COVERAGE AND FACTORS ASSOCIATED WITH HEALTH INSURANCE UTILIZATION AMONG REPRODUCTIVE WOMEN: INSIGHTS FROM TANZANIA DEMOGRAPHIC HEALTH SURVEY 2022. A QUANTITATIVE STUDY.

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ABSTRACT.

Background:

Universal Health Coverage aims to alleviate poverty caused by out-of-pocket health expenses, affecting 150 million annually, particularly in low- and middle-income countries. Health Insurance plays a crucial role, yet faces challenges like low coverage rates and equity issues. This study aimed to assess the extent of coverage and identify factors influencing the utilization of health insurance among reproductive women in Tanzania, utilizing data from the 2022 Demographic Health Survey.

Methods:

The study quantitatively examined data from the 2022 Tanzania Demographic and Health Survey, involving 15,254 women of reproductive age. The analysis included univariate, bivariable, and multivariable techniques utilizing chi-square and multilevel logistic regression. Findings reported as adjusted odds ratios (AOR), determined statistical significance at p<0.05.

Results:

The overall coverage of Health Insurance (HI) stood at a mere 5.7%. Individuals aged 35-49 years were 1.6 times more inclined to utilize insurance compared to those aged 15-24 years (AOR=1.633, 95%CI: 1.326-2.010). Residents in rural areas exhibited a 1.3 times higher likelihood of using HI compared to their urban counterparts (AOR=1.300, 95%CI: 1.086-1.556). Moreover, individuals with a higher level of education were 8 times more inclined to use HI compared to those with no education (AOR=8.113, 95%CI: 5.009-13.141), indicating a correlation between increased educational attainment and HI utilization. Additionally, participants owning a television were 1.4 times more likely to use HI than those without (AOR=1.419, 95%CI: 1.135-1.774). Those who held an account in a bank or financial institution were 3.9 times more likely to utilize insurance compared to those without an account (AOR=3.999, 95%CI:3.302-4.843).

Conclusions:

The extent of Health Insurance (HI) coverage in Tanzania continues to fall short, impeding advancements toward universal health coverage.

Recommendation:

The study recommends bolstering public awareness initiatives to underscore the benefits of HI services and striving to enhance their affordability.

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INTRODUCTION.

Worldwide, roughly 150 million people face significant out-of-pocket (OOP) health expenses annually, leading to 100 million individuals falling into poverty as a result of these expenditures. Over 90% of those who are impoverished by healthcare costs reside in low- and middle-income countries (LMICs) (1). The aim of implementing Universal Health Coverage (UHC) is straightforward: to guarantee that individuals and communities' access essential health services without facing financial burdens (2). The World Health Organization's definition of Universal Health Coverage (UHC) encompasses ensuring that all individuals have access to necessary health services of adequate quality, without encountering financial adversity. Accomplishing this goal necessitates implementing effective healthcare financing strategies, a task fraught with challenges in Sub-Saharan Africa (SSA). (3).

When it comes to tackling financial obstacles and improving healthcare accessibility in developing nations, the importance of Health Insurance (HI) cannot be emphasized enough. Ensuring that all individuals have access to comprehensive healthcare services at an affordable price and without encountering financial burdens is paramount (4). The implementation of Health Insurance (HI) enrollment has the potential to serve as a health financing system, reducing out-of-pocket expenses (5). Health Insurance (HI) serves as a form of insurance that covers either all or part of the risk associated with an individual incurring medical expenses, thus spreading this risk among a large number of people (6). It remains a vital cornerstone in resource mobilization for attaining universal health coverage (UHC), wherein individuals or households make predetermined payments to receive a healthcare benefits package that covers themselves and their dependents (7).

In Tanzania, HI was introduced to achieve UHC (8). UHC is defined to ensure that all individuals have access to quality health services while avoiding financial hardship (9)(10). Furthermore, HI has been correlated with enhanced maternal, newborn, and child health outcomes (11). An examination of 36 Sub-Saharan African (SSA) nations unveiled that merely four countries boasted Health Insurance (HI) coverage rates surpassing 20% (Rwanda, Ghana, Gabon, and Burundi). Remarkably, insurance coverage exhibited a bias towards higher-income households and individuals engaged in formal employment (12).

