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Determinants of Uptake and Utilization of National Hospital Insurance Fund Medical Cover by People in the Informal Sector in Kakamega County, Kenya

Mukhwana Eugine Sundays[1,*], Ngaira J.K[2], Mutai C[3]

[1]Masinde Muliro University of Science and Technology, Kenya
[2]Department of Disaster Management and Sustainable Development., Masinde Muliro University of Science and Technology, Kenya
[3]Department of Public Health and Biomedical Sciences, Masinde Muliro University of Science and Technology, Kenya

Abstract Low and middle-income countries have extended state sponsored Social Health Insurance (SHI) to people outside the formal sector to enhance access to healthcare. However, in spite of the relatively low costs of signing up and the benefits offered by SHIs, up-take rates are very low among the informal sector populations. The objective of this study was to investigate factors affecting participation of people in the informal sector in the National Hospital Insurance Fund (NHIF) scheme in Kakamega County, Kenya. This cross-sectional study was conducted in Kakamega County in Western Kenya. The study employed a mixed methods designs approach. In the first phase of the study, 400 participants were recruited using both probability and non-probability sampling methods; 400 persons engaged in informal sector activities were recruited through random sampling. In the second phase of the study, 24 key informants and 5 groups consisting of 8-12 persons were purposively selected for in-depth interviews and Focus Group Discussions respectively. The study established that people in the informal sector with higher income (> Kshs.10, 000) are more likely to enroll (odds ratio 2.21 with 95% CI: 1.07 to 4.03) compared to those with low incomes and similarly, higher level of education was significantly associated with enrolment in NHIF scheme (odds ratio 31.07 with 95% CI: 17.19 to 87.94). Rigid scheme design features create difficulties for people in informal sector to participate. In conclusion, policy decisions should focus on interventions directed at educating poor populations, people with low educational levels and those working outside formal employments on the benefits of subscribing to the NHIF scheme in Kenya. The study recommends subsidies or waivers to increase affordability of participation in the NHIF scheme, particularly for people with low monthly incomes.

Keywords Informal Sector, Participation, National Hospital Insurance Fund Scheme, Access to Health Care, Kenya

1. Background

Access to healthcare (services of providing medical care) is still a global problem because many people cannot afford costs of health services [1]. Most households still rely on Out-of-Pocket payments for health care [2] Reliance on out-of pocket payments deters people from seeking health care when needed and those who do seek health care suffer the problem of financial impoverishment[3, 19]. Inability to access health services is prevalent in low income countries (LICs) [18,40], and is an obstacle to attainment of Millennium Development Goals (MDGs), particularly the health-related goals of reducing child mortality (MDG 4), improving maternal health (MDG 5), and combating HIV/AIDS, malaria, and other diseases (MDG 6). The World Health Organization (WHO) views medical fees as a significant obstacle to healthcare coverage and utilization, and has stated that the only way to reduce reliance on direct payments is for governments to encourage social protection using risk-pooling prepayment approach [46]. With social protection schemes such as Social Health Insurance (SHI), people can access health services based on the need and not ability to pay. SHI schemes are also emerging as a global solution for breaking the cycle of poverty and vulnerability to ill health [45].

Expanding health insurance is a strategy that countries use to alleviate the adverse health outcomes of all citizens, especially the poorest [47]. It is one of the methods that low-income countries may consider to achieve universal health coverage (UHC). UHC implies ensured access to and use of high-quality healthcare services by all citizens, especially the poor, and protection for all individuals from the catastrophic financial effects of ill health. With

encouragement from international organizations and donor governments, many developing countries have recently extended Social Health Insurance schemes (SHIs) to people outside the formal sector to remove financial barriers of access to healthcare. However, in spite of the relatively low cost of signing up and the benefits offered by SHIs, up-take rates are still very low in many developing countries especially among the poor households [3, 4].

In Kenya, the formal sector (people in permanent and pensionable government employment) are covered by the National Hospital Insurance Fund (NHIF) scheme. Contributions are normally deducted through payroll check-offs depending on one's monthly income ranging from Kshs.30 to Kshs.320 (about USD 0.33 to USD 4; 1 USD= Kshs.89, during the month of March, 2015).

