

Factors Affecting Customer Satisfaction with Health Care Services for the Elderly

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Abstract

The increasing elderly population has created significant challenges for healthcare systems, particularly in ensuring high-quality services that meet the needs and expectations of older patients. Elderly patient satisfaction has become an important indicator of healthcare performance because it reflects patients' perceptions of service processes, outcomes, and overall care experiences. This study aimed to analyze the factors affecting elderly patient satisfaction with healthcare services by examining the roles of digital information systems, healthcare facility conditions, service costs, human-resource behavior, and perceived health recovery, with healthcare-service quality as a mediating variable. This study employed a quantitative observational analytical design with a cross-sectional approach. Data were collected from 175 elderly patients aged ≥ 60 years receiving geriatric outpatient services at the Geriatric Polyclinic of RSUPN dr. Cipto Mangunkusumo Jakarta and Prodia Jakarta Senior Clinic. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0. The findings showed that healthcare-service quality had a strong and significant effect on elderly patient satisfaction. Perceived health recovery significantly influenced healthcare-service quality, while digital information systems, facility conditions, service costs, and human-resource behavior did not show significant direct effects on healthcare-service quality. The results indicate that elderly patients primarily evaluate healthcare services based on perceived quality and meaningful health improvements. In conclusion, improving healthcare-service quality through patient-centered care, effective communication, and outcome-oriented services is essential for enhancing elderly patient satisfaction. Future healthcare strategies should prioritize age-friendly services and integrated approaches that address the technological, structural, interpersonal, and clinical needs of older adults.

INTRODUCTION

The growth of the elderly population is one of the main demographic challenges in various countries, including Indonesia. According to the World Health Organization (WHO, 2024), by 2030 it is estimated that one in six of the world's population will be 60 years old or older, with a total of around 1.4 billion people. This figure is projected to increase to 2.1 billion by 2050. In Indonesia, the Central Statistics Agency (BPS, 2024) reports that the proportion of the elderly has reached around 12% of the total population or around 33.4 million people. This condition indicates that Indonesia has entered the era of aging population since 2021 (Basrowi et al., 2021; Dinakrisma et al., 2022; Handajani et al., 2022; Kaligis et al., 2021; Ngadi et al., 2023).

The increase in the number of the elderly is accompanied by the need for more intensive health services due to the high prevalence of chronic diseases, decreased physical and cognitive

functions, and socio-economic changes. In this context, elderly patients' satisfaction with health services is not only an indicator of service quality, but also a determining factor for medication adherence, repeated service utilization, and overall quality of life improvement (Ferreira et al., 2023; Donabedian, 1988).

Elderly patient satisfaction is multidimensional and is influenced by various factors, including the use of digital information systems, the condition of service facilities, the behavior of health human resources (HR), affordability of costs, and perceptions of health recovery outcomes. Digital transformation of health in Indonesia, such as the Satu Sehat platform, is expected to increase the accessibility of services. However, the elderly often face digital gaps due to low technological literacy, physical limitations, and infrastructure inequality (Yasmin, 2025; Wang et al., 2024; APJII, 2024).

Structural factors such as elderly-friendly facilities and service processes involving friendliness and empathy of health workers also play an important role (Parasuraman et al., 1988; Kajonius & Kazemi, 2021). In addition, the perception of health recovery as a clinical outcome is a strong predictor of satisfaction according to the Donabedian framework (structure-process-outcome) (Donabedian, 1988; Akbar et al., 2020).

