

Barriers To Healthcare Access: Examining Travel Time, Waiting Times, And Service Costs in Indonesia Primary Health Care

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Abstract

Access to primary health care in Indonesia faces significant challenges, including long travel times, high transportation costs, and poor quality of care due to a lack of health workers. These factors contribute to delays in treatment and increase the risk of severe health outcomes. Additionally, out-of-pocket expenses not covered by the national insurance program are major barriers, particularly for low-income families. To analyze the relationship between travel time, waiting time, transportation costs, service fees and access to health services. A cross-sectional study conducted in Banyumas district during May–June 2022 with 100 randomly selected adult respondents. Data were collected using a validated structured questionnaire consisting of six sections covering demographics, travel time, waiting time, transportation cost, service cost, and accessibility. Chi-Square test was used to examine relationships between the independent variables (travel time, transportation cost, service cost, and waiting time) and the dependent variable (healthcare accessibility). Travel time was significantly associated with access to health services ($p = 0.041$), as was waiting time ($p = 0.035$). However, transportation costs ($p = 0.405$) and service fees ($p = 0.096$) did not show a significant relationship. Improving transportation infrastructure and reducing waiting times through more staff and better service processes are key to enhancing healthcare access. Although transport and service costs were not statistically significant, they are still important for inclusive policy planning.

Keywords: costs, healthcare access, primary care, travel time, waiting time

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INTRODUCTION

Indonesia, as an archipelago with uneven population geographical distribution, often faces challenges in providing equitable health access ([Mangoma et al., 2024](#)). The primary health care accessibility in Indonesia faces several challenges, affecting the quality and timeliness of care ([Nurfaiza & Purwito, 2022](#)). The problems, such as travel time to health facilities, waiting time for services, transportation costs, and service fees, are significant obstacles ([Mseke et al., 2024](#)). While previous research has highlighted several aspects of this challenge, many gaps still need to be handled to develop a more complete understanding ([Cochran et al., 2022](#); [Jang et al., 2020](#)).

A number of studies have identified long travel times to health facilities in rural Indonesia as one of the most significant obstacles to accessing health services. Many health centers and hospitals are located far from residential areas, forcing people to travel long distances using various forms of transportation, which may not always be comfortable ([Wulandari et al., 2022](#)).

These long travel times delay access to medical care and can worsen health conditions, as patients may wait until their conditions are severe before seeking treatment. [Pelletier \(2023\)](#) suggests that poor Infrastructure conditions mean that rural communities often have to travel for hours or even days to

reach health facilities ([Pelletier, 2023](#); [Ramadina et al., 2021](#)).

Apart from travel time, long waiting times also negatively affect the quality of health services. [Asante et al. \(2023\)](#) found that many rural health facilities suffer from a shortage of medical staff, leading to long queues and extended waiting periods for patients. These delays not only affect patient comfort but also risk postponing diagnoses and treatments, which can worsen health outcomes ([Anggraini, 2023](#); [Asante et al., 2023](#)).

Cost is another important barrier to accessing health care. For many low-income families, transportation costs to distant health facilities can be a heavy burden, sometimes even exceeding the cost of maintenance itself ([Cromer et al., 2019](#)). In addition, regardless of government programs such as JKN (National Health Insurance), many health facilities in rural areas charge additional costs that are not borne by insurance, which prevents people from receiving the treatment they need ([Adani et al., 2020](#)).

Although the major challenges are generally understood, some aspects are still unclear. One such area is how travel and waiting times influence care-seeking behavior in rural communities ([Jalloh et al., 2023](#)). While several studies suggest that delays in seeking care are often linked to an inability to afford transportation or the time required, more research is needed to determine how these factors specifically impact decisions to seek health services.

In addition, the effects of indirect costs, such as loss of income or work time due to long journeys to health facilities, are still mostly unexplored. Rural communities often rely on daily work to meet their needs, and long trips to health care facilities can interfere with family income. This, in turn, influences the decision to seek medical treatment, especially for families in economically vulnerable situations ([Bijlmakers et al., 2019](#); [Pillai et al., 2019](#)).

Overcoming gaps in this knowledge is very important to create more effective policies to increase access to health care in rural areas. Further research is needed to understand how travel time, waiting time, transportation costs, and service costs affect people's health behavior and to identify strategies to reduce the negative impacts of this challenge. One potential solution is to improve rural transportation infrastructure and provide health care services that are more accessible and affordable.

