

Meta analysis: Relationship of health service quality with patient satisfaction in hospital

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Abstract

At the moment, Indonesia's health industry has not evolved to its full potential. Not all parts of Indonesia have equal access to high-quality medical care. However, the main reason people engage in activities is their health, specifically having a fit and healthy body. Hospitals in Indonesia expanded by 12.86% between 2016 and 2020, according to the 2020 Indonesian Health Profile. Based on data from basic health research conducted in 2018, 51.99% of people had access to hospital services. These findings indicate that hospital health care facilities are the most often utilized medical service for treatment. This study's main goal was to ascertain how the quality of health services evaluated from the perspectives of safety, responsiveness, empathy, physical evidence, and patient satisfaction in hospitals related to each other. The design of this study was meta-analysis. Google Scholar and the Garuda website's indexed journal provider sites were searched for research data. Ten journals that satisfied the inclusion criteria were retrieved after selection. The Revman 5.4 program was utilized for the statistical testing in this investigation. The findings indicate a strong correlation between patient happiness and every aspect of health service quality. The reliability quality dimension POR is 2.96; CI = 1.43-6.13; Z = 2.93, the responsiveness quality dimension POR 3.38; CI = 1.69-6.77; Z = 3.43, the quality assurance dimension POR 2.91; CI = 1.45-5.83; Z = 3.01, the empathy quality dimension POR 3.63; CI = 2.03-6.49; Z = 4.33, and the physical evidence quality dimension POR 2.55; CI = 1.28-5.07; Z = 2.66. There is a substantial correlation between hospital patient satisfaction and the quality of health services evaluated from five dimensions. With a value of 3.63 times in terms of increasing patient recurrent hospital visits, the empathy dimension is the one with the strongest correlation.

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I. INTRODUCTION

A hospital is defined as a healthcare facility that offers complete individual healthcare services, including inpatient, outpatient, and emergency care, in accordance with Government Regulation Number 47 of 2021 of the Republic of Indonesia about Hospital Management¹. In compliance with hospital service standards, it must prioritize the needs of patients while delivering safe, effective, high-quality, and anti-discriminatory healthcare services. As a standard for patient care, it also creates, implements, and upholds hospital quality standards [1].

The Ministry of Health sets national criteria for patient satisfaction in healthcare. The Republic of Indonesia's Ministry of Health's 2016 Regulation on Minimum Service Standards states

that patient satisfaction is more than 95%. It is deemed that a healthcare service is of low quality or does not fulfill the basic requirements if the patient satisfaction rate is less than 95% [2].

The servqual technique, often known as the five quality dimensions, is used to measure the quality of services provided to patients. These dimensions include: Equipment and personnel are tangible; officers' ability to deliver promised health services promptly, accurately, and satisfactorily is known as reliability; employees' desire to deliver services promptly and responsively is known as responsiveness; assurance is the capacity, courtesy, and trustworthy attitude that is free from risk, danger, or uncertainty; and empathy is the ease of forming relationships,

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effective communication, attentiveness, and understanding of customer needs [3].

Hastuti's research findings conducted in 2017 at Yogyakarta Regional General Hospital showed that the p value for each variable was less than 0.0000 < 0.05. The order of the strength of the relationship from the largest to the smallest, namely: responsiveness, assurance, reliability, empathy, and physical evidence. In line with other studies that show that among all the satisfaction dimension variables, namely physical appearance, reliability, responsiveness, assurance, and empathy have a significant correlation with outpatient satisfaction, responsiveness is a determinant of outpatient satisfaction at Hospital X. The responsiveness factor influences the level of patient satisfaction, assuming that the responsiveness factor which includes doctors asking patient complaints, doctors responding to patient complaints, doctors giving patients the opportunity to ask questions, and officers being polite and friendly influences the level of patient satisfaction. The better the responsiveness of health services provided to patients, the more it increases the level of patient satisfaction. Mernawati and Zainafree found that responsiveness was related to the level of patient satisfaction. These results are in line with Widyaningrum's research which stated that there was a significant relationship between the responsiveness dimension and patient satisfaction in midwifery services at BPM Boyolali [4, 5, 6, 7].