Satisfaction among older patients is particularly complex because their evaluation of healthcare may emerge from multiple dimensions experienced before, during, and after the clinical encounter. Structural characteristics such as healthcare facilities and technological systems establish the environment in which services are delivered, while process-related factors such as communication, empathy, responsiveness, and healthcare-worker behavior determine how patients experience the care interaction. Clinical and functional outcomes subsequently influence whether patients believe that the services they received produced meaningful improvements in their health. This multidimensional perspective is consistent with Donabedian's structure-process-outcome framework, which conceptualizes healthcare quality through the conditions under which care is provided, the processes through which care is delivered, and the resulting outcomes. Earlier empirical evidence supports the importance of distinguishing these dimensions. Kajonius and Kazemi (2016), using large-scale Swedish elderly-care data, found that process-related characteristics of user-oriented care were particularly important predictors of perceived quality and satisfaction, whereas structural factors demonstrated more limited explanatory effects. This evidence suggests that improving satisfaction cannot be achieved solely through physical infrastructure (Bouzid et al., 2018; Jie et al., 2015; Nag et al., 2020). Rather, elderly patients may simultaneously evaluate the accessibility of service systems, physical facilities, interactions with healthcare personnel, affordability of care, perceived improvement in their health, and the overall quality created by these combined experiences.

One increasingly important component of this healthcare experience is digitalization. Registration systems, electronic health records, online appointments, electronic payments, digital health information, patient applications, and self-service technologies can potentially improve efficiency and accessibility; however, their value cannot be assumed to be identical across age groups. Older adults may face difficulties associated with digital literacy, visual and physical limitations, unfamiliar interfaces, concerns about information security, and dependence on family members or healthcare staff for technological assistance. Wang et al. (2024), in a mixed-method study of urban older adults involving 876 valid questionnaires in

China, demonstrated that satisfaction with digital medical services depended substantially on how older people perceived and accepted the technology. Digital-skills support positively influenced perceived ease of use and usefulness, while behavioral intention had a strong positive relationship with satisfaction ($\beta = .641$, $P < .001$). The study also showed that increasing age and lower educational attainment were associated with lower evaluations of several aspects of digital medical services. These findings are highly relevant to health systems undergoing digital transformation because technological availability alone does not guarantee perceived service quality. Digital systems may improve service experiences when they simplify access, but they can also become additional barriers when their design or implementation does not accommodate the functional and technological capabilities of older adults.

Beyond digitalization, interpersonal behavior, physical facilities, affordability, and perceived health outcomes constitute important but potentially unequal determinants of elderly satisfaction. Evidence from Indonesia illustrates this complexity. Akbar, Gondodiputro, and Raksanagara (2020) examined 112 older adults participating in the Chronic Disease Management Program across eight public health centers in Bandung and reported an overall satisfaction level of 92%. Nevertheless, substantial variation occurred across SERVQUAL dimensions: assurance recorded the highest satisfaction level at 94.6%, whereas tangibles recorded the lowest at 84.8%, while assurance, responsiveness, and empathy were identified as dimensions that needed to be maintained. At a broader level, Sharkiya's (2023) rapid review of 11 studies concluded that higher healthcare-service quality was generally associated with greater satisfaction and better outcomes among older adults, with perceived service quality, quality of life, satisfaction, and provider–patient communication emerging as central themes. These results demonstrate that satisfaction cannot be adequately understood through a single service attribute. Physical conditions may establish comfort and accessibility, healthcare workers influence trust and interpersonal experiences, costs affect perceived economic accessibility, and perceived recovery provides patients with evidence regarding whether the healthcare they received was ultimately worthwhile.

Previous international research further establishes patient satisfaction as a multidimensional construct while simultaneously revealing important inconsistencies that justify more integrated empirical examination. Ferreira et al. (2023), through a systematic literature review and bibliometric analysis, demonstrated that healthcare satisfaction has been investigated through numerous determinants and measurement approaches, reinforcing the central role of healthcare quality in meeting patient expectations and needs. Kajonius and Kazemi (2016) showed that interpersonal and process-related characteristics could be more influential than many structural characteristics in explaining satisfaction with elderly care. Akbar et al. (2020), however, documented high satisfaction across all SERVQUAL dimensions among Indonesian older patients while still identifying meaningful differences between tangible and interpersonal components. More recently, Wang et al. (2024) demonstrated that technological satisfaction among older adults depended on usefulness, ease of use, external support, behavioral intentions, and perceived risk rather than merely the existence of digital services. Collectively, these studies indicate that different dimensions may assume different levels of importance across healthcare settings and populations. They also suggest that conclusions obtained from general patient groups, long-term-care environments, primary-care services, or highly digitalized settings may not automatically explain satisfaction among older

patients receiving specialized outpatient geriatric services in Indonesia.