While evidence indicates that Health Insurance (HI) schemes can improve healthcare utilization and offer financial protection to their members, they also pose a risk of undermining equity by excluding high-risk and/or vulnerable individuals in society. Certain demographics, including older adults, individuals with chronic illnesses, and those with disabilities, are less inclined to participate in social protection programs, or their healthcare needs may not be fully covered in standard benefits packages (13). Despite the capacity of insurance programs to shield individuals from overwhelming healthcare costs, their adoption in low- and middle-income countries (LMICs) remains low, typically falling within the range of 5% to 25%. (14). Nevertheless, research has illustrated that insurance programs can be effective in low-income regions, as individuals enrolled in insurance schemes exhibit a greater likelihood of utilizing healthcare services than non-members (15). Evidence suggests that insurance coverage contributes to enhanced affordability of healthcare, with clients reporting an increased frequency of seeking care and improved access to a diverse range of healthcare providers. (16). Women's enrollment in HI has been linked to increased use of maternal healthcare (17).

Health Insurance (HI) programs have the potential to notably enhance consumer access to healthcare services and promote equity in financing. Nevertheless, challenges such as low enrollment rates, insufficient long-term funding, and distrust in the public health system can impede individuals' utilization of HI. (18). HI and its delivery aim to improve health, contributing to increased productivity, lifetime earnings, and time spent in activities that maximize utility (19). HI also promotes high-quality healthcare for all by addressing barriers to service utilization and ensuring equity and access for everyone. The goal is to achieve universal health coverage (UHC) by reducing impoverishment and catastrophic expenditures in seeking healthcare (20). In the absence of a National HI Scheme, many people lack access to basic healthcare due to high costs, especially among chronically ill patients facing higher rates of morbidity and hospitalization (21). However, the adoption of insurance programs remains low in these nations. (22). Transitioning from out-of-pocket (OOP) payments for healthcare at the time of use to pre-payment (HI) (24) is a crucial step in averting the financial hardship associated with paying for healthcare services (25). A more profound understanding of the socio-demographic factors associated with HI coverage may inform the design and implementation of strategies to improve financial protection from healthcare-associated costs (23). Given the considerable promise of HI, it is essential to assess coverage and determinants of utilization among adults in Tanzania using the latest version of nationally representative data. This study therefore aimed to assess the extent of coverage and identify factors influencing the utilization of health insurance among reproductive women in Tanzania, utilizing data from the 2022 Demographic Health Survey.

METHODS AND MATERIALS.

Study setting and design.

This study utilized a cross-sectional study design and was carried out over five months, spanning from February 24th to July 21st, 2022, in Tanzania. The sample design for the 2022 TDHS-MIS comprised two stages to generate countrywide, urban, and rural estimates for Tanzania Mainland and Zanzibar, covering 31 regions (26 in Tanzania Mainland and 5 in Zanzibar). Institutional populations, including those in hospitals, hotels, barracks, camps, hostels, and prisons, were excluded from the sampling frame. Using a stratified two-stage approach, the initial phase comprised the selection of sampling points (clusters), which constituted enumeration areas (EAs) delineated according to the 2012 Tanzania Population and Housing Census. The EAs were chosen with a probability proportional to their size within each stratum, resulting in 629 selected clusters, of which 211 were from urban areas and 418 were from rural areas. In the second stage, 26 households were systematically chosen from each cluster. Preceding the main survey, a household listing operation was conducted in all selected EAs, entailing the creation of location and sketch maps, as well as compiling detailed household lists, addresses, and the names of household heads by field staff.

Study population.

The 2022 TDHS encompassed all women aged 15–49, regardless of whether they were permanent residents or visitors in the household on the night preceding the survey interview. All eligible participants gave informed consent to partake in the survey and retained the autonomy to withdraw at any juncture.

Description of variables.