The purpose of this study is to explore how factors such as travel time, waiting time, transportation costs, and service fees have an impact on the accessibility of primary health care services in rural Indonesia. This study aims to fill the gap in understanding how these challenges affect the behavior of seeking care in rural communities. In addition, this research will test the impact of indirect costs, such as lost work or income due to the decisions of long-distance individuals to seek health care. By getting a deeper understanding of these factors, this study hopes to offer policy recommendations to improve health service accessibility, including improving transportation infrastructure and providing more comfortable and affordable health care for rural communities.

This study brings new insights to nursing and public health, especially in rural Indonesia. Unlike previous research that focused on one factor or used secondary data, this study looks at how travel time, waiting time, transport costs, and service fees affect access to primary healthcare. Using surveys and a quantitative approach, it shows real challenges people face. A unique part of this study is its focus on hidden costs, like lost income or work time from long travel to health facilities—an issue rarely studied in Indonesia. It also shows how these challenges affect healthcare-seeking behavior, especially for low-income families, and can help create better, evidence-based policies.

The results are important for nursing practice and education. They show how nurses play a key role in helping vulnerable people reach healthcare, especially in remote areas. Nurses need to be flexible, offering care through home visits, mobile clinics, or community outreach. The findings can also improve nursing education, especially in subjects like community health and health policy. Nurses are also encouraged to support public policies that improve access, such as better transport and more health workers in rural areas. Lastly, the study's methods can guide future research on healthcare access and social health factors.

METHODS

This quantitative study utilized a descriptive-analytic design with a cross-sectional approach. The descriptive aspect assessed the impact of travel time, cost, and waiting time on care-seeking behavior, while the analytic component examined the relationships between these factors and accessibility to primary health services.

A simple random sampling technique was used to select 100 participants from a population of 33,687 adults aged 18–60 years within a primary health care (PHC) service area. The sampling ensured that every eligible individual had an equal chance of being chosen, without considering any subgroup or strata. Eligibility criteria included living in the PHC area, previous use of its services, and willingness to provide informed consent. A complete list of eligible individuals was prepared, and participants were randomly selected using a computer-generated random number system. Those selected were contacted to confirm eligibility and consent. This method ensured a representative and unbiased sample, supporting the study's reliability and ethical standards.

The instrument used in this study was a structured questionnaire consisting of six parts. This questionnaire was made by the researcher based on the results of a review of various literature and similar research ([Adani et al., 2020](#); [Jang et al., 2020](#); [Kaiser & Barstow, 2022](#); [Wulandari et al., 2022, 2023](#)). This approach aims to ensure that every question raised is relevant to the research objectives and in accordance with the context and variables you want to measure.

The questionnaires are designed with the following structure: 1) Section A: Gather demographic information such as gender, age, education, work, and monthly income. 2) Section B assessed travel time using two open-ended questions and one closed-ended question ([Jamei et al., 2022](#)). Travel time was categorized as short if ≤ 20 minutes and long if > 20 minutes. 3) Section C evaluated waiting time with one open question and five Likert-scale items ([Makua & Khunou, 2022](#); [Wulandari et al., 2022](#)). Waiting time was classified as short (≤ 30 minutes), moderate (30–60 minutes), and long (> 60 minutes). Section D measured service fees through one closed question and six Likert-scale statements ([Adani et al., 2020](#)), where costs were categorized as cheap if $\leq$ IDR 10,000 and expensive if $>$ IDR 10,000, based on local income standards. Section E assessed transportation costs using two closed questions and one open question ([Jang et al., 2020](#)); costs below IDR 10,000 were considered cheap, while those $>$ IDR 10,000 were expensive. In terms of distance, areas within 5 km were classified as near, and those over 5 km as far. Section F measured overall accessibility through three Likert-scale items ([Wulandari et al., 2022, 2023](#)); where perceived access was considered easy if responses indicated minimal physical, financial, or time barriers, and difficult if multiple barriers were reported.

The instrument used in this study was tested for both validity and reliability to ensure the quality and consistency of the measurements. The validity test was conducted in May 2022 within the working area of a Primary Health Centre (PHC), involving 40 respondents. This location was strategically chosen as it closely reflects the characteristics of the population targeted in the main study, thus allowing the instrument to be evaluated under conditions that are both relevant and representative. By selecting respondents from the PHC service area—individuals familiar with the local healthcare system—the researchers were able to obtain meaningful data to determine whether the questionnaire effectively measured the intended constructs.

