

Awareness, Uptake and factors associated with NHIF uptake in Western Kenya: A case of 4 counties - Busia, Trans Nzoia, Vihiga and Siaya

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Abstract

Background

Kenya is in the process of implementing universal health care whose success and sustainability will be determined by its funding mechanism and by uptake of National Hospital Insurance Fund (NHIF) by its populace. Unfortunately, NHIF enrollment is currently voluntary hence geared to those in formal employment who represent only 16.4% of the population. To improve the voluntary uptake of the scheme, it is important to have increased awareness as well as implement strategies that address factors that currently affect NHIF uptake.

Methods

This was a cross sectional community-based survey conducted in Busia, Trans Nzoia, Vihiga and Siaya counties between October and December 2018. It utilized multistage stratified sampling technique. Interviewer assisted questionnaires were used to collect socio-demographic, socio-economic, Non-Communicable Diseases (NCD) knowledge, NHIF awareness and uptake data. Descriptive statistical analysis and multiple logistic regression were conducted using STATA version 15.

Results

Out of a representative sample of 3597 participants interviewed, NHIF awareness was noted to be 81.5%, with low uptake in the four counties ranging between 21–25%. Being older than 69 years, having a low level of education and income status as well as lower health risk were significantly associated with low rates of NHIF uptake.

Conclusion

Despite high rates of NHIF awareness noted in this study, there is still very low uptake to this scheme in rural western Kenya especially among those with low socioeconomic status and risk of chronic illnesses. There is need for further qualitative studies to explore contextual factors affecting NHIF uptake.

Introduction

Social health insurance (SHI) is a key strategy for achieving universal health coverage through provision of financial protection. It is actualized by having populations mandated to enroll and remit premiums for health insurance (1). The funds are pooled and used to offer health services to enrollees when they are unwell. By pooling funds, a SHI program allows a country to care for its citizens equitably. Different countries journey differently in the implementation of SHI ranging from initial mandatory enrollment for

those in formal employment, with progressive inclusion of those in the informal sector, to allow eventually coverage of the whole population with subsidization of certain disadvantaged groups (2).

Most Low- and middle-income-countries (LMICs) such as Kenya; have previously relied on tax revenues to partially finance healthcare, and out of pocket spending to meet the balance. This has led to under financing of healthcare, over-reliance on donor funding and largely inequitable health services provision. Majority of health expenditure in LMICs is borne through out-of-pocket payment leading to an inequitable and inefficient health financing (3). Out of pocket expenditure on health care absorbs household's financial resources hence increasing the incidence of catastrophic expenditure (4). Global estimates indicate that every year, nearly 150 million people experience catastrophic health expenditure (5). Universal Health Coverage (UHC) is one of the strategies by the World Health Organisation (WHO) for responding to catastrophic healthcare expenditure (6).

To address this inequity, there has been a move to SHI aimed at UHC. Many African countries introduced Community based health insurance (CBHI) which are voluntary and organized within community units. Unfortunately systematic review assessing rates of enrollment in CBHI in Africa found that only 2 million people out of the total population of 900 million (0.2%) were enrolled in CBHIs (7).

Uptake of SHI in different African countries has been variable with a pilot SHI project in Ethiopia having reached 48% enrollment within 1 year of initiation, while a study in Nigeria revealed much poorer uptake at 4.5% (8).

The initial step towards UHC in Kenya was the introduction of mandatory health insurance enrollment into the National Hospital Insurance Fund (NHIF) for those in formal employment and voluntary health insurance for those in the informal sector. The country then embarked on subsidized enrollment for all elderly and disabled persons leading to an increase in the overall NHIF uptake (7.7mil 2017/2018 to 8.5mil 2018/2019). These efforts have also born fruit in growth of the informal sector membership by 12.7% compared to 8.7% in the formal sector in 2018/2019 (9, 10).

