Factors Influencing Voluntary Enrollment in National Health Insurance Funds among Market Vendors: A Case of Mwanza, Tanzania

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Abstract

Background:

The National Health Insurance Fund (NHIF) recently developed new affordable packages aimed at attracting enrolment of new clients into the health insurance scheme, however, NHIF still faces low enrollment of clients primarily from the informal sector. This study aims to understand the factors affecting the uptake of voluntary NHIF in the informal sector, focusing on how demographic factors, socioeconomic status, level of awareness, and perceived quality of health care affect the uptake of voluntary NHIF in the informal sector.

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Therefore, the aim of this study was to determine factors influencing voluntary uptake of NHIF among market vendors in Mwanza.

Method: The study design was cross-sectional descriptive to establish factors associated with the uptake of NHIF in the informal sector. The factors explored were socio-demographic, economic, NHIF awareness and perception of health care quality. Data were collected using structured questionnaires. The respondents were from two municipal city markets in Mwanza. Data was analyzed using SPSS version 26.0 software. Descriptive analysis was performed for the background characteristics of respondents, awareness, and perception. Chi-square was used to determine factors associated with NHIF uptake.

Results

Data were collected from 323 market vendors from two municipal markets of Mwanza. Main source of income, perception, and awareness were positively associated with NHIF enrollment. The odds of enrolling in NHIF among respondents with low NHIF awareness were 92% lower than among respondents with high NHIF awareness. The odds of enrolling in NHIF among respondents with negative perceptions on the quality of health care services was 83% lower than among respondents with positive perceptions.

Conclusion: NHIF uptake among market vendors in Mwanza City was still low. The study reports that source of income, poor awareness of the fund by the respondents, and negative perceptions with regard to quality of health care negatively affect enrollment in NHIF. The study recommends using information, education, and communication strategies to raise awareness of NHIF and create demand for insurance in the informal sector. Moreover, a review of the affordability of NHIF packages in relation to the income earned by the majority in the informal sector is important to attract enrollment.

Keywords: National insurance, Tanzania

Introduction

Developing countries face many of challenges in the health care system, from ensuring the provision of drugs, physical infrastructure, and human resources to the delivery of services in the most fair and equitable manner (Bryant, 2019; Rubanju, 2014). The failure of the government to provide health care services forced people to depend on out-of-pocket payment system that has a greater risk of impoverishing people ((Bennett, 2001).

In response to discouraging health service provision challenges, Tanzania embarked on a journey of health financing reforms, seeking to redefine its health sector development (Mæstad, 2021). The objective was to move away from excessive reliance on out-of-pocket payment toward a system that which incorporates a greater element of risk pooling and affords greater protection through health insurance (Basaza, 2013). Health insurance has been perceived to enhance access and utilization of good quality health services and to provide protection against catastrophic health expenditures(Baine, 2018).

Enter to the National Health Insurance Fund (NHIF), a cornerstone in Tanzania endeavor for a society. Established by Act of Parliament No. 8 of 1999, the NHIF commenced its operations in June 2001 (NHIF, 2020), functioning as a government entity under the under the Ministry of Health Community Development, Gender, Elderly and Children (MoHCDGEC) (Durizzo, 2022). Departing from the notion of health insurance as an individualists need, the NHIF operates under the principles of risk sharing and solidarity among its members (Lutinah, 2020; Muia, 2022). For public sector employees, enrollment is mandatory; covering up to six the operation of the NHIF is compulsory for public sector employees and their legal dependents covering up to six individuals (Muia, 2022). Moreover, in the quest for enhancing health care, NHIF addressed other groups that can voluntarily join the scheme, such as private companies, education institutions, private individuals, farmers in cooperatives, and organized registered groups such as “Machinga” and “Bodaboda” (Lambin, 2022).

Yet, within the grand tapestry of the NHIF’s initiatives, a notable gap persists- the low rate of enrollment in the scheme among individuals in the informal sectors, particularly market vendors (Borghi, 2013). Numerous studies in sub-Saharan Africa countries have explored factors affecting the uptake of health insurance, emphasizing issues like the quality of services, accessibility of health facilities, and income level (Enuameh, 2016; Mulenga, 2016;

Ndungu, 2014). However, little attention has been give to the unique factors influencing the voluntary enrollment of market vendors in NHIF (Borghi, 2013; Mtei, 2007).