The findings of [8] demonstrate a connection between the responsiveness and reliability quality characteristics. Assurance dimensions, and empathy dimensions with patient satisfaction with the value of p -value of all these dimensions is equal to 0,001, but there is no relationship from the dimension of Reliability quality to the value of p -value The dimensions are 0,437 > 0,05. The results of the article analysis show that there are still differences in the study's conclusions regarding the relationship between the quality of health services and patient satisfaction in hospitals. Of the 10 journals obtained, 8 journals stated that the quality of service in 5 dimensions had a relationship with patient satisfaction at home sick. Meanwhile, 2 other journals stated that not all aspects of service quality have a relationship with hospital patient satisfaction. The research gap, namely the evidence gap, makes researchers interested in conducting a meta-analysis of the relationship.

II. METHOD

This study uses meta-analysis research. Meta-analytic analysis is a systematic process that uses statistical techniques to combine two or more research findings in order to obtain new quantitative data. In korelasi meta-analysis, the design of the study is similar to other types of meta-analysis, namely, it fo-

cuses on statistical analysis [9].

Data collection is conducted using databases such as Google Scholar and Portal Garuda. The abstract and kunci used in the article's introduction are "Mutu pelayanan kesehatan, kepuasan pasien, kepuasan pasien di rumah sakit, metode servqual, dimensi pelayanan, dimensi bukti fisik, kehandalan, ketanggapan, jaminan, empati, quality of health services, patient satisfaction, patient satisfaction in hospital, servqual method, tangible, reliability, responsiveness, assurance, and empathy."

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) concept is used in the study process [10]. The following are the requirements for research inclusion:

- Kemutakhiran sumber data yang digunakan adalah artikel ilmiah dengan batas maksimal 5 tahun terakhir.
- Bahasa Indonesia dan Bahasa Inggris yang terpublikasi secara online
- Tersedia full text, Bisa di download secara gratis
- Jurnal internasional yang bereputasi (terindeks Scopus dan/atau Index Copernicus international) atau jurnal nasional terakreditasi (terindeks Sinta 1 sampai Sinta 4)
- Desain penelitian Cross Sectional
- Terdapatnya nilai p -value dan dengan CI 95% yang dapat mewakili keadaan pada populasi sebenarnya
- Table hasil penelitian 2x2

Following the explanation and explanation of the statistics, twelve articles will be analyzed. The RevMan 5.4.1 application is used to present and report the meta-analysis's findings. A forest plot graph is used to display the data processing findings and show the effect size (combined effect) of each variable under study. Portal Garuda and Scopus were the two databases that were searched.

III. RESULTS

A. Meta Analysis of the relationship between physical evidence dimensions and patient satisfaction.

Size is impacted by the computation results. Figure 1 shows the results of studies on the connection between patient satisfaction and the aspects of tangible evidence:

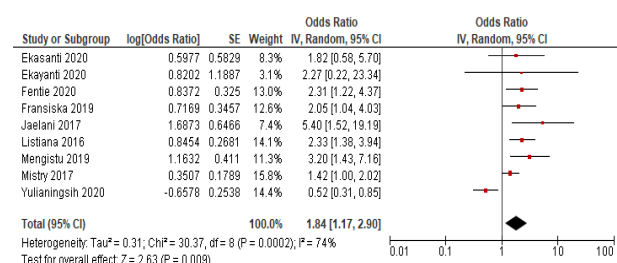


Fig. 1. Forest plot relationship of physical evidence dimensions with patient satisfaction

Data analysis utilizing Random Effect Models is necessary because, as shown in Figure 1, the results of the heterogeneity test analysis are quite high ($I^2 = 90\%$). Pooled Odds Ratio (POR) = 2,55; CI 95% = 1,28-5,07; overall effect $Z = 2,66$ dan $P = 0.08$ were the outcomes of the statistical test. These findings suggest a strong correlation between patient satisfaction and the aspects of tangible evidence.

