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Affordability of Out-of-Pocket Payments in Private Health Services Among Low-Income Households in Peri-Urban Dar Es Salaam, Tanzania

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ABSTRACT

Background: Healthcare affordability remains a central policy challenge in low-income countries, where weak regulation and market-driven private provision increasingly constrain access to essential services, particularly for vulnerable groups.
Objective: This study assesses the affordability of healthcare services for low-income households seeking care at private health facilities in peri-urban Dar es Salaam, Tanzania.
Methods: A cross-sectional mixed-methods design was employed between December 2022 and September 2023 across three private health facilities, involving 1,030 respondents aged 18 years and above selected through random sampling. Data were collected using semi-structured interviews, surveys, and focus group discussions. Quantitative data were analyzed using SPSS, with t-tests and chi-square tests used to examine associations between healthcare affordability and socio-demographic characteristics.
Results: Affordability remained limited across all facilities. At Cardinal Rugambwa Hospital, 37.14% of females and 31.43% of males reported being able to afford healthcare, while a smaller share reported partial affordability. No statistically significant association was found between affordability and gender at Cardinal Rugambwa Hospital ($p = 0.870$) or at Tabata Dispensary ($p = 0.756$). Affordability constraints disproportionately affected unemployed women, widowed, and divorced individuals. Heavy reliance on out-of-pocket payments imposed substantial financial strain, reinforcing household vulnerability and poverty.
Conclusion: Reliance on out-of-pocket financing significantly undermines healthcare affordability in private facilities and exposes low-income households to financial risk. Strengthening financial protection mechanisms, enforcing regulations in private healthcare markets, and reducing import tariffs on essential medical supplies are critical to improving affordability, and accelerating progress toward universal health coverage (UHC).

Keywords: *Affordability; income; out-of-pocket payments; health insurance*

1 INTRODUCTION

The affordability of health services in low- and middle-income countries, including Tanzania, has been a contentious issue in health policy debates. Since health sector

reforms in Sub-Saharan Africa (SSA) began in the 1990s, private providers have influenced healthcare costs. For many low-income families, financial barriers, compounded by weak protection policies, make private healthcare largely inaccessible, especially in areas where out-of-pocket (OOP) payments are common. In Tanzania, little is known about the affordability of health services at private health facilities among poor peri-urban households. In India for instance, Francis and Sengottuvelu (2019) conducted a descriptive analysis examining the economic affordability and quality dimensions of healthcare services provided by hospitals in Kochi. The study reveals a clear dichotomy between public and private healthcare provision in terms of cost and perceived service quality. Public hospitals were found to be significantly more affordable, particularly for low-income households, due to subsidized services and free wards[1].

Evidence shows that in SSA and South East Asia (SEA), OOP expenses account for over 60% of total health costs in low-income countries, compared to 20% in high-income countries [2]. However, there is limited analysis of how affordability, especially at private facilities, is understood or measured, and no universally accepted model exists. Over the past decade, several studies have sought to define and measure affordability in various contexts. Affordability of healthcare services is often understood as a patient's ability to pay for necessary services, given their financial capacity. According to the WHO (2010, 2019), healthcare affordability refers to whether an individual or household can access and afford health services, including both direct and indirect costs, without experiencing financial hardship or forgoing other essential goods or services [3]. The World Bank (2019) [4] notes that, when applied to a private health facility, affordability means that a patient should be able to access the facility's services, such as consultation, diagnostics, treatment, medicines, and follow-up care, and cover all related costs, including facility fees, travel, time off work, and possibly accommodations without:

- Being forced to forgo other essential expenditures (food, housing, education);
- Borrowing money or selling assets to pay.
- Being pushed into poverty or deeper financial hardship.

Given this contextual reality, Haggerty & Levesque (2015) show that respondents with lower incomes reported significantly more problems with healthcare affordability than those with higher incomes [5]. Therefore, it is helpful to examine how Niëns and Brouwer (2013) clarify the concept of affordability and how it is measured. The authors explain that affordability can be measured by defining when a health care payment is considered too costly relative to people's financial resources, and they describe several ways to do this systematically [6].

Precisely, the authors summarize two widely used indicators of measuring affordability of healthcare. First, is when health spending exceeds a specified threshold often 10% or 25% of total household expenditure, it is classified as *'Catastrophic Health Expenditure'*, indicating that healthcare costs impose a significant financial burden on households. Another commonly applied approach is the '*capacity-to-pay method'*, which measures healthcare expenditure relative to household income remaining after basic subsistence needs are met.

These scholars identify three main aspects of affordability analysis: healthcare prices, patient income, and unacceptable financial burdens. In a separate study in South Africa on pricing and affordability of cancer treatment shows that many standard cancer treatments in the private health facilities were largely unaffordable relative to a low-income worker's wages [7]. The authors note that affordability gaps between private and public health facilities largely stem from high medicine prices that exceed patients' incomes.

Conversely, Kamath et al. (2024) examined factors influencing out-of-pocket expenditures (OOPE) in Karnataka, South India, with a focus on the determinants of private hospital choice. The study found that low-income households often rely on government hospitals because they are affordable and offer free or low-cost medical services. By contrast, wealthier individuals tend to use private hospitals for higher-quality care, including access to specialists [8].

A study in rural western Kenya examined the affordability of National Health Insurance Fund (NHIF) premiums, the need for financial protection, and coverage among rural informal workers. It found that only 12% of households had insurance, and premiums were largely unaffordable for 60% of the insured and 80% of the uninsured. Rural households spent 12% of their income on out-of-pocket costs, and both insured and uninsured faced high expenses and similar levels of impoverishment [9].

The price gap between public and private healthcare facilities in Ethiopia for instance is substantial. A study assessing the availability, price, and affordability of COVID-19 medicines in Dessie found notable price differences between private and public hospitals It was found that 72.09% of medicines in public facilities and 91.84% in private facilities were unaffordable, and previous research has also shown that 63.9% of prescribed medicines were unaffordable, with prices generally higher in private facilities than in public ones [10]. Similar results were observed in China, where significant price disparities existed between public and private health facilities. However, the comparative study noted that although 80% of medicines in both the private and public health facilities were unaffordable, the differences were not statistically significant [11].

In Zambia, the private health sector operates on a profit-driven model, collaborating with public providers to improve service readiness and access. Private providers find the accreditation process and fees reasonable and affordable. They also report an increase in service use, especially among clients enrolled in the National Health Insurance Scheme (NHIS) [12]. In Vietnam, a study examined factors influencing out-of-pocket payments for outpatient healthcare services among low-income households and different levels of health facilities. It found that health insurance decreases out-of-pocket costs by about 21% ($P < .001$). However, using private health facilities is associated with higher out-of-pocket expenses than using public facilities ($P < .001$) [13].

Affordability gaps often exist between wealthy and disadvantaged groups within certain areas, with impoverished elders frequently being the most affected. Gender disparities further complicate affordability in South-Eastern Nigeria. The study found that female-headed households (FHH) had higher cost burdens for care-seeking and untreated morbidity than male-headed households (MHHs) [14]. Households in both rural and urban areas in Tanzania bear catastrophic health expenditure burdens, with health spending exceeding 10% of household income [15]. In a cross-sectional multilevel analysis of Demographic and Health Survey data (2015–2022) from six Southeast Asian countries in the WHO region, the study examined health insurance coverage and its socioeconomic and demographic determinants among men and women aged 15–49 years, revealing considerable cross-country variation. Indonesia, for example, had the highest health insurance coverage for both women (58.2%) and men (56.6%), whereas Bangladesh and Myanmar reported the lowest coverage for women (0.3%) and men (1.4%), respectively. Overall, pooled estimates indicate that only about one in five women and one in four men in the Southeast Asia Region were covered by some form of health insurance [16].

