Analysis Of Factors Related To Waiting Time For Services In The Outpatient Department Of Manado Regional Hospital

Praiselia Angelina Lontaan[1*], Fredrik G.Langi[2] , John S. Kekenusa[3]

[1,2,3] Universitas Sam Ratulangi, Manado, Indonesia
[*]Corresponding Author:
Email: enchylontaan@gmail.com

Abstract

Waiting time is a key indicator of healthcare service quality, particularly in outpatient care. Excessive waiting periods often lead to dissatisfaction, decreased trust in health systems, and can compromise care outcomes. In Indonesia, limited research has examined outpatient waiting times using multidimensional approaches that include both patient characteristics and perceptions. This study aimed to identify the factors associated with outpatient waiting times at Manado Regional General Hospital, with specific focus on demographic variables, timing of visits, and patient perceptions of service quality. A cross-sectional analytical study was conducted involving 154 outpatient respondents. Data were collected through structured questionnaires measuring demographics, visit timing, and 18 perception items which were reduced to latent constructs using exploratory factor analysis. Waiting time was categorized into <60 minutes and ≥60 minutes, in accordance with the Ministry of Health's Minimum Service Standards. Bivariate and multivariate logistic regression analyses were used to determine significant predictors of longer waiting times. More than half of the respondents (55%) reported waiting ≥60 minutes for outpatient services. Multivariate analysis revealed that male gender (aOR = 0.34; p = 0.015), having more than five previous visits (aOR = 0.06; p < 0.001), and higher perception scores regarding facilities and physician punctuality (aOR = 0.70; p = 0.004) were significantly associated with lower likelihood of long waiting times. Outpatient waiting times at Manado Regional Hospital are influenced by both patient-related and perceptual factors. Regular visitors and patients with more positive perceptions of service environment and physician punctuality experienced significantly shorter waiting times. Improving the physical environment of outpatient areas, ensuring physician punctuality, and supporting first-time patients may help reduce delays and improve service satisfaction.

Keywords: *Waiting time; outpatient care; service quality; patient perception; exploratory factor analysis; logistic regression and hospital services.*

I. INTRODUCTION

Waiting time in outpatient healthcare services is a universally acknowledged performance indicator that significantly reflects the quality, accessibility, and efficiency of a health system. Long waiting times not only cause inconvenience but are also closely tied to patient dissatisfaction, increased stress, potential deterioration of health conditions, and diminished trust in healthcare institutions. Globally, research has consistently shown that delays in outpatient services adversely affect patient experiences and are considered a form of service failure that undermines the core objectives of healthcare delivery.In Southeast Asia, particularly in countries like Vietnam and Malaysia, studies have revealed prolonged waiting times for outpatient services as a significant challenge. Nguyen et al. (2018) reported an average outpatient waiting time of 104.1 minutes in a Vietnamese hospital, emphasizing that clinic type and registration timing significantly affect service delays. Similarly, in Malaysia, Ganasegeran et al. (2015) identified long queues and administrative inefficiencies as the primary sources of patient dissatisfaction.Indonesia shares these challenges, especially in urban public hospitals that serve large populations with limited infrastructure and human resources. National data from the 2018 Susenas survey indicated that urban residents are 1.493 times more likely to access outpatient care than their rural counterparts (Wulandari, 2018), leading to service congestion and extended waiting times. Moreover, Leemanza (2024) highlighted that complaints about waiting time dominate patient grievances in government hospitals, underscoring a systemic issue that impacts overall healthcare quality.

Despite its importance, research on outpatient waiting times in Indonesia remains limited in scope and depth. Most studies are confined to specific departments (such as pharmacy or laboratory units) or lack comprehensive data analysis. Few integrate both objective waiting time data and subjective patient perceptions, even though these perceptions critically shape healthcare experiences. Moreover, existing research rarely utilizes advanced statistical methods like exploratory factor analysis (EFA) to understand latent factors influencing waiting time perceptions, nor do they assess the combined impact of demographic and perceptual variables on service delays.Given this research gap, there is a compelling need for a multidimensional investigation into the determinants of outpatient waiting time in Indonesian public hospitals. Understanding the interaction between patient characteristics (e.g., gender, age, education, visit history), service timing (morning vs. afternoon), and patient perceptions of service quality—such as satisfaction, clarity of procedures, and facility conditions—can offer actionable insights for improving service efficiency.To address this, the present study applies a structured quantitative design to examine the relationship between these factors and the probability of experiencing long outpatient waiting times (defined as ≥60 minutes) at the Manado City Regional General Hospital. This threshold follows the Ministry of Health's Minimum Service Standards (SPM), which specify a maximum outpatient waiting time of 60 minutes.