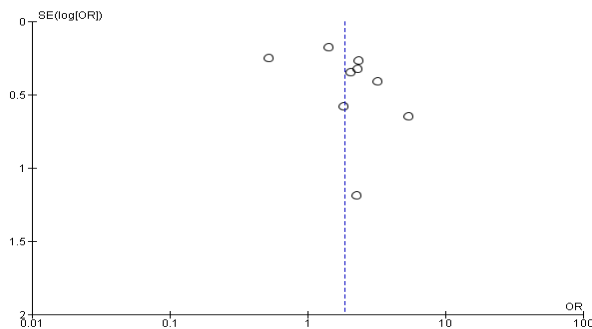


Fig. 2. Funnel plot relationship of physical evidence dimensions with patient satisfaction

According to the funnel plot results, publication bias is indicated by the asymmetry of the plots on the right and left of the vertical line, where the distance between the plots varies, and the presence of three plots on the left of the vertical line and five plots on the right where two of them touch the vertical line.

B. Meta Analysis of Reliability Dimension Relationship with Patient Satisfaction

The results of the study's effect size computation for the relationship between the reliability and patient satisfaction dimensions are shown in Figure 3:

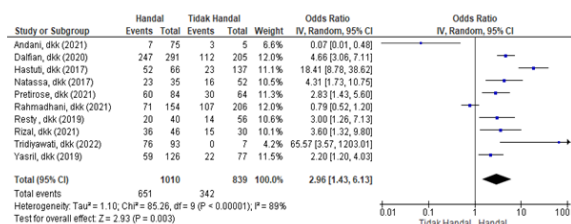


Fig. 3. Forest plot of reliability dimension relationship with patient satisfaction

Because the results of the heterogeneity test analysis are so high ($I^2 = 89\%$), as illustrated in Figure 3, the data analysis uses Random Effect Models. The results of the statistical test were as follows: Pooled Odds Ratio (POR) = 2,96; CI 95% = 1,43-6,13; score overall effect $Z = 2,93$ dan $P = 0.03$. These results imply a substantial correlation between the dependability factors and patient satisfaction.

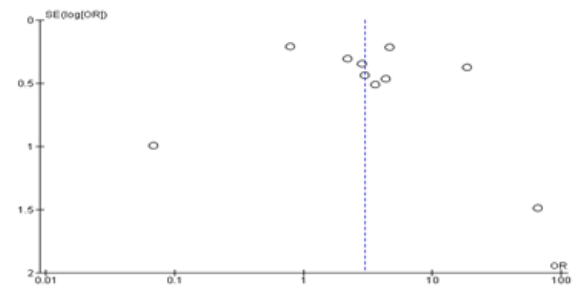


Fig. 4. Funnel plot of reliability dimension relationship with patient satisfaction

A publication bias in the funnel plot results is suggested by the asymmetrical plots on the right and left of the vertical line, where the distance between the plots varies. Five plots on the right and three on the left round the vertical line, with two of them touching it. 3. Meta Analysis of the Relationship between Responsiveness and Patient Satisfaction. Figure 5 below displays the findings of the study's impact size calculation for the correlation between the responsiveness and patient satisfaction dimensions:

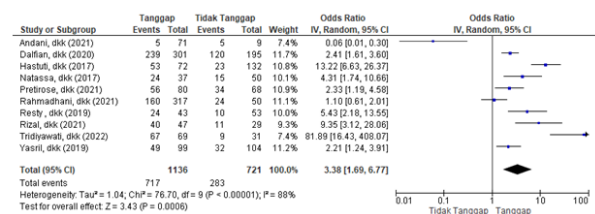


Fig. 5. Forest plot of the relationship between the dimensions of responsiveness and patient satisfaction

Figure 5. Forest plot of the relationship between the dimensions of responsiveness and patient satisfaction The data analysis employs Random Effect Models because, as shown in Figure 5, the findings of the heterogeneity test analysis are extremely high ($I^2 = 88\%$). Pooled Odds Ratio (POR) = 3,38; CI 95% = 1.69-6.77; score overall effect $Z = 3,43$ dan $p = 0.006$ were the outcomes of the statistical test. These findings suggest a strong correlation between patient satisfaction and responsiveness parameters.