Accordingly, a meaningful research gap remains in explaining how these heterogeneous determinants operate simultaneously within Indonesian geriatric healthcare. Existing studies frequently concentrate on either conventional service-quality dimensions, particular healthcare programs, specific technological services, or isolated components of elderly care. Consequently, evidence remains limited regarding whether digital information systems, healthcare-facility conditions, service costs, healthcare human-resource behavior, and perceived health recovery jointly explain how older patients evaluate healthcare quality and, ultimately, their satisfaction. The original manuscript similarly identifies the limited availability of Indonesian studies specifically addressing geriatric services and highlights the need to integrate digital-technology factors with the circumstances of older patients in referral-service environments. An additional conceptual gap concerns the mechanism linking these service characteristics with satisfaction. Treating each antecedent only as a direct predictor may overlook the possibility that patients first synthesize their experiences into an overall judgment of healthcare-service quality, which subsequently determines satisfaction. This mechanism is consistent with Donabedian's logic in which structural, process, and outcome characteristics collectively shape perceptions of healthcare performance. Examining healthcare-service quality as a mediator therefore offers a more integrated explanation than evaluating fragmented direct relationships alone.

Addressing this gap is increasingly urgent because Indonesian healthcare organizations must simultaneously respond to population ageing, the growing utilization of health services, continuing digital transformation, financial-access concerns, and rising expectations for patient-centered care. The importance of this issue becomes greater in older populations because dissatisfaction may originate not from a single failure but from the interaction of several barriers for example, a modern digital registration system that is difficult for older adults to use, technically adequate facilities that do not sufficiently accommodate age-related limitations, professional healthcare personnel whose communication does not correspond with patient needs, or clinically appropriate care in which treatment progress is not adequately communicated. International research has shown that older adults' satisfaction with digital healthcare improves when systems are useful, accessible, and supported appropriately, while research on geriatric healthcare has emphasized the importance of interpersonal quality and communication. Therefore, healthcare managers require evidence not merely concerning whether these factors matter but concerning their relative contribution and the pathways through which they influence satisfaction. Such evidence can help organizations distinguish basic service attributes from high-impact determinants and direct limited resources toward interventions most capable of improving the healthcare experience of older patients.

The novelty of the present research lies in its integrated examination of technological, structural, economic, interpersonal, and outcome-related determinants within a single explanatory model of elderly healthcare satisfaction. Rather than restricting healthcare quality to conventional physical or interpersonal dimensions, the proposed framework combines the use of digital information systems, conditions of healthcare facilities, service costs, human-resource behavior, and perceptions of health recovery and evaluates healthcare-service quality as the mechanism connecting these antecedents with elderly patient satisfaction. This framework is particularly relevant because the variables represent different components of the

healthcare experience: digital information systems reflect technological access and service modernization; facilities represent structural conditions; costs represent economic accessibility and perceived affordability; human-resource behavior captures interpersonal service processes; and perceived recovery represents the patient's evaluation of healthcare outcomes. The study further applies this framework to elderly outpatients receiving geriatric services at the Geriatric Polyclinic of Dr. Cipto Mangunkusumo National Central General Hospital and Prodia Jakarta Senior Clinic, providing an urban Indonesian setting that differs from the primary-care and long-term-care environments dominating much previous research. The manuscript specifies elderly patients aged 60 years or older as the study population at these two healthcare facilities.

Based on these considerations, this study aims to analyze the factors affecting the satisfaction of older patients with healthcare services and to determine the mediating role of healthcare-service quality within these relationships. More specifically, the research examines whether the use of digital information systems, the condition of healthcare-service facilities, healthcare costs, human-resource behavior, and perceived health recovery influence healthcare-service quality and whether healthcare-service quality subsequently influences elderly patient satisfaction. The research thereby seeks to identify which dimensions of healthcare delivery make the most meaningful contribution to the perceived quality of geriatric services rather than assuming that all attributes have equivalent effects. This objective responds directly to inconsistencies in previous studies showing that tangible, interpersonal, technological, and outcome-related factors can differ substantially in explanatory importance depending on the population and healthcare environment. By testing these relationships within an integrated model, the study is expected to provide a clearer explanation of how older patients transform individual service experiences into an overall evaluation of healthcare quality and satisfaction, thereby extending understanding of satisfaction formation in geriatric outpatient healthcare.