Validity was assessed using Pearson's product-moment correlation analysis, which was applied to evaluate the construct validity of each questionnaire item, using a significance level of 5%, with a corresponding r-table critical value of 0.444. Of the 25 items analyzed, 14 were identified as valid, with correlation coefficients (r-count) ranging from 0.465 to 0.732, thus exceeding the minimum required threshold and demonstrating a significant relationship with the overall construct. Two items were determined to be invalid due to their r-count values falling below the established cut-off.

Reliability testing further demonstrated strong internal consistency for all components of the instrument. The waiting time questionnaire (7 items) had a Cronbach's Alpha of 0.838; the service fee questionnaire (6 items) yielded an Alpha of 0.870; and the community accessibility questionnaire (4 items) had an Alpha of 0.858. Since all reliability coefficients exceeded the acceptable threshold ($\alpha > 0.7$), the instrument was deemed reliable and appropriate for use in the main study.

Data were collected directly from respondents to ensure accuracy and reliability. Statistical analysis included both univariate and bivariate methods, with a confidence level of 95% ($\alpha = 0.05$). The chi-square test was used to examine the relationship between independent variables and healthcare accessibility.

The analysis was conducted using IBM SPSS 26.0 software, with a significance level set at $p < 0.05$. Descriptive statistics were used to summarize demographic data, including calculating frequencies and percentages to provide a clear overview of participant characteristics. This approach ensured that the data were interpreted accurately and aligned with the study's objectives.

The study protocol has been approved by the ethics committee under approval number (KEPK/UMP/34/VI/2022). Participants were informed about the study objectives, potential benefits and risks, their rights, data extraction procedures, confidentiality, and their right to withdraw from the study at any time until data collection was completed without any consequences. All participants provided informed consent before data collection began.

RESULTS

In this section, detailed information is presented about respondents' characteristics. The participant profiles are listed in [Table 1](#). The findings of this research indicate that a significant number of participants are over 40 (63%), with females constituting the largest group (59%). A considerable proportion of participants have attained only elementary schooling (58%), and most are employed as laborers (38%), while a lesser amount are self-employed (14%). In terms of income, 81% of participants receive between IDR 1,000,000 and 5,000,000 on a monthly basis.

Regarding accessibility, 80% of participants indicated short travel durations to healthcare facilities, while 73% mentioned that these facilities are fairly nearby. The predominant mode of transport was private vehicles, utilized by 41% of participants. Waiting periods differed, with 37% noting moderate wait times for health services. Transportation expenses were deemed reasonable by 81% of participants, and 96% believed that the fees for health services were also minimal.

In total, 60% of participants reported that accessing healthcare services in their vicinity was straightforward; however, 40% continued to struggle with receiving care. This indicates that, although the majority of rural communities benefit from fairly ample access to medical facilities, persistent challenges linked to extended waiting periods and expenses may obstruct certain individuals from obtaining the necessary care.

Accessibility Variables and Primary Healthcare Service

Association between different factors and the ease of accessing primary healthcare services was explored to pinpoint possible obstacles and aids. The investigation showed notable correlations between travel duration and waiting periods with perceived accessibility, whereas transportation and service expenses were not significantly related.

People with short travel durations (≤ 20 minute) indicated that they had notably better access to healthcare services than those facing extended travel durations ($P = 0.041$). In particular, among those with brief travel times, 65.0% regarded their access as straightforward, whereas just 40.0% of individuals with longer travel durations shared this sentiment. This indicates that closeness and travel effectiveness play vital roles in determining accessibility.

The waiting time also exhibited a notable correlation with accessibility ($P = 0.035$). Participants experiencing shorter wait times (≤ 30 minute) were more inclined to view healthcare services as readily available (78.1%) compared to those facing moderate (48.6%) or extended waiting periods (54.8%). These results suggest that prolonged wait times could hinder access and diminish satisfaction with services.

On the other hand, the cost of transportation did not reveal a significant connection with accessibility ($P = 0.405$). Both participants who considered transportation expenses to be affordable and those who deemed them costly reported analogous levels of accessibility, indicating that transportation

expenses may not pose a significant obstacle for the majority of respondents. Likewise, service charges were not significantly linked to accessibility ($P = 0.96$). The substantial percentage of participants perceiving service charges as affordable (96.0%) could account for the negligible influence of costs on accessibility.

