The Influence of Non-Clinical Factors (Age, Location, and Non-Medical Costs) on Patient Satisfaction and Loyalty at The Outpatient Polyclinic of The Manado City Dental and Oral Hospital

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Abstract.

*Patient satisfaction and loyalty are influenced not only by clinical factors but also by non-clinical factors, especially in the context of dental and oral health services supported by the National Health Insurance system. Three non-clinical factors that are strongly suspected of influencing patient satisfaction are age, non-medical costs, and location. Purpose. This study aims toanalyzing the direct and indirect influence between age, non-medical costs, and location on patient loyalty through patient satisfactionat the outpatient clinic of the Manado City Dental and Oral HospitalMethods. This study is a quantitative study with an analytical observational approach and uses a cross-sectional design, which was conducted in October - December 2025. The study sample consisted of 128 respondents consisting of respondents ≥ 18 years. Data were collected through questionnaires, then analyzed using univariate, bivariate, and multivariate analysis. Results.The results show that there is a direct effect of age and non-medical costs on patient satisfaction (p = 0.001), there is a direct effect of age on patient loyalty (p = 0.001), there is a direct effect of patient satisfaction on patient loyalty (p = 0.001), there is a direct effect of age on patient loyalty through patient satisfaction (p = 0.001) and there is a direct effect of non-medical costs on patient loyalty through patient satisfaction (p = 0.036). Meanwhile, there is no direct effect of location on patient satisfaction and loyalty (p = 0.976 and 0.436), there is no direct effect of non-medical costs on patient loyalty (p = 0.058), and there is no effect of location on patient loyalty through patient satisfaction (p = 0.979).**Conclusion**Patient satisfaction is a full mediator between non-medical costs and loyalty, and a partial mediator between age and loyalty.*

Keywords: *Age; Non-Medical Costs; Patient Satisfaction and Patient Loyalty.*

I. INTRODUCTION

The transformation of dental healthcare services is determined not only by clinical competence, but also by non-clinical factors that shape the patient's holistic experience. This illustrates the importance of non-clinical aspects in influencing perceived satisfaction with a service. Several studies have consistently shown that non-clinical factors have a greater influence on patient satisfaction than clinical factors such as technical expertise or treatment outcomes.(Prihatini et al, 2024). Manado City Dental and Oral Hospital faces challenges in maintaining patient loyalty with a repeat visit rate of only 60% based on data from January – July 2025.In the BPJS system, where major medical expenses are covered, non-clinical factors are the primary determinants of patient satisfaction and loyalty. Three non-clinical factors strongly suspected of influencing patient satisfaction are age, non-medical costs, and location..Age category influences expectations and satisfaction priorities, for example: elderly people are more sensitive to waiting times, young parents are more sensitive to doctor communication.(Denilson et al, 2025) Non-medical costs, such as transportation and time, are important considerations when assessing the value of a service. BPJS patients don't pay direct medical expenses, but they still incur indirect costs (transportation, time, and energy). Strategic location and ease of access also influence patients' decisions to remain loyal to a particular hospital.

True loyalty is demonstrated through retention, advocacy (recommending others), and resilience to negative incidents. To build this true loyalty, understanding satisfaction derived from non-clinical factors such as age, location, and perception of cost (even if paid by BPJS) is crucial.(Parmana et al, 2024). The Manado City Regional Dental and Oral Specialist Hospital (RSKD) is a public health institution that plays a strategic role in providing quality dental and oral health services to the community. As the spearhead of service, the outpatient clinic must provide a satisfying experience so that patients become loyal and regular customers, not just once. In 2024, 12 percent of outpatients at the Manado Regional Dental and Oral Hospital (RSKD) visited the clinic once, while the remaining 88 percent visited more than once. Meanwhile, from January to July 2025, the number of patients who visited only once increased to 40 percent. This could be a problem for the hospital, leading to patient dissatisfaction and a lack of return visits, or other contributing factors. In other words,Manado Dental and Oral Hospital faces challenges in maintaining patient loyalty with a repeat visit rate of only60 percent. Although 188 patients per month have demonstrated initial loyalty by visiting more than once, this loyalty may be pseudo-loyalty due to the BPJS system's linkages.