As Hanan and Bruce (2024) while, discussing global and regional issues related to private sector engagement in health

systems, with particular reference to WHO's work and observations in the Eastern Mediterranean Region found that private health services face several barriers, including [17]:

(i) Private health facilities often lack robust regulatory oversight, raising concerns about quality, patient safety, and unregulated fees that reduce affordability and trust.

(ii) High out-of-pocket costs in private settings remain a significant barrier for many low-income households, preventing vulnerable populations from accessing private facilities.

(iii) Private providers are often limited by infrastructure and workforce shortages, such as insufficient equipment, unreliable utilities, and a lack of skilled staff, especially in rural or underserved areas, which restricts their capacity and reach.

Furthermore, findings from a systematic scoping review on medicine availability and affordability in Africa indicate that among 59 articles reporting affordability measures, 32 (54%) compared medicine prices to the daily wage of the lowest-paid government worker [18]. Other measures of affordability included patient self-reported affordability, capacity-to-pay assessments, and comparisons of medicine prices with population-level income standards such as the minimum wage, poverty line, or per capita income. Sullivan et al. (2021) emphasize the interconnectedness of public and private healthcare systems [19]. Additionally, the study by Leo and Prasad (2024) found that many tribal women of reproductive age in India, especially those with no or lower levels of education, had the highest probability (odds) of facing difficulties arranging money for their own healthcare during both surveys, compared with those with higher levels of education [20]. Recently, the focus has shifted to health insurance, particularly universal coverage, as a means to improve affordability and reduce out-of-pocket (OOP) expenses. Amani et al. (2021) found that high National Health Insurance Fund (NHIF) premiums have little effect on elderly rural Tanzanians [21]. In Tanzania, fewer than 20% are insured, leaving most reliant on OOP payments (Gulamhussein et al., 2024), while high private insurance costs limit access (Magaria et al., 2023) [22] [23]. Despite efforts, a significant knowledge gap remains about how to maintain healthcare affordability.

Previous studies on the affordability of health services have not clearly explained how affordability differs between public and private healthcare settings in Tanzania. As a result, analyses of healthcare affordability lack the detail needed for researchers to develop clear, informed narratives that adapt to changing cost-sharing models. Consequently, a significant knowledge gap remains regarding how health financing researchers link affordability factors and their changes to the poor's access to and use of health services. Building on this theoretical foundation, the paper aims to address these gaps by exploring the following research questions:

- How affordable are healthcare costs for low-income households in private health facilities?
- How effective are regulatory mechanisms in protecting low-income households from the risk of high out-of-pocket expenses at private health facilities?

Using an analysis of affordability factors (socio-demographic and socio-economic), this study examines the affordability of medical costs for low-income households in private facilities, focusing on selected private hospitals in peri-urban Dar es Salaam. Its significance lies in its potential to enhance healthcare affordability within Tanzania's policy, institutional, and regulatory frameworks.

2 MATERIALS AND METHODS

2.1 Description of the Study Area

This study was conducted at three private health facilities in Dar es Salaam, Tanzania: Cardinal Rugambwa Hospital, Kitonka Medical Hospital, and Tabata SES Dispensary. According to the 2022 National

Population Census, the areas surrounding these hospitals have a combined population of 206,782, representing 12.53% of Dar es Salaam City's total population of 1,649,912 (URT, 2022). The selection of these research sites was based on the presence of diverse private health facilities offering a range of services, easy access, a well-organized healthcare system that includes dispensaries and health centers, and a high number of low-income individuals who rely on out-of-pocket payments.

2.2 Research Design and Sampling

The study used a cross-sectional design combined with a mixed-methods approach to gather data from outpatients and inpatients aged 18 and older who paid for their care either out-of-pocket or through health insurance. A total of 721 respondents participated, with 35 selected from each hospital. Among these, 350 were direct respondents i.e. outpatients and inpatients, as shown in Table 1. Additional key informants from various sources (371) were also included, and their responses were analyzed separately from the patient data, as summarized in Table 2.

Table 1: Number of respondents from sampled health facilities

Name of health facility	Out of pocket payment for outpatients	Health insurance for OOP	Out of pocket payment for inpatients	Health insurance for inpatients	Total
Cardinal Rugambwa Hospital	35	35	35	35	140
Kitonka Medical Hospital	35	35	35	35	140
Tabata SES Dispensary	35	35	0	0	70
Grand total					**350**

Source: Field data, October 2023

2.3 Data Collection methods, Tools, and Procedures

Specifically, the study employed non-probability sampling to select key informants, and respondents were chosen based on characteristics relevant to the research questions. A range of data collection tools were used. Primary data were gathered from both outpatients and inpatients at patient exits and at hospital beds. Semi-structured, face-to-face interviews were conducted with these patients using an interview guide.

A household survey was also conducted to collect data on healthcare affordability, whether through out-of-pocket expenses or health insurance, using a range of household survey tools. A total of 264 households participated, with 88 respondents selected from each of the chosen wards (see Table 2). Key informant interviews were conducted with 9 health facility staff, including the head of the facility, hospital administrator, and chief medical officer, as well as 5 members of the Dar es Salaam city council's health management team. Additionally, a Focus Group Discussion (FGD) checklist was used to gather information through guided discussions with 84 participants, including persons with disabilities and women-headed, low-income households. All questionnaires were pretested to ensure relevance and reliability. Table 2 summarizes respondents from key informants and other sources.

Table 2: Number and types of key informants covered in this study.

Respondents	**Category**	**No. of respondents**	**Institution/Location**		
			Cardinal Rugambwa Hospital	Kitonka Medical Hospital	Tabata SES dispensary
Key informants (KIs)	Head of health facility, hospital administrator and chief medical officers	9	3	3	3
Sub Total on KI		**9**			
Council's Health Management Team	Members of the Council's health management team	5	Dar es salaam City Council's Chief Medical office		
			Tabata	Ukonga	Gongo la Mboto
Ward Health Committees	Members of the Ward Health committees	9	3	3	3
Sub Total		**14**			
Household heads	Respondents from the Household Survey	264	88	88	88
Focussed groups	Respondents from Six FGDs participated in the FGDs	84	28	28	28
Sub Total		**348**			
Total Respondents		**371**			

Source: Field data, October 2023.

2.4 Methods of Data Processing and Analysis

Completed questionnaires were reviewed, coded, and checked for completeness and reliability. Data cleaning was performed to ensure accuracy. Quantitative data were analyzed in IBM SPSS Statistics 25, and qualitative data from key informants and FGDs, including indigent women-headed households and persons with disabilities, were analyzed in MaxQDA. Descriptive statistics, Chi-square tests, independent-samples t-tests, and regression analysis were used to assess relationships and variability among variables at the 5% significance level.

3. RESULTS AND DISCUSSION

3.1 Socio-Demographic and Socio-Economic Characteristics of Healthcare Affordability

This cross-sectional study of selected private health facilities provides key insights into healthcare affordability. Socio-demographic factors (gender, employment status, education, marital status, and family size) and socioeconomic factors (patient income, healthcare prices, and expenditures) were analyzed to assess their influence on affordability. Key findings are presented below.

