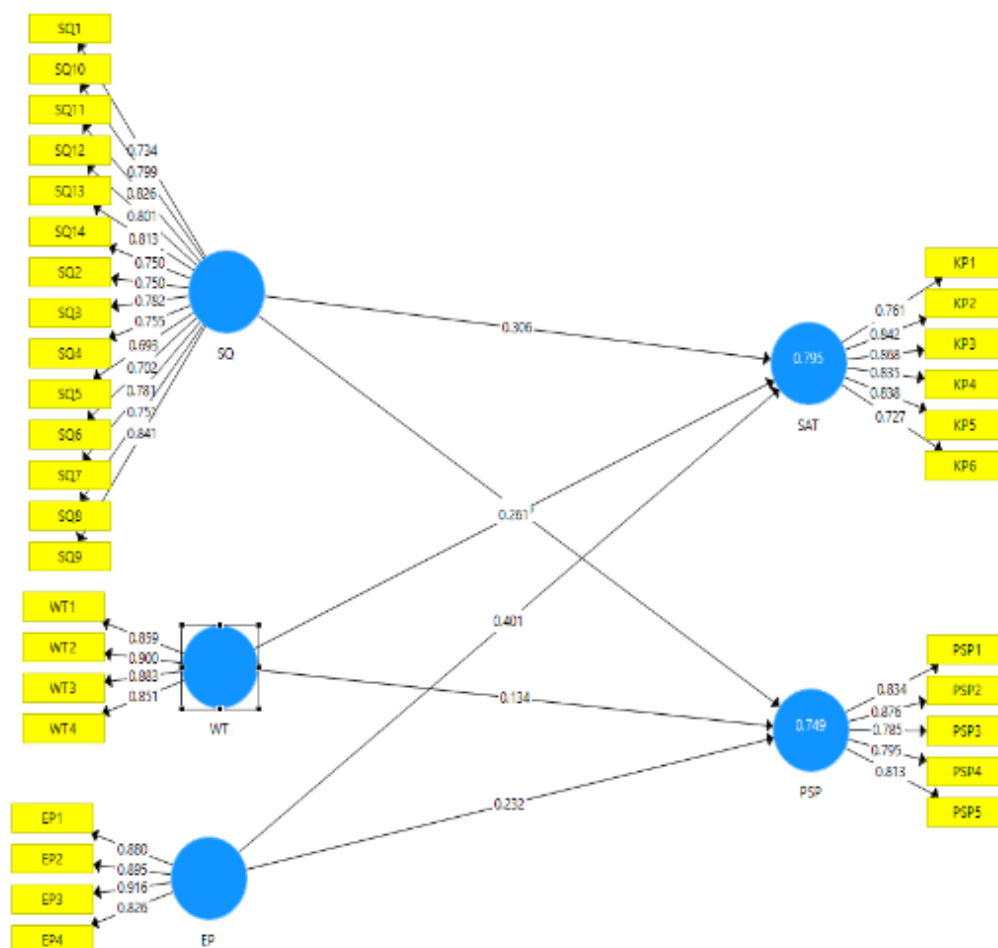


Figure 2. Full Model Calculation

Figure 3 illustrates the bootstrapping results of the full structural model for each variable. The structural model estimation involved various analyses, including testing for VIF (Variance Inflation Factor), R^2 (coefficient of determination), Beta coefficients, and t-values to assess the hypotheses based on bootstrapping. Bootstrapping was performed with 5,000 subsamples to improve the statistical significance of item weights, in accordance with statistical guidelines. The VIF test measures the degree of

multicollinearity, where a value above 5 may indicate collinearity issues among variables. The R^2 value explains the proportion of variance in the dependent variable explained by the independent variables. A higher R^2 value suggests better predictive accuracy (with values ranging from 0 to 1).

