Utilization of the National Hospital Insurance Fund in Embu County, Kenya

Oren Nyambane Ombiro[1] and Dr. George Otieno[2]
[2]Department of Health Management and Informatics,
Kenyatta University, Kenya
[1]orennyamben@gmail.com, cyrusville@hotmail.com

Abstract
Health insurance schemes have been recognized as among the major tools to finance Universal Health Coverage (UHC) and reduce catastrophic health expenditure. Despite the fact that public health insurance has been available in Kenya since 1966, the National Hospital Insurance Fund (NHIF) has 36% coverage of the population. In Embu County, catastrophic health expenditure stands at 9%, higher than the national average of 6.2%. This study sought to assess the determinants of utilization of NHIF among Embu County community members. A cross-sectional study design consisting of mixed methods of data collection i.e. quantitative (household survey) and qualitative methods was used. The study population for the household survey was community members aged 18 years and above. A sample of 306 was determined using Fisher's et al., (1998) formula. A semi-structured, paper-based questionnaire was used to collect data on the variables of interest. Interviews and Focussed Group Discussions were used to collect qualitative data. Less than half of the respondents (n=113; 40.8%) were enrolled with NHIF either as contributors or dependants, despite a vast majority (n=262; 94.6%) reporting to have ever heard of the fund. Among those enrolled with NHIF, only about a third (37.2%) were predominantly using the fund to meet their health service needs. Employment status (p=0.007) and increase in wealth index (p=0.033) were significantly associated NHIF enrollment. Of the 164 respondents who were not enrolled with NHIF, 88 (53.7%) reported the premiums were too high, 41 (25.0%) reported they didn't know how to enrol or how the fund works, 29 (17.6%) reported they didn't find NHIF useful and 6 (3.7%) were not interested. Barriers to utilization of NHIF, particularly the cost of premiums, inadequate information and difficulty accessing needed services threaten to reverse the gains made so far in health insurance and universal health coverage. The study recommended targeted enrolment in the informal sector as well as review and enforcement of the benefit package in all accredited health facilities in a manner that ensures maximum benefit to the insured to reduce the need to incur out-of-pocket expenditure or failure to access needed services.

Introduction

Globally, about 100 million people are pushed into extreme poverty annually due to excessive out of pocket spending on health (WHO, 2016). Further, high out-of-pocket payments can discourage communities from seeking or continuing healthcare (United Nations, 2013). It is against this backdrop that the United Nations (UN) member states agreed to work towards achievement of Universal Health Coverage (UHC) by 2030 in line with the Sustainable Development Goals (United Nations, 2015). The third Sustainable Development Goal (SDG3) where UHC falls aims at improving access to quality and effective healthcare for the entire population while protecting against catastrophic and impoverishing health expenditure (United Nations, 2015).

While the constitution guarantees access to quality health services as a fundamental right (GoK, 2010), millions of Kenyans are unable to enjoy this right, largely because they cannot afford to

pay for all their health service needs. Approximately 83% of the Kenyan population have inadequate financial protection from health care costs, with about 1.5 million being pushed into poverty annually due to expenditure on health (Ministry of Health, 2014). About 16% of ill persons do not get medical attention because of financial limitations and 38% are forced to either borrow or sell their belongings so as to meet their health needs (Luoma et al., 2010).
High out of pocket health spending (approximately a third of the total health expenditure) is a big barrier to accessing health services in Kenya and easily drives households into poverty (World Bank Group, 2014). In line with WHO recommendations, the country has adopted contributory prepayments (National Hospital Insurance Fund) as one of the means for financial protection against catastrophic health spending (to complement general government revenues/taxes) and has given a target of 100% coverage by 2022 (KIPPRA, 2018). With this target the country has essentially adopted the global UHC tagline of 'leaving no one behind' in as far as access to essential health services is concerned (Government of Kenya, 2017). However, despite the fact that public health insurance has been available in the country since 1966, NHIF (subsequently referred to as the fund) has 36% coverage of the population (KIPPRA, 2018). It receives funds mainly through member contributions which are statutory deductions from persons employed in the formal sector (based on income level) and voluntary (flat-rate) for those in the informal sector/self-employed. In its strategic plan 2014-2018, NHIF committed to expand coverage in the informal sector and among indigent populations through government support (NHIF, 2014). Some of the initiatives to achieve this included health insurance subsidy programs (Mwaura *et al*., 2015; World Bank, 2014), health insurance for the elderly and people with severe disabilities program (Kenya National Bureau of Statistics, 2018a) and a package for all public secondary school students (NHIF, 2018).