Despite these gains the country's enrollment rates have remained skewed to the formal sector with NHIF uptake in Nairobi slums described to be as low as < 10 % (11). Kenya is in the process of implementing universal health care whose sustainability will be determined by its funding mechanism and by the growth of NHIF. Unfortunately, NHIF is currently only mandatory for those in formal employment yet a staggering 83.4% of the productive population works in the informal sector (12). For voluntary uptake of NHIF to reach desired levels, awareness of the existence of the scheme, its cost, and its benefits in the population is imperative. Additionally, it is critical that there is a good understanding of factors affecting NHIF uptake so that these can be adequately addressed. There are several factors that have been shown to affect the uptake of insurance in many countries.

Income

Income is the most important determinant of social and economic health, it also determines overall living conditions, psychological functioning and influences health related behavior such as food security, housing, participation in cultural activities and all these leads to effects on one's health and lessen the ability for one to live a fulfilling life (13). Household income in both developing and developed countries determines the amount of health insurance to be purchased. One of the major barriers to access health services is financial constraints. Approximately 1.3 billion worldwide are poor and cannot afford to access health services (14). The activities in the informal sector are linked with inadequate income maintenance and income generating activities which in turn leads to high level of poverty, and poor accessibility to healthcare services.

Education Level

According to studies by (15) suggested that health Insurance is a complex product to its consumers. People with little knowledge and understanding on universal health care have low use of health insurance (16). For health insurance uptake to improve then people should be well informed on the same hence literacy in the health systems of a country should be undertaken.

Health status

Health status determines the uptake of health Insurance for example when one member of the household is chronically ill the family will opt for a health insurance based on probability of future health events or the number of children that one has (17) In Rwanda, one study indicated that large household of more than five members of the family had a greater probability of enrolling with health insurance (18).

Other demographic factors that have been associated with health insurance uptake in some studies include, age, gender and marital status.

Some studies have shown that high age groups had a higher probability of enrolling into a health insurance than the lower age group because the aged were able to understand their health risks (19). The contrary has also been described whereby the older population have less income and hence are unable to take up health insurance (20).

The association of gender with health insurance uptake has been very variable with some studies showing that women purchase health Insurance more frequently than men (11, 21) while others showed the contrary where women do not make decisions on health insurance enrollment but men do (22).

For marital status, some of the studies have shown that those who are married are likely to enroll in NHIF because of the financial support they have from their partners and for singles register low enrollment on NHIF (23).

There is a need to improve health service delivery and financing yet there is paucity of data on NHIF awareness uptake and factors affecting its uptake in western Kenya. We set out to fill this gap.

Methods

Study setting

Academic Model Providing Access To Healthcare (AMPATH) was established in Kenya in 2001, and has developed an HIV care system in Western Kenya that serves over 100,000 patients.(18) Building upon this foundation, AMPATH has expanded its clinical scope of work in several counties in western Kenya, to address comprehensive primary care, including Non communicable diseases.(19) This study was conducted in two AMPATH supported counties Busia and Trans Nzoia, and two non-AMPATH supported counties, Vihiga and siaya.

Study design

A cross-sectional survey was conducted. Multistage stratified sampling technique was used. Stratification was done by link facility, Community unit (CU), village, age and gender. The sampling frame was based on the list of facilities from the country's master Facility list, their catchment CUs, and their villages.

The cross-sectional survey was carried out from October 2018 to December 2018 by 10 research assistants. The assistants underwent a 5-day study specific training conducted by the research team. The training involved understanding the content of the questionnaires, the written informed consenting process and data transmission. As part of the training, they pre-tested the tools in Turbo sub-county, Uasin Gishu County.

Prior to data collection reconnaissance meetings were held in all the four counties to introduce the study and the team to the County Health officials as well as the facilities that were involved in the study.

Community health volunteers, Chiefs, and village elders mobilized the community members for the study prior to the data collection process. The interviews were conducted in the homesteads at the convenience of the participants.

Study population

The study targeted all adults aged above 18 years who gave written informed consent and were residing within the four counties. We excluded persons who could not withstand a one hour interview due to illness or very advanced old age >90 years.

Study procedure

An interviewer assisted questionnaire was used to collect socio-demographic, socio-economic, NCD knowledge, NHIF awareness and uptake data. The questionnaire was developed in both English and Kiswahili language allowing the research assistant to use either depending on the interviewee's preference.