In the uncharted territory of market vendor's decisions to enroll in NHIF health insurance, this study seeks to unravel the impact of demographic factors, socio-economic status, level of awareness, and perceived quality of health care. Through this exploration, we aim to illuminate critical insights that can guide interventions, fostering an environment conducive to increased enrollments and, consequently, a healthier and more resilient informal sector.

Methods and materials

Study Area

This study was conducted in public municipal markets in Mwanza, Kirumba, and Uhuru Tanzania. These markets were selected because they have a good number of vendors, thus providing enough room for easily obtaining the population of interest.

Research Design

This study was a cross-sectional descriptive study using quantitative approach to gather data on the factors influencing the enrollment of NHIF in the informal sector. This design was selected because it can best draw a correlation between factors of interest and voluntary NHIF uptake in the informal sector.

Target Population

In this study, the target population was market vendors at the Kirumba and Uhuru markets.

Inclusion Criteria

The main inclusion criteria were market vendors aged 18 years and above.

Exclusion Criteria

This study excluded market vendors with disabilities such unable to talk or hear.

Sample size Formula: $n = \frac{Z^2 P (1-P)}{d^2}$ P – Expected proportion of clients covered by NHIF from previous studies, 30% (Kapologwe, 2017).

Therefore, a sample size of at least 323 respondents was appropriate for this survey.

Sampling Procedures

Purposive sampling was employed in the study. The sample population comprised market vendors who were available at the markets during data collection.

Data Collection

The researcher used a structured questionnaire with multiple choice and Likert scale questions as the instrument for collecting primary data from the respondents. Interviewers approached vendors at their stalls, introduced themselves, thoroughly explained the aim of the study, and sought consent for their participation. The study only included respondents who agreed to participate.

Data Management

The principal investigator ensured that the collected data were accurate and correctly entered in SPSS. This was done at the end of data collection each day. Research assistants scanned the complete questionnaires and stored them in secure computers for backup. The principal investigator further checked the uploaded data for consistency.

Data collection tools

The questionnaire was the tool used to collect primary data from respondents. The questionnaire was divided into four sections, each addressing the separate variables in the study. The questionnaire was filled out by the market vendors. Section A addressed the demographic characteristics of the respondents, which included gender, age, marital status, and household size. Section B was Socio-economic status which included the level of education, main economic activity, and estimated household incomes. Section C dealt with the level of awareness of health insurance, including sources of information, enrollment status, registration procedures, and awareness of special NHIF premium packages for small business people in cooperative unions, benefits of insurance, reasons for non-enrolment, insurance trainings, and visits by NHIF staff in the community. Section D was on respondents' perception on the health care quality received in health facilities under NHIF cover. Respondents' perception of services provided to NHIF beneficiaries at health facilities focused on availability of human resources for health, infrastructure, accessibility of health services, and health workers' attitudes towards NHIF beneficiaries at NHIF-accredited health facilities.

Data Analysis

Quantitative data were analyzed using SPSS version 26. General information was analyzed by the descriptive statistics. Actual counts, relative frequencies, means, and standard deviations were used in the descriptive analysis to describe the characteristics of the sample. To determine the relationship between study variables, the Pearson chi-square (χ^2) model was used. The questions were asked in a Likert scale order, which were further merged into positive and negative perceptions depending on the response. The strongly agreed and agreed were merged into positive perception and the strongly disagree and disagree were merged

into negative perception. This resulted in the existence of positive and negative perception of respondents on the quality of health care services provided under NHIF health insurance-accredited health facilities.

Ethical Consideration

An ethical clearance letter was approved by the University Senate of Research and Publication (USRP). Permission was granted by the Nyamagana Municipal Council, Mwanza, and from the municipal markets administrations for the team to conduct this study. Informed consent was requested from the respondents after being introduced to them by the municipal market administrator. Informed consent forms contained easy-to-understand information so that, study participants took part in the study willingly and were aware of what the study was all about.