Utilization refers to both enrollment with health insurance and the extent to which it is used to meet the health service demands of the enrollee (Wang *et al*., 2013). Studies have shown that coverage does not necessarily translate to utilization of insurance. For instance, Wang *et al*, (2013) state that despite high health insurance coverage in China, it is not used in all instances that require health services. Fang *et al*, (2012) and Sussmuth-Dyckerhoff & Jin, (2010) reported that even households under health insurance coverage incurred substantial out of pocket costs, at times even beating the point of being insured in the first place. This leads to inequitable access to health services. Utilization has been shown to provide a better measure of effectiveness of health insurance than just coverage (Nguyen *et al.*, 2012). Optimal utilization of health insurance has the potential to cut down out-of-pocket expenditure and thereby increase access to health care as well as mitigate financial ruin on households (Qingyue *et al*, 2011).

Even as Kenya and individual counties push for increased insurance coverage particularly through NHIF, understanding the whole scope of utilization is important to ensure its effectiveness in meeting its intended objectives of contributing towards UHC. Formal research studies conducted on health insurance in Embu County have mostly focused on population sub-groups e.g. pregnant women, with NHIF projections for the county as at 2014 estimating a low coverage of 33.5% (Ministry of Health, 2015). Further, catastrophic health expenditure in the county stands at 9%, higher than the national average of 6.2% (Ministry of Health, 2014). This is compounded by the fact that a third of the Embu community live below the poverty line (Kenya National Bureau of Statistics, 2018b). Even among those who are enrolled in NHIF, there is paucity of data on the extent of utilization and whether it meets the needs of those insured. Low insurance enrollment coupled with poor utilization keeps people from using the services they need, or they stand a risk of being impoverished through high out-of-pocket

expenditure. Taking these into consideration, this study therefore sought to assess the determinants of utilization of NHIF in Embu County.

Methodology

The study was conducted in Embu, a cosmopolitan county in Kenya which lies approximately 120 kilometers north-east of the country's capital, Nairobi. A cross-sectional study design consisting of mixed data collection methods i.e. quantitative (house-hold survey) and qualitative methods was used. Three geographically distinct sub-counties were purposively sampled. One community unit was selected per sub-county using simple random sampling. According to the Kenya Essential Package for Health (KEPH), a community unit is the first level in the hierarchy of the country's levels of health care (Ministry of Health Kenya, 2014). The community unit household register was used as the sampling frame. Systematic sampling was then used to identify the households to participate. The household head or the senior-most person available was interviewed by trained research assistants. Key informants included managers of the link health facilities of the targeted community units. Focus group discussion (FGD) participants included community health volunteers (CHVs) and general community members.

A sample of 306 was determined for the household survey using Fisher's *et al.*, (1998) formula. This was distributed equally among the three community units, given that a community unit is defined by a standard number of households (1,000 households). For the focus group discussions, group sizes of ten participants each were used since the recommended size for an FGD is six to twelve participants (Guest *et al*, 2017). A semi-structured, paper-based questionnaire was used to collect data on the variables of interest. Interviews and FGD guides were used to collect qualitative data. A recorder was used to capture the discussions of the interviews and focus group discussions. Descriptive statistics were used to summarize and present statistical information while inferential statistics were employed to determine relationships between variables in the study. The software Statistical Package for Social Sciences (SPSS) version 23 was used to analyze quantitative data. Qualitative data was transcribed verbatim then analyzed through a thematic framework approach. Findings from the different data sources were then triangulated to draw conclusions and inform recommendations.

Results

A total of 277 respondents participated in the household survey, representing a response rate of 91%. Six FGDs and three key informant interviews were also conducted.

Majority of the respondents (n=161; 58.1%) were female. Those aged 35-59 years were 131, constituting 47.3% of the respondents. This was followed by respondents of ages 18-34 years and ≥60 years who made up 34.3% and 18.4% of the sample respectively. The findings also showed that majority (n=181; 65.3%) of the respondents were married. The distribution of level of education showed that 118 (42.6%) respondents had secondary education and 102 (36.8%) had primary education. Those who had post-secondary education were 29 (10.5%) while 28 (10.1%) had no formal education. Majority of the respondents were self-employed (55.2%). Those who were in formal employment were 58 (20.9%) while 66 (23.8%) were unemployed. Further, the data showed that majority of the respondents were in the second and middle wealth quintiles at 82 (29.6%) and 78 (28.2%) respectively. In terms of household size, 128 respondents (46.2%) had 1-3 children, 72 (26%) had 4-6 children, 41 (14.8%) had 7 or more children while 36 (13%) had no children. Majority of the respondents (n=141; 50.9%) preferred to visit a government facility when ill. This was followed by 89 (32.1%) who preferred to self-medicate/visit a pharmacy, while 28 (10.1%) and 19 (6.9%) had private and faith-based health

facilities respectively as their preferred choices. Table 1 summarizes the socio-demographic characteristics of the respondents.