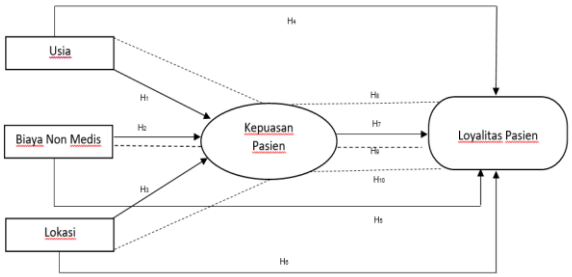

Fig 1. Conceptual Framework

The hypothesis in this study is as follows:
H1 = The effect of age on patient satisfaction
H2 = The effect of non-medical costs on patient satisfaction
H3 = The influence of location on patient satisfaction
H4 = The effect of age on patient loyalty.
H5 = The effect of non-medical costs on patient loyalty.
H6 = The influence of location on patient loyalty.
H7 = The influence of patient satisfaction on patient loyalty.
H8 = The effect of age on patient loyalty through patient satisfaction.
H9 = The effect of non-medical costs on patient loyalty through patient satisfaction.
H10 = The influence of location on patient loyalty through patient satisfaction.

II. METHODS

This study is a quantitative, observational, and analytical study using a cross-sectional design. This design aims to examine the relationship between age, non-medical costs, and location as independent variables, and patient loyalty as the dependent variable. Furthermore, this study also considers patient satisfaction as an intervening or mediating variable. This study was conducted from October to December 2025.

2.1. Respondents

The respondents in this study were 128 respondents aged ≥ 18 years who visited the Outpatient Polyclinic of the Manado City Special Dental and Oral Hospital.

2.2. Data Collection

In this study, primary data was collected through interviews using questionnaires to gather information regarding characteristics. respondents, non-medical costs, and location

2.3. Data Analysis

Data analysis was performed using statistical tests in the SPSS program using multivariate analysis. Multivariate analysis is performed to understand the influence of two variables by controlling for other variables and to measure the extent of the pure influence of these variables. This process is carried out using the SPSS application or software. In multivariate analysis, the test used is path analysis.

III. RESULT AND DISCUSSION

Table1. Direct Influence

Hypothesis	Variables	Direct Influence		
		Estimate	***P value***	***Conclusion***
H1	Patient Satisfaction Age	0.672	0.001	Significant
H2	Non-medical costs Patient satisfaction	0.498	0.001	Significant
H3	Llocation Patient Satisfaction	0.003	0.976	Not Significant
H4	Patient Loyalty Age	0.571	0.001	Significant
H5	Non-medical costs Patient Loyalty	0.256	0.058	Not Significant
H6	Patient Loyalty Location	-0.061	0.436	Not Significant
H7	Patient Satisfaction Patient Loyalty	0.513	0.001	Significant

Table 2. Indirect Effects

Hypothesis	Variables	Indirect Influence		
		P value	***Indirect Effect***	***Total Effect***
H8	Patient Satisfaction Age Patient Loyalty	0.001	0.224	0.795
H9	Non-Medical Costs Patient Satisfaction Patient Loyalty	0.036	0.147	0.109
H10	Patient Satisfaction Location Patient Loyalty	0.979	0.002	0.059

