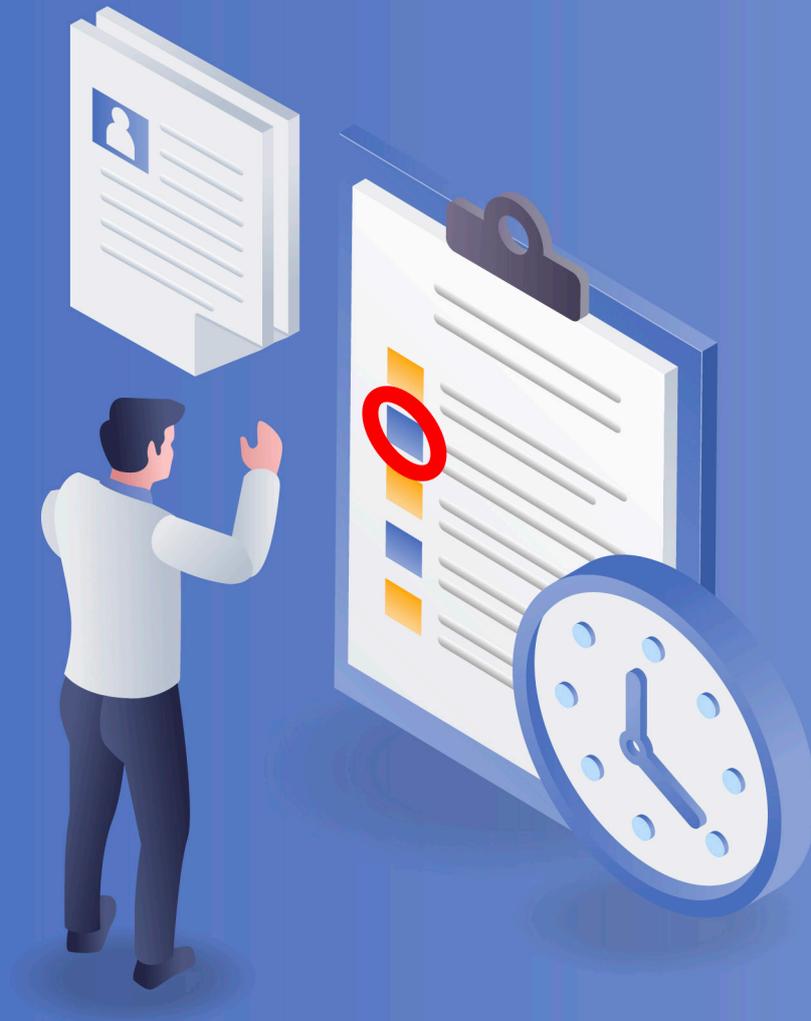




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Willingness to Pay For National Health Insurance among Informal Sector Workers A Case Study of Kazungula Rural District of Zambia

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ABSTRACT

Expanding Health Insurance to Zambia's informal sector is vital for achieving Universal Health Coverage (UHC) by 2030. However, challenges arise in collecting premiums from dispersed workers with irregular incomes in the informal sector. A mixed-method cross-sectional study in Kazungula District surveyed 384 informal workers and interviewed 10 key informants. Results showed 77.6% were willing to pay for health insurance, with an average contribution of K28.4 (\$1.85 exchange rate at the time of the study). Factors influencing willingness included age, marital status, income, prior illness, and willingness to enroll. Although awareness was generally high, respondents reported insufficient information to make informed choices. Importantly, the mean amount they were willing to pay was below NHIMA's required premium, highlighting the need for more affordable and flexible contribution structures. Overall, the study indicates strong potential for expanding insurance coverage among informal sector workers, provided affordability and information gaps are addressed.

INTRODUCTION

Globally, several countries in low-middle income nations face challenges in healthcare financing especially among the informal sector as a result of out-of-pocket (OOP) expenditures. High out-of-pocket pose financial hardships to people when accessing healthcare given the high costs associated with out-of-pocket payments (Ifeagwu *et al.*, 2021; WHO, 2022). Health insurance is being increasingly looked upon as a way of giving quality healthcare services to people as well as protecting them from the financial risk of illness, and increases welfare by spreading the risk of financial loss due to illness and helps maintain income by relieving the consumer from concerns about healthcare prices and income constraints at the time of illness (Okoroh *et al.*, 2020).

Zambia has identified health insurance as a vital channel for increasing locally sourced finances for achieving the agenda of universal health coverage (Kaonga *et al.*, 2022). Access to reasonable healthcare is an ultimate right and a key contributing factor of well-being. However, in many low-middle-income countries, including Zambia, barriers such as financial constraints frequently hinder people's ability to look for appropriate and adequate healthcare services. The informal sector which comprises a substantial percentage of the workforce in Zambia, faces heightened susceptibility due to the lack of formal occupation benefits which include health insurance coverage (Ifeagwu *et al.*, 2021).

Kazungula District, situated in the rural part of the southern province of Zambia, demonstrates the challenges encountered by informal workers regarding healthcare access and affordability. In spite of governmental efforts

to increase healthcare services, inequalities continue, mostly among rural people where infrastructure and resources are still limited (Rudasingwa *et al.*, 2022).

Global and Regional Perspectives on Health Financing and Health Insurance

Health financing remains a crucial building block of the health system in addressing disease burden globally and many countries have recognize the relevance of universal health coverage as a means to achieving Sustainable Development Goals. (WHO, 2022) in its "World Health Statistics 2022" that passable and constant health financing is a precondition for a well-functioning health system that can help the achievement of the Universal health coverage (UHC) which is about equity and social justice. UHC goals is to ensure many people have access to desired health services without any financial hardship and therefore requires sustainable healthcare financing. Sustainable health financing entails having sufficient resources to fund the health system and to protect populations against financial hardship when they use health services. Health insurance is now seen as a way to address increasing expenses for medical care in many countries especially sub-Saharan countries and additionally, according to (Hoque, 2021), he stated that for most people living in developing countries that include Zambia "health insurance" is an unknown word. It is generally assumed that, except for the upper classes, people cannot afford such a type of contribution and his is a pity as also poor people demand protection against the financial consequences of illnesses. For most people living in poor developing countries, especially the informal sector,

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illness still represents a permanent threat to their income-earning capacity. Besides the direct costs for treatment and drugs, indirect costs for the missing labour force of the ill and the occupying person have to be shouldered by the household (Wang *et al.*, 2017; Amu *et al.*, 2021; Muttaqien *et al.*, 2021).

Health Financing and Health Insurance in Zambia
Zambia has not been spared from hardship when it comes to healthcare financing due to limited resources and high disease burden which include communicable and non-communicable diseases. The health financing system in Zambia is a mixed health financing structure that includes contributions from the Government, private employer schemes, NGOs, and Out of Pocket (OOP) by individuals and households and the level of budgetary allocation to the health sector has consistently fallen over the past years as it can be seen. The total public health expenditure for health was at 9.3% in the 2019 budget, 8.8% in 2020 and a reduction of 8.1% in 2021 of the total government expenditures which still does not meet the 15% which was target set by African heads of state in the Abuja Declaration of 2000 (Health, 2016; Peters *et al.*, 2019).

The government and the donors are the major sources of health expenditure in Zambia which accounts for 80% of the total health expenditure and in 2016, expenditures on health constituted 43% of the total health expenditure for NGOs while the government accounted for 38% of expenditure and households through OOP expenditure were responsible for 12% of the total expenditure as well as 7% from the private companies through medical and insurance scheme (Health, 2016; Cheetah, 2022).