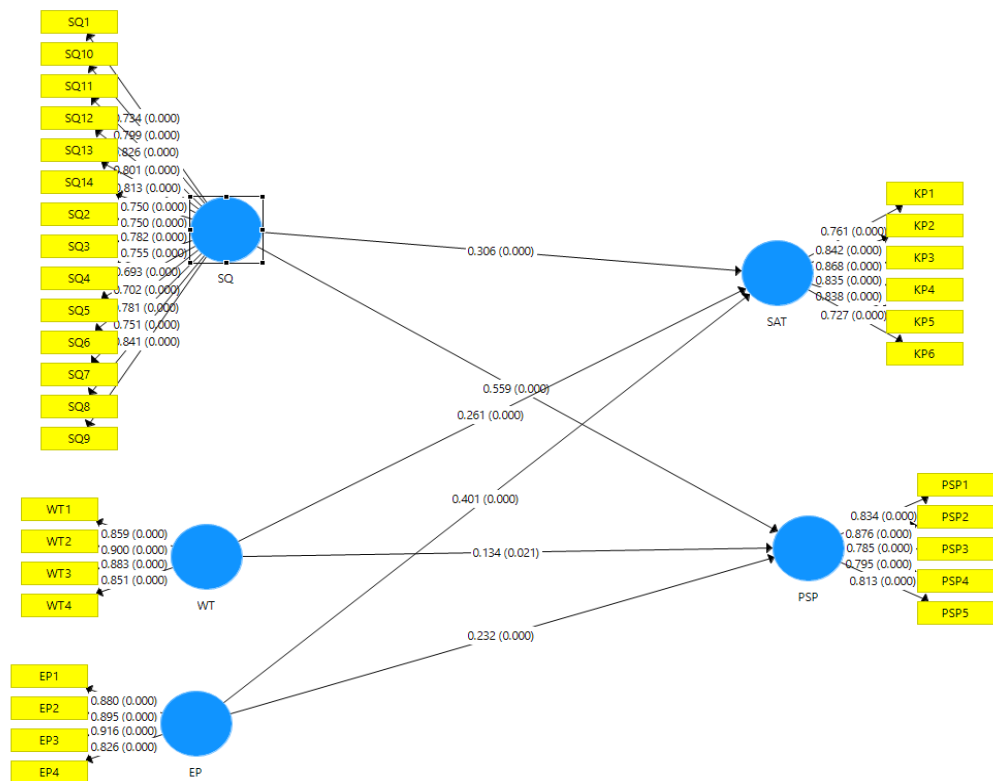


Figure 3. Bootstrapping Full Model Structural

The structural model represents the hypothesized relationships among the latent variables. The inner model evaluation involves developing a conceptually grounded model to analyze the relationships between exogenous and endogenous variables, as described in the conceptual framework. The structural model evaluation involves three stages. The first step is to assess the coefficient of determination (R-Square/ R^2). The R^2 value should ideally fall between 0 and 1. Values approaching 1 suggest that the exogenous constructs provide nearly all the information necessary to predict the variation in the endogenous constructs. The R^2 results are shown in Table 3.

Table 3. R-Square Result

Model Dependency	R Square	Adjusted R Square
Patient Satisfaction	0.749	0.747
Service Standard Assessment	0.795	0.793

Based on Table 3, the adjusted R-square value for the patient satisfaction model, formed by the variables of service aspect, waiting time, and service effectiveness, is 0.747. This indicates that these three independent variables can explain 74.7% of the variance in patient satisfaction, which is considered a strong explanatory power. Similarly, the adjusted R-square value for the service standard assessment model is 0.793, meaning that the same three variables can explain 79.3% of the variance in service standard assessment, also indicating a strong model.

The second step of the inner model analysis involves assessing predictive relevance using the Q^2 test. The Q-square value serves a similar purpose to the R-square by measuring how well the model predicts endogenous constructs. The higher the Q-square,

the better the model's predictive power. According to Table 4, the Q-square values are 0.517 for the patient satisfaction model and 0.491 for the service standard assessment model. These values indicate that both models demonstrate adequate predictive relevance.

Table 4. Q-Square Result

Variable	SSO	SSE	Q ² (=1-SSE/SSO)
Service Effectiveness	1264.000	1264.000	
Service Standard Assessment	1580.000	804.340	0.491
Patient Satisfaction	1896.000	916.324	0.517
Service Aspects	4424.000	4424.000	
Waiting Time	1264.000	1264.000	

The second step of the inner model analysis involves assessing predictive relevance using the Q² test. The Q-square value serves a similar purpose to the R-square by measuring how well the model predicts endogenous constructs. The higher the Q-square, the better the model's predictive power. According to Table 4, the Q-square values are 0.517 for the patient satisfaction model and 0.491 for the service standard assessment model. These values indicate that both models demonstrate adequate predictive relevance.

Table 5. F-Square test

Relationship	F-Square	Effect Size
Service Aspects → Patient Satisfaction	0.148	Weak
Service Aspects → Service Standard Assessment	0.402	Strong
Waiting Time → Patient Satisfaction	0.116	Weak
Waiting Time → Service Standard Assessment	0.025	Weak
Service Effectiveness → Patient Satisfaction	0.255	Weak
Service Effectiveness → Service Standard Assessment	0.070	Weak

The third step in the inner model analysis is evaluating the effect size using the F-square (f²) test. As explained by Kwong and Wong (2013), the f² value helps determine how much an exogenous construct contributes to an endogenous construct. According to Sarstedt et al. (2021), f² values of 0.35, 0.15, and 0.02 indicate large, medium, and small effects, respectively. Values below 0.02 suggest negligible influence and can be ignored. The f² results in Table 5 show that the service aspect has a strong effect on service standard assessment, while service effectiveness and patient satisfaction fall in the medium category, and other relationships are classified as having weak effects.

