

Service Quality Analysis of Public Health Centre on Patient Satisfaction Using SERVQUAL and ZoT Approach

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Abstract

Poasia Public Health Centre aims to provide quality health services. Complaints received from patients can impact the number of patient visits. Patient visits in 2023 decreased by approximately 21%, likely due to dissatisfaction with the services at Poasia Public Health Centre. This study introduces novelty by combining SERVQUAL (service quality) and the zone of tolerance (ZoT). While SERVQUAL identifies the gap between patient expectations and service performance, ZoT defines the tolerance threshold for dissatisfaction. Together, they offer a more comprehensive evaluation than previous studies that used only one method. Respondents were interviewed using a questionnaire. The results of this study show that the GAP value in the responsiveness dimension is still negative (-0.04), indicating that some patients are dissatisfied with the services received. The GAP values in the other four dimensions are positive, indicating that patients are satisfied with the services received at the health centre. The ZoT values are within the tolerance range of -0.01 to 2.24. Negative ZoT values indicate that some patients are dissatisfied, while positive ZoT values indicate that patients are still within the tolerance range for receiving minimal services. This study concludes that quality health services will provide satisfaction to patients.

Keywords: patient, public health centre, satisfaction, SERVQUAL, ZoT

Analisis Kualitas Layanan di Puskesmas terhadap Kepuasan Pasien dengan Pendekatan SERVQUAL dan ZoT

Abstrak

Puskesmas Poasia bertujuan untuk memberikan layanan kesehatan yang berkualitas. Keluhan yang diterima dari pasien dapat berdampak pada jumlah kunjungan. Kunjungan pasien pada tahun 2023 menurun sekitar 21%, yang kemungkinan disebabkan oleh ketidakpuasan terhadap layanan di Puskesmas Poasia. Penelitian ini memiliki kebaruan dengan menggabungkan metode SERVQUAL (*service quality*) dan ZoT (*zone of tolerance*). SERVQUAL digunakan untuk mengidentifikasi kesenjangan antara harapan pasien dan kinerja layanan, sementara ZoT digunakan untuk menentukan ambang toleransi pasien terhadap ketidakpuasan. Kombinasi keduanya memberikan evaluasi yang lebih komprehensif dibandingkan penelitian sebelumnya yang hanya menggunakan salah satu metode. Responden diwawancarai menggunakan kuesioner. Hasil penelitian menunjukkan bahwa nilai GAP pada dimensi responsivitas masih negatif (-0,04), yang mengindikasikan sebagian pasien tidak puas dengan layanan yang diterima. Nilai GAP pada empat dimensi lainnya positif, menunjukkan bahwa pasien merasa puas terhadap layanan yang diberikan di Puskesmas. Nilai ZoT berada dalam rentang toleransi -0,01 hingga 2,24. Nilai ZoT negatif menunjukkan sebagian pasien tidak puas, sedangkan nilai ZoT positif menunjukkan bahwa pasien masih berada dalam batas toleransi untuk menerima pelayanan minimum. Penelitian ini menyimpulkan bahwa layanan kesehatan yang berkualitas akan memberikan kepuasan kepada pasien.

Kata Kunci: kepuasan, pasien, puskesmas, SERVQUAL, ZoT

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1. Introduction

The Poasia Public Health Centre is a public service unit that plays a vital role in providing health services at the community level, as part of promotive, preventive, curative, rehabilitative, and palliative efforts. The Poasia Public Health Centre ensures that the community's health in its working area continues to improve¹ with the primary objective of enhancing the community's health status.² The Poasia Public Health Centre is also responsible for addressing various health issues faced by residents, as well as providing basic health services in accordance with the "Minimum Service Standards (MSS)" in the health sector. These services are carried out by health professionals with the competence and authority in their respective fields, including providing health services to newborns, pregnant women, school-age children, toddlers, adults of working age, and the elderly.³ In addition to serving the community's general health needs, Poasia Public Health Centre also provides individualized health services. These include health services that meet predetermined standards and requirements in terms of location, buildings, infrastructure, laboratories, medical equipment, and other essential health supplies. These needs are fulfilled by adequate and competent health human resources to ensure service quality.²