3.1.1 Gender and Affordability

At Cardinal Rugambwa Hospital, 37.14% of females and 31.43% of males could afford out-of-pocket (OOP) healthcare expenses. Moderate affordability was reported among females, while 8.57% of females and 5.71% of males could not afford health services. However, the association between gender and affordability was not statistically significant ($p = 0.870$). At Kitonka Medical Hospital, 28.6% of females and 34.4% of males could afford OOP services, with 5.71% reporting non-affordability for both genders ($p = 0.517$). At Tabata SES Dispensary, 40% of females and 34.29% of males could afford healthcare, likely due to lower prices at primary-level facilities. Non-affordability was 2.90% for both genders, with no significant association observed ($p = 0.756$).

3.1.2 Employment and Affordability

At Cardinal Rugambwa Hospital, 45.70% of employed patients fully afforded healthcare, 5.7% partially afforded it, and none were unable to pay. Among unemployed patients, 8.6% fully afforded services, 20% partially afforded, and 20% could not afford healthcare. Employment status was significantly associated with affordability ($p = 0.001$). At Kitonka Medical Hospital, 37.14% of employed patients fully afforded healthcare, 11.4% partially afforded it, and none were unable to pay. Among unemployed patients, 20% could afford healthcare, while 11.4% could not, leading to treatment delays or withdrawal. This association was statistically significant ($p = 0.037$). At Tabata SES Dispensary, 57.10% of employed patients fully afforded healthcare, while 8.6% moderately afforded it. Among unemployed patients, 17% afforded healthcare, 6% moderately afforded it, and 8.6% could not. However, the association was not statistically significant ($p = 0.104$).

3.1.3 Marital Status and Affordability

At Cardinal Rugambwa Hospital, 34.30% of married patients could afford healthcare, 11.40% afforded it moderately, and 8.60% could not. Divorced and unmarried patients reported lower affordability, influenced by income, savings, and spousal support. However, the association was not statistically significant ($p = 0.519$). At Kitonka Medical Hospital, 45.70% of married patients fully afforded healthcare, with no significant association observed ($p = 0.111$). At Tabata SES Dispensary, 51.40% of married patients fully afforded healthcare, 2.9% moderately afforded it, and 20% of singles could afford it, with none unable to pay. This association was statistically significant ($p = 0.002$). The study further showed that 8.6% of women of childbearing age at Cardinal Rugambwa and Tabata, and 5.7% at Kitonka, experienced affordability challenges.

3.1.4 Level of Education and Affordability

At Cardinal Rugambwa Hospital, none of the patients without formal education demonstrated full or moderate affordability, except 2.90% who could not afford healthcare. In contrast, 11.4% and 17.10% of patients with primary and secondary education, respectively, afforded healthcare, while 17.14% reported moderate affordability. Affordability increased with education level, with 25.70% of tertiary-educated patients able to afford care. This relationship was statistically significant ($p = 0.008$). At Kitonka Medical Hospital, 22.90% and 17.10% of patients with primary and secondary education, respectively, reported moderate affordability, while 5.70% could not afford care. Patients with tertiary education accounted for 14.30% of those who could afford services, with no reported non-affordability. However, the association was not statistically significant ($p = 0.836$). At private dispensaries, most OOP payers had primary or secondary education, with affordability rates of 31.40% and 34.30%, respectively. The low proportion among tertiary-educated patients (8.6%) reflects lower utilization of primary-level facilities rather than income differences, with no significant association observed ($p = 0.091$).

3.1.5 Family Size and Affordability

At Cardinal Rugambwa Hospital, families with 1–3 children reported higher affordability (34.30%), while 14.30% afforded care moderately and 5.7% could not afford healthcare. Affordability declined with increasing family size, particularly among low-income households. For families with four or more children, 11.4% could not afford healthcare. However, no significant association was observed ($p = 0.449$). At Kitonka Medical Hospital, 22.90% of patients with 1–3 children could afford healthcare, while 14.30% afforded it moderately. Among families with four or more children, 11.40% fully afforded healthcare and 8.6% could not, with no

significant relationship identified. At Tabata SES Dispensary, 31.40% of patients with 1–3 children could afford healthcare, compared to 14.3% of those with larger families, with no significant association (p = 0.127). Vulnerable groups, including persons with disabilities and resource-deprived female-headed households, faced greater affordability challenges. Factors contributing to limited affordability are summarized in Figure 1.

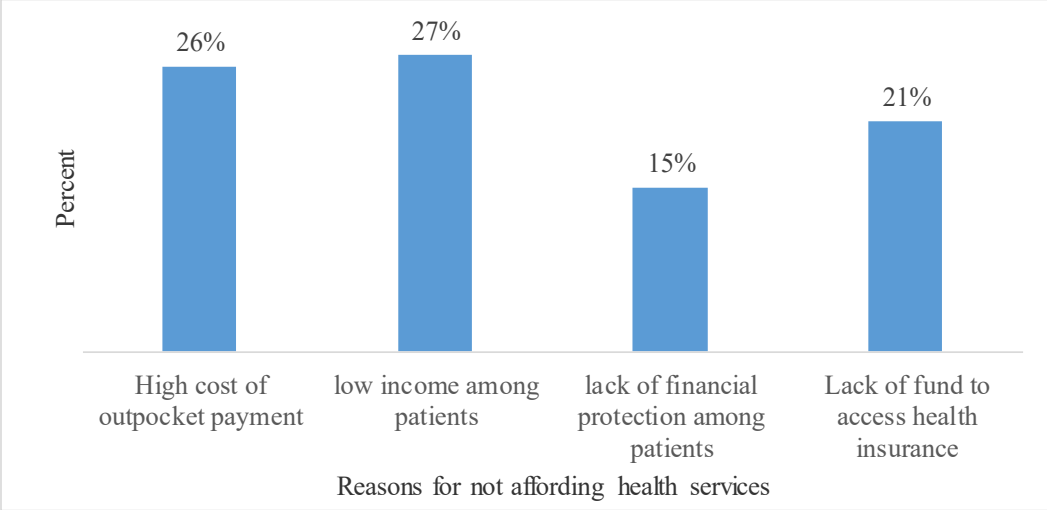

Figure 1: Proportion of families not affording health services
Source; Field data, October 2023

3.2. Socioeconomic Characteristics of Affordability in Private Health Facilities

Household income levels, within a specific socioeconomic context in underserved areas, are a key predictor of healthcare affordability across the three health facilities studied. Along with prices, insurance, and health expenditures, income levels significantly influence patients' ability to pay for health services when other factors are held constant. A detailed analysis of income quintiles across the three health facilities revealed notable differences, as shown below.

3.2.1 Income and Affordability for Outpatients

At Cardinal Rugambwa Hospital, patient income data was divided into four quintiles. In the highest quintile (TSH 1,000,000-1,700,000), 20% of patients could afford healthcare, and none reported moderate or complete unaffordability. The second income group (TSH 1,800,000–2,500,000) and the third group (TSH 2,600,000–3,300,000) had affordability rates of 8.6% and 5.71%, respectively, with no patients reporting difficulty affording care. Conversely, the lowest-income group (TSH 200,000–900,000) had 25.7% of patients able to afford or moderately afford healthcare, while 14.3% could not afford it at all. This underscores the vulnerability of low-income households and the need for targeted policy responses. A regression analysis showed a moderate-to-high correlation (r = 0.655) between income and affordability, with income explaining 42.9% of the variance in affordability.