The study is expected to contribute theoretically, empirically, managerially, and practically to healthcare-service research. Theoretically, it extends the application of the structure–process–outcome perspective by integrating digital healthcare systems, structural facilities, economic considerations, interpersonal behavior, and perceived recovery into a unified model in which perceived healthcare-service quality functions as a mediating mechanism. Empirically, the study contributes evidence from elderly patients in an Indonesian urban geriatric-service context, thereby complementing previous evidence obtained from primary care, elderly-care facilities, general patient populations, and international digital-health settings. Managerially, the findings can assist healthcare administrators in prioritizing improvements according to the factors that exert the greatest influence on perceived service quality rather than allocating resources solely on the basis of conventional assumptions regarding service satisfaction. Practically, the results may guide the development of more age-friendly digital processes, accessible healthcare facilities, appropriate financial arrangements, empathetic and responsive healthcare interactions, and more effective communication regarding treatment progress and recovery. At the policy level, such evidence can support the development of elderly-centered healthcare strategies consistent with Indonesia's rapidly ageing population and broader efforts to promote healthy ageing, equitable healthcare access, and sustainable improvements in the quality of geriatric services.

METHOD

This study used a quantitative design of observational analytics with a cross-sectional approach. Data collection was carried out at the Geriatric Polyclinic of RSUPN dr. Cipto Mangunkusumo Jakarta and Prodia Jakarta Senior Clinic during the period of May 2026. The study population was elderly patients (age ≥ 60 years) who utilized geriatric outpatient services at both facilities. A sample of 175 respondents was obtained through consecutive sampling techniques by considering inclusion criteria (able to communicate, willing to participate, and have used services in the last 6 months) and exclusion criteria (severe cognitive impairment and acute conditions).

Primary data were collected through face-to-face interviews using questionnaires adapted and modified from the 2017 Patient Satisfaction Questionnaire (KKP-2017). The instrument consists of items with a 5-point Likert scale that measures the variables of the use of digital information systems, the condition of health service facilities, service costs, human resource behavior, perception of health recovery, quality of health services (mediation), and customer satisfaction. The questionnaire has gone through trial and validation before use.

Data analysis was carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software. The evaluation includes measurement models (outer models) including convergent validity, discriminatory, and reliability, as well as structural models (inner models) with hypothesis testing through bootstrapping at a significance level of 5%. The validity and reliability of the results are guaranteed through convergent validity, discriminant validity, Cronbach's Alpha, and Composite Reliability tests.

RESULTS AND DISCUSSION

This study involved 175 elderly patient respondents (age ≥ 60 years) who took advantage of the services at the Geriatric Polyclinic of Dr. Cipto Mangunkusumo Hospital and the Prodia Jakarta Senior Clinic. The majority of respondents were female (61.1%), in the age group of 70-80 years old (48.6%), with a high school education and above (57.4%), and had an income below the Jakarta UMR (84%). This characteristic reflects the profile of urban elderly people who actively utilize outpatient geriatric services.

Table 1. Respondent Characteristics

Features	Quantity	
	n	%
Gender		Table contents
Women	107	61,1
Male	68	38,9
Age		
60-70 years old	67	38,2
70-80 years	85	48,6
>80 years old	23	13,2
Education		
No school	1	0,6

Features	Quantity	
	n	%
SD	21	12
SMP	14	8
SMA	51	29,1
D1	1	0,6
D3	14	8
S1	46	26,3
S2	19	10,9
S3	2	1,1
Income		
< UMR Jakarta	147	84
> UMR Jakarta	28	16

Evaluation of Measurement Model (Outer model)

The measurement model shows good results. All indicators have an outer loading ≥ 0.70 (except for one facility item that was removed). The Average Variance Extracted (AVE) value of the entire construct is above 0.50, the Fornell-Larcker Criterion is met, and the HTMT is 0.70. This shows that the research instrument is valid and reliable to measure the research variables.