3.1. The Direct Effect of Age on Patient Satisfaction

Based on the results of the multivariate analysis of the direct influence of age on patient satisfaction, the value.The p-value obtained was 0.001 ($p<0.05$), meaning H0 was rejected and H1 was accepted. Based on the analysis, it can be concluded that there is a direct influence between age and patient satisfaction. The value of the influence of age on patient satisfaction was recorded at 0.672, indicating a positive relationship between the two.In line with the results of this study, Setyawan et al.,(2020)found that age and marital status influenced patient satisfaction in primary healthcare facilities in Indonesia. Those aged 18-35 years had high expectations for digital services, prioritizing efficiency, online access, and digital communication. However, this age group was sensitive to communication. Poor doctor-patient communication correlated with low satisfaction (A. Setyawan et al., 2025). This study also demonstrated high satisfaction among pre-elderly individuals aged 55 years and older, who had realistic expectations and valued conventional services, empathy, and personal attention. The results of the study by Denilson et al.(2025)found that age and education level were associated with patient satisfaction in academic dental clinics. Similarly, research at Hermina Hospital by Sagay et al.,(2023)showed a significant relationship between age characteristics and patient satisfaction.

3.2. The Direct Impact of Non-Medical Costs on Patient Satisfaction

Based on the results of the multivariate analysis of the direct effect of non-medical costs on patient satisfaction, the p-value obtained was 0.001 ($p<0.05$), this means that H0 is rejected and H1 is accepted. Based on the analysis conducted, it can be concluded that there is a direct effect between non-medical costs and patient satisfaction. The value of the effect of age on patient satisfaction was recorded at 0.498, indicating a positive relationship between the two.In line with these findings, research by Alyafei et al., (2024)stated that high non-medical costs can be categorized as perceived value. According to Rao et al. (2025), patient satisfaction is categorized as a perceived barrier. When this barrier is low (costs are perceived as affordable), individuals will more easily engage in desired behavior, in this case, positively evaluating the overall service, which is manifested as satisfaction. Furthermore, this finding also supports the value-expectancy theory (Linder-Pelz). Non-medical costs that are affordable or lower than patients' estimates (expectations) will result in positive disconfirmation, where reality exceeds expectations, thus encouraging high satisfaction.

3.3. Direct Influence of Location on Patient Satisfaction

Based on the results of the multivariate analysis of the direct influence of location on patient satisfaction, the p-value obtained was 0.536 ($p>0.05$), this means that H0 is accepted and H1 is rejected. Based on the analysis carried out, it can be concluded that there is no direct influence between location and patient satisfaction. The value of the influence of location on patient satisfaction is 0.003 which indicates that although the relationship between the two is positive, the effect is very small, namely only 3%.This finding is likely influenced by the unique location characteristics of RSKDGM, such as its location on the Ring Road with smooth traffic and low population density. This condition results in relatively stable travel times and minimal congestion, making "absolute distance" (in kilometers) a good proxy for travel time. Patients from a distance of 10 km may not perceive their journey as significantly more difficult than those from a distance of 5 km, as both can be reached quickly and predictably. Thus, the perceived geographic barrier is very small. Based on the health belief model (HBM) theory, "distance/location" fails to be a strong perceived barrier. Due to easy access, patients do not perceive location as a significant obstacle to obtaining services, so this variable does not significantly influence their satisfaction evaluations.

3.4. The Direct Influence of Age on Patient Loyalty

Based on the results of the multivariate analysis of the direct effect of age on patient loyalty, the p-value obtained was 0.001 ($p<0.05$), this means that H0 is rejected and H1 is accepted. Based on the analysis conducted, it can be concluded that there is a direct effect between age and patient loyalty. The value of the effect of age on patient loyalty is 0.571, indicating that the relationship between the two is positive.Older patients often value long-term relationships, familiarity with their doctors, and the trust they have built. They are less likely to switch providers if they feel comfortable and trust them (high attitudinal loyalty).).Consistent with this research, a 2025 study in China found that patient age significantly impacted loyalty. The results showed that older patients tended to be more loyal due to the need for continuity of care (Li, 2025).