Table 3: ANOVA table from the CRH model on income variability analysis

Sum of Squares	df	Mean Square	F	Sig.
2660638806415.516	1	2660638806415.516	24.770	.000
3544629765013.055	33	107413023182.214		
6205268571428.570	34			

Source: Field data, October 2023 as computed from income quintile data analysis

3.2.2 Regression Analysis of Income and Affordability at Cardinal Rugambwa Hospital

Regression analysis (Table 4) reported a standard error of 128,633.80, df = 1, F = 24.70, and t = 9.369, indicating a significant relationship between income and affordability. The regression coefficient of -0.655 indicates a strong negative correlation, meaning that lower income is associated with greater difficulty affording healthcare. The empirical analysis shows that this places a financial burden on low-income households due to rising diagnostic and pharmaceutical costs. Notably, even a slight income increase among the poor may be offset by higher treatment expenses, reducing affordability. The relationship is statistically significant (p = 0.000).

Table 4: Regression Coefficients table from income variability data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	1205222	128633.8		9.369	0.001
	Affordability	-348668.4	70056.45	-0.655	-4.977	0.001

Source: Field data, October 2023, as calculated from income quintile analysis.

Affordability at Kitonka Medical Hospital (Table 5) was generally comparable to that observed in other health facilities. Among households in the first income quartile (TSH 1,200,000–1,700,000), approximately 8.6% of outpatients could afford healthcare services. This income group was neither moderately affordable nor unaffordable. In the second income quintile (TSH 1,800,000–2,300,000), 5.7% of patients could afford healthcare. The third income quintile (TSH 100,000–500,000) accounted for 68.6% of respondents, of whom 34.3% could afford healthcare, 25.7% reported moderate affordability, and 8.6% were unable to pay for care. Respondents who reported unaffordability cited primarily high out-of-pocket payments, unaffordable insurance premiums, lack of exemption mechanisms, and the absence of effective public–private partnership (PPP) arrangements. The PPP scheme in question operated between 2016 and 2022 under a comprehensive Service Level Agreement (SLA) signed between the former Ilala Municipal Council and three hospitals included in this study: Cardinal Rugambwa, Kitonka Medical Hospital, and Tabata Hospital. However, this PPP contractual arrangement was not financially sustainable due to limited funding from the Ilala City Council (Dar es Salaam City Council). Under this program, patients in the study areas received healthcare services at highly subsidized rates. In some cases, treatment costs were reduced by up to 50%. For example, child delivery services that previously cost TSH 400,000 at individual hospitals were reduced to TSH 200,000 under the PPP arrangement, with similar reductions across other healthcare services.

Table 5: Affordability Status * Respondents' Income Quartiles in TSHZ at Kitonka Medical Hospital

			1st Income Quartile 1,200,000-1,700,000	2nd Income Quartile 1,800,000-2,300,000	3rd Income Quartile 100,000-500,000	4th Income Quartile 600,000-1,100,000	Total
Affordability	Affordable	Count	3	2	12	5	22
		% of Total	8.60%	5.70%	34.30%	14,3%	62.90%
	Moderately affordable	Count	0	0	9	1	10
		% of Total	0.00%	0.00%	25.70%	2.90%	28.60%

	Not affordable	Count	0	0	3	0	3
		% of Total	0.00%	0.00%	8.60%	0.00%	8.50%
Total		Count	3	2	24	6	35
		% of Total	8.60%	5.70%	68.60%	17.10%	100.00%

Source: Field data, October 2023

To examine the relationship between affordability and income, a regression analysis was conducted at Kitonka Medical Hospital. The analysis revealed an R-squared value of 0.173, indicating that the model explains approximately 17.3% of the variability in income attributable to affordability.

Table 6: Model Summary and ANOVA Table

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.416	.173	.148	352545.344
a. Predictors: (Constant), Affordability				

ANOVA						
Model		**Sum of squares**	**df**	**Means square**	**F**	**Sig**
	Regression	858963051146.384	1	858963051146.384	6.911	.013
	Residual	4101511234567.902	33	124288219229.330		
	Total	4960474285714.286	34			

Source: Field data, October 2023, derived from income quintile analysis.

The regression results indicate a positive but modest relationship between income and affordability. The R-squared value of 0.173 indicates that affordability accounts for approximately 17.3% of the variation in income, suggesting that while income influences the affordability of healthcare services at Kitonka Medical Hospital, a substantial share of affordability is determined by factors beyond income. This suggests that healthcare affordability is influenced not only by income but also by insurance coverage, household composition, disease burden, provider pricing, social support mechanisms, and indirect costs such as transportation.

Table 7: Coefficient table

Coefficients						
		Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig**
Model		**B**	**Beta**			
1	(Constant)	789407.407	139045.759		5.677	.000
	Affordability	-192654.321	73283.549	-.416	-2.629	.013

Source: Field data, October 2023 as computed from income quintile data analysis

3.2.3 Regression Analysis of Income and Affordability at Kitonka Medical Hospital

Using the regression coefficient to assess the relationship between the variables, we found a standard error of 139045.759; df = 1, F = 6.911, and t = 5.677. The p-value is 0.013, indicating no significant difference between the two variables, as shown in the coefficient table above. However, the regression coefficient is -0.416, meaning that income and affordability are significantly and negatively associated. As incomes rise alongside the increasing costs of medical care, affordability declines. The relationship is statistically significant ($p < 0.05$; $p = 0.013$). This situation implies that rising incomes are being outpaced by rising healthcare costs**,** so higher income does not translate into better affordability. In practical terms, medical expenses are increasing faster than households' ability to

pay**,** making healthcare less affordable even for those with higher incomes. This suggests cost escalation, weak financial protection, and limited insurance coverage**,** particularly in private healthcare settings, and highlights the risk of financial strain and foregone care despite income growth.

Tabata SES private dispensary shows variation in affordability variations (Table 8), indicating a slightly higher affordability rate for the low-income cohort (TSH 200,000-700,000) at 37.1%, although 11.4% of respondents still did not afford healthcare, as shown in the 3rd income Quintile. In contrast, respondents with the highest income in the 2nd Quartile indicate 14.3%, with no cases for moderately and those who did not afford health services.

Table 8: Affordability Status - Respondents income Quantiles in TSHZ Private Dispensary at Tabata SED dispensary

			1st Quartile 1,400,000-1,900,000	**2nd Quartile 2,000,000-2,500,000**	**3rd Quartile 200,000-700,000**	**4th Quartile 800,000-1,300,000**	**Total**
Affordability Status	Affordable	Count	2	5	13	6	26
		% of Total	5.7%	14.3%	37.1%	17.1%	74.3%
	Moderately Affordable	Count	0	0	5	0	5
		% of Total	0.0%	0.0%	14.3%	0.0%	14.3%
	Not Affordable	Count	0	0	4	0	4
		% of Total	0.0%	0.0%	11.4%	0.0%	11.4%
Total		Count	2	5	22	6	35
		% of Total	5.7%	14.3%	62.9%	17.1%	100.0%

Source: Field Data, October 2023

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.352[a]	.124	.098	830510.343
a. Predictors: (Constant), Affordability Status				

From this model summary, the relationship between income and affordability at Tabata Private Dispensary is positive but relatively weak**.** The R-squared value of 0.124 shows that income explains only 12.4% of the variation in affordability, indicating limited explanatory power. Nonetheless, the positive association suggests that higher household income is associated with improved ability to afford healthcare**,** although most of the variation in affordability is driven by factors other than income. At Tabata Private Dispensary, the weak R-squared implies that factors beyond income largely determine affordability. Key factors include:

i. Health insurance coverage and benefit depth, which reduces out-of-pocket spending regardless of income
ii. Household size and dependency burden, affecting how income is allocated
iii. Type and severity of illness, especially chronic conditions requiring repeated care
iv. User fees and pricing policies at the dispensary (consultation, drugs, diagnostics)
v. Availability and cost of medicines, including stock-outs that force private purchases
vi. Indirect costs, such as transport and time lost from work

vii. Health-seeking behavior and timing of care, where delayed treatment increases costs

viii. Social support and informal coping mechanisms, including family assistance or community loans.