Evaluation of Structural Models (Inner Model)

Structural model evaluation was conducted to assess how well the research model explained the relationships between latent constructs as well as the overall predictive strength of the model. This assessment includes the determination coefficient (R^2), effect size (f^2), and the measure of overall model suitability (Goodness of Fit).

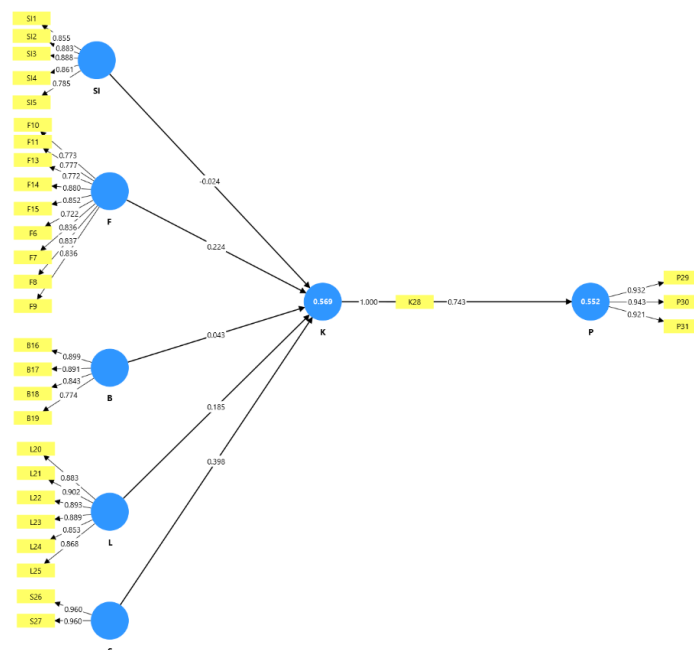


Figure 1. Evaluation of Measurement Models (*Outer Model*)

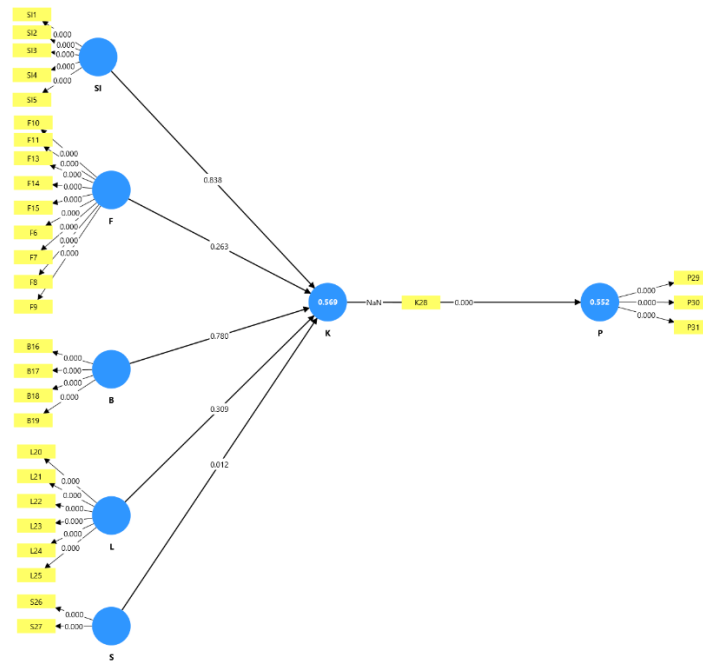


Figure 2. Structural Model (*Inner model*)

Tabel 2. Nilai R-Square (R^2) dan R-Square Adjusted

Variabel	R^2	R^2 Adjusted	Category
Quality of Health Services (K)	0.569	0.556	Moderate
Patient Satisfaction (P)	0.552	0.549	Moderate

Based on Table 2, the variable of health service quality can be explained by an independent variable of 56.9%, while the satisfaction of elderly patients can be explained by 55.2%. According to Hair et al. (2022), R^2 values between 0.50 to 0.75 are categorized as moderate. These results show that the research model has a fairly good explanatory power in the context of behavioral research in the field of health service management. The remainder (about 43–45%) were influenced by other factors outside the model, such as personal expectations, comorbid health conditions, or family support that were not measured in the study.