The Kenya Government recently raised these monthly contributions to as much as Ksh. 3000 (USD 32). The benefits of NHIF membership include coverage of inpatient expenses (costs of bed, meals, treatment and drugs) with the share of expenses covered determined largely by the type of health facilities (Hospitals, Nursing Homes and Dispensaries). Beneficiaries of the scheme also include the contributor's dependents (the spouse and children less than 18 years of age). Persons outside the formal sector including the unemployed, retirees and people in the informal sector (these are 'semi-formal' employees such as taxi, *Matatu* and bus drivers, *Jua kali* artisans, house helps, gardeners; the 'self-employed', like farmers, fishermen, hawkers, mechanics) are allowed to join the scheme on voluntary basis by paying a monthly subscription of Ksh. 160 (about USD 2) [26].

Since the year 1998, the intention of the Government of Kenya (GOK) has been to reform and use the NHIF scheme as an avenue to attain Universal Health Coverage for the country [11]. NHIF is a pillar in major policy documents including the recent Sessional paper no. 7 of 2012 on attainment of Universal Health Coverage [10].This is because NHIF is still a more accessible medical cover offering insurance at costs that are considerably below the actuarially fair price suitable for most socioeconomic groups in the country [7]. Private health insurance is available in Kenya but predominantly accessible to the middle and higher-income groups, while, the Community Based Health Insurance (CBHI) schemes still have limited coverage countrywide [23,22].

In the year 2011 in Kenya, the NHIF scheme was opened to all other persons including the unemployed, retirees and people in the informal sector. This was a deliberate effort by the GOK to make NHIF an all-inclusive scheme, to support the health care system in reducing child mortality (MDG 4), improving maternal health (MDG 5), and combating HIV/AIDS, malaria, and other diseases (MDG 6) [29]. Although the scheme is now open to all, some eligible people are still not subscribing to the scheme, for example, the wider rural Kenya, and people in the informal sector [17]. There is no clear explanation of the reasons why so; which is a sound justification for this study.

A number of studies show that households in the informal rural sector rely on traditional coping responses such as selling assets and informal borrowing to deal with the adverse consequences of ill-health [32, 37]. This could be true for people in western Kenya. These coping responses are not cost free but entail a compromise, protecting current consumption at the cost of future vulnerability [9]. Thus, SHI becomes a viable strategy to overcome this problem. However, developing effective approaches to Universal Health Coverage for the poor and the informal sector through SHI is still a challenge, particularly in low and middle-income countries [45, 4]. Approaches based on health insurance face challenges of enrolment of a sufficient number of people into a common risk pool and in collection of contributions [5, 24]. To tackle these challenges, the Government of Kenya needs a clear understanding of factors that determine demand for health insurance among different population groups. Comprehension of determinants of informal sector participation in health insurance on labor supply situation is important since access to health services through health insurance can help reduce the expected time out-of-work as a result of illness. Moreover, it is also a concern for policy-makers because it supports the purpose of promoting equity and its welfare implications. Locally, protecting populations with the widely accessible NHIF cover provides an opportunity to plan for ill health by organizing regular payments, making health expenses predictable and affordable. Maximizing enrollment in the NHIF scheme has rippling effects of getting the citizenry (especially the rural inhabitants) by reducing out of pocket expenditure and increasing access to legitimate healthcare, thereby helping to improve people's health related quality of life and wellbeing.

Previous studies on uptake of health insurance in the NHIF scheme reported that married persons, persons with higher income and persons with higher education were more likely to own health insurance [17, 27, & 28]. People in the informal sector, unlike the very poor, have some income, although low and irregular, and can therefore, make contributions to benefit from the NHIF scheme. Given that illness and injuries are often unpredictable, people in the informal sector are usually ill prepared to meet the costs associated with health care. A report by the Kenya Household Health Expenditure and Utilization Survey -KHHEUS [12] indicated that due to lack of health insurance cover, many people suffer, and are forced either to sell assets to access health services, or forego critical health care or worse still, end up dying from treatable illnesses and injuries. This is dire vulnerability that propels the poverty sequel, increases risks of mortality for both children and adults, and impairs productivity of able populations. This study sought to look at the cause of low enrolment and participation in the NHIF scheme by the informal sector populations in Kakamega County in Western Kenya, focusing on inability and perhaps unwillingness factors.