Dependent/outcome variable.

The dependent variable in the analysis of this study is the utilization of Health Insurance (HI). From the women's questionnaire, participants were asked whether they use insurance, with response options of "yes" and "no".

Independent variables.

The independent variables included in the analysis were: the age of the participants, area of residence, highest level of education, wealth index, household ownership of a radio, household ownership of a TV, sex of household head, relationship with the household head, possession of a bank account, and self-reported health status.

Data analysis.

The data analysis for this study utilized the Statistical Package for Social Sciences (SPSS) software version 26. A three-level analysis approach was employed. Firstly, univariate analysis offered a descriptive overview of the socio-demographic characteristics of the participants. Secondly, bivariate analysis examined the relationship between independent and dependent variables, with a significance level set at 95%. Finally, multivariate logistic regression analysis was utilized to explore the factors associated with insurance utilization.

Study Bias.

The accuracy of data collected via self-administered questionnaires may have been compromised as participants could potentially misinterpret questions or offer inconsistent responses.

Ethics and approval.

The questionnaires and the survey protocol, encompassing the administration of questionnaires and the collection of biomarkers, received approval from the Medical Research Council of Tanzania and the Zanzibar Health Research Institute. Additionally, the survey protocol underwent review by ICF's Internal Review Board (IRB).

RESULTS.

Socio-demographic characteristics of the study participants.

The Tanzania DHS enrolled 15254 women in the study, 38.4% were aged between 15-24 years. Most of them 64.3% were residing in rural areas. Almost half of them 48.6% attained at most primary education.
Among the selected households 72.1% were headed by males, 46% had a radio, and only 33.0% had a television of all the participants 68.2% were either a wife or daughter to the household head. 52.7% of the participants self-reported their health status as good, and 26.5% of the participants were richest however 92.4% did not have an account in a bank or financial institution. Table 1 below shows the details of the participant's demographic characteristics.

Table 1 Social-demographic characteristics of the participants.

Variable	Category	Frequency	Percentage
Age in years	15-24	5852	38.4
	25-34	4541	29.8
	35-49	4861	31.9
Type of place of residence	Urban	5441	35.7
	Rural	9813	64.3
Highest educational level	No education	2387	15.6
	Primary	7413	48.6
	Secondary	5235	34.3
	Higher	219	1.4
Household has: radio	No	8241	54.0
	Yes	7013	46.0
Household has: Television	No	10215	67.0
	Yes	5039	33.0
Sex of household head	Male	10997	72.1
	Female	4257	27.9
Has an account in a bank or other financial institution	No	14093	92.4
	Yes	1161	7.6
Self-reported health status	Very good	3105	20.4
	Good	8042	52.7
	Moderate	3956	25.9
	Bad	147	1.0
	Very bad	4	.0
Wealth index combined	Poorest	2271	14.9
	Poorer	2498	16.4
	Middle	3063	20.1
	Richer	3378	22.1
	Richest	4044	26.5
Relationship to the household head	Head	2070	13.6
	Wife or daughter	10402	68.2
	others	2782	18.2

Health insurance coverage.

From table 2, 94.3% of all the study participants did not use HI and only 5.7% used HI. The commonly used forms of insurance were; insurance provided by employer 3.9%, mutual/community organization insurance 1.6%, social security insurance 0.1%, and others 0.1%.

Table 2 Health insurance coverage.

Variables	Category	Frequency	Percentage
Used health insurance	No	14386	94.3
	yes	868	5.7
Insurance type used	Provided by employer	600	3.9
	Mutual/community organization	242	1.6
	Social security	22	.1
	Other	10	.1

Bivalent analysis of factors associated with utilization of health insurance.

At bivalent level analysis the age of the participant(p<0.001), type of place of residence(p<0.001), highest education attained(p<0.001), the household has a radio (p<0.001), the household has a television(p<0.001), sex of the household head(p<0.001), has a bank account(p<0.001), self-reported health status(p=0.016), wealth index(p<0.001), and relationship to the household

head(p<0.001) were all statistically significant associated with the use of HI at 95% level of significance as shown in table 3.