Table 3. Effect Size Value

Variabel	F^2	Category Efek (Cohen, 1988)
IF $\rightarrow$ K	0,001	Weak
F $\rightarrow$ K	0,028	Moderate
B $\rightarrow$ K	0,001	Weak
L $\rightarrow$ K	0,022	Weak
S $\rightarrow$ K	0,147	Moderate
K $\rightarrow$ P	1,232	Strong

Effect size (f^2) measures the substantive contribution of each predictor variable. The perception of health recovery (S) makes a moderate contribution to the quality of service, while the quality of health services (K) has a very strong influence on patient satisfaction ($f^2 = 1,232$). These findings confirm the position of service quality as the dominant mediation variable. On the other hand, the variables of digital information systems, costs, and HR behavior showed

very small effects, which corresponded to the high average scores of these variables (ceiling effect) so that the variation between respondents was low.

Value Goodness of Fit The model is measured using *Standardized Root Mean Square Residual* (SRMR) of 0.093 in the estimated model, which is below the threshold of 0.10 (Hair et al., 2022). This shows that the model as a whole has a good fit with the empirical data. Theoretically, the results of the internal evaluation of this model strengthen the framework of Donabedian (1988) which emphasizes the role of outcomes (perception of recovery) and quality of service as the main link towards the satisfaction of elderly patients.

1. The Effect of the Use of Digital Information Systems on the Quality of Health Services

This hypothesis was rejected because the path coefficient value was -0.024 with a T-statistic of 0.204 and a p-value of 0.838 (>0.05). Although respondents gave a high average assessment, the use of digital information systems has not had a significant effect on the perception of service quality. This finding can be explained by the low digital literacy and the preference of the elderly for face-to-face interaction (Yasmin, 2025; Dinakrisma et al., 2022). These results are different from Wang et al. (2024) who found a positive influence among urban elderly in China, but in line with Indonesian conditions where functional and structural barriers are still dominant.

2. The Effect of Health Service Facility Conditions on Health Service Quality

This hypothesis was rejected (path coefficient 0.224; $p=0.263$). Although the facilities are considered to be very good, the effect on the quality of service is not significant. This is in accordance with the framework of Donabedian (1988) which states that structure (facility) is a basic factor, but its influence becomes smaller when the process and outcome are optimal. These findings support the research of Akbar et al. (2020) who found that the tangible dimension is not the main predictor of elderly satisfaction.

3. The Effect of Health Service Costs on Health Service Quality

This hypothesis was rejected (path coefficient 0.043; $p=0.780$). The high perception of cost affordability does not have a significant effect, possibly because the majority of respondents (84%) use JKN/BPJS or private health insurance so that the cost burden is low (Rosyada & Budi, 2018). These results are in line with *Equity Theory* (Adams, 1965) that when the perception of justice is already high, cost is no longer a distinguishing factor.

4. The Influence of Human Resource Behavior on the Quality of Health Services

The hypothesis was rejected (path coefficient 0.185; $p=0.309$). Although this variable has an excellent judgment, its effect is not significant due to the occurrence of *ceiling effect*. These findings support *Social Resource Theory* (Kazemi & Kajonius, 2020) that when HR behavior is very good, it functions as a *hygiene factor* which prevents dissatisfaction but is no longer a significant differentiator (Junaedi et al., 2024).

5. The Effect of Health Recovery Perception on Health Service Quality

The hypothesis is accepted with *path coefficient* of 0.398, T-statistic 2.524, and p-value 0.012 (<0.05). These results show that the perception of health recovery has a positive and significant effect on the perception of health service quality. The higher the perception of the elderly that their health condition has improved and their ability to carry out daily activities has improved after receiving services, the higher their assessment of the overall quality of services.