Kakamega County is the second most densely populated County in Kenya with majority of residents deriving

livelihoods through the informal sector [14, 15]. People in the informal sector here often work in poor, sub-standard working conditions and are exposed to various hazards without proper knowledge concerning the use of personal protective equipment, and they stand a higher risk of injuries. However, little is known about social health scheme patterns of the informal sector populations in Kakamega County and even in Kenya as a whole. Results of this study thus hold a significant contribution to health insurance policy for Kenya and other low income countries (LICs). Kakamega County is an overtly rural and inhabitants of the County are mainly the Luhya ethnic group. The major economic activities in the study area include agriculture, artistry (*Jua Kali*), hawking, businesses etc. Farming of food crops is done mainly to sustain livelihoods. The major stable food crops grown are maize, beans, and cassava. Sugarcane, Tea, and Coffee are grown for commercial purposes. Residents also keep livestock including cattle, sheep, goats and local chickens [16]. The Population of Kakamega County is estimated at 1,660,651people (Male – 48%, Female – 52 %) and the Population density as 515 people per Km² [14]. There are 214 Health Facilities in Kakamega County; 1 Referral Hospital, 4 County Hospitals, 7 Sub-County Hospitals, 101 Dispensaries, 40 Health Centre's, 43 Medical Clinics, 10 Nursing Homes, 1 Maternity Home and 7 others [16]. The most prevalent diseases in the County are Malaria, Diarrhea, Skin Diseases and Respiratory tract infections [16]. The assumption of this study therefore is that people are afflicted by an array of illnesses, they have health facilities to seek health care from but lack means to a health care insurance scheme that could otherwise enhance their health statuses.

2. Materials and Methods

This was a cross sectional study with a mixed methods approach. Both Quantitative and Qualitative approaches were adopted since the nature of data required and the procedures of analysis involved integrating both qualitative and quantitative data, merging and connecting to answer the research questions [33]. The household survey generated quantitative data whereas in-depth interviews and Focus Group Discussions offered qualitative information for the study. The Quantitative approach was used to determine how certain factors influence participation of the informal sector populations in accessing health services through the NHIF scheme while the qualitative research method was used to determine factors related to enrolment into the NHIF scheme. Four research assistants were used to collect both quantitative and qualitative data. In the Household survey, respondents from the informal sector were recruited through a two stage multistage area sampling method. The study area was first stratified into Urban and Peri-Urban Sub Counties. Two Sub Counties were selected randomly from the 10 predominantly Peri-urban Sub Counties (Lugari and Shinyalu); within these Two Sub Counties, two divisions were randomly selected. Households numbering 100 were sampled randomly within each of the divisions and specifically from locations and villages. The average number of households in a location was 435 (range: 420–496). Each household was assigned a sequential number and 105 numbers were chosen using a random numbers table to achieve a sample size of 210. The Household head in selected households was then approached and interviewed using a questionnaire, about forms of informal sector engagements and enrolment status in the NHIF scheme. In situations where the Household head could not be reached (such as those who were far away from their homes), the spouse of the household head was considered as a representative and was subsequently interviewed. And in situations where the household head or their representatives were available but not present at the time of the visit by the research team, appointments were booked and two follow up visits made to meet the respondent. Using this procedure, 145 male and 55 female respondents were interviewed. In addition, 2 sub counties with large urban centres; Kakamega and Mumias were purposively selected because they host numerous informal sector activities. Cluster sampling was used to recruit 200 respondents who were also interviewed using the questionnaire.

In the second phase of the study, 24 key informants who included NHIF regional Management officers, Hospital administrators, patients in health facilities, Managers with insurance firms in the County, Community health workers and Local opinion leaders were purposively selected for in-depth interviews. Finally, 5 groups consisting of 8-12 persons from selected informal sector groups were also recruited through quota sampling for Focus Group Discussions (FGDs).

Quantitative data were analysed in SPSS version 17. The data is summarized in the form of tables showing descriptive statistics for each variable. Chi-square test and logistic regression analysis was used to assess for statistically significant associations. For the bivariate analysis, chi-square test (χ^2) was used to test the association between enrollment in the NHIF and explanatory variables. For the univariate regression analysis, the variables that were significant at $\alpha = 0.05$ were selected and included in the multivariate analysis. The multivariate logistic regression analysis was conducted to examine the determinants for participation in the National Hospital Insurance Fund Scheme program. Qualitative analysis was done using a framework approach. The interview responses were thoroughly read and searched for patterns and themes after they were transcribed in single MS Word files. . Data were then analysed manually using a meaning centered approach. The research study was approved by Kenya National Commission for Science, Technology and Innovation (NACOSTI) vide a research permit (Ref. NACOSTI/P/15/659/4522). Findings from both arms are used complementarily.