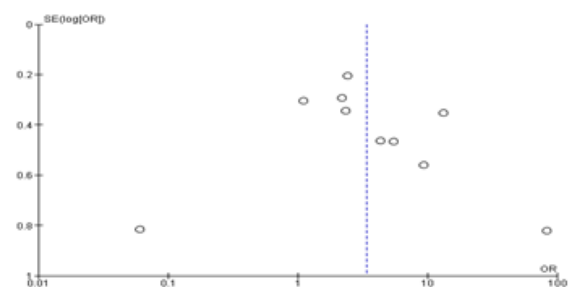


Fig. 6. Funnel plot relationship of responsiveness dimensions with patient satisfaction

Publication bias is indicated by the funnel plot results, which

show that there are five plots to the left of the vertical line and five plots to the right of it, as well as asymmetry in the plots on the right and left of the vertical line, where the distance between the plots is not the same.

C. Meta Analysis of the Relationship between Assurance Dimensions and Patient Satisfaction

Figure 7 below displays the findings of the study's impact size estimate for the connection between the assurance dimensions and patient satisfaction:

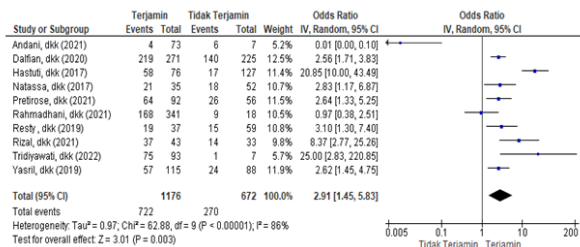


Fig. 7. Forest plot of the assurance dimension relationship with patient satisfaction

Random Effect Models are used in the data analysis because, as shown in Figure 7, the results of the heterogeneity test analysis are quite high ($I^2 = 86\%$). The statistical test yielded the following results: score overall effect $Z = 3.01$, $P = 0.03$; Pooled Odds numbers Ratio (POR) = 2,91; CI 95% = 1.45-5,83. These findings suggest that patient pleasure and assurance aspects are significantly correlated.

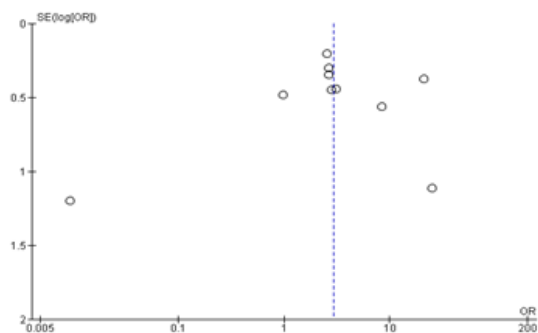


Fig. 8. Funnel plot of assurance dimension relationship with patient satisfaction

The results of the funnel plot show that publication bias is present when the plots on the right and left of the vertical line are asymmetrical, meaning that the distance between them is different. There are three plots on the right and three plots on the left where four plots encounter the vertical line.

D. Meta analysis of the relationship between empathy and patient satisfaction

Figure 9 below displays the findings of the study's impact size estimate for the connection between the empathy and patient satisfaction dimensions:

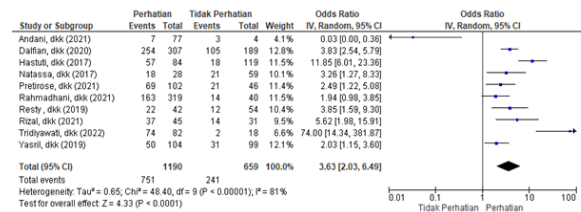


Fig. 9. Histogram Plot for Normality Test

The data analysis employs Random Effect Models because, as shown in Figure 9, the findings of the heterogeneity test analysis are extremely high ($I^2 = 81\%$). Pooled Odds Ratio (POR) = 3,63; CI 95% = 2,03-6,49; score overall effect $Z = 4,33$ and $P = 0,001$ were the outcomes of the statistical test. These findings suggest a strong correlation between hospital patient satisfaction and empathy characteristics.