Zambia experiencing a number of issues in healthcare financing which includes inadequate public funding, uneven distribution of healthcare resources between urban and rural areas, and dependence on out-of-pocket payments among many people. Therefore, addressing these challenges entails sustainable financing means, improved proficiency in resource allocation and a focus on achieving universal health coverage without leaving anyone behind. Through the National Health Insurance Act number 2 of 2018, the national health insurance scheme was established with its first phase capturing the formal sector both serving in public and private before expanding the coverage to the informal sector workers. Health Insurance schemes have become an increasingly recognized factor as a tool to finance health care provision in low-income countries and are the way to achieve universal health coverage in low-middle-income countries. About 87.7% of the labour force in Zambia works in the informal sector (Masiye & Chansa, 2019).

Therefore, extending health insurance to the informal workers in Zambia remains a challenge, partly due to high levels of poverty and difficulties associated with collecting premiums from the informal sector workers, most of whom are geographically isolated with unstable income. Funding and delivering reasonable, accessible and

eminence healthcare are one of the crucial health policy difficulties presently facing many societies, governments, policy makers and international non-governmental organizations as noted by (Peters *et al.*, 2019; Ifeagwu *et al.*, 2021; Rudasingwa *et al.*, 2022).

For the success and sustainability of the scheme, willingness to pay for the NHI scheme among the informal sector workers who represent 87.7% (CSO, 2015) of Zambia's population is critical at the core of risk pooling and functioning of a health insurance scheme but this can prove to be difficult in that within the informal sector, it is difficult to initiate an enforcement mechanism as most people have unstable incomes, the difficulties in premium deduction or the collection and amounts that one is willing to pay. Even if the Zambian government expressing commitment to achieving universal health coverage and improving healthcare financing through policy reforms such health insurance policy, the question remains how the government can incentivize the NHI to attract informal workers and there is a need to examine factors that stimulate willingness to pay.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional, mixed-methods survey was conducted to assess respondents' willingness to pay for NHI among informal workers in the Kazungula rural district of Southern Province, Zambia. 384 respondents were randomly selected through a survey, while qualitatively, 10 key informants were purposively selected from the informal sector. The Probit model was employed to assess factors influencing willingness to pay for health insurance among informal workers, with bivariate and multivariate analyses identifying associated variables. The quantitative aspect involves a cross-sectional survey administered to 384 randomly selected respondents. This allowed for statistical analysis and generalization of findings to a larger population. The qualitative aspect involved interviewing 10 key informants selected purposively, likely based on their expertise to the topic. Purposive sampling was employed for selecting key informants in the qualitative phase, aiming to include individuals with valuable insights relevant to the study's focus.

Participants and Recruitment

Quantitatively, 384 respondents were randomly selected through a survey, while qualitatively, 10 key informants were purposively selected from the informal sector which included male and females aged between 18 to 60 years who were household heads.

Data Collection

Quantitative Data Collection Tools, Procedure, Management

A semi-structured questionnaire was used in the collection of quantitative data using a simple random sampling method among 384 respondents through a survey. The tool answered objectives two and three and part of

objective one. The principal investigator recruited and trained research assistants so that they are familiar with the topic under study, its objectives and data collection plans. They were briefed on health insurance and its benefits for informal sector workers in Zambia.

Qualitative Data Collection Tools, Procedure and Management

The sample of 10 key informants were engaged for a qualitative approach through Purposive sampling method. The interview guide was used to collect data in order to get some perceptions and explanations to justify some of the findings about health insurance. To guarantee

the rigor of the results, the qualitative research aspect of this study employed rigorous methods to increase reliability. This included approaches such as participant checking and lengthy engagement with respondents. Participant checking involved returning to respondents with the outcomes to confirm their precision and clarification of the data, hence improving the reliability of the study. Additionally, lengthy engagement with respondents enabled the researcher to develop trust and understanding, leading to wealthier and more consistent data.

Furthermore, predetermined and emerging themes of the study were identified as below;

Table 1: Key Thematic Categories

Main theme	Sub-themes
Awareness and knowledge levels on national health insurance	<ul style="list-style-type: none"> • Heard about health insurance and NHIMA • Information received adequate to make informed decision • Availability of accredited NHIMA facility in Kazungula
How much the informal workers are willing to pay for national health insurance in Kazungula.	<ul style="list-style-type: none"> • Amount willing to pay for health insurance? • Preferred mode of payment and frequency of payments daily, monthly or annually • Reasons for willing or unwilling to pay for health insurance
Factors that influence willingness to pay for health insurance	<ul style="list-style-type: none"> • Occupation, income, marital status, and education level • Availability of medicines and other medical products • Distance to the NHIMA accredited healthcare facility • Chronic illness in the family

Data Analysis

For qualitative, data was analysed thematically using inductive approach from predetermined themes (Table 1). Transcripts were read by more than one independent analyst who identified sub-themes and then organized them into themes. The responses from the participants were triangulated with the quantitative data findings to gain a deeper understanding.

For quantitative, data was collected using semi-structured questionnaire and analyzed using statistical software Stata 16MP. Descriptive statistics were used to obtain mean, median, standard deviations, frequencies and percentages. Inferential statistics were obtained using Probit Model Regression. Bivariate and multivariate analysis were done to determine the factors influencing willingness to pay for health insurance and adjusted odds ratios were obtained as the measures of associations.

Probit model was used in assessing willingness to pay for health insurance among the informal sector workers because of its ability to model binary or dichotomous outcomes, knowing whether respondents are willing to pay for health insurance or not and results are interpreted using predictive probability. Probit model results in identification of factors that influence respondents' decision on contributing towards health insurance, which allows more precise analysis of factors or determinant that influence willingness to pay. Probit model is a log-linear approach used to measure the effects of the independent variables on the dependent variable. This

study adopted the following empirical Probit Model specification;

$$y_i = \alpha_0 + \alpha_1 Age_i + \alpha_2 G_i + \alpha_3 MS_i + \alpha_4 INC_i + \alpha_5 SoM_i + \alpha_6 FS_i + \alpha_7 QHS_i + \alpha_8 AM_i + \alpha_9 SoI_i + \alpha_{10} RIR_i + \alpha_{11} NHIB_i + \alpha_{12} WTE_i + \mu_i \tag{1}$$

Where,

y_i = WTP for health insurance scheme (1= yes, 0 = no). Age_i = age of the respondent; G_i = gender of the respondent; MS_i = marital status of the respondent; INC_i = income of the respondent; SoM_i = source of money for hospital bills; FS_i = family member fallen sick before; QHS_i = quality of health services; AM_i = availability of medicines; SoI_i = source of the information received on NHIMA; RIR_i = rate information received on NHIMA; $NHIB_i$ = National health insurance beneficial; WTE_i = willingness to enrol for NHI. Each of the categorical variables is specified in the mode as (m-1) variables with one category as a reference category.

Ethical

The study was approved by the UNZABREC (REF. 2444-2024) and at the district level, permission to do the study was obtained from the District Health Office and local leaders before conducting the study. Informed consent was obtained from each respondent in the study which included the purpose of the study, what participation in the study would involve, confidentiality and anonymity were maintained and the right to refuse to participate in the study or to withdraw from the study

without any penalty remains of the participants. We anticipated minimal ethical challenges with the study as it was a minimal-risk study to participants and ethically, confidentiality and anonymity were maintained by the use

of codes on the questionnaire other than names.

RESULTS AND DISCUSSION

Qualitative Results

Table 2: Key thematic categories

Main theme	Sub-themes
Awareness and knowledge levels on national health insurance	<ul style="list-style-type: none"> • Heard about health insurance and NHIMA • Information received adequate to make informed decision • Availability of accredited NHIMA facility in Kazungula
How much the informal workers are willing to pay for national health insurance in Kazungula.	<ul style="list-style-type: none"> • Amount willing to pay for health insurance? • Preferred mode of payment and frequency of payments daily, monthly or annually • Reasons for willing or unwilling to pay for health insurance
Factors that influence willingness to pay for health insurance	<ul style="list-style-type: none"> • Occupation, income, marital status, and education level • Availability of medicines and other medical products • Distance to the NHIMA accredited healthcare facility • Chronic illness in the family

Knowledge and Awareness Levels on Health Insurance

There is a significant gap in communication and outreach regarding health insurance services, particularly from NHIMA (presumably the National Health Insurance Management Authority or a similar entity). This lack of awareness could stem from a misconception among potential beneficiaries that health insurance is primarily for formal workers with regular salaries, rather than being accessible to a broader range of individuals, including the self-employed.