Table 9: ANOVA for Tabata Dispensary

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	3224763377082.281	1	3224763377082.28	4.675	.038
	Residual	22761665194346.28	33	689747430131.706		
	Total	25986428571428.56	34			

Source: Field data, October 2023, as computed from income quintile data analysis

3.2.4 Regression Analysis of Income and Affordability for Tabata Dispensary

A regression analysis revealed a significant negative relationship between income and affordability, with a regression coefficient of -0.352. The degrees of freedom (df) were 1, the F-value was 4.675, and the t-value was 4.717. This suggests that as income rises, healthcare costs also increase, reducing affordability for low-income individuals. The analysis yielded a p-value of 0.038, indicating a 3.8% probability that the observed relationship between income and affordability occurred by chance. The p-value confirms statistical significance at the 5% level.

Table 10: Regression Coefficients Table

Coefficient						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3	(Constant)	1490989.399	316114.019		4.717	.000
	Affordability Status	-446554.770	206524.154	-0.352	-2.162	.038

Source: Field data, October 2023, as computed from income quintile data analysis

As shown in Table 10, the regression coefficient is -0.352, indicating a significant negative relationship between income and affordability. This means that as income increases, healthcare costs also rise, reducing affordability for low-income individuals. Briefly, this statement means that higher income does not translate into better healthcare affordability. The negative regression coefficient ($\beta = -0.352$) indicates that healthcare costs increase alongside income**,** so the gains from higher income are offset by rising medical expenses. As a result, affordability remains constrained especially for low-income individuals despite income growth**.**

4. Health Cost Comparison: Out-of-Pocket vs. Health Insurance

In addition to analyzing how out-of-pocket payments impact affordability at the patient's point of exit in health facilities, a comparative study examined the costs incurred by patients paying out-of-pocket versus those with health insurance. The goal was to establish a reliable cost-effectiveness criterion to help patients choose the less expensive option between the two payment methods. To support this, Levene's test (Levene, 1960) was used to determine whether the variances of OOP and health insurance payments were equal. Similarly, a t-test for equality of means (Snedecor and Cochran, 1989) was performed to evaluate whether the average costs of OOP and health insurance payments were the same.

4.1 Group Statistics for Kitonka Medical Hospital

At Kitonka Medical Hospital, females incurred higher costs than males. The mean cost for females was TSH 52,657.89 for OOP and TSH 35,401.05 for health insurance, while males incurred TSH 47,062.50 for OOP and TSH 30,053.13 for health insurance. The combined costs for OOP and health insurance were TSH 99,720.39 and TSH 65,454.18, respectively.

This indicates that health insurance is more cost-effective than OOP. There was no significant difference between males and females in OOP and health insurance costs (p-values for both OOP and health insurance > 0.05).

4.2 Group Statistics for Cardinal Rugambwa Hospital

At Cardinal Rugambwa Hospital, the mean OOP cost was TSH 156,541.18, and the mean health insurance cost was TSH 71,662.06. This suggests that health insurance is more cost-effective than OOP. Again, no significant difference was found between males and females for either payment method (p-values for both OOP and health insurance > 0.05).

5 DISCUSSIONS

This paper assesses the affordability of health services in private health facilities and explores strategies to improve healthcare access for low-income patients in peri-urban areas of Dar es Salaam. The analysis considers key socio-demographic and economic factors, including sex, marital status, family size, employment status, and educational attainment. Economic indicators, particularly income quintiles, health expenditures, and pricing, were also examined to determine their influence on low-income individuals' ability to afford healthcare services in the study area.

The findings show only minor differences between male and female respondents in healthcare affordability, with no significant variation between groups, particularly among those who are moderately able or unable to afford healthcare across all examined facilities. However, female respondents were slightly more likely than males to afford healthcare services, either fully or partially and the association between sex and affordability was not statistically significant. Overall, smaller household sizes, personal savings, and stable employment improve affordability outcomes. Other socioeconomic factors, such as marital status and education level, also positively relate to affordability. These results suggest that financial hardship among low-income patients, mainly caused by limited financial protection and poor access to risk pooling, continues to increase their vulnerability to out-of-pocket health costs.

Furthermore, persistently high out-of-pocket costs, limited health insurance coverage, and inconsistent exemption policies worsen affordability challenges for the poor. As a result, many patients rely heavily on social capital, such as financial help from relatives, friends, and organized social networks, which are based on reciprocity and trust. However, the study also highlights the complex and fragile nature of these social capital systems, underscoring the need for effective strategies to harness, maintain, and monitor them to ensure their reliability, transparency, and quality. Strengthening these people-centered support networks could be key to improving healthcare access for low-income households in peri-urban Tanzania.

Analysis of socioeconomic data from outpatient respondents revealed a statistically significant negative association between income and healthcare affordability. The regression coefficient ($\beta = -0.416$) and corresponding p-value ($p = 0.013 < 0.05$) indicate that as income rises, healthcare affordability falls. This implies that rising income is accompanied by a disproportionate increase in healthcare costs especially pharmaceutical and diagnostic examination costs on low-income patients, thereby reducing the relative affordability of services. The finding implies that higher-income earners are not necessarily insulated from the financial burden of healthcare, possibly due to greater use of private or specialized medical services, which tend to be more expensive. This trend was particularly evident in peri-urban Dar es Salaam during the study period.

Conversely, elevated health insurance premiums and ongoing reliance on out-of-pocket (OOP) payments created significant barriers to affordability, particularly among

vulnerable populations, including women-headed households, the unemployed, widowed or divorced individuals, and the elderly. Financial constraints were the primary barrier to healthcare access across all facilities, with women disproportionately affected. However, gender did not have a statistically significant effect on affordability ($p > 0.05$). This aligns with observations by Wagner et al. (2013), who reported no systematic gender-based disparities in healthcare access, although both men and women had limited access to services for chronic conditions [24]. Similarly, these findings closely align with research by Prasad et al. (2024) in South India, in which women with little or no education had the highest odds of difficulty raising funds for healthcare compared with those with higher education. Collectively, these results underscore the complex and paradoxical nature of healthcare affordability in peri-urban settings, where increases in income do not necessarily translate into improved access to care, and financial protection mechanisms remain insufficient to mitigate the impact of rising healthcare costs.

5.1 Overall Implication

Collectively, these findings show that healthcare affordability in peri-urban Dar es Salaam is shaped by complex economic, institutional, and social factors. Addressing healthcare affordability requires not only raising incomes but also implementing reforms to strengthen financial protection, control healthcare costs, and establish community-based support systems. Without these measures, rising incomes alone will not ensure fair access to healthcare or ease financial hardship.