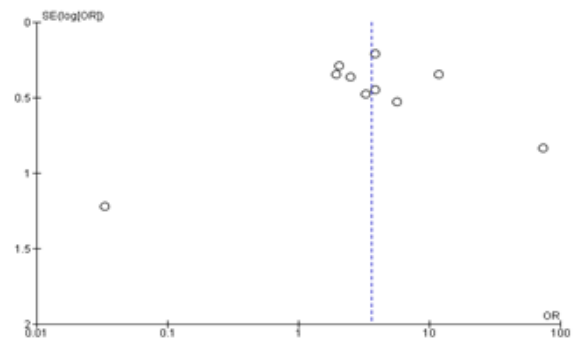


Fig. 10. Funnel plot of the relationship between empathy and patient satisfaction dimensions

The results of the funnel plot show that there is a publication bias indicated by the asymmetry of the plots on the right and left of the vertical line where the distance between the plots is not the same. There are 4 plots on the left of the vertical line and 3 plots on the right where three of them touch the vertical line.

IV. DISCUSSION

A. Meta Analysis of the Relationship between Physical Evidence Dimensions and Patient Satisfaction in Hospitals

Figure 2 displays the findings of data analysis from ten studies that used the Random Effect Model to examine the association between patient satisfaction and the physical evidence aspects. With a value of $p=0.01$ and an I^2 value of 90%, the findings of the heterogeneity test indicated that the study's variance was comparatively high. There is a significant correlation between

the dimensions of physical evidence and patient satisfaction, as demonstrated by the results of the combined analysis of the data displayed on the combined Forest Plot. The results show a significant relationship with a score pooled odds ratio of 2,55 (95% CI 1.28–5.07) and a value of $p < 0,05$, or $p 0,008$ after combined analysis. For satisfied patients who wish to return, the dimension of tangible physical proof increases 2.55 times more than for unsatisfied patients. The asymmetry of the plots on the right and left of the vertical line, where the distance between the plots is not the same, indicates a publication bias, according to the funnel plot results. Five plots are on the right where two of them touch the vertical line, and three plots are on the left of the line.

B. Meta Analysis of Reliability Dimension Relationship with Patient Satisfaction

Table 4 displays the findings of data analysis from ten studies that used the Random Effect Model to examine the link between patient happiness and the quality of health care as measured by dependability. With a value of $p=0.03$ and an I2 of 89%, the findings of the heterogeneity test indicated that the study's variation was fairly high. The results of the analysis of the data presented on the combined Forest Plot demonstrate the relationship between the reliability and patient satisfaction dimensions. When the data are analyzed together, they reveal a significant relationship with a score of $p < 0,05$, or $p 0,003$, and a score pooled odds ratio of 2,96 (95% CI 1,43-6,13). When compared to dissatisfied individuals, the reliability component increases 2.96 times for satisfied patients who wish to return. The asymmetry of the plots on the right and left of the vertical line, where the distance between the plots is not the same, indicates a publication bias, according to the funnel plot results. Five plots are on the right where two of them touch the vertical line, and three plots are on the left of the line.