Sociobiographic Characteristics of Study Sample

Descriptive statistics of the sample population and the percentage of respondents in each category enrolled in the NHIF scheme are summarised in table 1 below;

Table 1. Descriptive statistics of the sample population

Variable	Category	Frequency	% enrolled in the NHIF scheme	χ^2	p-Value
Gender	Males	260	26%	0.239	0.063
	Females	140	6%		
Age (Completed Years)	18-25	144	2%	3.125	0.071
	26-35	140	2.8%		
	36-45	72	4%		
	46-55	36	19%		
	≥ 56	4	4.1%		
Marital Status	Married	192	46%	8.043	0.002
	Single	116	29%		
	Divorced	24	4%		
	Widowed	72	15%		
Occupation	Farmers	144	12%	7.966	0.064
	Artisans (*Jua Kali*)	72	11%		
	Taxi/Bus Drivers	72	32%		
	Mechanics	40	18%		
	Hawkers	16	9%		
	Bicycle and motor cycle riders (Boda Boda)	56	14%		
Level of Education	Below Primary school	130	13%	7.931	<0.001
	Up to Secondary school	116	11%		
	Beyond Secondary school	156	69%		
Level of income(monthly)	Up to Kshs.5000	140	18%	62.516	<0.001
	5001-10,000	144	18%		
	>10001	72	64%		
Religious Affiliation	Christians	240	21%	1.076	0.087
	Islamic	120	20.3%		
	Others	40	3%		

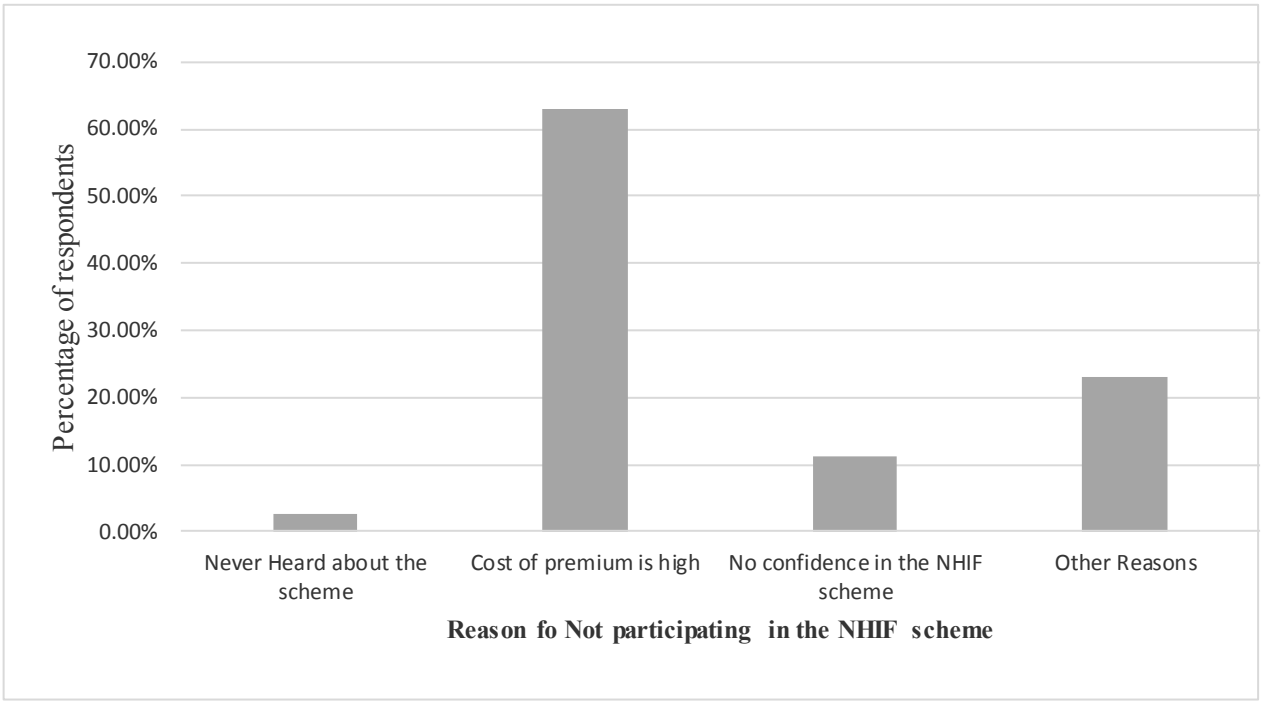

Figure 1. Reason for not participating in the NHIF scheme (N= 268)