3.5.The Direct Impact of Non-Medical Costs on Patient Loyalty

Based on the results of the multivariate analysis of the direct effect of non-medical costs on patient loyalty, the p-value obtained was 0.058 ($p>0.05$), this means that H0 is accepted and H1 is rejected. Based on

the analysis conducted, it can be concluded that there is no direct effect between non-medical costs and patient loyalty. The value of the effect of non-medical costs on patient loyalty is 0.256. This shows that although the relationship between the two is positive, it is only 2.5%.The finding that non-medical costs do not directly encourage patients to return to or recommend RSKDGM is logical and can be explained by the behavioral consequences of service quality theory (Zeithaml et al.). Affordable costs contribute to a positive and satisfying overall treatment experience. Satisfaction then fosters a commitment to loyalty.Although indirect, non-medical costs that are suddenly deemed unreasonable by patients can quickly become a major source of dissatisfaction that erodes loyalty.Research conducted at NN Dental Care Muara Jawa found that patient satisfaction significantly mediated the influence of price and service quality on loyalty (Sari et al, 2024).

3.6. The Direct Influence of Location on Patient Loyalty

Based on the results of the multivariate analysis of the direct effect of location on patient loyalty, the p-value obtained was 0.436 ($p>0.05$), this means that H0 is accepted and H1 is rejected. Based on the analysis conducted, it can be concluded that there is no direct effect between location and patient loyalty. The value of the influence of location on patient loyalty is -0.061, indicating a negative relationship between the two.An easily accessible and smooth location such as on the Manado Ring Road, as the location of RSKDGM, may have been a satisfying factor. basic. It means,When these factors are met, it is no longer the primary motivator for loyalty. However, if these factors are not met (for example, access is very difficult), it can become a strong source of dissatisfaction and disloyalty.

In other words, RSKDGM's strategic location is a necessary prerequisite, but not a sufficient guarantee, for creating loyalty.In line with the results of this study, research by Kipu and Wariki (2023) at the Outpatient Polyclinic of Manembo-nembo Hospital, Bitung, also found no relationship between location and customer loyalty (p-value = 0.061). However, this result is inconsistent withA study in China (2025) found that geographic accessibility and ease of transportation were predictors of patient loyalty at primary healthcare facilities. Patients located >10 km away showed 15% lower satisfaction on the accessibility and convenience dimensions compared to patients located <2 kilometers away (Li, 2025).

3.7. The Direct Influence of Patient Satisfaction on Patient Loyalty

Based on the results of the multivariate analysis of the direct effect of patient satisfaction on patient loyalty, the p-value obtained was 0.001 ($p<0.05$), this means that H0 is rejected and H1 is accepted. Based on the analysis conducted, it can be concluded that there is a direct effect between patient satisfaction and patient loyalty. The value of the effect of age on patient satisfaction was recorded at 0.513, indicating a positive relationship between the two.The results of this study align with research at Dr. Doris Sylvanus Regional Hospital, Palangkaraya, which showed that satisfaction significantly influences outpatient loyalty at the neurosurgery clinic.

This means that the better the patient satisfaction, the greater their loyalty to the hospital's healthcare services (Purba et al., 2021).High satisfaction creates a positive attitude toward the hospital. This positive attitude is then manifested in two dimensions of loyalty: behavioral loyalty, demonstrated by the intention and action to return to RSKDGM when requiring dental services in the future, despite other options, and attitudinal loyalty, demonstrated by the willingness to recommend RSKDGM to family, friends, or colleagues. This word-of-mouth recommendation is a highly valuable and credible form of loyalty.

3.8. Indirect Effect of Age on Patient Loyalty Through Patient Satisfaction.

Based on the results of the statistical path analysis test, it was found that there was an indirect influence of age on patient loyalty through patient satisfaction.The results of the Sobel test show a z-value of 4.737 > 1.96 (absolute z) or it can be interpreted that the Patient Satisfaction variable as an intervening variable can mediate the Age variable on Patient Loyalty.. The p-value obtained is p = 0.001 (p < 0.05), meaning H0 is rejected and H1 is accepted. So it can be concluded that there is an indirect effect of age on patient loyalty through satisfaction as an intermediary variable in patients at the Outpatient Polyclinic of the Manado City Special Dental and Oral Hospital.