Table 6. Estimation Results of Path Coefficients and Statistical Test

Hypothesis	β	T-Stat	P Values	Conclusion
H1: Service Aspects → Patient Satisfaction	0.306	5.143	0.000	H1 Accepted
H2: Service Aspects → Service Standard Assessment	0.559	8.358	0.000	H2 Accepted
H3: Waiting Time → Patient Satisfaction	0.261	5.237	0.000	H3 Accepted
H4: Waiting Time → Service Standard Assessment	0.134	2.314	0.021	H4 Accepted
H5: Service Effectiveness → Patient Satisfaction	0.401	7.397	0.000	H5 Accepted
H6: Service Effectiveness → Service Standard Assessment	0.232	3.752	0.000	H6 Accepted

Data on path coefficients and statistical testing are shown in Table 6. The path estimations in the structural model are expected to be statistically significant. Significance was tested using the bootstrapping procedure, and a p-value < 0.05 indicates statistical significance. Table 6 presents the conclusions for each hypothesis tested in the study. Hypothesis 1 examined the effect of the service aspect on patient satisfaction. The analysis revealed a p-value of 0.000, which indicates a statistically significant effect. The path coefficient was 0.306, suggesting that improvements in service aspects lead to increased levels of patient satisfaction. The positive relationship means that the better the perceived

quality of service aspects such as staff behavior, responsiveness, and attentiveness, the higher the satisfaction experienced by patients. Therefore, Hypothesis 1 is supported and accepted.

Hypothesis 2 evaluated the relationship between the service aspect and service standard assessment. The p-value of 0.000 and a strong coefficient of 0.509 signify a significant and positive influence. This implies that a higher quality of service delivery correlates with a more favorable assessment of whether services meet expected standards. As patients perceive services to be more professionally delivered and consistent, their evaluations of institutional service standards improve. Consequently, Hypothesis 2 is accepted. Hypothesis 3 tested the impact of waiting time on patient satisfaction. The p-value obtained was 0.000, with a path coefficient of 0.261. This shows a significant and positive effect, indicating that shorter and more reasonable waiting times enhance patient satisfaction. It reflects the importance of efficiency and timeliness in service delivery. Hence, Hypothesis 3 is accepted.

Hypothesis 4 explored the effect of waiting time on service standard assessment. The analysis yielded a p-value of 0.021, which meets the significance threshold, and a path coefficient of 0.509. This confirms a significant and positive relationship, suggesting that effective time management and reduced waiting durations are positively perceived as indicators of high service standards. Thus, Hypothesis 4 is accepted. Hypothesis 5 assessed the influence of service effectiveness on patient satisfaction. The results showed a p-value of 0.000 and a coefficient of 0.401. This indicates that more effective services, those that are accurate, timely, and meet patient needs, lead to higher patient satisfaction. The strong positive association confirms the importance of reliable and outcome-oriented service delivery. Accordingly, Hypothesis 5 is accepted. Hypothesis 6 investigated the effect of service effectiveness on service standard assessment. The analysis revealed a p-value of 0.000 and a path coefficient of 0.232. This demonstrates a significant and positive relationship, implying that increased effectiveness in service operations contributes to better perceptions of compliance with service standards. Therefore, Hypothesis 6 is also accepted.

DISCUSSION

This study reveals that service aspects, waiting time, and service effectiveness are significantly associated with patient satisfaction and service standard assessment at the Outpatient Clinic of UPT Mekarmukti Community Health Center. These findings align with the SERVQUAL framework, which posits that service quality dimensions, including tangibles, reliability, responsiveness, assurance, and empathy, are critical determinants of patient satisfaction in healthcare settings (Parasuraman et al., 1988). The results are further supported by empirical evidence demonstrating that service quality significantly influences patient satisfaction across various healthcare contexts (Batbaatar et al., 2017; Rizaldy et al., 2021).