Table 1. Participants Profile

Characteristics	f	%
Gender		
Male	41	41
Female	59	59
Age (years)		
18 – 24	10	10
25 – 44	27	27
45 – 59	35	35
≥60	28	28
Education		
Elementary	58	58
Junior high	29	29
Senior high	13	13
Occupations		
Private employees	1	1
Self-employed	14	14
Student	5	5
Labour	38	38
Other	42	42
Monthly income (IDR)		
500.000 – 1.000.000	19	19
1.000.000 – 2.000.000	34	34
2.000.000 – 5.000.000	47	47
> 5.000.000	0	0
Travel time		
≤ 20 minutes	80	80
> 20 minutes	20	20
Distance (km)		
≤ 5	73	73
> 5	27	27
Transportation mode		
Private vehicle	41	41
Taxi	38	38
Public transportation	21	21
Waiting time		
≤ 30 minutes	32	32
30-60 minutes	37	37
>60 minutes	31	31
Transportation cost (IDR)		
≤ 10.000	81	81
> 10.000	19	19
Service cost (IDR)		
≤ 10.000	96	96
> 10.000	4	4
Accessibilities		
Difficult	40	40
Easy	60	60

Table 2. Relationship Between Accessibility Variables and Primary Healthcare Service Utilization

Variables	Accessibilities		Total	p-value
	Difficult	Easy		
Travel time				
≤ 20 minutes	28	52	80	0.041
> 20 minutes	12	8	20	
Waiting time				
≤ 30 minutes	7	25	32	0.035
30-60 minute	19	18	37	
>60 minute	14	17	31	
Transportation cost				
≤ Rp. 10.000	34	47	81	0.405
> Rp. 10.000	6	13	19	
Service cost				
≤ Rp. 10.000	40	56	96	0.96
> Rp. 10.000	0	6	4	

These findings highlight the significance of tackling logistical hurdles, such as journey durations and waiting periods, to improve accessibility. Although economic elements like transit and service expenses seem to play a lesser role in this analysis, it is crucial to provide cost-effective and efficient services to uphold fair access.

DISCUSSION

This study revealed that the majority of respondents were pre elderly and elderly, with women as the dominant group. This is consistent with findings from several studies showing that women in Indonesia, especially at an older age, are often more vulnerable to health and social access issues, especially in rural areas ([Fastl et al., 2024](#)). In addition, low levels of education and the dominance of jobs as laborers describe a more economically vulnerable population, which affects their access to quality health services ([Rahman & Pingali, 2024](#)).

This study adopts the conceptual framework of healthcare access as proposed by Aday and Andersen (1974), which identifies several critical factors that influence an individual's ability to access health services ([Vedom & Cao, 2011](#)). According to this model, access is shaped not only by the availability and organization of services but also by specific enabling components that affect utilization. Among these, four key variables travel time, waiting time, transportation costs, and service charges are recognized as significant determinants of healthcare accessibility. Drawing from this framework, the present study focuses on analyzing these four dimensions to better understand how they serve as barriers or facilitators to primary healthcare access, particularly in the context of rural and underserved populations.

Majority of respondents felt that travel time was short and health facilities were close, and used private vehicles, are in line with the literature showing that physical accessibility to health facilities greatly influences the service experience in rural Indonesia ([Anggraini, 2023](#)). Varied service waiting times and difficulties in accessing services for 40% of respondents reflect significant challenges in Indonesia's health system, which faces limited facilities and a shortage of medical personnel in rural areas ([Idris, 2022](#); [Makua & Khunou, 2022](#); [Mangoma et al., 2024](#)).

Overall, although there is a positive perception of transportation costs and affordable services, difficulty remains for some residents, which indicates inequality in service distribution and dependence on socioeconomic factors ([Samad et al., 2023](#)).

The findings about the significant role of travel time and waiting time in healthcare accessibility are supported by recent research. For instance, studies have shown that short travel times significantly enhance perceived accessibility to healthcare services, as proximity reduces physical and temporal barriers, enabling more consistent and timely access to care. Research by Nsiah et al. (2024) highlighted

that spatial accessibility directly impacts healthcare utilization, with long travel distances being a critical impediment ([Makua & Khunou, 2022](#); [Nsiah et al., 2024](#)).

Regarding waiting times, evidence suggests that prolonged waiting periods can deter patients from seeking care and lower satisfaction levels. In a study conducted by [Nwagbara et al. \(2024\)](#), waiting time emerged as a crucial factor affecting patient experience and healthcare utilization. The research highlights that shorter waiting times significantly enhance patients' perceptions of the quality of care they receive. When patients experience reduced waiting periods, they are more likely to perceive the services as efficient and sufficient, leading to increased satisfaction. Furthermore, decreased waiting times can motivate patients to seek healthcare services more frequently, as they feel more valued and at ease within the healthcare system ([Nwagbara et al., 2024](#)).