The Poasia Public Health Centre provides health services that meet patients' needs and expectations. Patients come to the Public Health Centre hoping that their health problems can be resolved. Of course, this cannot be separated from the quality of service that the public health centre provides. Likewise, the opposite is also true: if patients feel that the quality of service is poor, they may be less likely to visit again. Patient satisfaction is an important aspect that reflects the quality of service at the Poasia Public Health Centre.⁴ By knowing the level of patient satisfaction, the public health centre can evaluate the current program and identify aspects that need improvement. Patient dissatisfaction indicates that the service has not been effective and efficient. Satisfaction can be achieved if patients' needs, expectations, and desires are met.⁵ A health centre that provides quality services according to patient expectations will be able to increase patient satisfaction⁶ because the assessment of service quality plays an important role in influencing patient satisfaction.⁷

Patient trust in the Poasia Public Health Centre is evident from the number of patient visits. According to data from the Poasia Public Health Centre's profile, the number of patients visiting the public health centre has increased from 20,494 in 2021 to 32,089 in 2022. However, in 2023, there was a decrease in the number of visits, namely to 25,218 people (21.4%). In addition

to the decrease in the number of visits, several complaints have been submitted by patients. One of the main complaints is the delay in service opening hours, which is considered to interfere with patients' schedules and reduce time efficiency. Another complaint is the limited parking facilities available, which are considered inadequate to accommodate patient vehicles, causing inconvenience.

Evaluation of service quality can be measured using the SERVQUAL method, an approach that assesses the level of patient satisfaction with the service quality provided. According to Czepiel et al. (1985) in Fransiska, "service quality is the result of outcome quality because it is a service that occurs at that time." Parasuraman introduced the service quality or SERVQUAL method, which has often been used to measure the quality of services in various sectors. SERVQUAL compares the patient's expectations with the situation received at that time. Five dimensions in SERVQUAL are used: reliability, tangibles, assurance, empathy, and responsiveness.⁸ The five underlie every aspect of the assessment and can describe the level of patient satisfaction. In this study, the SERVQUAL method is integrated into the zone of tolerance (ZoT) analysis as a continuation of the resulting GAP value to determine whether the GAP value is at an acceptable tolerance limit.

Research on service quality using the SERVQUAL method has been conducted at various public health centres, such as Kemaraya Public Health Centre in Kendari City, Sangurara Public Health Centre in Palu City, Parit Haji Husin II Public Health Centre in Pontianak City, and Tawangrejo Public Health Centre in Madiun City.^{10–13} However, research integrating the SERVQUAL method with the ZoT analysis in the context of the inpatient Public Health Centre is still limited and has only been conducted at Lepo-lepo Public Health Centre. Therefore, a similar study is needed at Poasia Public Health Centre, one of the inpatient public health centres, to measure the quality of health services provided. This study aims to provide an in-depth illustration of the quality of health services at Poasia Public Health Centre. Moreover, the findings of this study can serve as an important reference for the Public Health Centre to identify the strengths and weaknesses of the service and to design effective improvement strategies for enhancing service quality in the future. This study contributes to pharmacy practice by evaluating service quality aspects that directly involve pharmacists, particularly in inpatient settings within public health centres. Pharmacists play a critical role in patient care through medication counseling, ensuring medication safety, and contributing to the overall therapeutic outcomes. Enhancing the quality of service delivered by pharmacists is essential in

achieving the ultimate goal of pharmaceutical care, which is to improve patients' quality of life. By identifying service gaps and patient expectations through the SERVQUAL and ZoT approach, this research provides actionable insights that can be used to improve the service delivery of pharmacists as integral members of the healthcare team.