To address this deficit in knowledge and awareness, proactive outreach efforts are essential. NHIMA could consider implementing targeted educational campaigns to reach out to different segments of the population, including those who are self-employed or informal workers. This could involve community outreach programs, informational sessions at local gatherings or workplaces, and the dissemination of educational materials through various channels such as social media, radio, and television.

Additionally, improving communication between healthcare workers and patients is crucial. Healthcare providers can play a key role in informing patients about the benefits of health insurance and facilitating enrolment processes. By providing clear and accurate information about available services and products, as well as addressing misconceptions, healthcare workers can help individuals make informed decisions about their healthcare coverage.

Overall, bridging the gap in knowledge and awareness about health insurance services requires collaborative efforts between healthcare providers, government agencies, and community organizations to ensure that all individuals have access to essential information and resources to make informed choices about their access healthcare services. Some respondents stated:

...I have seen NHIMA posters at the hospital and have heard

about health insurance but I have not taken the time to find out what they offer because no one has come to me to talk about health insurance and no one from NHIMA has visited me to give me details about health insurance itself. (Taxi driver, Male 32 years KI#9)

...have seen NHIMA adverts on TV, what I know is that health insurance is only for those who work in government and not for a self-employed person because they deduct payment from the salary and myself, I don't have the monthly salary. (Mobile money agent, female 28 years KI#5)

Furthermore, the concerns raised by the respondents highlight a critical need for improved communication and engagement from NHIMA and accredited healthcare facilities regarding the benefits and accessibility of health insurance, especially for informal workers and those with lower incomes. To address these issues, NHIMA and relevant stakeholders could implement several strategies enhanced outreach and education developing targeted outreach programs aimed at informal workers and individuals with low incomes. This could involve conducting community-based education sessions, distributing informational materials in local languages, and leveraging trusted community leaders to spread awareness about health insurance benefits. There is need to launch comprehensive sensitization campaigns to dispel misconceptions and promote understanding of health insurance among the general population. These campaigns could utilize various communication channels, including radio, television, social media, and community events, to reach a wide audience. Finally, encouraging accredited healthcare facilities to actively engage with their surrounding communities through health education programs and outreach activities. This can help build trust and encourage participation in health insurance schemes. Some respondents stated that:

...I have not received enough information on health insurance products and services, I don't even know what NHIMA stands apart from seen posters for NHIMA at the hospital and I am

not aware of benefits of paying. (Market vendor, female 34 years KI#2)

...there is a need for NHIMA to have meetings with us in the informal sector so that we know the benefits that you get as a member and how to register as well as how much to contribute because as it stands, I have heard of NHIMA but what they do exactly I don't know and at times we see NHIMA as only for government workers, not us who are self-employed" (Shop Owner, Male 40 years KI#8)

Amount Willing to Pay for Health Insurance

The fact that respondents are willing to pay amounts within the range of K25-K30, although below the desired premium, indicates a positive inclination towards supporting the scheme. The National Health Management Authority (NHIMA) keeps making strides in ensuring the sustainability and quality of services in accredited public health facilities. Therefore, by understanding the willingness of respondents to pay for health insurance and preferred payment methods, NHIMA can tailor their approach to better accommodate the needs and preferences of the population. Furthermore, the preference for monthly payments via mobile money reflects a desire for convenience and flexibility, allowing individuals to contribute without disrupting their daily activities or businesses.

Additionally, partnering with mobile money operators to facilitate payments demonstrates NHIMA's commitment to accessibility and convenience for its members. This approach not only streamlines the payment process but also increases the likelihood of sustained contributions by making it more convenient for individuals to participate. Overall, these findings suggest that NHIMA's strategies align well with the needs and preferences of the population, which bodes well for the continued success and effectiveness of the health insurance scheme. Respondents stated:

...I'm willing to start contributing K30 per month even now provided more information is given and you show me the process of registration, where to register, how many of our family members will be able to access the services once I'm a member. (Money changer, Male 29 years KI#7)

...banks or going to the hospital to make payment can be difficult because these places are far from our trading places and also the queues in public places will mean I have to close the business and losing on income, so I would prefer paying using mobile money" (Market Vendor, Female 37 years KI#1)

The reasons cited by respondents for their willingness to contribute towards health insurance highlight the diverse motivations driving participation in the scheme. Many respondents expressed anxiety for their families' well-being, emphasizing the importance of having financial protection against unforeseen health expenditures. By contributing to health insurance, they perceive it as a way to alleviate the financial risks associated with unexpected illness or medical emergencies. This demonstrates a vital understanding of the role insurance plays in providing peace of mind and security for families, both in the present

and future. Another significant reason for willingness to pay is the expectation of improved service delivery within the healthcare system. Respondents believe that their contributions will directly contribute to enhancing the quality and accessibility of healthcare services for themselves and their communities. This reflects a desire for tangible benefits from their investment in health insurance, beyond just financial protection.

Overall, these reasons highlight a complex understanding of the value proposition offered by health insurance. While some prioritize managing risk and financial security, others emphasize the importance of collective investment in healthcare infrastructure and service provision. By addressing these diverse motivations, NHIMA can further strengthen its engagement with members and enhance the perceived value of the health insurance scheme. One respondent stated:

...it is good to contribute even if one does not fall sick because sickness doesn't inform you, it just comes and maybe that day you won't have money to buy medicine so health insurance can help and avoid selling household goods or spending my whole capital on hospital bills. (Farmer, Male 46 years KI#4)

The reasons cited by respondents for their unwillingness to pay for National Health Insurance (NHI) reveal underlying concerns and perceptions that may pose challenges to willingness to pay for the scheme. Some respondents expressed a lack of understanding about the benefits of health insurance. This suggests a need for greater education and awareness campaigns to inform the population about how health insurance works, its benefits, and how it can mitigate financial risks associated with healthcare expenses. Without a clear understanding of the value proposition, individuals may be hesitant to contribute towards health insurance. Another significant barrier to unwillingness to pay is the perception that healthcare services should be provided free of charge by the government, particularly for those living in rural areas with limited economic opportunities. This perspective reflects a belief in the government's obligation to ensure access to essential services, including healthcare, without the need for individual contributions. Addressing this perception may require broader discussions about the role of the informal sector partnerships in healthcare financing and the sustainability of the scheme.

These reasons underscore the importance of addressing knowledge gaps and changing perceptions to encourage greater participation in health insurance schemes. Effective communication strategies that highlight the benefits of health insurance while also acknowledging government responsibilities in healthcare provision may help overcome these barriers and increase uptake among the population, particularly in underserved rural areas. Additionally, exploring alternative financing models that balance individual contributions with government support may be necessary to ensure equitable access to healthcare services for all segments of society. One respondent stated:

...we should have free services just like we have free education;

government should be able to pay for some of us who cannot afford to pay or buy medicines because they must provide such basic services, especially for us in rural who are always left out on many opportunities. (Farmer, Male 54 years KI#3)

Factors Influencing Willingness to Pay for Health Insurance

The observations made during the interviews highlighted several factors that influence respondents' willingness to pay for health insurance, as well as key challenges that need to be addressed to improve participation in health insurance schemes. Some respondents identified the burden of family size and household income as significant factors affecting their willingness to pay for health insurance. Larger families and lower household incomes may create financial constraints that make it difficult for individuals to afford health insurance premiums. Addressing affordability concerns through other tax means or sliding-scale premiums may help make health insurance more accessible to families with lower incomes.