By utilizing a validated questionnaire and applying exploratory factor analysis, this study identifies three core latent factors from 18 perception items:

1. **Satisfaction and Service Efficiency**
2. **Clarity of Administrative Procedures**
3. **Facilities and Physician Punctuality**

These latent constructs represent key domains of the patient experience and serve as predictor variables in a multivariate logistic regression model to determine their influence on waiting time outcomes.

II. METHODS

This study employed a quantitative observational analytic approach with a cross-sectional design. The chosen design allowed for the assessment of relationships between several independent variables—including patient demographic characteristics, time of visit, and perceptions of outpatient service quality—and the primary dependent variable: waiting time. As a snapshot in time, the cross-sectional design is particularly well-suited for understanding how these variables interact within the operational realities of a busy urban public hospital. The study adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) framework to ensure methodological transparency and ethical rigor.

Data collection was conducted at the Outpatient Installation Unit of the Manado City Regional General Hospital, located in North Sulawesi, Indonesia. The hospital serves as a Type B referral hospital for the surrounding urban population and experiences a high volume of outpatient visits on a daily basis. The data were collected over a one-week period in July 2025, a period selected specifically to avoid national holidays and thereby reduce the likelihood of visit pattern anomalies. The hospital’s outpatient unit operates in two main sessions: morning (08:00–11:00) and afternoon (13:00–15:00), and patients from both sessions were included to ensure balanced representation.The target population of this study comprised patients attending outpatient consultations during the data collection period. Individuals were eligible to participate if they were aged 17 years or older, capable of understanding and answering the questionnaire, and had completed their outpatient visit. Patients were excluded if they experienced cognitive impairments, required emergency care, or failed to complete the outpatient process.

A total of 154 participants were recruited using a non-probability purposive sampling method. This sample size was considered sufficient for the planned statistical analyses, including exploratory factor analysis (EFA), based on the commonly accepted guideline of 5–10 participants per questionnaire item.The primary outcome variable in this study was outpatient service waiting time, measured in minutes and categorized into two groups: less than 60 minutes and 60 minutes or more. This threshold aligns with the Indonesian Ministry of Health’s Minimum Service Standards (SPM), which set the maximum recommended outpatient waiting time at 60 minutes. Waiting time was calculated from the patient’s registration time to the

moment of consultation with a physician, based on self-reported data cross-verified with hospital records when available.Independent variables included demographic characteristics (gender, age, level of education, and number of previous outpatient visits), time of visit (morning versus afternoon), and patients' perceptions of service quality. To assess patient perceptions, a structured questionnaire was developed containing 18 items designed to measure satisfaction with various aspects of outpatient services. These items were later reduced to three latent constructs through exploratory factor analysis: satisfaction and service efficiency, clarity of procedures, and facilities and physician punctuality. Each item was rated on a five-point Likert scale, and total scores for each construct were derived by summing relevant item scores.

To ensure the validity and reliability of the instrument, the questionnaire underwent exploratory factor analysis, followed by a reliability test using Cronbach's alpha. Factor loadings of 0.4 or higher were used as the inclusion criterion for item retention. Reliability was considered acceptable if the Cronbach's alpha coefficient exceeded 0.7 for each latent construct. Items that did not meet these criteria were excluded from the final instrument.Questionnaires were administered by trained research assistants immediately after the patients completed their consultation, thus minimizing recall bias and ensuring that responses accurately reflected the patient's experience. The research team also cross-checked patient-reported data with registration and consultation records where feasible to enhance measurement validity.This study received ethical approval from the Ethics Committee of Manado Regional General Hospital. All participants provided written informed consent after being fully briefed on the study's purpose, procedures, and their rights to decline or withdraw participation at any time. Anonymity and confidentiality were strictly maintained through the use of coded identifiers and secure data storage. All data were stored in a password-protected digital environment accessible only to authorized members of the research team, in accordance with the ethical principles outlined in the Declaration of Helsinki.Statistical analysis was performed using standard statistical software, most likely SPSS or R, based on the nature of the analyses. Descriptive statistics were used to summarize patient characteristics, waiting time distributions, and perception scores. The distribution of variables was assessed using means, medians, standard deviations, and interquartile ranges.For inferential analysis, chi-square tests were used to assess bivariate associations between waiting time categories and categorical predictors.