Across all cases studied, age had only a minor impact on healthcare affordability. However, many elderly patients, especially those who were impoverished, struggled to afford out-of-pocket costs at private health facilities. Affordability declined further with age due to limited income, lack of social support, and the absence of exemption policies in private healthcare facilities. This indicates that mobilizing social capital to support impoverished patients, along with reviewing exemption policies to expand coverage in private health facilities, is essential. In contrast, employment was strongly associated with better affordability: 45.7%, 51.1%, and 37.1% of employed respondents in some facilities were able to afford care. Although some patients still could not afford services, the significant relationship between employment and affordability (p-values of 0.001 and 0.037) highlights employment as a key factor in improving healthcare access.

In contrast, the empirical findings indicate that even employed individuals may experience difficulties in affording healthcare due to the high cost of medical treatment. This observation is consistent with evidence from other contexts. For example, a study conducted in India by Vootukuri et al. (2024) reported that occupational categories significantly influence health insurance status. The study demonstrated that employed individuals are more likely to possess health insurance coverage, largely due to government-supported insurance schemes. However, differences were observed with respect to marital status. In the study areas in Tanzania, married individuals exhibited relatively higher levels of healthcare affordability, whereas the study in India found that marital status was not a significant determinant of health insurance coverage [25, p.5].

Furthermore, married patients generally showed higher affordability scores compared to divorced or widowed individuals. This finding is consistent with evidence from Bangladesh, where divorced women were reported to face greater financial barriers to accessing healthcare services (Hinata et al., 2024). In such contexts, health insurance coverage obtained through spouses can play an important role in improving healthcare affordability [26]. Nevertheless, statistical analysis in the present study showed that

marital status was not a significant predictor of healthcare affordability in most facilities (p-values of 0.519 and 0.111), with the exception of Tabata SES, where marital status demonstrated a statistically significant association with affordability (p = 0.002).

Regarding the association between education and the affordability of health services, the results show no statistically significant association. This indicates that education, as a predictor of affordability, is highly subjective and may not reliably influence access to health services in a specific context. However, this empirical finding sharply contrasts with the analysis in a study conducted in Tanzania by Kimario et al. (2022) [27]. In their findings, the authors reported a significant relationship between education and affordability, along with other variables. They argued that a higher level of education among the household head was associated with greater affordability of health services at the household level. We respectfully disagree with these researchers as this may not always be the case, as we believe that education alone may not consistently or reliably determine affordability.

Empirical evidence shows that even well-educated individuals may face significant barriers to care due to non-enrollment or limited use of health insurance, high out-of-pocket costs, and the severity or chronic nature of illnesses requiring long-term, expensive treatment (Wagstaff & van Doorslaer, 2003; [28]; Xu et al., 2003) [29]. In many low- and middle-income countries, including those in Sub-Saharan Africa, healthcare financing systems heavily rely on cost sharing, which exposes households—regardless of educational level—to catastrophic health expenditures when income is low or insurance coverage is incomplete (World Health Organization (WHO 2010) [30], Saksena et al., 2011). As a result, financial protection mechanisms, rather than education alone, are essential for ensuring effective and equitable access to healthcare services [31].

5.2 Key Emerging Implications of the Study

Persistent Inequities in Healthcare Affordability

The study indicates that even when incomes increase among low-income patients, the affordability of healthcare services still decreases, especially for complex illnesses and long hospital stays. This demonstrates a regressive trend where medical costs outpace income growth, putting pressure on household finances. It suggests that economic improvements for peri-urban residents are not leading to better financial protection or more equitable healthcare access. Ultimately, the affordability of healthcare remains limited by structural market forces within private-sector healthcare facilities, such as unregulated pricing and profit-driven service models.

Limitations of Existing Financial Protection Mechanisms

The findings highlight the shortcomings of current health insurance and exemption programs in shielding low-income populations from high out-of-pocket costs. The combination of high premiums, limited coverage, and minimal risk pooling underscores the need for policy changes to strengthen prepayment and subsidy systems, particularly for vulnerable groups, including women-headed households, older adults, and the unemployed.

Socio-Economic Vulnerability and Informal Coping Mechanisms

Many households rely heavily on social capital and financial assistance from relatives, friends, and community networks to cover healthcare costs. While these informal support systems play an important supportive role, their long-term sustainability and fairness remain uncertain. This highlights the need to formalize informal support systems within official health financing strategies, such as community-based health insurance or cooperative schemes.

Gender and Affordability Dynamics

Although gender differences in affordability were statistically insignificant, the greater financial strain experienced by women underscores the gendered nature of economic vulnerability. Policy responses should therefore consider gender-sensitive financing models that enhance women's access to insurance, credit, and targeted subsidies.

Urban Health System and Private Sector Oversight

The study highlights the vital role of the private sector in peri-urban health services, while also warning about its potential to increase financial exclusion. Improving regulatory frameworks to boost price transparency, service quality, and accountability is essential to ensure private healthcare supports, rather than hampers, Tanzania's goals for universal health coverage.

Need for Inclusive Public–Private Partnerships (PPPs)

Evidence from discontinued PPP arrangements suggests that well-structured and adequately financed collaborations can improve affordability and access to services. Revitalising PPPs through explicit funding commitments, performance monitoring, and equity targets could create sustainable mechanisms for delivering affordable care to underserved populations.

6. Implications on Income and Affordability

The findings of this study demonstrate that income quintile significantly influences patients' ability to afford healthcare under out-of-pocket (OOP) payment systems. A substantial share of patients was concentrated in the lowest income brackets, with TSH 100,000–500,000 (8.6%) at Cardinal Rugambwa Hospital, TSH 200,000–700,000 (11.4%) at Kitonka Medical Hospital, and TSH 200,000–900,000 (11.14%) at Tabata Dispensary, underscoring the financial vulnerability of household's dependent on unstable income sources. These results suggest that many low-income patients continue to face serious affordability constraints, often leading to delayed healthcare-seeking or foregone care due to cost barriers. Empirical evidence further indicates that those most affected include socially and economically vulnerable groups such as the elderly, widows and divorcees, persons with disabilities, and unemployed youth, many of whom experience chronic financial deprivation. These patterns reinforce the notion that income inequality and socioeconomic exclusion remain critical determinants of healthcare access in peri-urban Tanzania.

Regression analysis showed a consistent negative relationship between income and healthcare affordability across all three facilities (Cardinal Rugambwa Hospital: $\beta = -0.0655$; Kitonka Medical Hospital: $\beta = -0.416$; Tabata Dispensary: $\beta = -0.352$). These results suggest that higher income levels are associated with reduced affordability, possibly reflecting rising healthcare costs, particularly for pharmaceuticals and diagnostic services. The relationships were statistically significant at Kitonka Medical Hospital ($p = 0.013$) and Tabata Dispensary ($p = 0.038$). These findings align with Sagaya et al. (2024) in India, who reported that 6.38% and 6.23% of women from tribal communities faced significant affordability challenges due to socio-demographic disadvantages [32]. Similarly, in Tanzania, women from the poorest households experienced severe financial hardship, exacerbated by income inequality and limited access to formal financial protection mechanisms. Together, these findings highlight structural barriers sustaining inequalities in healthcare affordability in peri-urban areas and underscore the need for policies that strengthen financial protection, regulate private-sector costs, and expand access for vulnerable groups.