3.9. Indirect Effect of Non-Medical Costs on Patient Loyalty Through Patient Satisfaction.

Affordable non-medical costs orLower-than-expected performance (perceived performance) will result in positive disconfirmation of patient expectations. This positive disconfirmation manifests as increased satisfaction. High satisfaction then becomes the psychological foundation for forming a long-term commitment in the form of loyalty. Thus, non-medical costs do not directly purchase loyalty, but rather satisfaction, which in turn generates loyalty.Based on the results of the statistical path analysis test, it was found that there was an indirect influence of non-medical costs on patient loyalty through patient satisfaction.

The results of the Sobel test show a z-value of 2.087 > 1.96 (absolute z) or it can be interpreted that the Patient Satisfaction variable as an intervening variable can mediate the Non-Medical Cost variable on Patient Loyalty.The p-value obtained is p = 0.036 (p < 0.05), meaning H0 is rejected and H1 is accepted. So it can be concluded that there is an indirect effect of non-medical costs on patient loyalty through satisfaction as an intermediary variable in patients at the Outpatient Polyclinic of the Manado City Special Dental and Oral Hospital.Research in Saudi Arabia in 2024 also found that the perception of value of the costs incurred influences patient satisfaction and loyalty, especially in private facilities that offer higher quality services at competitive prices.(Alodhialah et al, 2024).

3.10. Indirect Effect of Location on Patient Loyalty Through Patient Satisfaction.

The location of the Manado City Dental and Oral Specialist Hospital on the smooth Ring Road is likely a perfect "hygiene factor" for most patients. This means that easy access is taken for granted. When this factor is met perfectly, it is no longer a driver of satisfaction or loyalty; its existence is taken for granted. However, it is important to note that if this factor suddenly deteriorates (for example, with restricted access or difficult parking), it can quickly become a powerful source of dissatisfaction.Based on the results of the statistical path analysis test, it was found that there was no indirect influence of location on patient loyalty through patient satisfaction.The results of the Sobel test show a z-value of 0.026 < 1.96 (absolute z) or it can be interpreted that the Patient Satisfaction variable as an intervening variable cannot mediate the Location variable on Patient Loyalty. The p-value obtained is 0.979 (p> 0.05), so it can be concluded that there is no influence of Location on Patient Loyalty through Patient Satisfaction as an intervening variable or intermediate variable onpatients at the Outpatient Polyclinic of the Manado City Special Dental and Oral

Hospital.In contrast to the research results conducted by Prakoeswa et al.,(2022)who found that strategic location can influence a patient's decision to remain loyal to a healthcare facility. In the study by Setyawan et al.,(2020)also found that travel times >30 minutes significantly influenced patients' decisions to choose other healthcare facilities, particularly in healthcare facilities with difficult transportation access, complex topography, and densely populated areas.Thus, it can be concluded that in the context of RSKDGM,

location is not a determinant of patient satisfaction. However, this finding does not necessarily deny the importance of location in healthcare services in general, but rather underscores that when physical accessibility is well met, other non-clinical factors such as age and cost become more prominent in shaping satisfaction.

IV. CONCLUSION

Based on the results of the study above, it can be concluded that there is no direct influence of location on patient satisfaction (p = 0.976) there is no influence of non-medical costs and location on patient loyalty (p = 0.058 and 0.436), there is a direct influence between age and non-medical costs on patient satisfaction (p = 0.001 and 0.001), there is a direct influence of age on patient loyalty (p = 0.001), there is a direct influence of patient satisfaction on patient loyalty (p = 0.001), there is an indirect influence of age and non-medical costs on patient loyalty through patient satisfaction (p = 0.001 and 0.036). Suggestions forThe management of the Manado City Dental and Oral Hospital (RSKD Gigi dan Mulut) prioritizes programs that directly improve patient experience and satisfaction, implementing specific interventions to address the most problematic non-clinical factors. Regarding non-medical costs, evaluate the transparency of costs for general or non-BPJS patients and provide clear information about non-medical costs from the outset.

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