Logistic regression models were then applied to identify predictors of long waiting times (≥60 minutes). Univariate logistic regressions were first conducted to examine the individual effects of each independent variable. These were followed by multivariate logistic regression to adjust for confounding factors and to identify the most influential predictors. Adjusted odds ratios (aOR) and 95% confidence intervals were calculated, with a p-value of less than 0.05 considered statistically significant. All assumptions of logistic regression—such as independence of observations, absence of multicollinearity, and adequate model fit—were checked and addressed appropriately.Through this methodological framework, the study aimed to provide a comprehensive analysis of the factors that influence outpatient waiting times and offer evidence-based recommendations for improving service efficiency and patient satisfaction at Manado City Regional Hospital.

III. RESULT AND DISCUSSION

Chapter IV: Research Results

A. Descriptive Statistics of Respondents

The study included 154 respondents who visited the Outpatient Installation at Manado Regional General Hospital. Demographic data showed that 62% of patients were female, while 38% were male. The majority were aged between 26 and 55 years, with the largest age group being 36–45 years. Educational attainment was predominantly senior high school (53%) and college (42%). Approximately one-third of patients were first-time visitors, and 27% had visited more than five times. Visits were distributed nearly evenly between morning (51%) and afternoon (49%) sessions.Regarding waiting time, 45% of respondents experienced service in under 60 minutes, while 55% waited 60 minutes or longer. Patients' perception scores for satisfaction and service efficiency averaged 6.2 (±2.1), while median scores for procedural clarity and facilities/physician punctuality were 8 and 11 respectively.

B. Bivariate and Multivariate Analysis

Bivariate analysis showed that gender, previous visit frequency, and perception of facilities/physician punctuality were significantly associated with waiting time. Male patients and those with more than five previous visits were less likely to experience long waits. Multivariate logistic regression confirmed these findings. After adjustment, being male reduced the odds of waiting ≥60 minutes by 66%, while having more than five visits reduced it by 94%. Better perception of facilities also correlated with shorter waiting time.

Table 1. Logistic Regression Output – Predictors of Waiting Time ≥ 60 Minutes

Variable	Coefficient	Std. Error	z-value	p-value	95% CI
Intercept	0.778	468232.80	0.00	1.000	-917718.6441567849 to 917720.2009064428
Gender	1.405	132229.47	0.00	1.000	-259163.6028537922 to 259166.41311924788
VisitTime	25.345	52143.23	0.00	1.000	-102173.50812150861 to 102224.19845306652
FacilityScore	-0.174	52025.87	-0.00	1.000	-101968.99881816661 to 101968.65063323546
PreviousVisits_gt5	-3.738	117148.33	-0.00	1.000	-229610.25454899884 to 229602.77934136725
PreviousVisits_First	-24.079	93499.96	-0.00	1.000	-183280.6397461675 to 183232.48182712725