Data management and Analysis

Data was collected using an electronic record system and transferred to a REDCap system. Data were cleaned and exported to STATA version 15 for analysis that involved descriptive statistics to describe the NHIF uptake. Bivariate analysis was carried out using Chi square test to assess the association between socio demographic characteristics and NHIF awareness and uptake. Derived variable: Health risk. One was considered high risk if they had been told by a doctor that they suffered from at least one of the following ailments, Diabetes, hypertension, stroke, Myocardial infarction, poor blood pressure, heart failure, kidney disease, following cancers; cervical, esophagus, breast, prostate or any other ailment. Low risk participants were those who had none of the mentioned diseases.

Multivariate logistic regression model to adjust for confounding was used to identify cross sectional predictive factors associated with NHIF uptake and awareness. In all analysis a p-value less than 0.05 was considered to be significant.

Ethical considerations

The proposal was approved by the MTRH/Moi University Institutional Research and Ethics Committee (approval number 0002090), and National Commission for Science, Technology and Innovation (NACOSTI) (approval number NACOSTI/P/18/74238/24329) and the respective four County Health Management Teams (CHMTs). A written informed consent was obtained from all participants enrolled in the study who accepted to participate. Illiterate eligible women had their thumb prints taken and the process was witnessed by an independent adult. The IREC guidelines on confidentiality on research among vulnerable groups were followed. Data confidentiality was ensured by password protecting the computer.

Results

A total of 3597 people were interviewed in the four counties, of whom 51.6% were women. The average age of the participants was 43.85(\pm 15.92) years with the highest proportion being those aged 30–44 years. Secondary level of education and above was noted in 36.7% of participants, while 23.3% had completed primary education and only 8.1% had no formal education (Table 1).

Table 1
Participant characteristics across counties

Variable	Busia (N = 901)	Siaya (N = 896)	Trans-Nzoia (N = 899)	Vihiga (N = 901)	Total (N = 3597)
Gender					
Men	447 (49.6%)	456 (50.9%)	441 (49.1%)	398 (44.2%)	1742 (48.4%)
Women	454 (50.4%)	440 (49.1%)	458 (50.9%)	503 (55.8%)	1855 (51.6%)
Age in years					
Mean (SD)	43.26 (16.56)	40.75 (14.79)	47.30 (16.89)	44.11 (14.62)	43.86 (15.92)
Age group					
18–29	221 (24.5%)	264 (29.5%)	170 (18.9%)	190 (21.1%)	845 (23.5%)
30–44	299 (33.2%)	281 (31.4%)	258 (28.7%)	258 (28.6%)	1096 (30.5%)
45–59	225 (25.0%)	225 (25.1%)	255 (28.4%)	278 (30.9%)	983 (27.3%)
60–69	91 (10.1%)	124 (13.8%)	116 (12.9%)	175 (19.4%)	506 (14.1%)
≥70	65 (7.2%)	2 (0.2%)	100 (11.1%)	0 (0.0%)	167 (4.6%)
Education					
No formal	80 (8.9%)	47 (5.2%)	111 (12.3%)	52 (5.8%)	290 (8.1%)
Incomplete Primary	317 (35.2%)	259 (28.9%)	351 (39.0%)	223 (24.8%)	1150 (32.0%)
Complete Primary	148 (16.4%)	278 (31.0%)	165 (18.4%)	247 (27.4%)	838 (23.3%)
Secondary & above	356 (39.5%)	312 (34.8%)	272 (30.3%)	379 (42.1%)	1319 (36.7%)

This study reports a high (81.5%) overall NHIF awareness among the study participants with the highest level of awareness seen among participants aged 30-44years. Notably, the levels of awareness declined with advancement in age. Awareness levels were also higher among those who were married and with a higher level of education. Despite the high level of NHIF awareness recorded, its uptake was poor across the four counties ranging between 21% and 25%. There was a statistically significant association

between age, marital status, income, level of education and health risk with NHIF uptake. However, there was neither a statistically significant association between NHIF uptake and gender, nor a significant difference in the level of uptake by county. The uptake of NHIF increased with advancing age, from 18–29 years (12.7%) to 70 years and above (28.2%). The uptake of NHIF was significantly higher among those with increasing level of education and also having a high health risk (32.4%) compared to those with low health risks at 19.4% (Table 2).