2. Materials and Method

The quantitative descriptive method was employed in this research to describe, analyze, and explain the various aspects under study. This method produces conclusions based on data processed in numerical form.^{15,16} The study's population consisted of outpatients who visited the Poasia Health Centre. The number of samples was taken based on data from the Poasia Health Centre profile, where the number of patient visits in 2023 was recorded at 25,218 people. The Slovin formula was used to calculate the tolerance limit for the error rate of 10% until a total sample of 100 people was obtained.¹⁷

$$\text{Slovin's formula : } n = \frac{N}{1 + N e^2}$$

Description:

- n = number of samples
- N = population size
- e = sample calculation error rate 0.1 (10%) for large populations

The sample calculation is as follows:

$$n = \frac{25.218}{1 + \frac{25.218 (0.1)^2}{25.218}} = 99.60 \approx 100 \text{ respondents}$$

$$n = \frac{25.218}{253.18}$$

Respondents were outpatients at the Poasia Public Health Centre, aged 18 years or older, who had received services at least once and agreed to complete the questionnaire. The SERVQUAL instrument, adapted from previous studies and adjusted to local conditions, has been tested for validity and reliability (Cronbach's Alpha > 0.7), confirming its suitability for measuring service quality.

2.1. Service Quality (SERVQUAL)

According to Parasuraman,¹⁸ the five dimensions of SERVQUAL determine the quality of a service and are explained as follows:

- Tangible (Physical Evidence), namely "infrastructure facilities, completeness of officers, communication and information tools."
- Reliability is "the ability to provide services

immediately, accurately, and satisfactorily."

- Responsiveness is "namely the officer's desire to help provide services."
- Assurance, namely, "there is certainty about the type of service and the ability of officers according to their competence"
- Empathy includes "the ability of officers to establish communication and receive attention."

The research employed interviews and questionnaires as data collection methods. Respondents were asked to respond to 29 questions. The questions were developed based on various literature references and utilised a Likert scale of 1-5, where one indicates "strongly disagree/dissatisfied" and five indicates strongly agree/satisfied.¹⁹ The questions applied are listed in Table 1.

The SERVQUAL value is calculated by finding the difference (GAP score) between expectations and service performance received. The SERVQUAL value can be calculated as follows:²⁰

$$\text{SERVQUAL Value (GAP Score)} = \text{Performance Value} - \text{Expected Value}$$

Where:

1. If the GAP score is negative, the performance is below expectations, and the service does not meet the patient's needs.
2. If the GAP score is zero, performance = expectations, the services provided can be said to be of high quality and can satisfy the patient.
3. If the GAP score is positive and performance is above expectations, the service is very satisfying for the patient.

The SERVQUAL value represents the quality of service, the performance value indicates the service the patient actually receives, and the expectation value reflects the patient's anticipated service.¹⁸

2.4. Zone of Tolerance (ZoT) Mapping

The Zone of Tolerance (ZoT) is a range that describes the level of satisfaction in service quality assessments. This concept aims to ensure that the quality of service provided is still acceptable to customers. To find this out, it is necessary to calculate the value Measure of Service Adequacy (MSA), "Measure of Service Superiority (MSS)," and "Zone of Tolerance (ZoT)." These values help evaluate the extent to which services can meet or exceed customer expectations. The MSA, MSS, and ZoT values can be calculated as follows.

$$\text{MSA Value} = \text{Current Service} - \text{Minimum Service}$$

$$\text{MSS Value} = \text{Current Service} - \text{Expected Service}$$

If the MSS value is positive, it indicates that the currently available service exceeds the ZoT value, suggesting that the patient is satisfied with the service provided. Conversely, if the MSS value is negative, the current service is below the ZoT value, reflecting patient dissatisfaction with the service received. Meanwhile, if the ZoT value is positive, it shows that even though patients feel dissatisfied with the service they get, they can still accept it.⁴

Determining the ZoT position for each dimension requires data in the form of the average value of the current service performance level, the average value of the expected service level, and the average value of the minimum service level. These three values analyse whether service quality meets or exceeds patients' expectations and basic needs.

3. Result

3.1. Characteristic of Respondent

In this study, the characteristics of the respondents can be observed in the Figure 1.

3.2. SERVQUAL

The SERVQUAL value is obtained by calculating the GAP between patient expectations and service performance. If the patient's expectations exceed the service provided, the service is considered poor and of low quality, resulting in the patient feeling dissatisfied. Conversely, if the service meets or exceeds the patient's expectations, the service is considered good

and quality, which makes the patient feel satisfied.

Figure 2A shows that the highest expected values are in TA3 and TA2, while the highest (positive) GAP value is in TA3, indicating performance exceeded expectations. In contrast, TA5 has the deepest negative GAP value, indicating performance is far below expectations. The tangible dimension exhibits fluctuations that require attention, particularly in indicators with negative GAP values.