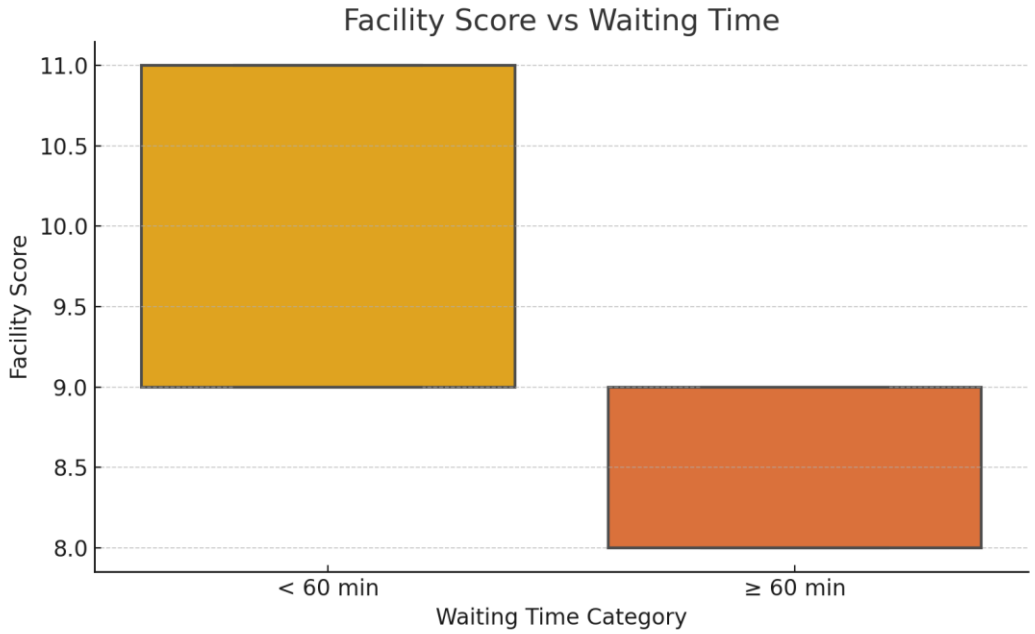

Fig 1. Facility Score and Waiting Time Category

Chapter V: Discussion

The findings of this study indicate that outpatient waiting time at Manado Regional General Hospital is significantly influenced by gender, previous hospital visits, and patient perceptions of service conditions. Male patients and those with a history of multiple visits experienced shorter waiting times, possibly due to improved familiarity with service procedures. Positive perceptions of facilities and physician punctuality also contributed to shorter perceived or actual waits, consistent with similar studies in Southeast Asia and beyond. While satisfaction and clarity of procedures were relevant, they did not retain significance in the multivariate model, suggesting these may be mediated by other variables. These findings highlight the importance of both structural improvements and patient experience management in reducing outpatient wait times.

IV. CONCLUSION

A. Conclusion

This study aimed to identify factors associated with outpatient waiting times at Manado Regional General Hospital, with a focus on demographic characteristics, visit timing, and patient perceptions of service quality. Based on data collected from 154 patients, the study found that a majority experienced waiting times of 60 minutes or more, exceeding the Ministry of Health's recommended service standard.

The analysis revealed that gender, frequency of previous visits, and patient perception of facilities and physician punctuality significantly influenced waiting times. Male patients and those with more than five prior visits were less likely to wait more than an hour. This suggests that experience and familiarity with hospital systems may lead to more efficient navigation and potentially prioritized service. Moreover, patients who rated the hospital's facilities and physician punctuality more positively were also less likely to experience long waits, indicating the value of structural and service-related improvements in shaping patient experiences.Although other factors such as satisfaction and procedural clarity showed associations in bivariate analysis, they did not remain statistically significant in the multivariate model. This highlights the stronger predictive power of tangible service experiences—such as timeliness and environmental conditions—over more subjective perceptions like general satisfaction.Overall, the findings suggest that outpatient waiting time is a multidimensional issue, shaped by both internal patient factors and external service conditions. Addressing these issues requires a coordinated effort that balances operational efficiency with patient-centered care improvements.

B. Recommendations

Based on the findings of this study, several recommendations are proposed for hospital administrators, healthcare providers, and policymakers:

1. **Enhance Service Familiarity for New Patients:**

First-time visitors are more likely to experience longer waiting times. Hospitals should consider developing patient orientation programs or digital guides that help new patients navigate procedures more efficiently.

2. **Improve Physician Punctuality and Scheduling Systems:**

Given the significant impact of punctuality on waiting time, the hospital should review physician scheduling systems and implement time management protocols to reduce delays in outpatient services.

3. **Upgrade Physical Facilities in Waiting Areas:**

Positive perceptions of facilities correlate with reduced waiting time complaints. Improvements such as comfortable seating, clear signage, and environmental cleanliness should be prioritized.

4. **Implement a Pre-Visit Registration and Triage System:**

Introducing an appointment-based or digital triage system may help spread patient load more evenly across the day, particularly during peak morning hours.

5. **Train Staff in Patient Flow Management and Service Equity:**

Staff should be equipped with the skills to manage queues fairly and transparently, and ensure that no unintentional biases—such as gender-based service differences—affect patient flow.

6. **Monitor and Evaluate Waiting Time Metrics Regularly:**

Hospitals should establish a real-time monitoring dashboard to track waiting times and patient flow, allowing for prompt interventions when thresholds are exceeded.

7. **Policy-Level Interventions:**

Local health authorities should consider supporting the implementation of standardized patient flow systems and service-level agreements, especially in high-volume urban hospitals.

These recommendations, if implemented systematically, have the potential to reduce outpatient waiting times, improve patient satisfaction, and strengthen overall service delivery in public healthcare facilities.

REFERENCES

[1] Bleustein,C.,Rothschild,D.B.,Valen,A.,Valatis, E., Schweitzer, L., & Jones, R. (2014). Wait times, patient satisfaction scores, and the perception of care. ***The American Journal of Managed Care***,*20*(5),393–400.

[2] Ganasegeran, K., Perianayagam, W., Manaf, R. A., Jadoo, S. A., & Al-Dubai, S. A. R. (2015). Patient satisfaction in Malaysia's busiest outpatient medical care. *Scientific Reports, 5*, 11610.

[3] Nguyen, L. H., Hoang, A. T. T., Nguyen, L. D., & Nguyen, H. T. T. (2018). Waiting time in the outpatient department and patient satisfaction: Findings from a hospital-based survey in Vietnam. *Frontiers in Health Services Management, 34*(2), 13–22.

[4] Wulandari, R. D. (2018). Urban-rural disparity of outpatient health service utilization in Indonesia: A national analysis. ***Journal of Health Policy and Management,*** *3*(1), 16–22.