Also the perception of non-availability of essential drugs in some public health facilities emerged as a significant barrier to willingness to pay for health insurance. Respondents heard from those enrolled in the scheme that despite being enrolled in the National Health Insurance Management Authority (NHIMA), some members reported having to purchase medicines out-of-pocket due to stock outs at accredited health facilities. Improving medicine supply chains and ensuring consistent availability of essential drugs in NHIMA-accredited facilities are critical steps to building trust and confidence in the health insurance scheme especially among the informal workers.

Another factor observed was the challenge of long distances to NHIMA-accredited facilities, which can result in additional transportation costs for accessing healthcare services. This issue excessively affects individuals in rural areas or those living far from health facilities. Expanding NHIMA services to lower-level health facilities, such as Zonal Health Centres and Mini Hospitals, could help improve access to healthcare services for individuals in remote areas and reduce the financial burden associated with transportation costs.

Addressing these challenges will require a multi-

faceted approach that involves improving healthcare infrastructure, strengthening supply chains, and expanding access to NHIMA-accredited facilities in underserved areas. Additionally, targeted interventions to address affordability concerns and increase awareness of the benefits of health insurance may help boost participation among informal workers and other vulnerable populations. Some responses included:

...I cannot contribute because my income is small and paying for health insurance monthly might be expensive for me looking at what I'm earning at the moment and nowadays business is difficult plus I have to provide for the family. (Taxi driver, Male 32 years KI#10)

...already we have shortage of medicines at the hospital, each time you go there, they will give you a prescription to go buy drugs and on top of buying drugs, you have to think of transport to go to livingstone so for me I'm not willing to pay. We currently have no drugs as we speak at the hospital regardless of us paying tax, when you go the only thing available is paracetamol. (Money changer, female 29 years KI#6)

Quantitative Results

Descriptive Statistics: Demographic Characteristics of the Respondents

A total number of 384 questionnaire responses were collected with 100% response rate recorded from the study. The table (Table 3) shows a detailed description of the demographic characteristics of the respondents. The majority of the respondents 51.04% were females and 48.96% were males with 60.42% married and 58.33% have gone up to the secondary level of education. Furthermore, approximately 27.86% of the respondents were in the age range of 36–45 with the least age range being 46–60 at 19.79% with the mean age of the participants was 34.8 years with a standard deviation of +10.5 and the min age was 18 years and the max-age was 58.

National Health Insurance Scheme Awareness

On awareness about health insurance (HI) and the national health insurance authority (NHIMA), (58.07%) of the respondents have heard about health insurance and more respondents (92.19%) have heard of the acronym "NHIMA" from health workers (38.80%) which can be attributed to the newly accredited Kazungula district hospital. In terms of rating the information received,

Table 3: Demographic characteristics

Variables	Freq. (N=384)	Percent (%)
Gender		
Female	196	51.04
Male	188	48.96
Age		
18-25	101	26.30
26-35	100	26.04
36-45	107	27.86
46-60	76	19.79

Income		
500-1000	189	49.22
1001-1500	89	23.18
1501-2000	70	18.23
2001-Above	36	9.34
Marital status		
Married	232	60.42
Never married	117	30.47
Divorced/separated	22	5.73
widowed	13	3.39
Education level		
Secondary	224	58.33
Primary	111	28.91
Tertiary	33	8.59
None	16	4.17
Occupation		
Mobile Money Agent	103	26.82
Market Vendor	84	21.88
Shop Owner	81	21.09
Farmer	71	18.49
Money Changer	21	5.47
Taxi Driver	15	3.91
Other	9	2.34

(85.94%) of respondents stated that they received minimal information which shows a lack of social mobilization by NHIMA. Lastly, with NHIMA visiting or knowing the registration process, (95.31%) were not visited by NHIMA and did not know the process of registration for NHIMA (Table 4).

Respondents' Willingness to Pay for Health Insurance

A significant majority of respondents, 77.60%, expressed a willingness to pay for national health insurance. This indicates a favourable disposition towards participating in the NHI scheme among the study population. Understanding the factors driving this willingness, such as perceived benefits, affordability, and trust in the system, can inform strategies to further promote enrolment and

Table 4: Respondents' awareness of Health Insurance and NHIMA

VARIABLES	Freq.(N=384)	Percent (%)
Heard of HI		
Yes	223	58.07
No	161	41.93
Heard of NHIMA		
Yes	354	92.19
No	30	7.18
Source of information		
Health workers	149	38.80
TV	115	29.95
Friends	53	13.80
Radio	41	10.68
Phone Texts	26	6.77
Rating Information Received		
Minimal information received	330	85.94
Adequate information received	23	5.99

No information received	20	5.21
A lot of information	11	2.86
NHIMA Visit		
Yes	18	4.69
No	366	95.31
Registration Process Known		
Yes	18	4.69
No	366	95.31

participation. The mean amount respondents were willing to pay for health insurance, K28.4 (\$1.85), provides a benchmark for premium setting and affordability considerations. Given the mean monthly income of respondents (K1, 406.5 or \$91.35), the willingness to pay appears to be within a reasonable range relative to income levels. However, further analysis may be needed to ensure that premiums remain affordable for all income groups. Furthermore, the overwhelming preference for making monthly contributions via mobile money (94.79%) highlights the importance of convenience and accessibility in payment methods. By partnering with mobile money operators for NHIMA contributions, the National Health Insurance Authority (NHIA) has aligned with the preferences of the majority of respondents, enhancing convenience and reducing barriers to payment. This strategic approach not only facilitates ease of payment but also demonstrates responsiveness to consumer

preferences, which can contribute to higher enrolment and sustained participation in the NHI scheme.

Overall, these findings suggest a positive attitude towards national health insurance and underscore the importance of tailoring payment methods to meet the needs and preferences of the target population. By leveraging mobile money platforms and ensuring affordability, NHIA can strengthen the accessibility and sustainability of the NHI scheme, ultimately improving healthcare coverage and outcomes for the population.

The most common reason cited by respondents for unwilling to pay (62.79%) was affordability. This highlights a significant barrier to participation, as individuals may perceive health insurance premiums as an additional financial burden, particularly if they are already facing economic constraints. Addressing affordability concerns through income-based subsidies or sliding-scale premiums could help make health insurance more

Table 5: Respondent’s willingness to pay, frequency of pay and preferred payment method

Variables	Freq.(N=384)	Per cent (%)
Willingness to pay		
Yes	298	77.60
No	86	22.40
Frequency of payment		
Monthly	364	94.79
Per year	15	3.91
Daily	4	1.04
weekly	1	0.26
Method of Payment Preferred		
Mobile money	215	55.99
Bank deposit	119	30.99
Cash through NHIMA agent	34	8.85
Not interested	16	4.17
Reason for not willing to pay		
Cannot afford	54	62.79
I don't get sick	1	1.16
Not interested	5	6.50
Too expensive	12	13.95
Waste of money	8	9.30
Service is free	6	6.30

accessible to individuals with lower incomes.

A small percentage of respondents (1.16%) stated that they don't get sick as a reason for not wanting to contribute to health insurance. This suggests a perception of low personal risk or a belief that they can manage healthcare expenses out-of-pocket if needed. Overcoming this perception may require education about the unpredictable nature of health emergencies and the importance of being financially prepared for unexpected medical expenses.

These findings underscore the importance of addressing affordability concerns and effectively communicating the value proposition of health insurance to potential enrollees. Strategies to increase awareness of the benefits of health insurance, alleviate financial barriers, and tailor offerings to meet the needs of different income

groups can help improve uptake and participation in national health insurance schemes. Additionally, efforts to enhance understanding of the unpredictable nature of health risks and the role of insurance in providing financial protection against such risks may help overcome misconceptions and increase willingness to enrol.