In Figure 2B, indicator REL9 has the highest GAP value (around +0.13), indicating highly satisfactory service compared to expectations. However, REL8 has a tiny GAP, indicating that expectations and performance are almost aligned. The reliability dimension generally exhibits a positive trend, but its distribution is not even across all indicators.

Figure 2C displays that RES15 has the highest positive GAP, while RES14 and RES17 show negative GAP. This indicates that responsiveness is inconsistent across all aspects, with some indicators showing services that have not met expectations. In Figure 2d, indicators ASS24 and ASS25 have the highest positive GAP, indicating that aspects of customer trust in the service are adequately met. The ASS20 indicator shows a performance that is slightly below expectations. This trend suggests that service assurance generally has a positive perception, but certain aspects require improvement.

Last, Figure 2e illustrates that EMP28 and EMP29 have positive GAP values, while EMP27 shows a slight

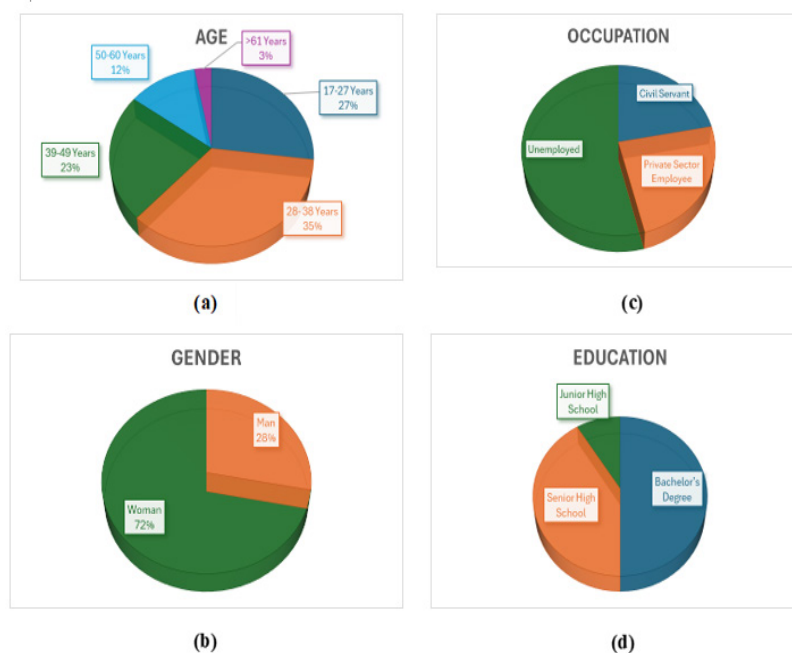


Figure 1. Respondent Characteristics at Poasia Public Health Centre by (a) Age; (b) Gender; (c) Occupation; (d) Education