Table 3 Bivariant analysis of factors associated with health insurance.

Variable	Category	Used insurance		X^2	d.f	P-value
		No	Yes			
Age in years	15-24	5606(95.8)	246(4.2)	47.439[a]	2	.000
	25-34	4273(94.1)	268(5.9)			
	35-49	4507(92.7)	354(7.3)			
Type of place of residence	Urban	4957(91.1)	484(8.9)	161.903[a]	1	.000
	Rural	9429(96.1)	384(3.9)			
Highest educational level	No education	2349(98.4)	38(1.6)	1004.378[a]	3	.000
	Primary	7170(96.7)	243(3.3)			
	Secondary	4753(90.8)	482(9.2)			
	Higher	114(52.4)	105(47.9)			
Household has: radio	No	7922(96.1)	319(3.9)	110.569[a]	1	.000
	Yes	6464(92.2)	549(7.8)			
Household has: Television	No	9920(97.1)	295(2..9)	452.529[a]	1	.000
	Yes	4466(88.6)	573(11.4)			
Sex of household head	Male	10419(94.7)	578(5.3)	13.852[a]	1	.000
	Female	3967(93.2)	290(6.8)			
Has an account in a bank or other financial institution	No	13582(96.4)	511(3.6)	1470.446[a]	1	.000
	Yes	804(69.3)	357(30.7)			
Self-reported health status	Very good	2890(93.1)	215(6.9)	12.230[a]	4	.016
	Good	7600(94.5)	442(5.5)			
	Moderate	3751(94.8)	205(5.2)			
	Bad	141(95.9)	6(4.1)			
	Very bad	4(100)	0(0.0)			
Wealth index combined	Poorest	2236(98.5)	35(1.5)	718.666[a]	4	.000
	Poorer	2439(97.6)	59(2.4)			
	Middle	2997(97.8)	66(2.2)			
	Richer	3233(95.7)	145(4.3)			
	Richest	3481(86.1)	563(13.9)			
Relationship to the household head	Head	1887(91.2)	183(8.8)	53.843[a]	2	.000
	Wife or daughter	9828(94.5)	574(5.5)			
	others	2671(96.0)	111(4.0)			

Multivariate analysis of factors associated with utilization of health insurance.

According to table 4, to investigate which of the socio-demographics were associated with the non-utilization of HI among women in Tanzania, a logistic regression model was performed. Only adjusted odds ratios with a P-value ≤ 0.05 are described in this section.

The age group 35-49 years was 1.6 times more likely to use insurance compared to the age group 15-24 years (AOR=1.633, 95%CI:1.326-2.010). Participants residing in rural areas were 1.3 times more likely to use HI compared to participants residing in urban areas (AOR=1.300, 95%CI: 1.086-1.556)

Participants having a higher education level were 8 times more likely to use HI compared to participants with no education (AOR=8.113, 95%CI: 5.009-13.141). The use of HI increased with an increase in the level of education.in addition, participants with television were 1.4 times more likely to use HI compared to those who don't have (AOR=1.419, 95%CI:1.135-1.774). Participants with an account in a bank or financial institution were 3.9 times more likely to use insurance compared to those without (AOR=3.999, 95%CI=3.302-4.843)

The richest participants were 3 times more likely to use HI compared to the poorest participants (AOR=3, 95%CI:2.138-5.320). The odds of utilizing HI increased with an increase in the wealth index combined.

Table 4 Multivariate analysis of the factors associated with health insurance.