Table 1 Socio-demographic characteristics of the respondents

Characteristic	Category	n	(%)
Sex	Male	116	41.9
	Female	161	58.1
Age	18-34	95	34.3
	35-59	131	47.3
	≥60	51	18.4
Marital status	Never married	44	15.9
	Currently married	181	65.3
	Separated/Divorced	21	7.6
	Widowed	31	11.2
Residence	Peri-urban	94	33.9
	Rural semi-arid	93	33.6
	Rural agrarian	90	32.5
Religion	Christian	257	92.8
	Muslim	20	7.2
Level of Education	No formal schooling	28	10.1
	Primary school	102	36.8
	Secondary school	118	42.6
	Post-secondary	29	10.5
Employment Status	Unemployed	66	23.8
	Self-employed	153	55.2
	Employed	58	20.9
Wealth Quintile	Lowest	31	11.2
	Second	82	29.6
	Middle	78	28.2
	Fourth	52	18.8
	Highest	34	12.3
Number of children	0	36	13.0
	1-3	128	46.2
	4-6	72	26.0
	≥7	41	14.8
Preferred source of health services	Public	141	50.9
	Private	28	10.1
	Faith-based organization	19	6.9
	Self-medication	89	32.1

Utilization was measured at two levels i.e. the proportion of respondents enrolled with NHIF, as well as the extent to which those enrolled used the fund to meet their health service needs. Figure 1 provides a summary of NHIF enrollment among the respondents. Less than half of the respondents (n=113; 40.8%) were enrolled with NHIF either as contributors or dependants, despite a vast majority (n=262; 94.6%) reporting to have ever heard of the fund.

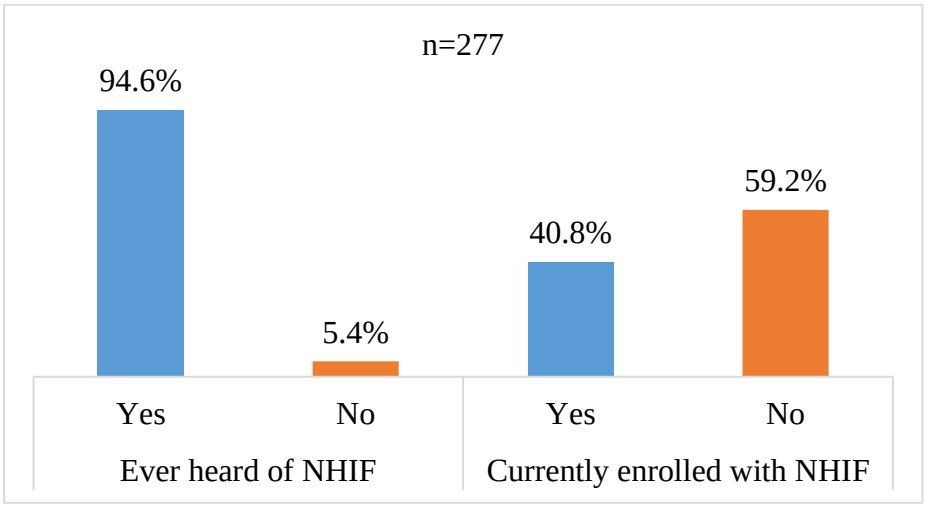

Figure 1 Awareness and enrolment status of NHIF

Among those enrolled with NHIF, only 42 (37.2%) were predominantly using the fund for their health service needs. Fifty four respondents, constituting 47.8% of those enrolled had to routinely use out-of-pocket (OOP) expenditure in addition to NHIF while 17 (15.0%) did not routinely use NHIF to meet their health service needs. These findings are demonstrated in Figure 2.