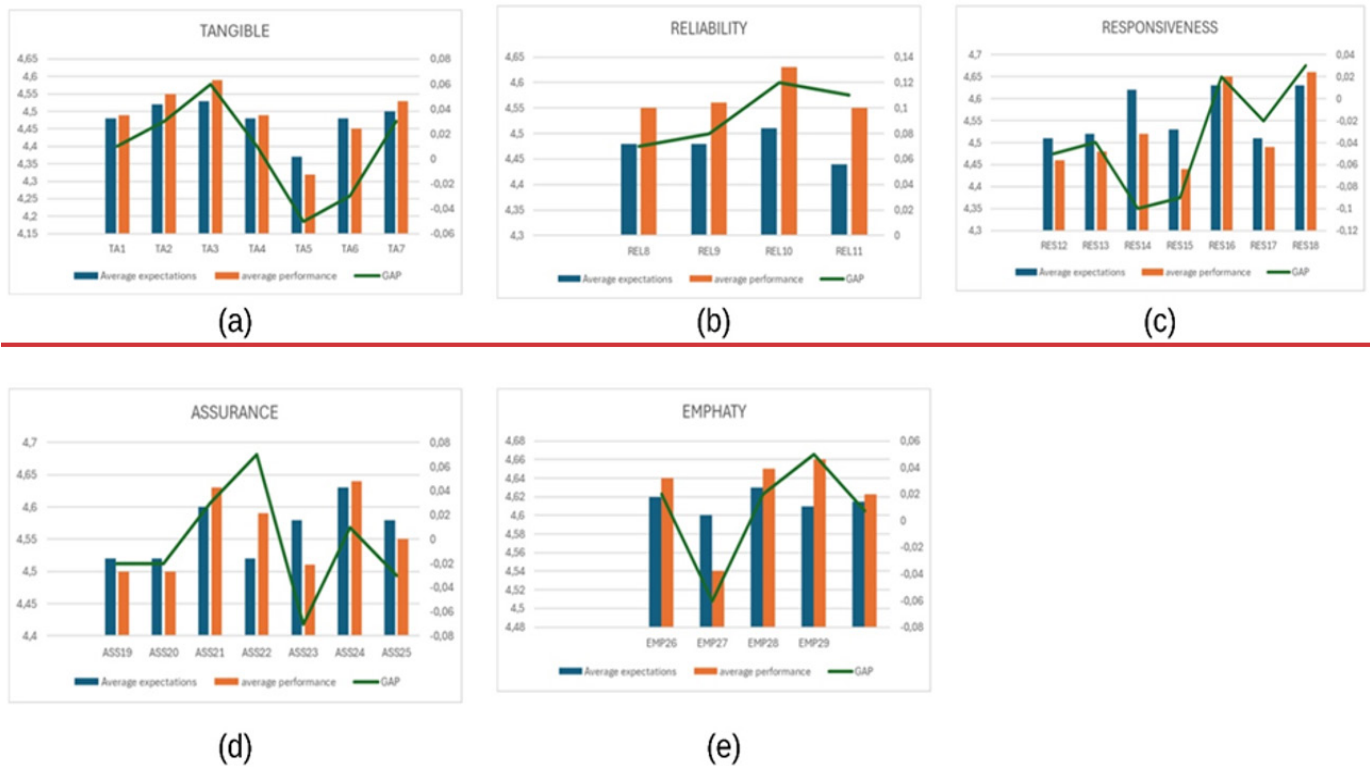


Figure 2. Expected Value, Performance Value and GAP Value of Servqual Dimension based on (a) Tangible; (b) Reliability; (c) Responsiveness; (d) Assurance; (e) Empathy

negative GAP. This indicates that customers' empathy tends to meet or exceed expectations, especially in EMP29, which indicates a successful personal approach.

3.3. Respondent's Zone of Tolerance Mapping

The Zone of Tolerance (ZoT) analysis illustrates the tolerance range for acceptable GAP values, as shown in Table 1.

The tangible dimension has an MSA value of -0.04 and an MSS value of 0.01, resulting in a ZoT of -0.01. This means that the service provided is only slightly above the minimum expectation and nearly equivalent to customer expectations. This indicates that tangible is a relatively weak dimension and needs improvement.

Furthermore, the reliability dimension yields an MSA of -0.02 and an MSS of 0.09, resulting in a ZoT of 0.07. This indicates that service reliability has exceeded the minimum tolerance limit and even slightly exceeded customer expectations.

Responsiveness dimension shows the highest ZoT of 2.24, with an MSA of -0.03 and an MSS of -0.04. Although the negative values indicate slight shortcomings in expectations, the high ZoT range indicates that customers have a high tolerance for service variations in this dimension. Further, a positive assurance MSA value (0.03) indicates that the service has exceeded minimum expectations. The ZoT value of 1.03 indicates that the customer's tolerance range is still quite wide. With an MSA of 0.06, an MSS of 0.01, and a ZoT of 0.71, the empathy dimension suggests

Table 1. Zone of Tolerance Position on Five SERVQUAL Dimensions

Dimensions	Average Expected Service Level	Average Service Level Performance	Average Minimum Service Level	MSA	MSS	ZoT
Tangible	4.48	4.49	4.52	-0.04	0.01	-0.01
Reliability	4.48	4.57	4.59	-0.02	0.09	0.14
Responsiveness	4.56	4.53	4.56	-0.03	-0.04	2.24
Assurance	4.56	4.56	4.53	0.03	0.00	1.03
Empathy	4.62	4.62	4.56	0.06	0.01	0.71

MSA = Measure of Service Adequacy; MSS = Measure of Service Superiority; ZoT = Zone of Tolerance

that service performance is satisfactory and within the customer's tolerance zone, although not particularly high. Collectively, the Responsiveness dimension has the highest ZoT range, indicating greater customer tolerance for service fluctuations. In contrast, the tangible dimension has a negative ZoT and the lowest MSA value, indicating that the service needs to be significantly improved.