Inferential Statistics

Model Brief Description

A dataset of 384 observations, but only 361 observations were used in your models. This indicates that 23 observations were automatically removed due to missing values. The model converged with a log-likelihood of -76.914. The likelihood ratio chi-square test yielded a value of 242.57 with 30 degrees of freedom and a p-value <0.000. This indicates that the model as a whole

Table 6: Bivariate (unadjusted), and Multivariate (adjusted) analysis on factors influencing willingness to pay for NHI (N=361)

Variables		Unadjusted Estimates			Adjusted Estimates		
		Predicted Probability	95% CI	p-value	Predicted Probability	95% CI	p-value
Age	1 [18-25] (ref)	-	-	-	-	-	-
	2 [25-35]	0.057	-0.062, 0.176	0.347	0.206	0.002, 0.409	0.047*
	3 [35-45]	0.081	-0.034, 0.196	0.169	0.229	0.016, 0.443	0.035*
	4 [45-60]	0.080	-0.045, 0.205	0.211	0.262	0.061, 0.464	0.011 *
Gender	0 male (ref)	-	-	-	-	-	-
	1female	-0.137	-0.218, -0.055	0.001	-0.049	-0.151, 0.053	0.349
Marital status	1 Never married (ref)	-	-	-	-	-	-
	2 Married	-0.092	-0.179, -0.005	0.039	-0.159	-0.258, -0.060	0.002*
	3 Divorced/ separated	-0.065	-0.252, 0.123	0.497	-0.029	-0.185, 0.127	0.712
	4 Widowed	-0.068	-0.307, 0.170	0.574	-0.114	-0.397, 0.169	0.431
Income	1[500-1000] (ref)	-	-	-	-	-	-
	2 [1000-1500]	-0.048	-0.159, 0.063	0.396	-0.046	-0.210, 0.118	0.582
	3 [1500-2000]	0.090	-0.012, 0.192	0.083	0.096	-0.007, 0.199	0.067
	4 [above 2000)	0.038	-0.104, 0.181	0.598	0.121	0.029, 0.213	0.010*
Source of Money for health bills	1Out of pocket (ref)	-	-	-	-	-	-
	2 Relatives	-0.080	-0.200, 0.039	0.185	0.052	-0.035, 0.138	0.242
	3 Borrowed	-0.175	-0.358, 0.008	0.060	-0.420	-0.793, -0.047	0.027*
	4 Government	-0.707	-0.917, -0.497	0.000	-0.255	-0.871, 0.362	0.419
Fallen sick before Quality of health services	0 No (ref)	-	-	-	-	-	-
	1Yes	0.097	0.009, 0.186	0.032	0.204	0.076, 0.331	0.002*
	1 Very satisfied (ref)	-	-	-	-	-	-
	2 Satisfied	0.224	0.039, 0.408	0.017	0.136	-0.216, 0.489	0.449
	3 Neutral	0.177	-0.016, 0.371	0.073	0.129	-0.237, 0.495	0.490
	4 Dissatisfied	0.004	-0.208, 0.217	0.968	0.162	-0.208, 0.533	0.390
	5 Very dissatisfied	0.129	-0.173, 0.431	0.401	0.161	-0.254, 0.577	0.447

Availability of medicines	1 Very low (ref)	-	-	-	-	-	-
	2 Low	0.297	0.055, 0.539	0.016	-0.057	-0.439, 0.324	0.768
	3 Neutral	0.261	0.034, 0.488	0.024	0.115	-0.206, 0.436	0.483
	4 Good	0.365	0.135, 0.594	0.002	-0.006	-0.360, 0.348	0.974
	5 Very good	-0.000	-0.537, 0.537	1.000	0.003	-0.804, 0.811	0.993
Source of information	1 Radio (ref)	-	-	-	-	-	-
	2 TV	0.197	0.029, 0.366	0.022	-0.135	-0.310, 0.039	0.129
	3 Health workers	0.260	0.099, 0.422	0.002	-0.108	-0.263, 0.047	0.171
	4 Friends	0.075	-0.122, 0.272	0.457	0.017	-0.097, 0.132	0.767
	5 Phone texts	0.299	0.105, 0.494	0.003	0.048	-0.058, 0.154	0.377
Rate information received	1 Nothing (ref)	-	-	-	-	-	-
	2 Minimal	0.276	0.052, 0.499	0.016	0.081	-0.216, 0.378	0.591
	3 Adequate	-	-	-	-	-	-
	4 A lot	0.318	0.002, 0.634	0.049	0.188	-0.105, 0.481	0.208
NHI beneficial Willingness to enrol	0 No (ref)	-	-	-	-	-	-
	1 Yes	-0.819	-0.895, -0.744	0.000	0.001	-0.252, 0.255	0.991
	0 No (ref)	-	-	-	-	-	-
	1 Yes	0.849	0.780, 0.917	0.000	0.954	0.887, 1.021	<0.001*

was statistically significant, meaning it fits significantly better than a null model (a model with no predictors). The Pseudo R-squared value of 0.6119 suggests that approximately 61.19% of the total variability in the data is being explained by the model. Overall, the findings indicate that the probit model was statistically significant and explains a substantial proportion of the variability in willingness to pay for health insurance based on the predictors included in the model.

Performing multivariate or adjusted analysis allowed to examine the relationship between multiple independent variables and the outcome variable while controlling for potential confounding factors. Estimating the marginal effects of these factors helped to quantify the impact of each variable on the probability of willingness to pay for health insurance while accounting for other variables in the model.

The marginal effect indicates the change in the predicted probability of willingness to pay for health insurance for a one-unit change in the independent variable of interest, while holding all other variables in the model constant at their means. For example, if you're examining the effect of income on willingness to pay for health insurance and find that the marginal effect of income is 0.05, this means that for every one-unit increase in income (holding all other variables constant), the predicted probability of willingness to pay increases by 0.05. It's also important to consider the statistical significance of the marginal effects.

A significant marginal effect indicates that the independent variable has a statistically significant impact

on the outcome variable. The sign of the marginal effect (positive or negative) indicates the direction of the relationship between the independent variable and the outcome variable. A positive marginal effect suggests that an increase in the independent variable leads to an increase in the probability of willingness to pay, while a negative marginal effect suggests the opposite.

By interpreting the marginal effects of various factors, we were able to gain insights into which variables have the most significant impact on willingness to pay for health insurance among the informal workers, and how these factors interact with each other in influencing the outcome.

Factors Influencing Willingness to Pay for National Health Insurance

The findings were that compared to the age reference category (18-25 years), being in the age category of 26-35 increases the predicted probability of willingness to pay for health insurance significantly by 0.206 units (or 20.6%) with a p-value of 0.047. Similarly, being in the age category of 36-45 compared to the reference category significantly increases the predicted probability of willingness to pay by 0.229 units (or 22.9%) with a p-value of 0.035. Also being in the age category of 46-60 compared to the reference category also significantly increases the predicted probability of willingness to pay by 0.262 units (or 26.2%) with a p-value of 0.011. These results suggest that as participants get older, their willingness to pay for health insurance increases significantly. This trend is consistent across all age categories compared to the

reference category of 18-25 years. The observed increases in predicted probability indicate that older individuals are more likely to express willingness to contribute to health insurance premiums compared to younger individuals. The statistically significant p-values (below conventional thresholds such as 0.05) indicate that these findings are unlikely to be due to random chance and are therefore considered meaningful. Overall, these findings highlight the importance of age as a significant predictor of willingness to pay for health insurance. Understanding how age influences willingness to contribute to health insurance premiums can inform targeted strategies for enrolment and participation in health insurance schemes, particularly among different age demographics.