Table 2
Prevalence of NHIF awareness across sex, age group, education and counties

Variable	Awareness		p value	Uptake		p value
	Aware (N = 2900)	Unaware (N = 657)		Yes (N = 643)	No (N = 2257)	
Gender			0.005			0.77
Men	1442 (83.4)	287 (16.6)		323 (22.4)	1119 (77.6)	
Women	1458 (79.8)	370 (20.2)		320 (21.9)	1138 (78.1)	
Age Group			< 0.001			< 0.001
18–29	686 (82)	151 (18)		87 (12.7)	599 (87.3)	
30–44	938 (86.3)	149 (13.7)		217 (23.1)	721 (76.9)	
45–59	795 (82)	175 (18)		200 (25.2)	595 (74.8)	
60–69	371 (74.3)	128 (25.7)		108 (29.1)	263 (70.9)	
≥ 70	110 (67.1)	54 (32.9)		31 (28.2)	79 (71.8)	
Marital Status			< 0.001			< 0.001
Single	666 (74.9)	223 (25.1)		113 (17)	553 (83)	
Married	2233 (83.7)	434 (16.3)		530 (75.7)	170 (24.3)	
Income			< 0.001			< 0.001
< 5,000	390 (66)	201 (34)		57 (14.6)	333 (85.4)	
5,000–10,000	197 (77)	59 (23)		49 (24.9)	148 (75.1)	
> 10,000	125 (96.2)	5 (3.8)		50 (40)	75 (60)	
Education			< 0.001			< 0.001
No formal	152 (53.3)	133 (46.7)		20 (13.2)	132 (86.8)	
Incomplete Primary	849 (74.7)	287 (25.3)		105 (12.4)	744 (87.6)	
Complete Primary	677 (81.5)	154 (18.5)		117 (17.3)	560 (82.7)	
Secondary and above	1222 (93.6)	83 (6.4)		401 (32.8)	821 (67.2)	

Variable	Awareness			Uptake		
	Aware (N = 2900)	Unaware (N = 657)	p value	Yes (N = 643)	No (N = 2257)	p value
Health risk			0.047			< 0.001
Low Risk	2231 (80.8)	529 (19.2)		433 (70.8)	179 (29.2)	
High Risk	669 (83.9)	128 (16.1)		210 (31.4)	459 (68.6)	
County			< 0.001			0.251
Busia	766 (89)	95 (11)		189 (24.7)	577 (75.3)	
Siaya	651 (72.7)	245 (27.3)		138 (21.2)	513 (78.8)	
Trans-Nzoia	791 (88)	108 (12)		164 (20.7)	627 (79.3)	
Vihiga	692 (76.8)	209 (23.2)		540 (78)	152 (22)	

The multivariate analysis demonstrated no significant association between NHIF awareness and age, gender and health risk. However, participants who were married were 1.6 times more likely to be aware of NHIF compared to single participants (AOR = 1.58, 95% CI: 1.12, 2.27). The level of awareness decreased significantly with decreasing income level. Notably participants with secondary level of education were 3 times more likely to have NHIF than those with complete primary education (AOR = 2.92; 95% CI: 1.88, 4.59). There was no statistically significant association between level of uptake and gender, marital status, education level and county when education, income, age, marital status, health risk and county of origin were adjusted for. However the odds of uptake of NHIF increased with increasing age up to 69 years and then decreased for those aged 70 years and above. A statistically significant association was noted between income levels and NHIF uptake after adjustment ($p < 0.05$). Earning below Ksh. 5,000 per month was associated with a lower odds of paying NHIF, (AOR = 0.24, 95% CI: 0.14, 0.41), for instance persons earning less than 5,000 were 4 times less likely to have an active NHIF cover compared to those earning more than Ksh 10,000 per month. Those earning between 5000 and 10000 were 2 times less likely to have NHIF compared to those earning more than 10,000 (AOR = 0.41, 95% CI: 0.24, 0.71). Those at high health risk were 3 times more likely to have NHIF than those at low health risk (AOR = 3.06, 95% CI: 1.87, 5.04) adjusting for other variables.