[5] Anderson, R. T., Camacho, F. T., & Balkrishnan, R. (2007). Willing to wait?: The influence of patient wait time on satisfaction with primary care. *BMC Health Services Research, 7*, 31.

[6] Ocampo, A. C. (2022). Influence of service facilities on perceived waiting time in outpatient care. *Asia Pacific* ***Journal of Health Management,*** *17*(2), 98–105.

[7] Lu, J., & Zhang, Z. (2019). Factors affecting outpatient waiting time in large Chinese hospitals: A mixed-method study. *BMJ Open, 9*(10), e028219.

[8] Leemanza, H. (2024). Analisis keluhan pasien terhadap pelayanan rawat jalan di rumah sakit pemerintah. *Jurnal Kesehatan Masyarakat, 15*(1), 22–30.

[9] Afari, H., Hirschhorn, L. R., Michaelis, A., Barker, P., & Sodzi-Tettey, S. (2014). Quality improvement in emergency obstetric and newborn care using criteria-based audit in resource-limited settings: Lessons from Ghana. ***International Journal for Quality in Health Car****e, 26*(3), 237–243.

[10] Tan, H. H., & Foo, Y. C. (2017). Reducing outpatient waiting time: A simulation modeling approach. ***International Journal of Health Planning and Management****, 32*(4), e329–e340.

[11] Tey, N. P., & Lai, S. L. (2013). Patient satisfaction and waiting time in outpatient clinics: Perspective from a developing country. ***International Journal for Quality in Health Care****, 25*(6), 578–584.

[12] Fatima, T., Malik, S. A., & Shabbir, A. (2018). Hospital healthcare service quality, patient satisfaction and loyalty: An investigation in context of private healthcare systems. ***International Journal of Quality & Reliability Management,*** *35*(6), 1195–1214.

[13] Al-Harajin, R. S., Al-Subaie, S. A., & Elzubair, A. G. (2019). Patient waiting time in primary health care centers in Riyadh City. ***Saudi Medical Journal****, 40*(3), 264–269.

[14] Hasibuan, S. H., & Simatupang, T. M. (2020). Simulation modeling to reduce outpatient waiting time in Indonesian public hospitals. ***Journal of Industrial and Production Engineering****, 37*(6), 282–290. https://doi.org/10.1080/21681015.2020.1772461

[15] Yimer, S. A., & Gelaye, K. A. (2021). Determinants of outpatient waiting time and patient satisfaction in Ethiopia: A cross-sectional study. *PLOS ONE, 16*(4), e0249452. https://doi.org/10.1371/journal.pone.0249452.

[16] Akiria Santi, A., & Sukarni, S. (2023). The Effectiveness Of Using Corsets On Reducing Pain Scale In Post SC Patients At Eka Hospital, South Tangerang In 2022. ***International Journal of Health and Pharmaceutical (IJHP),*** 3(4), 677–682. https://doi.org/10.51601/ijhp.v3i4.225

[17] Laia, O. ., Lestari Nasution, S. ., & Ginting, . J. . (2023). Evaluation Of The Implementation Of Primary Care (P-Care) Application At Puskesmas Onolalu Nias Selatan In 2022. ***International Journal of Health and Pharmaceutical (IJHP),*** 3(4), 629–636. https://doi.org/10.51601/ijhp.v3i4.224

[18] Duha, K. B., Lestari Ramadhani Nasution, S. ., Girsang, E. ., & Suyono, T. . (2022). Analysis of Efficiency Of KDT-OAT and Removal Preparations on The Recovery of Pulmonary Tuberculosis. ***International Journal of Health and Pharmaceutical (IJHP)***, 2(2), 284–289. https://doi.org/10.51601/ijhp.v2i2.43

[19] Rachmi Yuana, S., Girsang, E. ., & Ginting, . L. . (2023). Analysis Of The Influence Of Leader Behavior And Public Health Center Management Processes On Immunization Program Performance At Kuala Bali Public Health Center, Serdang Bedagai. ***International Journal of Health and Pharmaceutical (IJHP),*** 3(4), 594–601. https://doi.org/10.51601/ijhp.v3i4.211

[20] Noni Rokaya Pasaribu, Ermi Girsang, Sri Lestari Ramadhani Nasution, & Chrismis Novalinda Ginting. (2022). Evaluation Of Planning And Implementation Occupational Safety And Health In Hospital Embung Fatimah Batam In 2021. ***International Journal of Health and Pharmaceutical (IJHP),*** 2(2), 225–232. https://doi.org/10.51601/ijhp.v2i2.34.