Results

Respondent's characteristics

A total of 323 people responded to the questionnaire of small-scale vendors at Kirumba and Uhuru municipal markets in the Mwanza region. The respondents were aged 18 – 65 years [mean = 45; interquartile range, 38 - 49]. The majority, 217 (67.2 %) of the respondents were men and, 106 (32.8%) were women (Table 1).

Table 1: Respondent demographic characteristics (n=323)

Gender	Frequency (F)	Percentage (%)
Men	217	67.2
Women	106	32.8
Age		
18 – 25	80	24.8
26 – 35	95	29.4
36 – 45	83	25.7
46 – 55	36	11.1
> 56	29	9
Marital status		
Married	205	63.5
Single	18	5.6
Separated	86	26.6
Other status	14	4.3
Household size		
1 - 2 members	84	26
3 - 5 members	75	23.2
6 or more members	164	50.8
Level of Education		
Primary	188	58.2

Secondary	93	28.8
Diploma	21	6.5
Degree	13	4
No formal education	8	2.5

Regarding age groups, the majority, 29.4%, of the respondents were in the 26-35 years age group (Table 1). Those aged above 56 years were the minority, 9%. In addition, married respondents formed the most respondents (63.5%), followed by 26.6% who were separated. Almost half of the respondents (50.8%) lived in households with six or more members, followed by three to five members at 23.2% (Table 1). Regarding education attainment, 58.2% had attained primary level education, followed by 28.8% who had secondary level education (Table 1).

Table 2: Socioeconomic characteristics of respondents (n=323)

	Frequency	**Percentage**	**Cumulative Percentage (%)**
NHIF Membership			
Member	52	16.1	16.1
Not a member	271	83.9	100
Sources of Income			
Salaried employment	26	8	8
Small-scale farmer	28	8.7	16.7
Small-scale business	269	83.3	100
Level of Income (in Tsh)			
less than 50000	134	41.5	41.5
51000 – 100000	149	46.1	87.6
101000 – 200000	24	7.4	95.0
Above 200000	16	5.0	100

Enrollment in the NHIF among the respondents was approximately about 16.1%, 7.7% among men, and 8.0% among women (Table 2). Most of the respondents (83.3%) were involved in running small businesses, followed by those engaged in farming (8.7%). Regarding how much the household earned, almost half (46.1%) earned between 51,000 and 100,000 shillings; most respondents (87.6%) earned 100,000 shillings or less, and very few earned over 200,000 shillings per month.

Social demographic factors influencing voluntary enrolment into NHIF health insurance

Findings from bivariate analysis indicate that gender, age, marital status, household size, and level of education are associated with NHIF enrollment. However, those aged 45 – 55 years were enrolled more compared with other age groups (Table 3).

Table 3: Demographic factors influencing the voluntary uptake of National Health Insurance

Factors	NHIF member (N, %)	Non-NHIF member (N, %)	p-value
Gender			
Men	25 (7.7)	192 (59.5)	
Women	27 (8.0)	79 (24.8)	0.001
Age			
18 – 25	12 (3.7)	68 (21.0)	
26 – 35	12 (3.7)	83 (25.7)	
36 – 45	11 (3.1)	72 (22.3)	
46 – 55	13 (4.0)	23 (7.2)	
≥56	4 (1.2)	25 (7.7)	0.016
Relationship status			
Married	32 (9.9)	173 (53.6)	
Separated	18 (5.6)	68 (21.1)	
Other status	2 (0.6)	30 (9.2)	0.057
Household size			
1 - 2 members	17 (5.3)	67 (20.7)	
3 - 5 members	6 (1.9)	69 (21.4)	
> 6 members	29 (8.9)	120 (41.8)	0.148
Level of education			
Primary	22 (6.8)	166 (51.4)	
Secondary	16 (4.9)	77 (23.8)	
Diploma	7 (2.3)	14 (4.3)	
Degree	6 (1.8)	7 (2.2)	
No formal Education	1 (0.3)	7 (2.6)	0.003

A higher percentage of NHIF members were married than those with other marital statuses. Most NHIF members reside in household with six or more household members. The majority of NHIF members had primary level of education (Table 3).