On marital status, the findings reviewed how marital status and income levels influence the willingness to pay for health insurance among participants in that being married, compared to never being married, significantly reduces the predicted probability of willingness to pay for health insurance by 0.159 units (or 15.9%) with a p-value of 0.002, holding all other variables in the model at their means. This suggests that individuals who are married are less likely to express willingness to pay for health insurance premiums compared to those who have never been married. Marital status is an important factor that has an influence on willingness to pay for health insurance and the observed reduction in predicted probability for married individuals suggests that marital status may influence financial decision-making regarding health insurance contributions. Furthermore, on income, the findings showed that participants with income groups above K2, 000, compared to those with income groups ranging from 500 to 1,000, experience a significant increase in predicted probability. This increase is by 0.121 units (or 12.1%) with a p-value of 0.010, holding all other variables at their means. This indicates that individuals with higher income levels are more likely to express willingness to pay for health insurance compared to those with lower income levels. Similarly, the significant increase in predicted probability for higher income groups indicates that income plays a crucial role in shaping individuals' willingness to contribute to health insurance premiums.

These findings highlight the need for targeted interventions and policy measures to address socio-economic disparities in health insurance coverage and participation. Strategies aimed at increasing awareness, affordability, and accessibility of health insurance among married individuals and those with lower income levels may help promote more equitable access to healthcare coverage.

The findings regarding the source of money for health bills and its impact on willingness to pay for health insurance provide valuable understandings into the financial dynamics influencing participation in health insurance schemes. Respondents whose source of money for health bills was borrowed, compared to those who used their own funds, experienced a significantly reduced predicted probability of willingness to pay for health insurance.

Specifically, the predicted probability was reduced by 0.420 units (or 42.0%) with a p-value of 0.027 while holding all other variables in the model at their means. This suggests that individuals who rely on borrowed funds for health bills are less likely to express willingness to pay for health insurance compared to those who use their own money. The significant reduction in predicted probability for participants relying on borrowed funds highlights the financial strain or uncertainty associated with borrowing money. This may lead to a reluctance or inability to allocate additional funds towards health insurance. Equally, individuals who use their own funds may have greater financial stability and control over their resources, making it easier for them to consider health insurance as a viable investment for future healthcare needs. The statistically significant p-value indicates that the observed association between the source of money and willingness to pay for health insurance is unlikely to be due to random chance, lending credibility to the findings. These findings underscore the importance of financial stability and security in shaping individuals' decisions regarding health insurance participation. Policymakers and stakeholders may need to consider targeted interventions to address financial barriers, such as providing financial education, promoting savings schemes, or offering subsidies for individuals with limited financial resources. Efforts to improve financial literacy and access to affordable financing options may help mitigate the impact of financial constraints on health insurance enrolment and enhance overall healthcare coverage.

The findings regarding respondents' previous experiences with illness and its impact on willingness to pay for health insurance reveal important insights into the role of health-related experiences in shaping attitudes towards healthcare coverage. Participants who had fallen sick before or had a relative who had fallen sick before, compared to those who had not experienced illness, demonstrated an increased predicted probability of willingness to pay for health insurance. Specifically, the predicted probability increased by 0.204 units (or 20.4%) with a p-value of 0.002, holding all other variables in the model at their means. This finding suggests that individuals who have personally experienced illness or have witnessed illness within their families are more likely to recognize the importance of health insurance as a means of mitigating financial risks associated with healthcare expenses. Previous illness experiences may serve as a wake-up call or a first-hand realization of the potential financial burdens and uncertainties associated with healthcare needs, thereby motivating individuals to prioritize health insurance coverage. The statistically significant p-value indicates that the observed association between previous illness experience and willingness to pay for health insurance is unlikely to be due to random chance, lending credibility to the findings. These findings highlight the potential effectiveness of health education and awareness campaigns in promoting health insurance enrolment, particularly

among individuals who have had first-hand experiences with illness. Targeted messaging that emphasizes the financial protection and peace of mind provided by health insurance may resonate strongly with individuals who have faced healthcare-related financial challenges in the past. Efforts to incorporate personal narratives and testimonials from individuals who have benefited from health insurance coverage may further enhance the persuasive appeal of such campaigns and encourage greater participation in health insurance schemes.

The finding that participants who expressed willingness to enrol for health insurance were significantly more willing to pay for health insurance reinforces the importance of attitudes and intentions in shaping behaviour. Participants who indicated willingness to enrol for health insurance demonstrated a significantly higher predicted probability of willingness to pay for health insurance compared to those who were not willing to enrol. Specifically, the predicted probability increased by 0.954 units (or 95.4%) with a p-value less than 0.001, holding all other variables in the model at their means. This finding underscores the strong association between willingness to enrol and willingness to pay for health insurance, indicating that individuals who express intent to enrol are more likely to understand the value and importance of health insurance coverage. The high increase in predicted probability suggests that willingness to enrol serves as a strong predictor of actual behaviour regarding financial contributions towards health insurance premiums. The highly significant p-value (less than 0.001) indicates a robust association between willingness to enrol and willingness to pay for health insurance, strengthening the credibility of the findings.

Finally, these findings highlight the importance of targeting interventions and communication strategies towards promoting willingness to pay for health insurance scheme. Efforts to increase awareness, address misconceptions, and emphasize the benefits of health insurance coverage may help foster positive attitudes towards enrolment, consequently increasing willingness to pay for premiums. Providing clear and accessible information about the enrolment process, coverage options, and associated costs may further enhance individuals' confidence and readiness to enrol in health insurance programs.

Discussion

National Health Insurance Scheme knowledge and Awareness

The study's findings regarding respondents' knowledge and awareness on NHIMA products emphasize the critical importance of awareness and knowledge levels in the success of the mandatory health insurance scheme in Zambia. The fact that respondents heard about National Health Insurance and NHIMA from healthcare providers shows the fundamental role that healthcare workers play in spreading information about NHIMA products and services. Healthcare workers aid as reliable

source of information for those seeking guidance on health insurance related matters, making them influential in the promotion of awareness and knowledge levels of health insurance products and services. Awareness and knowledge levels of NHIMA services is a significant demand side factor that many studies have emphasized for the well-functioning health insurance scheme which is more sustainable. (Acharya *et al.*, 2012; Acharya *et al.*, 2019) noted that knowledge and awareness on health insurance schemes through innovative concepts helps many people to understand the benefits of health insurance and dismiss irrational views associated with the health insurance concepts which will eventually aid acceptance and willingness to pay.

Therefore, awareness campaigns and educational initiatives are necessary for growing understanding of the benefits, coverage options, registration processes, and privileges and errands linked to health insurance. By enabling people with precise and all-inclusive information, they are well prepared to make informed choices about their healthcare requirements and financial protection. Studies done by (Acharya *et al.*, 2012; Dror *et al.*, 2016; Miti *et al.*, 2020) noted that knowledge and awareness about products and services on the scheme influenced positively the willingness to pay and enrolment in the health insurance scheme. The findings also do speak to the study done in Northwest Nigeria by (Nnamuchi *et al.*, 2019; Khan *et al.*, 2020; Akwaowo *et al.*, 2021), which showed that individuals heard about health insurance but they were not aware what products and services which were on offer under health insurance schemes.

Despite receiving information about health insurance, the majority of respondents in the study rated the information as minimal for making an informed decision regarding health insurance. This indicates a gap in the value, completeness, or accessibility of the information provided by NHIMA and its accredited facilities. Inadequate information may delay persons' ability to completely understand the benefits, coverage choices, and registration processes associated with health insurance, eventually impacting their willingness to contribute. The study's findings suggest a lack of active social mobilization efforts by NHIMA and the accredited facilities in spreading information about health insurance. (Jofre-Bonet & Kamara, 2018; Dartanto *et al.*, 2020) seconded in their studies by stating that social mobilization plays a critical role in rising awareness, creating interest, and inspiring vigorous contribution in health insurance programs. Therefore, without enough mobilization efforts, individuals from the informal sector may remain uninformed or unaware about the availability and importance of health insurance, leading to low willingness to pay and limited coverage among the informal sector workers.