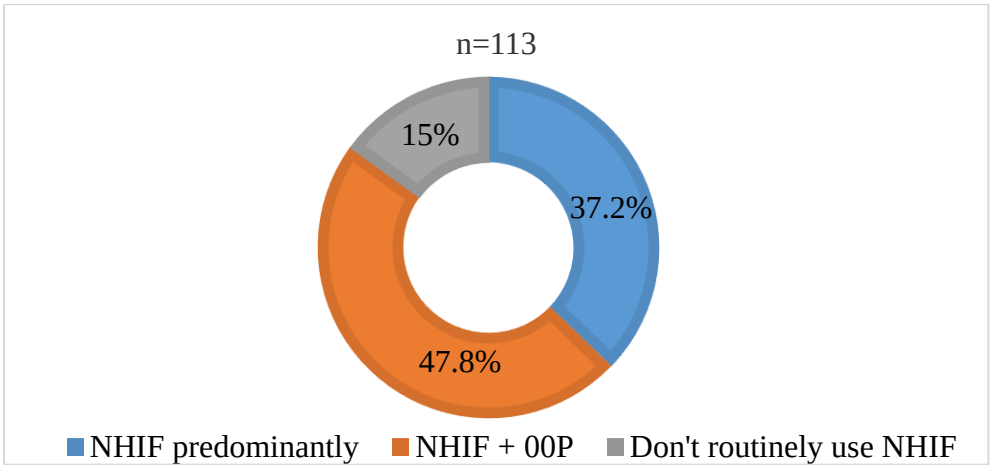

Figure 2 Extent of NHIF utilization for needed health services

Analysis of all the hypothesized demographic and socio-economic characteristics revealed that only the following were significantly associated with NHIF enrollment: residence (p=0.008), level of education (p=0.001), employment status (p=<0.001) and wealth index (p=<0.001). To determine the independent contribution of each explanatory variable while controlling for other variables, the above demographic and socio-economic variables which had shown significant relationships were further subjected to binary logistic regression analysis. The results are summarized in table 2. Being in formal employment was significantly associated with being enrolled with NHIF by close to four-fold compared to those who were unemployed (O.R = 3.542; p = 0.005). Being in the middle wealth quintile was significantly associated with increased odds of being enrolled with NHIF by close to 4 times higher (O.R =3.935; p=0.022) compared to those in the lowest quintile. Those in the fourth quintile had 6.2 times (OR=6.222; p= 0.003) while those in the highest quintile had 5.3 times (OR=5.283; p= 0.017) higher odds of NHIF enrollment compared to those in the lowest quintile. While overall, preferred source of health services was not significantly

associated with NHIF enrollment (p=0.131), those who preferred self-medication/visiting a pharmacy had significantly lower odds of being NHIF enrolled (OR=0.502; p=0.034) compared to those who visit government health facilities.

Table 2: Independent socio-demographic predictors

Characteristics	**OR**	**95% C.I for OR**		**p-value**
		Lower	**Upper**	
Residence				0.287
Urban (Reference category)				
Rural semi-arid	0.592	0.294	1.194	0.143
Rural agrarian	0.902	0.442	1.838	0.776
Level of education				0.205
No formal education (Reference category)				
Primary school	1.034	0.350	3.054	0.951
Secondary school	1.413	0.478	4.174	0.532
Post-secondary school	3.142	0.795	12.418	0.103
Employment status				0.007*
Unemployed (Reference category)				
Self-employed	1.187	0.552	2.552	0.661
Employed	3.542	1.458	8.606	0.005*
Wealth Quintile				0.033*
Lowest (Reference category)				
Second	2.589	0.822	8.153	0.104
Middle	3.935	1.217	12.719	0.022*
Fourth	6.222	1.833	21.116	0.003*
Highest	5.283	1.349	20.691	0.017*
Preferred source of health services				0.131
Government/public health facility (Reference category)				
Private health facility	1.021	0.395	2.639	0.965
Faith-based health facility	1.428	0.477	4.271	0.524
Self-medication/pharmacy	0.502	0.265	0.949	0.034*

***= Statistically significant at p< 0.05**

Of the 164 respondents who were not enrolled with NHIF, 88 (53.7%) reported the premiums were too high, 41 (25.0%) reported they didn't know how to enroll or how the fund works, 29 (17.6%) reported they didn't find NHIF useful and 6 (3.7%) were not interested. These findings are summarized in figure 3 below.