Among the examined variables, service aspects exhibited the strongest relationship with both patient satisfaction and service standard assessment ($f^2 = 0.402$, $\beta = 0.559$). This finding corroborates previous research indicating that healthcare service quality is a primary driver of patient satisfaction. The predominantly positive evaluation by respondents, mostly female housewives, suggests that Mekarmukti Community Health Center has successfully implemented patient-centered care practices, which are essential for enhancing healthcare delivery in primary care settings (Mosadeghrad, 2014; Santana et al., 2018; Rizaldy et al., 2021). These results underscore the importance of maintaining high service standards through continuous staff training, infrastructure improvement, and patient communication enhancement.

Waiting time emerged as another significant predictor of both patient satisfaction and service standard assessment, consistent with established literature highlighting the detrimental effects of prolonged waiting periods on patient experience (Bleustein et al., 2014; Manalu & Hutagaol, 2024). Although the effect size was moderate ($f^2 = 0.116$ for satisfaction; $f^2 = 0.025$ for standards), the significant relationship ($\beta = 0.261$, $p < 0.001$)

confirms that efficient time management is crucial for patient satisfaction. This finding is particularly relevant in the Indonesian primary healthcare context, where resource constraints often challenge operational efficiency (Mahendradhata et al., 2017). The positive evaluation of waiting time at Mekarmukti Community Health Center suggests effective queue management and appointment scheduling systems, which are recognized best practices in healthcare operations management (Cayirli & Veral, 2003).

Service effectiveness demonstrated a substantial positive relationship with patient satisfaction ($f^2 = 0.255$, $\beta = 0.401$), supporting previous findings that effective service delivery, characterized by accurate diagnosis, appropriate treatment, and positive health outcomes, enhances patient satisfaction (Donabedian, 1988; Maarif et al., 2023). This relationship reflects the outcome dimension of Donabedian's quality framework, emphasizing that healthcare quality must ultimately translate into tangible health improvements and patient well-being. The favorable assessment by general outpatient clinic patients indicates that Mekarmukti Community Health Center successfully delivers clinically effective care while maintaining patient-centered approaches.

The practical implications of these findings are significant for healthcare management and policy formulation. First, healthcare administrators should prioritize continuous quality improvement initiatives focusing on service delivery, staff competency development, and facility enhancement. Second, implementing lean management principles and digital queue management systems could further reduce waiting times and improve operational efficiency (Holden, 2011). Third, strengthening clinical protocols and evidence-based practice guidelines will enhance service effectiveness and health outcomes.

Moreover, these findings align with Indonesia's national healthcare agenda, particularly the National Health System's emphasis on accessible, quality primary healthcare services (Ministry of Health Republic of Indonesia, 2009). Mekarmukti Community Health Center's achievements demonstrate that resource-constrained primary healthcare facilities can deliver high-quality services through strategic management of service quality dimensions. Future research should explore the mediating role of patient satisfaction in the relationship between service quality factors and behavioral outcomes, such as patient loyalty and treatment adherence, to provide comprehensive insights into healthcare service improvement strategies in primary care settings.

CONCLUSION

Based on the research findings, service aspects, waiting time, and service effectiveness collectively shape healthcare service quality and patient satisfaction at the UPT Mekarmukti Community Health Center. The study confirms that these dimensions are interdependent, with service aspects demonstrating the strongest influence on both patient satisfaction and service standard assessment. These results emphasize the critical need for integrated approaches to healthcare quality improvement rather than isolated interventions.

Healthcare administrators should prioritize comprehensive quality improvement strategies that address multiple service dimensions simultaneously. Key recommendations include implementing digital queue management systems to reduce waiting times, establishing continuous professional development programs to enhance staff competency, and investing in infrastructure modernization. Technology integration through electronic health records, mobile health applications, and automated appointment systems can streamline processes and enhance communication between healthcare providers and patients, particularly in resource-constrained primary healthcare settings.

However, several limitations warrant consideration. The cross-sectional design limits causal inference regarding relationships between variables, while the single-facility focus may restrict generalizability to other primary healthcare settings with different organizational contexts and patient demographics. Reliance on self-reported satisfaction

measures may introduce response bias, and the study did not examine potential mediating variables such as patient expectations or socioeconomic factors. The predominance of female housewife respondents may also limit representativeness across diverse patient populations.

Future research should employ longitudinal or experimental designs to establish causal relationships and evaluate intervention impacts. Comparative studies across multiple healthcare facilities would enhance understanding of contextual factors influencing service quality. Investigating the mediating role of patient satisfaction in relationships between service quality and behavioral outcomes such as treatment adherence and patient loyalty would provide valuable insights. Qualitative research exploring patient and staff perspectives would complement quantitative findings, while examining cost-effectiveness of quality improvement initiatives would support evidence-based resource allocation in primary healthcare environments.

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*Service Quality,
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