7. Comparison Between Health Insurance and Out-of-Pocket Payments

The analysis shows a significant difference in average treatment costs between patients with health insurance and those paying out-of-pocket (OOP). Using a sample of N = 105 (35 patients per facility), the study assessed the most cost-effective payment method for low-income patients in private healthcare. Results indicate that treatment costs were considerably lower for insured patients than for OOP patients at two of the three facilities. These findings suggest that health insurance provides better financial protection and affordability than OOP payments, as patients prefer mechanisms that reduce direct financial burden. This finding aligns with international evidence. Zhang et al. (2017) found that China's health insurance system increased healthcare utilization while reducing OOP hospitalization expenses [33]. Similarly, Al-Hanawi et al. (2021) reported that health insurance in Saudi Arabia reduced OOP spending on health services by 3.6% and medications by 5.2%, although higher-income insured individuals showed slight increases in OOP spending, indicating preferences for higher-quality services [34].

In the Tanzanian context, these findings align with the study's broader analysis of affordability and socioeconomic vulnerability. Income quintile significantly influenced patients' ability to afford healthcare under OOP systems, with a large share of patients in the lowest income brackets: TSH 100,000–500,000 (8.6%) at Cardinal Rugambwa Hospital, TSH 200,000–700,000 (11.4%) at Kitonka Medical Hospital, and TSH 200,000–900,000 (11.14%) at Tabata Dispensary. Regression analysis showed a negative relationship between income and affordability, with statistically significant associations at Kitonka ($p = 0.013$) and Tabata ($p = 0.038$). These results highlight a paradox in which higher income does not always ensure affordability, due to rising healthcare costs on pharmaceutical and diagnostic investigations. Vulnerable groups, including low-income women-headed households, the elderly, widows, persons with disabilities, and unemployed youth, were most affected, reinforcing the link between socioeconomic hardship and limited financial protection.

8. Policy Implications

The evidence strongly supports expanding health insurance coverage to improve healthcare affordability for low-income populations in peri-urban Dar es Salaam. Policymakers should prioritize interventions that reduce financial barriers, including subsidized premiums, targeted enrolment programs, and enrolment incentives for vulnerable groups, such as women-headed households, older adults, and informal-sector workers. Additionally, integrating private health providers into formal insurance networks, subject to regulatory oversight of pricing and service quality, could improve equity and affordability. Strengthening awareness campaigns about insurance benefits and fostering trust in financial protection mechanisms are also essential to ensure timely healthcare utilization and reduce reliance on out-of-pocket payments.

9 Strengths and Weaknesses

The study was grounded in a solid theoretical foundation, providing valuable insights into healthcare affordability for low-income patients in private healthcare facilities. One of its main strengths is the integration of conceptual and empirical perspectives, which increases the analytical rigor and relevance of the findings. The chosen methodology clearly supported effective respondent categorization, selection, data collection, and analysis, ultimately delivering sufficient and reliable information to achieve the study's objectives. Additionally, using multiple data sources and systematic analytical procedures enhanced the validity and credibility of the results. Secondly, the study provides context-specific evidence on the role of_cost sharing, insurance gaps, and

out-of-pocket payments in shaping healthcare access and affordability among peri-urban residents. Third, the study adds to the limited knowledge of healthcare affordability in the private health sector in low- and middle-income settings, particularly in Tanzania, where such evidence is scarce.

However, the study faced notable limitations, including a lack of comparative studies on healthcare affordability in public facilities, which limited the broader applicability of the policy. This made comparative benchmarking difficult in Tanzania concerning the affordability of healthcare in public health facilities. Additionally, some private health facilities' reluctance to share detailed information on revenues, pricing structures, and sustainability created challenges in obtaining comprehensive data. Other limitations include potential recall bias among respondents and limited geographic coverage due to time constraints in examining long-term trends in healthcare costs. Furthermore, at the institutional level, field supervision conducted by the Dar es Salaam city council primarily addresses quality and compliance issues, with little focus on healthcare affordability among low-income patients. Despite these challenges, the study provides a solid foundation for future research and policy development aimed at improving affordability and financial protection in private health facilities.

10 CONCLUSIONS

This study shows that healthcare affordability remains a critical structural constraint for low-income households in peri-urban Dar es Salaam, underscoring deeper weaknesses in Tanzania's health financing and regulatory architecture. Rapid, poorly managed urbanization, coupled with limited oversight of private healthcare provision, has intensified financial barriers to care, leaving peri-urban populations at heightened risk of delayed treatment, forgone care, and health-related impoverishment. Without sustained, targeted pro-poor reforms, these vulnerabilities are likely to deepen as urban expansion continues. Furthermore, the absence of an independent, enforceable regulatory authority governing pricing across public and private healthcare facilities perpetuates inequities in access and affordability, underscoring the inadequacy of current regulatory and accountability mechanisms.

Notwithstanding these challenges, the study identifies emerging evidence of improved affordability among selected socio-demographic groups, suggesting that well-designed financial protection mechanisms can yield positive distributional effects. Building on these insights, the study concludes that achieving equitable access to healthcare in peri-urban settings requires a coherent pro-poor policy agenda that prioritizes effective risk pooling, cost containment, and regulatory reform. Critical steps to safeguard affordability while maintaining service quality and system sustainability include accelerating progress toward universal health coverage, strengthening equity-oriented financing instruments, reducing import tariffs on essential medical inputs, and establishing an independent pricing regulatory authority.

Declaration by Authors

We declare that this manuscript is original and has not been published previously, nor is it under consideration for publication elsewhere. All authors contributed significantly to the conception, design, analysis, and writing of the manuscript. All authors have read and approved the final version of the manuscript and agree to its submission for publication.