These findings are very much in line with the framework of Donabedian (1988) which puts *Outcome* (treatment outcomes) as one of the main components in assessing the quality of

health services. In the elderly population that is prone to chronic diseases and decreased function, the improvement of physical and functional conditions is the most tangible indicator of service success. These results also support *Disconfirmation of Expectations Theory* (Oliver, 1980), where results that exceed or meet expectations will increase a positive assessment of the overall service.

Empirically, this study is in line with Akbar et al. (2020) who found that elderly participants in the Chronic Disease Management Program (Prolanis) who felt improvements in health conditions reported higher satisfaction. Ferreira et al. (2023) in their systematic review also concluded that the perception of treatment outcomes is one of the strongest predictors of satisfaction of elderly patients in various countries. In Indonesia, these findings are increasingly relevant considering that the elderly often suffer from multimorbidity that requires long-term treatment. Therefore, health facilities should not only focus on the service process, but also actively communicate the progress of treatment results to elderly patients so that the perception of recovery is more positive.

6. The Effect of Health Service Quality on Patient Satisfaction

The H6 hypothesis was accepted with a very strong influence (path coefficient 0.743; T-stats 12,216; p-value 0.000). The quality of health services is the most dominant predictor of satisfaction of elderly patients and plays a key mediator in the research model. Effect size ($f^2 = 1.232$) showed a very large influence, meaning that improving the perception of service quality would have a significant impact on improving overall satisfaction.

These findings reinforce the framework of Donabedian (1988) who views satisfaction as the final outcome of the interaction between structure, process, and service outcomes. In addition, these results are consistent with the SERVQUAL model (Parasuraman et al., 1988) in which the combination of various quality dimensions (especially empathy, assurance, and tangibles) results in high satisfaction. In the context of the elderly, holistic quality of care including clear communication, empathy, and the achievement of clinical outcomes is critical because this group has more complex emotional and physical needs.

Empirically, this study supports Akbar et al. (2020) who reported that the satisfaction rate of the elderly reached 82–92% when the quality of service was felt to be good, and Ferreira et al. (2023) who concluded that the quality of service is the most dominant predictor of satisfaction of elderly patients. The magnitude of this pathway coefficient confirms that service quality serves as the main "bridge" that connects various service inputs with patient final satisfaction. The implication is that health facility managers need to continue to improve the quality of services in an integrated manner to support healthy ageing programs in Indonesia.

CONCLUSION

This study concludes that elderly patient satisfaction with healthcare services is determined by the interaction between various service dimensions, particularly through the mediating role of healthcare-service quality. The findings demonstrate that healthcare-service quality functions as an essential mechanism that transforms patients' perceptions of digital information systems, healthcare facilities, service costs, human-resource behavior, and perceived health recovery into overall satisfaction evaluations. Among the examined factors, perceived health recovery significantly contributes to healthcare-service quality, indicating that elderly patients tend to evaluate healthcare experiences positively when they perceive

meaningful improvements in their physical condition and ability to perform daily activities. Furthermore, healthcare-service quality has the strongest influence on elderly patient satisfaction, confirming that a comprehensive assessment of service performance including communication, responsiveness, empathy, reliability, and patient-centered care is fundamental in developing satisfactory geriatric healthcare services. These findings support previous evidence that improving healthcare quality contributes significantly to enhancing satisfaction among older adults because elderly patients often have more complex physical, psychological, and social needs requiring holistic service approaches. The study contributes to the healthcare management literature by providing an integrated model that explains elderly satisfaction through technological, structural, process, and outcome-related factors within an Indonesian geriatric healthcare context. Future research should expand the investigation by incorporating broader samples from different geographical areas, healthcare institutions, and elderly population characteristics to improve the generalizability of findings. Future studies may also apply longitudinal designs to examine changes in elderly satisfaction over time, particularly as healthcare digitalization continues to develop and older adults gradually adapt to technological systems. In addition, further research may explore other potential determinants that were not included in this model, such as family support, trust in healthcare providers, health literacy, psychological well-being, cultural expectations, and patient empowerment. Comparative studies between urban and rural healthcare settings may also provide deeper insights into differences in healthcare accessibility, digital adoption, and service-quality perceptions among elderly populations. Qualitative or mixed-method approaches are recommended to complement quantitative findings by exploring the personal experiences, expectations, and challenges faced by older patients when accessing healthcare services. Such investigations can support the development of more inclusive, age-friendly, and sustainable healthcare strategies that prioritize not only clinical outcomes but also the overall satisfaction and quality of life of elderly patients.