Variable	Category	Crude odds ratio		p. vale	Adjusted Odds ratio		p. value
		OR	95%CI		OR	95%cl	
Age in 5 years	15-24	1		0.000	1		0.000
	25-34	1.429	1.197-1.707		0.980	0.801-1.198	
	35-49	1.790	1.514-2.116		1.633	1.326-2.010	
Type of place of residence	Urban	1		0.000	1		0.000
	Rural	0.417	0.363-0.479		1.300	1.086-1.556	
Highest educational level	No education	1		0.000	1		0.000
	Primary	2.095	1.484-2.958		1.541	1.077-2.205	
	Secondary	6.269	4.489-8.754		3.198	2.198-4.653	
	Higher	56.936	37.561-86.303		8.113	5.009-13.141	
Household has: radio	No	1		0.000			0.565
	Yes	2.109	1.830-2.431		0.951	0.803-1.128	
Household has: Television	No	1		0.000	1		0.002
	Yes	4.314	3.733-4.987		1.419	1.135-1.774	
Relationship to the household head	Head	1		0.000			0.001
	Wife or daughter	0.602	0.506-.716		0.777	0.579-1.042	
	Others	0.429	0.336-.546		0.548	0.395-.759	
Sex of household head	Male	1		0.000			0.960
	Female	1.318	1.139-1.524		0.994	0.785-1.259	
Self-reported health status	Very good	1		0.018	1		0.847
	Good	0.782	0.661-0.925		1.083	0.899-1.303	
	Moderate	0.735	0.603-0.895		1.137	0.914-1.415	
	Bad	0.572	0.250-1.310		1.124	0.473-2.676	
Has an account in a bank or other financial institution	No	1		0.000	1		0.000
	Yes	11.802	10.130-13.750		3.999	3.302-4.843	
Wealth index combined	Poorest	1		0.000			0.000
	Poorer	1.545	1.013-2.357		1.376	0.898-2.108	
	Middle	1.407	0.930-2.127		1.071	0.700-1.638	
	Richer	2.865	1.973-4.161		1.639	1.083-2.480	
	Richest	10.333	7.314-14.597		3.372	2.138-5.320	

DISCUSSION.

The study examined the prevalence and determinants of HI coverage among reproductive women in Tanzania. Our findings revealed an overall low coverage of HI at 5.7%, a figure that aligns closely with similar studies in sub-Saharan Africa (SSA). Cross-country variations were observed, with the lowest prevalence recorded in Chad at 0.9% and the highest in Ghana at 62.4% (26), consistent with reported patterns in other nations. For instance, in Ethiopia, the overall weighted HI coverage was approximately 28% (27), while in Ghana, it stood at 69% (11). Among women in SSA, the prevalence of HI coverage was 8.5% (28). Notably, insurance ownership rates were 3.31% in Togo, 2.23% in Madagascar, and 2.2% in Mali (29). When considering income

classifications, the average HI coverage was 7.9% in low-income countries, 27.3% in lower-middle-income countries, and 52.5% in upper-middle-income countries (30). Across 36 SSA countries, the overall prevalence of HI coverage was 10.6% among females and 14% among males (28). In Europe and the Eastern Mediterranean, the highest proportion was observed at 44.4% (31).

Disparities in HI (HI) utilization underscores the existence of inequities within health systems in the region (32), emphasizing the need for measures to enhance HI coverage.

The study revealed an overall low coverage of HI at 5.7%. The commonly used insurance types were insurance provided by employers (3.9%), mutual/community organization insurance (1.6%), social security insurance (0.1%), and others (0.1%). Different countries and settings prioritize various types of insurance; however, government-run HI emerged as the dominant model in Africa, showing better results than community-based HI (CBHI). Private HI was marginal, especially in contexts with a large informal sector and a substantial number of people with low contributory capacity (33).

Regarding age groups, our findings indicated that older age groups had higher odds of HI utilization compared to the 35-49 age group. Similar studies demonstrated elevated odds of HI coverage among women aged 30–34, 35–39, 40–44, and 45–49 compared to those aged 15–19 (25). Conversely, women in the 45–49 age group had lower odds of HI coverage. This difference could be attributed to the financial stability and informed decision-making of older age groups. Promoting freely accessible information on HI and its benefits in local languages may encourage younger age groups to participate in such programs.

Participants residing in rural areas were 1.3 times more likely to use HI compared to those in urban areas, contrasting findings in other studies that reported significantly lower percentages in rural areas across all countries (29). The increased likelihood in rural areas in our study may stem from heightened awareness of HI schemes and their benefits.