The study's reference to risk aversion theory (expected utility) supports the notion that individuals tend to pursue insurance coverage as a means of mitigating risks and uncertainties. Heightened awareness and knowledge of

health insurance can intensify individuals' risk aversion tendencies, leading to increased demand for health insurance contributions as a form of financial protection against unforeseen illnesses. As noted by (Oktora, 2018; Dartanto *et al.*, 2020), addressing the lack of social mobilization and improving the quality and availability of information about health insurance are vital steps in improving awareness, knowledge, and ultimately, willingness to pay for health insurance. More effective communication strategies, targeted outreach efforts, and educational initiatives are important for permitting informal workers to make informed choices and contribute actively in health insurance programs, thereby encouraging equal access to healthcare and provide financial security for all.

In conclusion on knowledge and awareness, knowledge and awareness levels of NHIMA services represent key demand-side aspects that influence individuals' willingness to pay and actively participate in health insurance programs. Addressing these aspects requires concerted efforts from policymakers, healthcare workers, community traditional leaders as well as other stakeholders to develop operative communication approaches, increase access to information, and boost overall awareness and understanding of health insurance among the informal sector workers. Addressing the gap in awareness and knowledge levels of NHIMA services is essential for promoting the participation in health insurance scheme, ultimately contributing to improved access to quality healthcare and financial protection for individuals and families without putting them in catastrophic spending.

Willingness to Pay and Amounts Willing to Pay for the Health Insurance Scheme

The findings indicated that the majority of respondents (77.60%) were willing to pay for health insurance, with a mean amount of K28 (\$1.50). This highlights the importance of setting premiums that are affordable and reflective of the financial capacities of the target population, particularly informal sector workers. This speaks to other studies that have shown high levels of willingness to pay for health insurance among the informal sector include the study done in the Caribbean which reviewed that about 69.5% of the respondents were willing to be part of the NHI and while in Bangladesh and Ethiopia 86.7% and 76.4% were willing to be part of the health insurance schemes respectively which generally indicated that people are willing to accept health insurance scheme (Mebratie *et al.*, 2015; Minyihun *et al.*, 2019). The mean amount of K24 (\$1.50) reflects the average level of financial commitment that respondents are willing to make towards health insurance premiums which is below the set premium by NHIMA but serves as a benchmark for NHIMA and policymakers to consider when designing premium structures that are affordable and accessible to informal sector workers and other vulnerable populations. The findings were similar to the study done in Kenya which reported that informal sector

workers were only willing to pay a maximum amount of KS 300 (\$3) per month as a premium rather than what the insurance authority had set KS500 (\$5) (Barasa *et al.*, 2017b). Contrary to these findings, a study done in South Sudan among 381 randomly selected respondents found that 68% of the informal sector workers were willing to pay more for health insurance than what the authority had set as a premium (Robert Basaza *et al.*, 2017; Basaza *et al.*, 2019).

Additionally, the qualitative findings revealing a range of willingness to pay amounts from K20 to K30 further emphasize the variability in individuals' financial capabilities and preferences. This underscores the need for flexibility in premium structures to accommodate diverse income levels and affordability thresholds within the target population. Therefore, NHIMA and policymakers should carefully consider revisiting premium structures for health insurance schemes targeting informal workers. Setting premiums that align with the mean amount of willingness to pay, while also offering flexibility and affordability options, can enhance enrolment rates and ensure broader coverage within the informal sector. As the studies done by (Miti *et al.*, 2020; Alharbi, 2022) reviewed that access to affordable health insurance premiums is essential for promoting financial inclusion and reducing barriers to healthcare access among vulnerable populations. Therefore, by adjusting premium structures or categories to better suit the financial realities of informal workers, NHIMA can contribute to advancing universal health coverage and promoting equity in healthcare access.

In as much as we can have policy questions on how/ or if the willingness to pay can sustain the insurance scheme, however, the amounts which the premiums set by NHIMA are higher than what respondents from the informal sector were willing to pay. The idea of making contributions as a fraction is something that needs to be explored as it would make individuals pay according to their income and ability to pay and it can lead to more equitable figure as compared to just having a flat figure for all persons in the informal sectors. Most respondents in the study had access to public health facilities which agrees with (Masiye & Kaonga, 2016) who noted the high utilization of free public health services in Zambia.

Finally, respondents gave varying reasons as to why they were willing or not willing to pay for NHIMA. Some of the reasons given for willingness to contribute included protecting the family from unforeseen health bills, improve availability of drugs, to avoid selling households goods for health bills and the findings speaks to some of the findings in the study by (Ogundeyi *et al.*, 2019; Khan *et al.*, 2020) which showed that females and larger families were more willing to pay due to various reasons which included financial protection and affordability of service during illness, which represents the gains of contributing towards health insurance as compared to not contributing. Reasons for not willing to pay included respondents felt that it was government duty to provide free basic

services, others stated they could not afford, others noted lack of medicines in health facilities regardless of tax contribution made, and others thought NHIMA was only for those who work in government.

Therefore, the study's findings underscore the importance of revisiting premium structures to better align with the financial capacities and preferences of informal sector workers. By ensuring affordability and flexibility in premium options, NHIMA can enhance participation and uptake of health insurance among this population, ultimately contributing to improved access to healthcare and financial protection for all.

Factors Influencing Willingness to Pay for the Health Insurance Scheme

The study's findings regarding the significant influence of various factors on willingness to pay for health insurance provide valuable insights into the determinants of participation in health insurance schemes. The study found that age significantly influenced willingness to pay for health insurance. Older participants were more likely to express willingness to contribute financially towards health insurance premiums compared to younger individuals. This suggests that as individual's age, they may become more cognizant of the importance of health insurance as a means of financial protection against healthcare expenses. Similar to these findings, a study conducted in Sierra Leone and Iran showed that willingness to pay for health insurance scheme was mainly influenced by the income of the respondent, marital status, the family member fell sick before as well as the age of the respondent (Jofre-Bonet & Kamara, 2018; Adhikari & Gahatraj, 2020).

Marital status emerged as a significant predictor of willingness to pay for health insurance. Married individuals were less likely to express willingness to pay for health insurance scheme compared to those who had never been married. This finding may reflect differences in financial priorities and decision-making dynamics within married households, contrary to our study findings studies done by (Amu *et al.*, 2021; Negera & Abdisa, 2022) have shown that married were more likely to express willingness to pay for health insurance with reasons of protecting the children from unforeseen illness.

Additionally, Income levels were found to significantly influence willingness to pay for health insurance. Participants with higher income levels demonstrated a greater willingness to contribute financially towards health insurance premiums compared to those with lower incomes. A study by (ARCHFORD, 2020) speaks to the findings in this study who noted a positive influence on monthly household income and willingness to pay for health insurance and (Oktora, 2018) carried out a study on willingness to pay for national health insurance among motorcycle taxi drivers in Depok City and the study showed an association between one's income and the willingness to pay for NHI. This underscores the importance of affordability and financial capacity in

shaping individuals' decisions regarding health insurance participation.

Another factor of interest is the source of funds for health bills which emerged as a significant factor influencing willingness to pay for health insurance. Participants who relied on their own funds for health expenses were more willing to contribute towards health insurance premiums compared to those who borrowed money for health bills. This suggests that financial stability and control over resources play a key role in shaping attitudes towards health insurance. Previous experiences of illness, either personally or within the family, significantly influenced willingness to pay for health insurance. Participants who had experienced illness themselves or had a family member fall ill were more likely to express willingness to contribute towards health insurance premiums. This underscores the role of personal experiences in shaping perceptions of risk and the importance of financial protection.

Furthermore, respondents who had fallen ill or their family member fall sick before, versus those who felt that they had not had any family member fall sick before had an increased predicted probability of willingness to pay and this speaks to the study done by (Donfouet *et al.*, 2011; Usman & Bukola, 2013), findings showed an association between those who had fallen sick or their family member fallen sick and the willingness to pay, in that respondent who had fallen sick or their family member fallen sick before were more likely to contribute and pay for health insurance as compared to those who did not have any family member fallen sick, same with a study done in Nigeria, Cameroon and India reviewed that households with more sick family members were more willing to contribute for health insurance as compared to the other group (Donfouet *et al.*, 2011).