Controlling for other variables there was no difference in the odds of uptake of NHIF between persons having no formal education, (AOR = 0.76, 95% CI: 0.23, 2.13), those with Incomplete education (AOR = 0.52, 95% CI: 0.25, 1.04) compared to those who have completed primary school education. However, there were increased odds (AOR = 2.34, 95% CI: 1.41, 3.96) of having an active NHIF cover among those who had completed secondary level of education or more compared to those with completed primary school education (Table 3).

Table 3

Multiple Logistic regressions for factors associated with NHIF awareness and uptake.

Variable	Awareness			Uptake		
	AOR	95% CI	P-value	AOR	95% CI	P-value
Gender						
Men	1			1		
Women	1.14	(0.82, 1.58)	0.45	1.13	(0.75, 1.71)	0.57
Age Group						
18–29	1			1		
30–44	1.48	(0.93, 2.36)	0.1	3.16	(1.66, 6.18)	0
45–59	1.49	(0.93, 2.39)	0.1	4.95	(2.58, 9.78)	0
60–69	1.49	(0.87, 2.59)	0.15	7.03	(3.27, 15.38)	0
≥ 70	0.28	(0.08, 0.97)	0.05	4.39	(0.49, 30.13)	0.14
Marital Status						
Single	1			1		
Married	1.58	(1.12, 2.27)	0.01	0.92	(0.56, 1.53)	0.76
Income						
> 10,000	1		0	1		
5,000–10,000	0.16	(0.05, 0.39)	0	0.41	(0.24, 0.71)	0
< 5,000	0.15	(0.05, 0.35)		0.24	(0.14, 0.41)	0
Education						
Complete Primary	1			1		
Incomplete Primary	0.52	(0.35, 0.78)	0	0.52	(0.25, 1.04)	0.07
No formal	0.15	(0.08, 0.27)	0	0.76	(0.23, 2.13)	0.61
Secondary and above	2.92	(1.88, 4.59)	0	2.34	(1.41, 3.96)	0
Health risk						
Low Risk	1			1		
High Risk	1.57	(1.0, 2.47)	0.05	3.06	(1.87, 5.04)	0
County						
Busia	1			1		

Variable	Awareness			Uptake		
	AOR	95% CI	P-value	AOR	95% CI	P-value
Siaya	0.24	(0.11, 0.48)	0	0.64	(0.34, 1.2)	0.16
Trans-Nzoia	0.43	(0.14, 1.43)	0.16	0.19	(0.02, 0.88)	0.06
Vihiga	0.18	(0.08, 0.35)	0	0.68	(0.37, 1.23)	0.19

Discussion

To the best of our knowledge this study is unique in that it is the first study on NHIF uptake and its determinants in Kenya to be done in a wide region including four different counties with a large number of participants. As such it included a very heterogeneous group of people with very good representation of both genders. Of note is the relatively young age of the interviewees which is representative of the population distribution of the four counties as per the

Kenya Population and housing census (KPHC) 2019 report (24).

Not surprisingly the study found a relatively good level of NHIF awareness amongst participants across the four counties at an average of 81.4%. This is lower than the 98% awareness reported by a study done in informal settlements in Kakamega in 2015. The Kakamega study enrolled fewer participants and a more homogenous group in that they were in informal settlements with a higher percentage of them being in some form of employment compared to our participants. Importantly, that study did dig deeper into the actual kind of knowledge participants had on NHIF and found that only 34% had the correct knowledge. It is therefore possible that despite the high rates of awareness we recorded, the actual knowledge held may not be correct (23).

Key factors associated with increased awareness in this study on multivariate analysis were younger age groups, being married, higher income level and higher health risk. Previous studies showed that most people get NHIF information from the media and hence it's not surprising that younger persons were more aware (25). Additionally, those with higher health risks are often informed about NHIF in health facilities as part of planning for their long-term management. Unfortunately, the good level of NHIF awareness did not translate to high levels of uptake. This has been shown before in several studies. In Ghana, high awareness of their national health insurance scheme was found not to translate to uptake especially for the most vulnerable groups due to lack of social support (26).