Higher education was strongly associated with HI use, reflecting findings in other studies in SSA countries. The likelihood of being covered by HI increased with the level of education. Additionally, participants with access to television had higher odds of HI use. Exposure to media, particularly television, significantly contributed to the pro-rich distribution of HI coverage (50.3%) (34).

Wealth status played a significant role, with the richest participants having higher odds of HI use compared to the poorest. This aligns with previous studies reporting that households in the highest wealth quintile were more likely to join HI schemes. Understanding insurance benefits and limits was associated with increased uptake, emphasizing the role of informed decision-making.

The study found that community-based health insurance (CBHI) impacted the non-poor but did not sufficiently protect the poor, suggesting that a HI program designed for the general population may not be suitable for the poor (38). However, very poor households were significantly more likely to enroll in HI, possibly due to exemptions from premium payments. Additionally, the availability of health facilities in one's community significantly decreases expenditures on healthcare (39).

LIMITATIONS.

Despite the strengths of this study, the cross-sectional design used in collecting the DHS data limited the ability to draw any causal inferences among the variables studied. Additionally, the study was prone to recall bias, a common characteristic of DHS surveys, given the retrospective nature of reporting HI coverage among the study participants in their respective countries.

STRENGTHS.

This study on Health Insurance (HI) coverage among reproductive women in Tanzania presents a comprehensive examination offering insights into prevalence and determinants. It contributes to international comparisons across sub-Saharan Africa, incorporates income stratification analysis, explores age and demographic factors, considers media influence, evaluates community-based health insurance, and examines the impact of healthcare facility availability. The findings are relevant for policymakers and practitioners, providing nuanced insights that can inform targeted interventions and policies to enhance health insurance coverage and address disparities in the region.

CONCLUSION.

The extent of Health Insurance (HI) coverage in Tanzania remains limited, posing challenges to the attainment of universal health coverage. To address this, we propose an intensified public awareness campaign outlining the advantages of HI coverage. Utilizing diverse communication channels, these awareness programs should be inclusive, targeting all demographic groups. By enhancing public understanding of the benefits associated with HI, we aim to encourage broader participation, ultimately contributing to improved health coverage for the entire population.

RECOMMENDATIONS.

To improve health insurance (HI) utilization among reproductive women in Tanzania, comprehensive strategies are recommended by the researchers. These include intensified public awareness campaigns, targeted education programs addressing demographic disparities, and affordability initiatives through innovative financing

mechanisms. Policymakers should implement measures encouraging enrollment, especially among younger age groups and urban populations. Integration with existing services, collaboration with financial institutions, continuous monitoring, and inclusive policy design are crucial components. Implementing these recommendations aims to overcome barriers, increase HI coverage, and contribute to the broader goal of achieving universal health coverage, ensuring financial protection against healthcare costs for diverse demographic groups.

LIST OF ABBREVIATIONS.

AOR: Adjusted Odds Rati
CI: Confidence Interval,
COR: Crude Odds Ratio,
OR: Odds Ratio,
SPSS: Statistical Package for Social Science,
WHO: World Health Organization,
UHC: Universal Health Coverage,
OOP: Out-of-Pocket,
HI: Health Insurance,
LMICs: Low- and Middle-Income Countries,
SSA: Sub-Saharan Africa,
TDHS: Tanzania Demographic and Health Survey,
MIS: Multiple Indicator Cluster Survey,
EAs: Enumeration Areas

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COMPETING INTERESTS.

All authors declare no competing interests.

DECLARATIONS.
Availability of data and materials
The data set used is openly available upon permission from the MEASURE DHS website
(URL: https://www.dhsprogram.com/data/available-datasets.cfm)

CONSENT FOR PUBLICATION.

All the authors revised the final version of the manuscript and granted permission for publication

AUTHORS' CONTRIBUTIONS.

AH conceptualized the idea, and analyzed the data. AEI and AR wrote the initial draft of the manuscript. All the authors reviewed the final copy of the manuscript.

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