C. Meta Analysis of the Relationship between Health Service Quality from Responsiveness Dimensions and Patient Satisfaction in Hospitals

Figure 6 displays the findings of data analysis from ten studies that used the Random Effect Model to examine the association between patient satisfaction and responsiveness dimensions. A score of $p=0.006$ and an I2 of 88% indicated that the study's variance was relatively high, according to the results of the heterogeneity test. There is a significant relationship between the dimensions of responsiveness and patient satisfaction, as evidenced by the results of the combined analysis of the data displayed on the combined Forest Plot. The pooled odds ratio value is 3,30 (95% CI 1,69-6,77), and the score $p < 0,05$, or p

0,006, indicates a significant relationship. When compared to dissatisfied patients, the responsiveness dimension increases 3.30 times for satisfied patients who wish to return. The asymmetry of the plots on the right and left of the vertical line, where the distance between the plots is not the same, and the fact that there are five plots to the left of the vertical line and five plots to the right of it, indicate publication bias, according to the funnel plot results. This suggests a bias towards publications.

D. Meta Analysis of the Relationship between Assurance Dimensions and Patient Satisfaction

Figure 8 displays the findings of data analysis from ten studies that used the Random Effect Model to examine the connection between patient satisfaction and assurance aspects. With a value of $p=0.003$ and an I2 score of 86%, the findings of the heterogeneity test indicated that the study's variance was comparatively high. The data analysis results, which are shown on the combined Forest Plot, indicate a significant relationship between the assurance and patient satisfaction dimensions. The results show a value of $p < 0,05$, or $p 0,003$, and a score pooled odds ratio value of 2.91 (1.45-5.83). This suggests that the aspects of certainty and patient happiness are significantly correlated. When compared to dissatisfied patients, the assurance dimension increases 2.91 times for satisfied patients who wish to return. The asymmetry of the plots on the right and left of the vertical line, where the distance between the plots is not the same, and the fact that there are five plots to the left of the vertical line and five plots to the right of it, indicate publication bias, according to the funnel plot results.

E. Meta Analysis of the Relationship between Empathy Dimensions and Patient Satisfaction

Figure 10 displays the findings of data analysis from ten research that used the Random Effect Model to examine the connection between patient satisfaction and empathy dimensions. With a value of $p=0.001$ and an I2 score of 81%, the findings of the heterogeneity test demonstrated that the study's variance was fairly high. The data analysis results, which are shown on the combined Forest Plot, indicate a significant relationship between the patient satisfaction and empathy dimensions. The pooled odds ratio value is 3.63 (2.03 – 6.49), and the score $p < 0,05$, or $p 0,001$, indicates a significant relationship. This suggests that patient satisfaction and the empathy factor are significantly correlated. When compared to dissatisfied individuals, the empathy dimension increases 3.63 times for satisfied patients who wish to return. The asymmetry of the plots on the right and left of the vertical line, where the distance between the plots is not the same, indicates a publication bias, according

to the funnel plot results. Three plots are on the right where three of them meet the vertical line, and four plots are on the left of the vertical line.

V. CONCLUSION

This study concludes that there is a significant correlation between the quality of service dimensions of empathy and patient satisfaction in hospitals ($p = 0.001$ and $POR = 3.63$), between the quality of service dimensions of responsiveness and patient satisfaction in hospitals ($p = 0.006$ and $POR = 3.30$), and between the quality of service dimensions of reliability and patient satisfaction in hospitals ($p = 0.003$ and $POR = 2.96$). The aspects of assurance related to service quality have a substantial correlation with. A p -value of 0.003 and a POR of 2.91 indicate a significant

relationship between hospital patient satisfaction and the quality of service dimensions of assurance, and a p -value of 0.008 and a POR of 2.55 indicate a significant relationship between hospital patient satisfaction and the quality of service dimensions of physical evidence. Patient satisfaction has increased 3.63 times for the empathy dimension, 3.38 times for responsiveness, 2.96 times for reliability, 2.91 times for assurance, and 2.55 times for physical evidence for subsequent hospital visits. With a value of 3.63 times, the Empathy dimension exhibited the strongest link with an increase in patient repeat hospital visits among the five quality dimension variables examined. The study's findings are expected to help hospitals enhance patient satisfaction by improving service quality in these five criteria.

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