Participation in the NHIF Scheme

Respondents were asked if they had ever heard of the NHIF scheme. Almost all (98%) the respondents had heard of the NHIF scheme; however, when the same respondents were asked if they were aware they could participate in the scheme, more than a third (34%) of the respondents thought the scheme was meant for people in permanent and pensionable employment only. Respondents who were not enrolled in the NHIF scheme were asked to give reasons for non-participation and gave the reasons as presented in figure 1 below. The main reason for non-participation in the NHIF scheme was given as the cost of premiums (63.05%). The other reasons given for non-participation include fixed timelines to make contributions and harsh penalties for late payment of premiums.

When the respondents were further asked their main source of information about the NHIF scheme, both enrolled (72%) and non-enrolled (73%) pointed to media as source.

Table 3. Frequencies of responses on main source of information about the NHIF scheme.

Main Source of Information	Enrolled (n=128)	Non Enrolled (n=272)
NHIF outreach programs	11%	15%
Media	72%	73%
Friends, Work place	12%	6%
Other sources	5%	6%
Totals	100%	100%

Table 4. Logistic regression analysis on Key variables

Determinant	Category	Frequency	% enrolled in the NHIF scheme	Adjusted odds ratio	p-Value	95% confidence interval
Marital Status	Single	116	29%	1	0.002	
	Married	192	46%	1.56		0.835-3.112
	Divorced	24	4%	1.61		0.551-2.233
	Widowed	72	15%	1.32		0.322-1.988
Level of Education	Primary school level	130	13%	1	<0.001	
	Up to Secondary school level	116	11%	1.43		0.872-1.754
	Beyond Secondary school	156	69%	31.05		18.21-89.81
Level of income(Kshs. monthly)	Up to 5000	140	18%	1	<0.001	
	5001-10,000	144	64%	2.21		1.07-4.03
	>10001	72	18%	1.31		1.06-3.67

Estimates from the logistic regression (Table 4) indicate that the level of income showed statistically significant association with enrolment in the NHIF scheme, with individuals with higher income (> Kshs.10, 000) having an odds ratio for enrolment 2.21 (95% CI: 1.07 to 4.03) compared to those with low income. The logistic regression model also shows a statistically significant association between level of education and enrolment in NHIF (odds ratio 31.05 with 95% CI: 17.19 to 87.94).

From qualitative data, we deduce that difficulties resulting from rigidities of the scheme design features affected both the supply and demand for Health Insurance. A summary of the factors that affect participation in the NHIF scheme from narratives during in-depth interviews and Focus Group Discussions is presented Table 5 below.

Table 5. Factors that affect people's participation in the NHIF scheme

Factor	Scheme design challenges	Individual challenges
Demand side factors	Inflexible modes of payment	Irregular incomes/ insecure employment
	Harsh penalties for late payment	Poor access to credit facility to meet payment schedules
	Domain of services and illness that NHIF policy covers is limited	Out of pocket expenditure on health care remains high and household expenses are strained
Supply side factors	Quality of public health facilities services covered by NHIF scheme is poor.	Poor comprehension and low financial literacy about NHIF claims and waivers
	Poor recruitment by NHIF & restriction on type of health care services for NHIF enrollees	Long distance to offices for enrolment and to NHIF accredited health facilities
	Low impression of NHIF services and poor dissemination of information on the benefits of the scheme due to poor technical assistance in insurance domain knowledge	Cumbersome procedures for enrolment and uploading of monthly contributions Poor comprehension and knowledge of the features of insurance covers and risk averseness
	Low distribution of NHIF services	Misconceptions about procedures at NHIF accredited facilities and benefits of scheme.
	Mistrust about the insurance scheme	Corruption and fraudulent claim payment to hospitals

NHIF scheme's rigid design features create difficulties which people in the informal sector have to overcome making risk pooling less attractive in the NHIF scheme. These could be the major cause of poor participation in the NHIF scheme. The scheme also appeared to suffer negative publicity due to media reports of fraud cases involving the NHIF scheme management. Penalties for late remittance of contributions appeared to be a deterrent to participation in the NHIF scheme. A member who makes payment after the prescribed deadline pays five times the required contribution, as one respondent put it;

> 'Where do you get a fine of Ksh.800 if you delay to make the required contribution of Ksh.160 on time to the NHIF scheme and yet we have no access to credit facilities?'