REFERENCES

- Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 267–299). Academic Press.
- Akbar, J. M., Gondodiputro, S., & Rahardjo, S. S. (2020). Elderly satisfaction on chronic disease management program at public health center, Bandung City, West Java, Indonesia. *International Journal of Integrated Health Sciences*, 8(1), 1–8.
- APJII. (2024). *Survey of Indonesian internet user penetration and behavior 2024*. Indonesian Internet Service Providers Association.
- Basrowi, R. W., Rahayu, E. M., Khoe, L. C., Wasito, E., & Sundjaya, T. (2021). The road to healthy ageing: What has Indonesia achieved so far? *Nutrients*, 13(10), 3441.
- Bouزيد, M., Cumming, O., & Hunter, P. R. (2018). What is the impact of water sanitation and hygiene in healthcare facilities on care seeking behaviour and patient satisfaction? A systematic review of the evidence from low-income and middle-income countries. *BMJ Global Health*, 3(3), e000648.
- Central Statistics Agency. (2024). *Statistics of the elderly population 2024*. BPS.
- Dinakrisma, A. A., Laksmi, P. W., Abdiel, T., Fernandez, J. P., Indahwati, N., Susanto, A. P., Indrajaya Lukmana, A. A., & Yusuf, P. A. (2022). The role of digital mobile technology in elderly health management among health care workers in Indonesia: Analysis of knowledge, attitudes, and practice. *Digital Health*, 8, 20552076221102772.

- Donabedian, A. (1988). The quality of care: How can it be assessed? *JAMA*, 260(12), 1743–1748. <https://doi.org/10.1001/jama.1988.03410120089039>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Handajani, Y. S., Schröder-Butterfill, E., Hogervorst, E., Turana, Y., & Hengky, A. (2022). Depression among older adults in Indonesia: Prevalence, role of chronic conditions and other associated factors. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*, 18, e174501792207010.
- Jie, Y. U., Subramanian, N., Ning, K., & Edwards, D. (2015). Product delivery service provider selection and customer satisfaction in the era of Internet of Things: A Chinese e-retailers' perspective. *International Journal of Production Economics*, 159, 104–116.
- Junaedi, B. A., Indriyani, D., & Adriani, S. W. (2024). The relationship of 5S behavior in nurses to patient satisfaction levels. *Medic Nutricia: Journal of Health Sciences*, 5(5), 71–80.
- Kajonius, P. J., & Kazemi, A. (2021). Structure and process quality as predictors of satisfaction with elderly care. *Health & Social Care in the Community*, 24(6), 699–707.
- Kaligis, F., Ismail, R. I., Wiguna, T., Prasetyo, S., Indriatmi, W., Gunardi, H., Pandia, V., & Magdalena, C. C. (2021). Mental health problems and needs among transitional-age youth in Indonesia. *International Journal of Environmental Research and Public Health*, 18(8), 4046.
- Nag, D., Bhaduri, E., Kumar, G. P., & Goswami, A. K. (2020). Assessment of relationships between user satisfaction, physical environment, and user behaviour in pedestrian infrastructure. *Transportation Research Procedia*, 48, 2343–2363.
- Ngadi, N., Zaelany, A. A., Latifa, A., Harfina, D., Asiati, D., Setiawan, B., Ibnu, F., Triyono, T., & Rajagukguk, Z. (2023). Challenge of agriculture development in Indonesia: Rural youth mobility and aging workers in agriculture sector. *Sustainability*, 15(2), 922.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
- World Health Organization. (2024). *Ageing and health*. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>
- Yasmin, S. (2025). Adoption of digital technology by the elderly: Barriers, meaning and access to health information. *MITZAL (Democracy, Communication, and Culture): Journal of Governance & Communication Sciences*, 10(1), 1–15.