4. Discussion

From the interviews with 100 respondents, various characteristics can be observed in relation to gender, age, education level, and occupation. Most respondents were female (72%), indicating that women are more concerned about health problems and often serve as decision-makers in health services.²¹ The respondents were mainly 28-38 years old (35%), indicating that service users at the Poasia Public Health Centre are predominantly adults who use health facilities more frequently.²² When viewed from work, the most significant number is not working or housewives (54%). Homemakers are the respondents who visit the Public Health Centre the most because they have time during working days and hours, compared to civil servants and private sector employees, who may have limited time to go to the Public Health Centre. A bachelor's degree (50%) was the most common response. The higher an individual's education level, the easier it is to understand and process the knowledge received into specific actions, including efforts to maintain health.

In calculating the GAP value, the tangible dimension score, specifically physical evidence, refers to the appearance of facilities, equipment, communication materials, and existing physical facilities and infrastructure, including environmental conditions that patients encounter when visiting. The existing infrastructure can make patients comfortable in the health centre. For tangible reasons, the GAP score is negative (-0.05 and -0.03), indicating that patients are dissatisfied with certain aspects of the health center, specifically the toilet facilities and suggestion boxes. Therefore, the management of the public health centre needs to be given attention to this as a means of assessment to improve the quality of its services. Patients expect existing toilets to be clean and sufficient in number, as well as the availability of suggestion boxes with a sufficient number and variety of stationery. Clean toilets, ease of finding, and special toilets for patients with disabilities are the expectations of patients when visiting. Likewise, the existence of suggestion boxes at several public health centre locations can accommodate suggestions and input from patients so that the public health centre can evaluate the services provided for a positive GAP score (0.06), which means that patients are satisfied

with the health center services on the aspect of the existence of information signage regarding the location and direction of the room infrastructure in the health center. Patients can easily obtain the information they need and locate the room according to their specific needs.

The reliability dimension refers to the health center's ability to deliver health services that align with what was promised. The service is considered satisfactory if it can meet the patient's expectations and needs. Conversely, if the patient is dissatisfied with the service provided, it can be decided that it is ineffective and inefficient. In this dimension, the GAP score is positive (average 0.09), namely, the performance received is more excellent than the patient's expectations of service hours that are on time, health problems can be adequately resolved, service is precise and fast, and service waiting time is not long, which is less than 60 minutes. The ease and speed of accessing services are an expectation for patients when visiting the public health centre, which can encourage them to return if they need health services at the Poasia Public Health Centre. This can be an attraction to increase the number of patient visits.

In the responsiveness dimension, patients are dissatisfied with the responsiveness of officers in responding to their needs. It can be observed through several aspects of service that have the largest negative GAP score (-0.10). Namely, officers are less responsive to information about when services are provided. Patients are left waiting without information about the services that will be provided. This certainly makes the patient uncomfortable, because, of course, when they come to visit, they want to be served immediately according to their needs. Almost all aspects of the GAP score are negative for this dimension, namely, an average of -0.04. The negative GAP value in the responsiveness dimension indicates a weakness in the staff's speed and accuracy. This is not in line with Ministry of Health Regulation No. 6 of 2024 on Minimum Service Standards, which requires the public health centre to provide timely and efficient services. If not immediately addressed, this condition may decrease patient trust, reduce visits, and negatively impact the image of public health centre. Therefore, internal evaluations such as compliance audits with SOPs and staff competency improvement training need to be carried out. Therefore, it should be a concern for Public Health Centre management when making improvements and evaluating the services provided. However, the positive GAP score is in the aspect of pharmacy officers being able to explain the rules and doses of taking medicine correctly. This aligns with the "Pharmaceutical Service Standards at the public health centre, where one of the pharmacy's tasks is

to provide drug information services appropriately and correctly.