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REFERENCES

1. Francis L, Sengottuvelu C. Economic affordability and quality dimensions of health care service provided by hospitals in Kochi: a descriptive analysis [Internet]. 2019 [cited 2024 Jun 27]. Available from: https://www.academia.edu/79312492.
2. Belete GT, Walle Y**.** Willingness to pay for medical care and its determinants in private health care facilities among Gondar city residents, Northwest Ethiopia: cross-sectional study. *Heliyon* [Internet]. 2023 Nov 28;9(11):e21143. https://doi:10.1016/j.heliyon.2023.e21143. [cited 2024 Jun 27]. Available from: https://www.cell.com/heliyon
3. World Health Organization. Primary health care on the road to universal health coverage: 2019 monitoring report [Internet]. Geneva: World Health Organization; 2019. https://doi:10.2471/9789240029040. Available from: https://www.who.int/publications/i/item/9789240029040.
4. World Bank. *Universal health coverage: moving toward better health, protection, and financial risk protection* [Internet]. Washington (DC): World Bank; 2019 [cited 2024 Jun 27]. Available from: https://www.worldbank.org/en/topic/universalhealthcoverage
5. Haggerty JL, Levesque JF. Development of a measure of health care affordability applicable in a publicly funded universal health care system. *Can J Public Health*. 2015;106(2):e66–71. https://doi.org/10.17269/CJPH.106.4562.
6. Niëns LM, Brouwer WB. Better measures of affordability in health care research. Health Econ Policy Law. 2013;8(3):275–90. https://doi:10.1017/S1744133112000342.
7. Mattila PO, Babar ZU, Suleiman F. Assessing the prices and affordability of oncology medicines for three common cancers within the private sector of South Africa. BMC Health Serv Res. 2021; 21:661. https://doi:10.1186/s12913-021-06627-6.
8. Kamath S, Poojary M, Shetty H, Umesh K, Kar S, Ramesh VL, et al. "Private hospitals generally offer better treatment and facilities": out-of-pocket expenditure on healthcare and the preference for private healthcare providers in South India. Int J Environ Res Public Health. 2024; 21:1287. https:// doi:10.3390/ijerph21101287.
9. Maritim B, Koon AD, Kimaina A, Lagat C, Riungu E, Laktabai J, et al. "It is like an umbrella covering you, yet it does not protect you from the rain": a mixed methods study of insurance affordability, coverage, and financial protection in rural western Kenya. Int J Equity Health. 2023; 22:375. https://doi:10.1186/s12939-023-01837-2.
10. Mohammed SA, Tsehay T, Faris AG, Mengstu G**.** Availability, price, and affordability of medicines used for the management of COVID-19 in health facilities of Dessie town. Ethiopia. WHO/HAI survey. PLoS One. 2022;17(12): e0279465. https://doi:10.1371/journal.pone.0279465
11. Xi X, Li W, Li J, Zhu X, Fu C, Wei X, et al. Availability, prices and affordability of essential medicines in Jiangsu Province, China: a WHO/HAI survey. BMC Health Serv Res. 2015; 15:218. https://doi:10.1186/s12913-015-1008-8.
12. Simangolwa WM, Sundewall J. Role of private providers in the implementation of the national health insurance scheme in Zambia: a qualitative study of perceptions and experiences. BMJ Open. 2025;15: e092047. https://doi:10.1136/bmjopen-2024-092047.

13. Thanh ND, Anh TM, Hung PT, Anh PQ, Xiem CH. Impact of public health insurance on out-of-pocket health expenditures. Clin Med Insights Health Econ. 2021; 14:11786329211017411. https://doi:10.1177/11786329211017411.
14. Onah MN, Govender V. Out-of-pocket payments, health care access and utilisation in South-Eastern Nigeria: a gender perspective. PLoS One. 2014;9(4):e93887. https://doi:10.1371/journal.pone.0093887.
15. Kaijage A, Mgale Y, Dimoso P**.** Exploring the effects of out-of-pocket payments on healthcare utilization in rural and urban Tanzania: a gender perspective. Open J Soc Sci. 2023; 11:180–202. https://doi:10.4236/jss.2023.116013.
16. Singh N, John P, Shukla SK, Bajpai R, Sengupta R, Sadanandan R, et al**.** Health insurance coverage among men and women in six countries within the Southeast Asia Region (2015–2022): a multilevel analysis of Demographic and Health Surveys. Lancet Reg Health Southeast Asia. 2025; 39:100634. https://doi:10.1016/j.lansea.2025.100634.
17. Balkhy H, Aylward B. Putting governance into practice: the engagement of private health sector for universal health coverage and health security. *East Mediterr Health J*. 2024;30(12):807–809. https://doi.org/10.26719/2024.30.12.807.
18. Lane J, Nakambale H, Kadakia A, Dambisya Y, Stergachis A, Odoch DW**.** A systematic scoping review of medicine availability and affordability in Africa. BMC Health Serv Res. 2024; 24:10494. https://doi:10.1186/s12913-023-10494-8.
19. Penno E, Sullivan T, Barson D, Gauld R. Private choices, public costs: evaluating cost shifting between private and public health sectors in New Zealand. Health Policy. 2021;125(3):406–14. https://doi:10.1016/j.healthpol.2020.12.008.
20. Leo S, Prasad V, Md SK. Trends in financial affordability of healthcare among tribal women of reproductive age: a cross-sectional study from India. Cureus. 2024;16(11):e73463. https://doi:10.7759/cureus.73463.
21. Amani PJ, Hurtig AK, Frumence G, Kiwara AD, Goicolea I, Sebastiån MS. Health insurance and health system (un)responsiveness: a qualitative study with elderly in rural Tanzania. BMC Health Serv Res. 2021; 21:1140. https://doi:10.1186/s12913-021-07144-2.
22. Gulamhussein MA, Sawe HR, Kilindimo S, Mfinanga JA, Mussa R, Hyuha GM, et al. Out-of-pocket cost for medical care of injured patients presenting to emergency department of national hospital in Tanzania: a prospective cohort study. BMJ Open [Internet]. 2023;13(1): e063297. [cited 2024 Jun 26]. Available from: https://bmjopen.bmj.com/content/13/1/e063297.abstract
23. Magaria BR, Shauri NE, Masanyiwa ZS. Household's ability to afford health insurance packages in Tanzania. Open J Soc Sci. 2023; 11:59–73. https://doi:10.4236/jss.2023.114005.
24. Wagner AK, Graves AJ, Fan Z, Walker S, Zhang F, Ross-Degnan D. Need for and access to health care and medicines: are there gender inequities? PLoS One. 2013;8(3): e57228. https://doi:10.1371/journal.pone.0057228
25. Vootukuri K, Kumar VKS, Naik VS. Social and demographic determinants of health insurance status in India: evidence from a nationally representative cross-sectional survey. *J Educ Health Promot*. 2024; 13:150. https://doi.org/10.4103/jehp.jehp_1006_23
26. Hinata H, Lwin KS, Eguchi A, Ghaznavi C, Hashizume M, Nomura S. Factors associated with barriers to healthcare access among ever-married women of reproductive age in Bangladesh: analysis from the 2017–2018 Bangladesh Demographic and Health Survey. PLoS One. 2024;19(1):e0289324. https://doi:10.1371/journal.pone.0289324.
27. Kimario KA, Muhanga MI, Kayunze KA**.** Household socio-demographic characteristics and progress towards attainment of universal health coverage in Kilimanjaro, Tanzania [preprint]. 2022. https://doi:10.1101/2022.06.18.22276172.
28. Wagstaff A, van Doorslaer E. Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998. Health Econ. 2003;12(11):921–34. https://doi:10.1002/hec.776.
29. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJL. Household catastrophic health expenditure: a multi-country analysis. Lancet. 2003;362(9378):111-117.

30. World Health Organization. *The World Health Report 2010: Health Systems Financing—the Path to Universal Coverage* [Internet]. Geneva: WHO Press; 2010 [cited 2024 Jun 27]. Available from: https://www.who.int/publications/i/item/9789241564021
31. Saksena P, Hsu J, Evans DB. Financial risk protection and universal health coverage: evidence and measurement challenges. PLoS Med. 2011;8(2):e1001039. https://doi:10.1371/journal.pmed.1001039.
32. Sagaya L, Prasad V, Md SK. Trends in financial affordability of healthcare among tribal women of reproductive age: a cross-sectional study from India. Cureus. 2024;16(11):e73463. https://doi:10.7759/cureus.73463.
33. Zhang A, Nikoloski Z, Mossialos E. Does health insurance reduce out-of-pocket expenditure? Heterogeneity among China's middle-aged and elderly. Soc Sci Med. 2017; 190:11–9. https://doi.org/10.1016/j.socscimed.2017.08.005
34. Al-Hanawi MK, Mwale ML, Qattan AMN**.** Health insurance and out-of-pocket expenditure on health and medicine: heterogeneities along income. Front Pharmacol. 2021; 12:638035. https://doi:10.3389/fphar.2021.638035

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