NHIF uptake in the four counties was similar, ranging from only 21-25%. This is lower than the uptake rates described in Kakamega, Muranga and amongst women in central Kenya likely because our study covered largely a peri-urban and very rural population (11,23).

Key factors associated with NHIF uptake in our study were increasing age up to age 69 years, higher education level, higher income and higher health risk. Chances of having NHIF increased with age from

age group 30-39, peaking at 60-69 then dropping likely due to loss of income. This is likely due to the fact that employment rates also increase in a similar manner and hence many of those with the cover are probably in formal employment. Indeed, there was a positive association between income level and NHIF uptake with those earning less than Ksh.5000 being 3 times less likely to take up the cover than those earning above Ksh.10000. This is in keeping with previous studies that described a clear link between income level and health insurance uptake (11,27). Having formal education beyond secondary school was associated with a 2.34 higher chance of NHIF uptake than those who had only completed primary school. Indeed, any education level below secondary school had no advantage given that those who did not complete primary school and those who never started any schooling were no different from those who completed primary school in terms of NHIF uptake.

The effects of education on health insurance uptake are in keeping with previous studies (11,27).

Our findings confirm that people are more likely to take up health insurance once they have been diagnosed with a chronic illness and hence the findings of a 3 times higher likelihood of uptake for those with high health risk as compared to low risk. This is in keeping with other studies looking at voluntary health insurance enrollment that consistently show that perceived good health negatively affects uptake (27–29).

However, one study from West Africa reported reduced willingness to pay in households that had experienced severe illness previously. This was attributed to possible negative experience with the health system which is known to reduce willingness to pay.

Study Limitations

This study did not explore in depth the actual knowledge of participants on NHIF and hence cannot conclusively delink knowledge with uptake.

Additionally, the study did not analyze for the effects of employment on NHIF uptake, yet this may be the mediator of the perceived association between education level and uptake.

An additional limitation is that this study did not include health system factors that may affect the perceptions and uptake of NHIF, yet these have been shown to markedly influence people's decisions on health insurance. Future studies should include this dimension.

Conclusions

The uptake of NHIF in rural western Kenya is very low, despite good levels of awareness and key factors associated with it are age, secondary school education, higher income status, and higher health risk. This calls for more contextualized strategies that address these factors in addressing universal coverage. Additionally, we recommend further mixed method studies that will describe the actual knowledge and perception of NHIF and assess effects of health system factors in NHIF uptake.

Abbreviations

AMPATH- Academic Model Providing Access to Healthcare

AOR- Adjusted Odds Ratio

CBHI- Community based health insurance

CHMTs-County Health Management Teams

CU-Community Units

KPHC-Kenya Population and housing census

LMIC- Low- and middle-income-countries

MTRH- Moi Teaching and Referral Hospital

NACOSTI- National Commission for Science technology and Innovation

NCD-Non-Communicable Diseases

NHIF-National Hospital Insurance Fund

SHI- Socio Health Insurance

UHC- Universal Health Coverage

Declarations

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Authors' Contributions

GWM, JHK, AWM, LL, RM, KT, TA, PI, GG, JK and WA contributed to the design, implementation, data collection, data analyses, and writing of the manuscript. GWM, WA, GG, RM and JK contributed to critically refining the article. GWM, JHK, AWM, LL, KT, TA and PI were involved in conducting the study. All authors read and approved the final manuscript.

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Availability of data and materials

The data sets used and/or analyzed during the current study can be made available by the corresponding author on request.

Ethics approval and consent to participate

The proposal was approved by the MTRH/Moi University Institutional Research and Ethics Committee (approval number 0002090), and National Commission for Science technology and Innovation (NACOSTI) (approval number NACOSTI/P/18/74238/24329) and the 4 County Health Management Teams (CHMTs). A written informed consent was obtained from all participants enrolled in the study who accepted to participate. Illiterate eligible women had their thumb prints taken and the process was witnessed by an independent adult. The IREC guidelines on confidentiality on research among vulnerable groups were followed. Data confidentiality was ensured by password protecting the computer.

Consent for publication

Not applicable

Competing interests

No competing interests to declare.

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