Economic factors influencing voluntary NHIF health insurance enrollment

Using the chi-square test, we determined the association between the main source of income and enrollment in the national health insurance fund. Those employed respondents enrolled more into the NHIF: the difference was statistically significant, chi2=13.273, p-value = 0.000, 95% CI 2.648-(0.843) (Table 4). Regarding the average household income, those earning below 50,000 Tanzania shillings enrolled more in the fund than those earning above 200,000 (8.0% vs 4.7%), although the difference was not statistically significant (Table 4).

Table 4: Economic factors influencing voluntary enrolment in NHIF health insurance

Factors	NHIF member (N, %)	non NHIF member (N, %)	Chi-2	p-value	95%, CI
Main source of income					
Employed	11 (3.4)	15 (4.5)	13.273	0.000	-2.445 to -0.735

Farming	6 (1.9)	22 (6.8)	1.473	0.255	-1.571 - 0.369
Business	35 (10.8)	234 (72.4)	1		
Average household income					
Less than 50,000	26 (8.0)	123 (38.1)	0.754	0.385	-0.761 - 1.970
51,000 - 100,000	8 (2.5)	16 (4.9)	0.017	0.897	-1.237 - 1.413
101,000 – 200,000	3 (0.9)	13 (4.1)	1.000	0.317	-2.289 - 0.742)
Above 200,000	15 (4.7)	119 (36.8)	1		

Awareness of registration, premiums, and benefits of NHIF

Almost less than a quarter of the respondents, 23.9%, were aware that joining the fund was voluntary, the majority were not aware of this fact, 76.1% (Table 5). With regard to the scheme catering for people of all ages, 41% of respondents had awareness. 36% of respondents were aware that NHIF registration can be done in any of the NHIF offices. Furthermore, only 16.5% of respondents were aware of NHIF special packages for small businesspeople in cooperative unions. 59.9% of the respondents were aware of the benefits and services received in health facilities under NHIF. Almost half, 54.2% were aware that NHIF cover is only applicable in NHIF accredited health facilities. Almost 60% of the respondents were aware of the services offered by the fund.

Table 5: Awareness of registration, premiums, and benefits of the NHIF

Statements	**Aware, N (%)**	**Not Aware, N (%)**
Existence of a voluntary NHIF scheme	59 (23.9)	188 (76.1)
NHIF Registration is open to people of all ages	102 (41.3)	145 (58.7)
One can enroll in NHIF at any of the NHIF offices	89 (36.0)	158 (64.0)
Awareness of a special package for small businesses	41 (16.5)	206 (83.5)
Awareness of the NHIF covering admissions at registered hospitals	134 (54.2)	113 (45.8)
Awareness of the services offered	148 (59.9)	99 (39.1)

Awareness and enrollment into NHIF in the informal sector

The odds of enrolling in NHIF among respondents with low NHIF awareness were 92% lower than among respondents with high NHIF awareness (OR 0.075, 95% CI = 0.026 – 0.213) (Table 6).

Table 6: Awareness and voluntary enrollment into NHIF health insurance

NHIF awareness	NHIF member (N, %)	Non-NHIF Members (N, %)	p-value	Odds	95% CI
NHIF Awareness					
Aware	48 (27.3)	128 (72.7)			
Not aware	4 (2.7)	143 (97.3)	0	0.075	0.026 -0.213
Total	**52 (16.1)**	**271 (83.9)**			

Perceived quality of healthcare services and voluntary enrollment in NHIF health insurance

The majority of respondents perceived NHIF-accredited health facilities as having adequate diagnostic services (59.5%), adequate drugs and medical supplies (64.8%), and adequate human resources (65.8%). On the contrary, other respondents perceived that NHIF-accredited health facilities do not have necessary infrastructure (69.7%), NHIF clients face poor attitudes from health care workers (71.8%), and accredited health facilities are hard to reach (located far) (58.4%) Furthermore, 59% of the respondents perceived that NHIF beneficiaries face long waiting times for health services, and (54%) of respondents were under the impression that NHIF beneficiaries incur extra costs for medical services at health facilities (54%).

Table 7: Perception of respondents regarding healthcare quality received in health facilities under NHIF cover.