In as much as the willingness to enrol not considered as an issue on willingness to pay, it was one of the significant factors added in model in that respondent who were willing to pay and register for NHIMA immediately during interviews. Most studies have not explored this factor of respondent willingness to enrol immediately. This study showed that participants' willingness to enrol in health insurance was found to significantly influence their willingness to pay for health insurance. Those who expressed intent to pay were certainly willing to contribute financially towards premiums compared to those who were not willing to enrol and needed to have more information on health insurance before making any decision or commitment. This highlights the strong association between enrolment intentions and actual behaviour regarding health insurance participation.

Overall, these findings highlight a complex nature of factors influencing willingness to pay for health insurance, including demographic characteristics, financial considerations, previous experiences with unforeseen illness, and attitudes towards willingness to contribute for health insurance. Understanding these determinants is essential for designing targeted interventions and policies

to promote greater participation and uptake of health insurance schemes among diverse populations.

Age, marital status, income, source of money for health bills, previous experiences of illness, and willingness to enrol were identified as significant factors influencing willingness to pay for health insurance among informal workers. These findings underscore the importance of demographic characteristics, financial considerations, and attitudes towards enrolment in shaping individuals' decisions regarding health insurance participation.

While other studies (Ogundeji *et al.*, 2019; Khan *et al.*, 2020) have shown gender to be an influencing factor, this study did not find gender significant. Nevertheless, gender, perceived quality of health services, availability of medicines, source of information, perceived rate of information received, and perceived benefits of national health insurance did not have a significant influence on willingness to pay for health insurance among informal workers. While these factors may still play a role in shaping perceptions and attitudes towards health insurance, their non-significance in this study suggests that other factors may have a stronger impact on willingness to contribute financially towards health insurance premiums. The non-significant influences identified in the study, such as gender and perceived quality of health services, highlight the need for further exploration and understanding of the complex dynamics shaping health insurance participation among informal workers. Additional research could delve deeper into these factors to uncover potential nuances and variations within the population, thereby informing targeted interventions and policy adjustments to address specific barriers and facilitators to health insurance enrolment.

The findings underscore the importance of revising health insurance premiums based on income and locality to ensure affordability and accessibility for informal workers. Policy adjustments should take into account the significant influences identified in the study, including age, marital status, and income levels, to tailor premium structures that are responsive to the financial capacities and preferences of the target population. Ultimately, the goal is to ensure that every member of the informal sector has equitable access to affordable healthcare without facing catastrophic spending. By addressing the factors influencing willingness to pay for health insurance and revising premium structures accordingly, policymakers can work towards achieving this objective and promoting universal health coverage among informal workers.

Strength and Limitation

Qualitative research brings depth and richness to the study's findings by delving into complex social phenomena and offering detailed insights into respondents' perspectives, experiences, and behaviours, particularly through methods like in-depth interviews. This approach allows researchers to explore nuanced aspects of the research topic, such as attitudes and motivations, which quantitative methods may overlook. The flexibility of qualitative research in data collection and analysis enables

researchers to adapt to emerging insights, enriching the study's depth and breadth. However, qualitative research also has its limitations, notably in terms of validity and reliability. Ensuring the accuracy and credibility of findings can be challenging due to the subjective nature of data collection and interpretation. Strategies like triangulation and member checking are used to address validity concerns, yet achieving high levels of validity remains a challenge. Additionally, establishing reliability in qualitative research is complex due to the dynamic nature of human experiences and interpretive data analysis. Small sample sizes and purposive sampling techniques further limit the generalizability of findings (Brink, 1993; Golafshani, 2003).

Acknowledging these limitations is essential for interpreting the study's findings and drawing implications for policy and future research. While the study's insights are valuable for the expansion of Zambia's National Health Insurance program among informal sector workers, caution is needed in extrapolating findings beyond the study context. Policymakers can use the study's findings to tailor strategies and interventions to address specific barriers to health insurance participation among informal sector workers.

Moreover, the study's use of the contingent valuation approach to measure willingness to pay for health insurance may have limitations due to individuals' difficulty in assigning a monetary value to non-market services. Future research could explore alternative methodologies or refine the contingent valuation approach to improve validity and reliability.

In conclusion, while qualitative research has its limitations, it offers valuable insights and serves as a foundation for future research and policy development aimed at expanding health insurance coverage among informal sector workers in Zambia. By addressing identified challenges and building on the study's findings, policymakers can strive towards achieving universal health coverage and improving healthcare access for all segments of the population.

The sampling process aimed to strengthen the study's internal validity by mitigating biases and ensuring a representative sample. However, it's vital to recognize limitations concerning external validity, which refers to the extent findings can be generalized beyond the study's scope. The study's focus on Kazungula District, Southern Province, Zambia, with its unique socio-economic and cultural traits, may hinder generalizability to other regions or countries.

Additionally, reliance on a convenience sample of household heads within the informal sector introduces biases and limits generalizability to other demographic groups or sectors. Regional disparities in socio-economic conditions and healthcare infrastructure further impede generalizability. Acknowledging these limitations is vital for accurately interpreting the study's findings and guiding policy and future research. While the insights are valuable for Kazungula District, caution is warranted

when extrapolating to broader populations or contexts.

RECOMMENDATIONS

Recommendations from this study findings are around addressing key areas for improving awareness, accessibility, and sustainability of health insurance among informal sector workers in Zambia. These include;

1. **Sensitization Campaigns-** Mass sensitization campaigns led by the Ministry of Health and NHIMA, directing at the informal workers countrywide, can considerably expand awareness and knowledge on the benefits of health insurance. There is need to bring together relevant stakeholders and associations, these campaigns can effectively reach and engage the informal workers, nurturing trust and assurance in the health insurance scheme.

2. **Premiums-** NHIMA, together with other stakeholders, should review health insurance premiums for informal workers to ensure affordability and alignment with the person's willingness to pay based on their income and vicinity. Adjusting premiums to match the financial abilities of informal workers can enhance willingness to pay and promote equitable access to health insurance coverage.

3. **Service Delegation-** the Ministry of Health should provide policy guide through NHIMA on entrusting certain healthcare services to Zonal Health Centres and Mini Hospitals. This will align with the goals of universal health coverage by improving accessibility and convenience for informal workers, enhancing their utilization of health insurance benefits once they subscribe.

4. **Health in every Tax-** Exploring the concept of allocating a percentage of tax revenue on selected products towards NHIMA can provide sustainable funding for the scheme. This approach not only improves service delivery but also fosters a sense of collective responsibility and investment in healthcare among taxpayers.

5. **Tailored Packages for Informal workers-** NHIMA, in consultation with other stakeholders, should explore the splitting up of informal workers into categories and design tailored health insurance packages for each category. By addressing the various needs and inclinations of different groups within the informal sector, NHIMA can enhance enrolment and coverage rates.

6. **Mobile Money Payment Deductions-** Establishing a mandatory monthly deduction system via mobile money, can rationalize payments for NHIMA among members. This convenient payment method aligns with respondents' preferences and guarantees timely and consistent contributions from informal workers, enhancing the sustainability of the health insurance scheme.

CONCLUSION

The study revealed that 77.6% of informal sector workers in Kazungula were willing to pay for national

health insurance, though the mean contribution (K28.4) was below the premium required by NHIMA. This indicates strong potential for expanding coverage but also highlights the need to address affordability.

Key factors influencing willingness to pay included age, marital status, income level, source of medical expenses, past illness experiences, and willingness to enroll. While awareness was generally high, many respondents felt inadequately informed about NHIMA's products and services, showing the importance of targeted communication and engagement strategies.

The study recommends further research on the quality of NHIMA-accredited healthcare services and on socio-cultural factors shaping willingness to pay. Strengthening locally driven financing systems and community participation can promote ownership, equity, and sustainability in Zambia's health insurance programs.

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