Many respondents felt that this requirement is punitive and does not attract people outside the formal sector to participate into the scheme. Another concern was on the procedure of using computers in cybercafés to upload payments. Most of the respondents were not ICT literate and this requirement discouraged many potential recruits. From the FGDs, it also emerged that many respondent were not sure of the NHIF accredited health facilities. Most respondents felt that there was no difference between members and non-members in terms of out of pocket medical expenditure. As one of the respondents put it;

> 'Why should I contribute money monthly to the NHIF scheme when members are also still suffering by buying drugs like nonmembers?'

This problem is compounded by the lack of certain services in certain health facilities and the non-comprehensiveness of services the scheme covers. Most respondents were also not aware of the scheme's provision of launching claims for refund of medical expenses incurred by eligible members in non-accredited health facilities.

3. Discussion

The study established that there is still low participation of people in the informal sector in the NHIF scheme. This impacts negatively on access to health care since majority have to rely on out of pocket payment for health services.The low participation of individuals in the informal sector was attributed to a number of factors, including low and non-regular incomes, insecure employment, and NHIF scheme design features including inflexible payment schedules and lack of awareness about benefits of the scheme, that are not adapted to people's needs and preferences. These study findings are similar to findings by several other studies [28, 17] which reported marital status and level of education as major determinants of ownership of health insurance in different study populations. Factors such as occupation, age and religious beliefs, appeared to have no significant statistical effect in determining enrollment of persons in the informal sector into the NHIF scheme. This finding corroborates findings of a similar study by Vellakkall in India [39]. Further data analysis revealed the likelihood for more educated people in the informal sector to enroll in the program. People in the informal sector who had beyond secondary school level of education were more than twice as likely to enroll in the NHIF scheme compared to their counterparts (about a third of the total respondents) who have up to primary school level education. Similar findings were reported by Manortey *et al* in a study of socio deterministic factors of participation in health insurance in Ghana [21].

Limited information about features of the NHIF schemes and the difficulty of making monthly contributions are major obstacles that affects NHIF enrollment for people in the informal sector and thus need to be addressed. Insufficient knowledge on the schemes' benefits among residents in the County might also have contributed significantly to the observed non-participation rate. Since the level of education attained was detected as a significant determinant of enrollment, information on the scheme has to be disseminated in ways that it reaches the less educated to ensure that they understand the benefits of participation in the NHIF scheme. Simple to use information on subscription to the NHIF in mediums such as radio announcements and, social media and Information Education and Communication (IEC) can be packaged for use to boost NHIF enrollment. Health policy decisions should therefore, focus on interventions directed generally at educating people in the informal sector on the benefits of subscribing to the NHIF scheme. Although the NHIF scheme has recently adopted the use of *MPesa* (Mobile money transfer system) to reduce costs of travel for remittance of monthly contributions to the NHIF scheme, there are still some additional costs, including costs of travel to the location of the two main NHIF offices to enroll in the scheme and to the NHIF accredited health facilities for health services, and a complication of uploading details using Information, Communication and Technology (ICT) services in Cybercafés. The inability to afford such costs deters people in the informal sector populations, especially in the rural areas from participating in the NHIF scheme.

4. Conclusions

The success of any program depends on the utilization of services and the satisfaction of the users. The study highlights some of the barriers to enrolment into the NHIF scheme. From the qualitative findings of the study, majority of the scheme users reported that the enrolment in the NHIF scheme has not really benefitted them since they still have to buy drugs and only a few health facilities are accredited. This is compounded by poor access to the scheme services and inability to timely pay for the services which in turn attracts harsh penalties. Enrollment into the NHIF scheme is thus inhibitive in Kenya. This is happening when health needs are

on the rise in the County and Country. Increased effort to expand membership is critically needed if the NHIF cover is to benefit people in the informal sector since the principle of risk pooling requires membership to guarantee adequate financial resources for purchase of health services. Since cost was found to be a major obstacle to enrollment, more effective methods for identifying poor citizens for purposes waiver and exemption is most desirable. This study has recommendations that can be used directly by NHIF in Kenya and health insurance organs in LICs. Since majority of the people in the informal sector appear to have low monthly incomes, it is necessary to consider subsidies or waivers to increase affordability of health insurance through the NHIF scheme, specifically for informal sector populations. The NHIF scheme needs also to provide more qualitative and quantitatively clear set of services and, to provide more accountability and disclosure in the use of public funds contributed to make the scheme attractive to people outside the formal sector.

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