Perception questions	**Agree N (%)**	**Disagree N (%)**
NHIF beneficiaries face long waiting times for health services	59 (26.1)	167 (73.9)
NHIF accredited health facilities have the necessary infrastructure	66 (30.3)	152 (69.7)
NHIF-accredited health facilities have adequate diagnostic services	131 (59.5)	89 (40.5)
NHIF accredited health facilities have adequate drugs and medical supplies	142 (64.8)	77 (35.2)
NHIF accredited health facilities have adequate human resources	144 (65.8)	75 (34.2)
NHIF beneficiaries face poor attitude from healthcare workers	158 (71.8)	62 (28.2)
NHIF-accredited health facilities are hard to reach (located far)	128 (58.4)	91 (41.6)

NHIF beneficiaries incur extra costs for medical services at health facilities	54 (24.8)	164 (75.1)

Quality perception and voluntary enrollment in NHIF health insurance

The odds of enrolling in NHIF among respondents with negative perceptions on the quality of health care services was 83% lower than among respondents with positive perceptions (OR 0.166, 95% CI = 0.072-0.382) (Table 8).

Table 8: Perception and voluntary enrolment into NHIF health insurance

NHIF Perception	**NHIF member (N, %)**	**Non NHIF Members (N, %)**	**p-value**	**Odds**	**95% CI**
Positive Perception	45 (24.3)	140 (75.7)			
Negative Perception	7 (5.1)	131 (94.9)	0.000	0.166	0.072-0.382
Total	52 (16.1)	271 (83.9)			

Discussion

Utilization and enrollment in the national health insurance fund (NHIF) in developing countries poses challenges, with low participation rates (Agyepong, 2016).

The findings the present study show that number of women enrolled in NHIF slightly higher than that of men. This finding could be attributed to the differences in health seeking behavior between females and males. Women tend to be more responsive to illness, promptly seeking healthcare, especially during pregnancy. Similar finding was observed in Ghana by Badu (2018) in Ghana, who linked it to women's heightened responsiveness, particularly during pregnancy (Badu, 2018). Bethesda (2018) and Ofori (2023), noted higher insurance renewal rates among females in Ghana, attributing it to women roles as care giver (Bethesda, 2018; Ofori, 2023). Females' enrollment is crucial due to their central role in community health activities, including infant mortality reduction, child immunization, diseases prevention, access to hospital deliveries. and overall improvement of health indicators (Akute, 2021; Kuwawenaruwa, 2019).

The study shows that respondents of age group 45 – 55 years were enrolled more compared to other age groups. This result may be explained by younger respondents having insufficient

incomes or no children requiring healthcare. These findings align with dward (2018)) and Kumi-Kyereme (2013), who found that an increased likelihood insurance enrollment with age (Edward, 2018; Kumi-Kyereme, 2013). In contrast, Adebayo et.al (2015) found that younger generation had higher health insurance coverage, possibly due to employment in sectors offering insurance benefit (Adebayo, 2015).

In our study, marital status was identified as a positive factor influencing NHIF uptake, consistent with studies by Bwayla (2017) and Kumburu (2017) (Bwalya, 2017; Kumburu, 2017). Being part of a couple increases the likelihood of insuring family members, ensuring access to healthcare for the entire family Kirigia (2005) also reported the positive influence of marital status on health insurance enrollment in South Africa (Kirigia, 2005).

Present study found significant influence of education in enrollment in NHIF scheme, with literate individuals more likely to understand of health information and acces higher income opportunities. The study notes a low number of respondents with college and university education, emphasizing the implications on their ability to afford insurance premium and understand basic health insurance concepts (Kirigia, 2005; Kumi-Kyereme, 2013; Mhere, 2013).

Socio-economic factors associated with NHIF uptake reveal that employment in the informal sectors is linked to higher enrollment compared to farming and business activities. Surprisingly, income levels did not determine NHIF enrollment, challenging the common belief that economic factors drive uptake. The finding disagree with other studies that reported economic factor, how much one earns, as uptake drivers (Mavole, 2018; WHO, 2010). The fact that uptake was not associated with anyone's income, is an indication that other confounders such as education, and social profile might be more important. However, economic strata remains crucial when design subscription tariffs for the informal sector(Mavole, 2018; Taddesse, 2020).