Conversely, the non-significance of transportation and service costs in influencing accessibility, as noted in your findings, aligns with insights from [Bajgain et al. \(2023\)](#), which showed that financial barriers such as transportation costs have a variable impact depending on the socio-economic profile of the population ([Thapa Bajgain et al., 2023](#)). Similarly, high satisfaction with affordable service costs, as highlighted in this study, aligns with the broader literature showing minimal impact of service cost on accessibility when perceived as affordable.

The study highlights the intricate and interrelated nature of several critical factors—such as travel time, waiting time, socioeconomic status, and service costs—that collectively influence individuals' access to healthcare. These elements do not function independently; instead, they interact in ways that can either promote or hinder healthcare utilization. For instance, lengthy travel distances to healthcare facilities can compound the difficulties associated with extended waiting times, particularly in regions with limited healthcare resources. Likewise, socio-economic status affects not only one's ability to afford healthcare services but also the capacity to overcome logistical challenges like transportation and time constraints. The combined impact of these factors often results in disparities in healthcare access, especially for vulnerable populations, including low-income individuals, the elderly, and those suffering from chronic health conditions.

To effectively tackle these barriers and enhance healthcare access, a multifaceted strategy is essential. This strategy must extend beyond merely improving the physical accessibility of healthcare facilities by reducing travel times. It also demands comprehensive measures to minimize waiting times, which significantly affect patient satisfaction and the overall efficiency of healthcare systems. Streamlining processes within healthcare institutions, enhancing appointment scheduling systems, and increasing the availability of healthcare providers are viable solutions for alleviating delays. Additionally, fostering health literacy is crucial; individuals with a better understanding of healthcare options and preventive measures are more likely to seek timely care, navigate the healthcare system efficiently, and make informed health decisions.

Moreover, ensuring that healthcare services remain affordable for all segments of the population is critical in addressing access disparities. Even when physical and logistical barriers are reduced, high service costs can deter individuals from seeking care, particularly among economically disadvantaged groups. Thus, affordable care must be a cornerstone of any strategy aimed at improving healthcare access, ensuring that financial constraints do not prevent individuals from receiving essential services.

In summary, addressing the interconnected challenges of travel time, waiting time, socio-economic status, and service costs necessitates a holistic and integrated approach. Such a strategy would not only enhance access to healthcare services but also contribute to the broader objective of reducing health disparities among various population groups.

CONCLUSION

The findings highlight that shorter travel and waiting times significantly enhance individuals' perceptions of access to healthcare services. This underscores the critical need to improve transportation infrastructure and ensure a more equitable distribution of healthcare facilities across remote areas. While the study found that transportation and service costs did not have a significant direct impact on accessibility, maintaining these costs at an affordable level remains essential,

particularly for economically vulnerable populations. The research also draws attention to often-overlooked indirect costs—such as lost work time—which can substantially influence decisions to seek medical care. Addressing both direct and indirect barriers could foster more proactive health-seeking behaviors among rural communities. The implications for policy are clear: efforts must focus not only on reducing physical barriers through improved infrastructure but also on minimizing financial obstacles to care. Policymakers are encouraged to adopt comprehensive strategies that integrate logistical solutions with financial protections to ensure equitable access for all. Future research should explore the long-term effects of improved healthcare accessibility on population health outcomes and broader socio-economic conditions. Overall, this study reinforces the need for holistic policy approaches that address both structural and economic challenges to create a more inclusive and effective rural healthcare system in Indonesia.

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AUTHOR'S CONTRIBUTION

DP: Conceptualized the research design, conducted data analysis, drafted the initial manuscript, and coordinated the final submission process

KL: Supervised data collection, reviewed the literature, and contributed to data interpretation.

AJ: Visualization, Reviewing, and Editing.

All authors approved the final version of the manuscript.

ETHICS STATEMENT

The study protocol has been approved by the Research ethics committee of Universitas Muhammadiyah Purwokerto under approval number (KEPK/UMP/34/VI/2022).

DECLARATION OF CONFLICTING INTEREST

The authors declare no potential conflicts of interest concerning the research, authorship, and/or publication of this article. All aspects of the study were conducted independently, ensuring objectivity and transparency throughout the process.

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