The assurance aspect is that the officer can provide guarantees to patients regarding the services provided. Assurance refers to a patient's confidence in the promised recovery and safety, which includes the health worker's knowledge in providing appropriate services. If the service guarantee is good, it will positively impact patient satisfaction. The GAP score is negative (-0.07), where the officer has been unable to provide and foster a sense of trust in the patient regarding the medical action to be taken. When going to do a reproductive examination, some patients feel embarrassed, afraid of the results received, and unsure of the tools used. This evaluation assesses officers' competence, privacy, and assurance in relation to the tools they use, thereby fostering patient trust. Overall, in the assurance aspect, patient expectations of the service performance received are the same and are satisfactory. Indiraswari and Damayanti (2012) found that reasonable assurance increases patient satisfaction with services and affects patient assessments of other aspects. Their study indicates that the assurance dimension has a significant impact on patient satisfaction in healthcare services.

The GAP negative score (-0.06) on the complete information about Poasia Public Health Centre in the media (website or brochure) is still lacking. Because the Poasia Public Health Centre has a social media presence on Facebook, not all service users can access it. The brochures regarding the public health centre information are still lacking, so paying more attention to their availability is necessary. The Public Health Centre website is already available, but there is limited socialization, so not all service users are aware of it. The public health centre can engage with service users if information about Poasia Public Health Centre, including details about the type of services or health information, is accessible through various media.

To determine the tolerance range for acceptance based on the GAP score for the following five SERVQUAL dimensions, a ZoT analysis is carried out. Table 1 shows the ZoT value in five dimensions of SERVQUAL, which are worth -0.01, 0.14, 2.24, 1.03, and 0.71. The tangible aspect has a negative MSA value (-0.04), which means that the service performance received now is less than the minimum service, so it puts the ZoT value also at a negative value (-0.01), which means that the patient is not satisfied with the service received, even with the minimum service available. If left unimproved, the image and reputation of The Public Health Centre will suffer. The reliability aspect has a negative MSA value (-0.02), indicating that the current performance service falls below the minimum

service level. However, the MSS value is positive (0.09), above the ZoT value (0.14). This means the patient is unsatisfied with the service received, but it is still within the acceptable range according to the minimum service standard. This also needs to draw the attention of public health centre management to improve service performance, particularly in terms of speed and accuracy in service delivery.

Likewise, with the responsiveness aspect where the MSA value is negative (-0.03), and the MSS value is also negative (-0.04), supported by a negative GAP value (-0.04), which means that patients are not satisfied with the services received regarding the responsiveness of officers in serving both from the minimum service, expectations and current performance. However, patients can still accept it, as evidenced by the positive ZoT value. Likewise, regarding reliability, the public health centre enhances the responsiveness of officers, particularly in terms of competence, ensuring that patient needs are met. Regarding assurance and empathy, the MSA, MSS, and ZoT values are positive, indicating that patients are satisfied with the current performance, which meets the minimum service standards and exceeds their expectations for officers in assuring trust and involvement in their care. The public health centre maintains this good performance to ensure quality, and patients feel satisfied, relying on the Poasia Public Health Centre for help with their health problems.

5. Conclusion

The conclusion of this study indicates that the quality of services provided at Poasia Public Health Centre affects the level of patient satisfaction with the healthcare services they receive. Based on the SERVQUAL analysis, the dimensions of tangible, reliability, assurance, and empathy show that patients are satisfied because the services provided meet their expectations. However, in the responsiveness dimension, patients are not yet satisfied with the speed at which staff respond to their needs during their visit to the health center. Nevertheless, patients can still accept this condition, as it remains within the minimum tolerable limits.

This study also emphasizes the importance of further research comparing service quality across different Public Health Centre, as well as the use of other analytical methods to produce more comprehensive evaluations. Policy makers may adopt SERVQUAL and ZoT as routine tools to assess the quality of health services. In addition, improving staff responsiveness and upgrading basic facilities, such as sanitation, should be prioritized to increase patient satisfaction and maintain public trust in health services.

Conflict of Interest

The author declares no conflict of interest. This study was conducted independently and without any financial or commercial relationships that could be construed as a potential conflict of interest.

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