This study reported low awareness among respondents about the NHIF enrollment process, benefits, and packages. Respondent with low NHIF awareness had a 92% lower likelihood of enrolling, emphasizing the critical role of awareness in both enrollment and retention (Adewole, 2017). This lack of information was also noted in the other studies (Barasa, 2017; Bekoreire, 2018; Deeming, 2017).

In our study, factors influencing NHIF uptake were highlighted, revealing a prevalent negative perception. These included inadequate infrastructure, lower attitude from health care

workers, and challenges related to accessing distance health facilities. Respondents with a negative perception had an 83% lower likelihood of enrolling. Addressing issues like services quality, geographical accessibility, and healthcare workers' attitude is crucial to improving NHIF uptake (Barasa, 2017; Kironji, 2019; Munga, 2009). A qualitative approach study in future may provide a more comprehensive understanding of respondents' perception.

Strength and limitations of the study

The study provides a comprehensive examination of NHIF enrollment, considering a range of socio-demographic factors such as gender, age, marital status, education levels and employment sector. This allows for a nuanced understanding of the factors influencing enrolment. The study also draws on comparisons with existing research conducted different developing countries, enhancing its contextual relevance and considering to broader understanding of health insurance enrollment pattern in developing countries. Our study employed a quantitative method to analyze and present data, allowing for statistical rigor and the generation of numerical insights. This enhances credibility of the findings and supports evidence-based conclusion. However, our study has limitation on focusing on a specific region or community, and the findings may not be fully representative of the broader population. This limits the generalization of the results to other region. The convenient sampling strategy may have led to selection bias and hence results may not be reflective of the general informal sector. The study acknowledges the limitation of not employing a qualitative approach to explore respondents' perceptions in-depth.

Conclusion

The reveled the uptake of National health insurance fund among market vendors in Mwanza municipal markets was low.

The study identified a significant gap in awareness among potential NHIF members regarding the enrolment process, benefits, and packages. This lack of information emerges as a substaintial barriers to enrolment, necessating priortiozed starategies to enhace awareness and provides comprehensive information to improve NHIF uptake. The study unveils a gender disparity in NHIF enrollment, highlighting a higher enrollment among women attributed to distinct health-seeking behaviors, particularly during pregnancy. Furthermore, the findings emphasize that individuals in the age group 45-55 and those who were married exhibited a higher likelihood of NHIF enrollment. The study underscores the substantial influences of

education levels on NHIF enrollment, with literate individuals demonstrating a higher propensity to enroll.

Concerning employment the study challenges the conventional belief by revealing that employment in the informal sector is associated with higher NHIF enrolment, rather than income levels being the sole determinant.

Furthermore, a prevailing negative perception, rooted in inadequate infrastructure, healthcare worker attitudes, and challenges in accessing distant health facilities, act as a deterrent to NHIF enrolment.

Recommendations

Developing and implementing targeted awareness campaigns to address low awareness levels. Utilize various communication channels to disseminate information about NHIF enrollment process, benefit and package is essential.

Develop targeted intervention to address gender disparities and different age group in NHIF enrollment. Tailor communication strategies to appeal to both genders emphasize the importance of health coverage for and women.

Implementing community-based health literacy programs, especially targeted individuals with lower educations attainment is important.

Health facilities should invest in infrastructure improvement and accessibilities at NHIF accredited health facilities and implement training program for healthcare workers and enhance the service quality.

Declarations of Competing Interests

The authors have declared that no financial and non financial competing interests.

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Authors' contribution

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All authors have read and approved the final manuscript.

Abbreviations

CHF: Community Health Fund; MoHCDGEC: Ministry of Health, Community Development, Gender, Elderly and Children; NHIF: National Health Insurance Fund; WHO: World Health Organization; TIKA: Tiba kwa Kadi

Consent for publication

Not applicable, no individual detail is presented.

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Availability of data and materials

All relevant data are within the manuscript. The datasets analyzed during the current study available from the corresponding author on reasonable request.

Ethics approval and consent to participate

Ethical clearance was obtained from Ethical Review Committee of Muhimbili University of Health and Allied sciences.

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