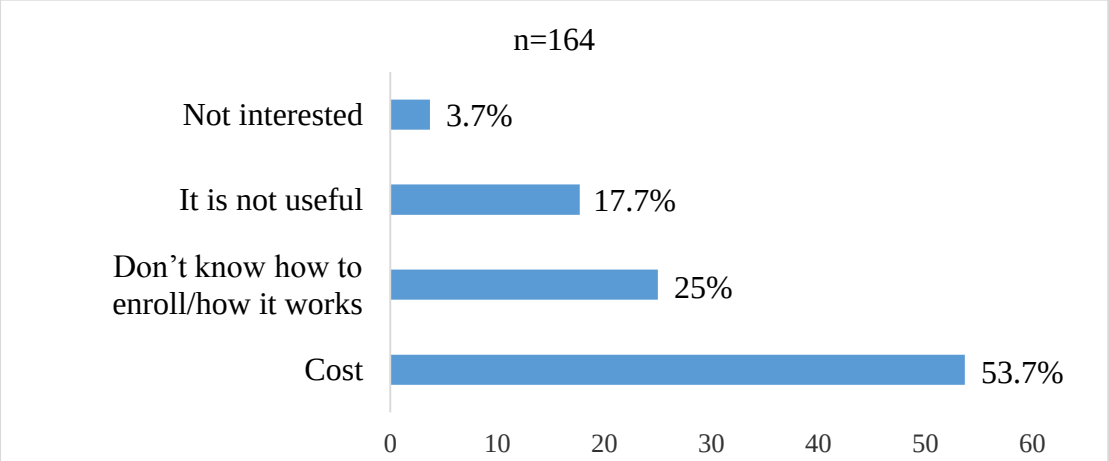

Figure 3 Reasons for not being enrolled with NHIF

When this was further explored in the follow up open-ended questions in the questionnaire and in the FGDs, it is not just knowledge about how to enroll/how the fund works that was deficient. There seemed to be varied perceptions and misunderstandings about NHIF. For instance, one middle aged man from Runyenjes reported *'I thought NHIF is only for those who are employed'.*

The reasons that determined to what extent those enrolled with NHIF actually used the fund to meet their health service needs (i.e. predominant use of NHIF vs. need to use out of pocket expenditure in addition to NHIF vs. not routinely using NHIF) were explored through follow-up open ended questions in the questionnaire as well as in the FGDs. The emerging themes revolved around the health system. The common reasons mentioned for having to spend out-of-pocket in addition to NHIF included not having all the services available in the facility where one is registered. One NHIF member from Kititiri reported '*They often send us for laboratory and x-ray to another hospital. There I have to pay cash'.* Other common reasons for out-of-pocket expenditure mentioned included being told to buy drugs that were out of stock and when one falls ill far from the facility they were registered in. When clarification on this was sought from key informants, they reported the financing structure in the county caused delays in availability of commodities in the facilities. The capitation/reimbursement funds from NHIF would be deposited in a central county account, and the county would then procure commodities for the facilities centrally. One key informant from an accredited facility reported, '*they delay to buy for us commodities, at times they buy too few or they give us what we don't need.*' It also emerged that many private facilities routinely asked for co-payments more from those enrolled with NHIF than those enrolled with private insurance. When probed further on the possible reasons for this, some FGD participants reported that this would be because of the lower and delayed reimbursements given by NHIF compared to private insurance companies. For those who did not ordinarily use their NHIF, one of the common emerging reasons was distance to an accredited facility. A hypertensive patient from Karurumo in Runyenjes reported *'the nearest accredited facility is too far. The money I would pay for transport I would rather buy drugs from the nearby pharmacy'.* It also emerged that this would affect retention in the fund. An elderly grocer from Kiritiri reported '*I even stopped paying the monthly contributions. The facility I was enrolled in was too far. NHIF was of no use to me.*' This was corroborated by the key informants, where of the 3 health facility sites visited, only one was NHIF accredited. Other respondents, especially those who were employed opted to enroll for private insurance, either individually or through employer –arranged corporate schemes due to perceptions of inefficiency and what a young man from Dallas in an FGD described as '*too*

limited scope of services that can be accessed'. Emerging also was limited knowledge on the scope of services offered, with some FGD participants saying they didn't know NHIF covers outpatient services. One middle aged man from Kiritiri reported, '*I always pay cash whenever I feel unwell, and since I have never been admitted, I have never used my NHIF'.*

Discussion

Less than half of the respondents (40.8%) were enrolled with NHIF at the time of the assessment. However, even among those enrolled, only about a third (37.2%) were predominantly using the fund to meet their health service needs, with the rest still having to additionally incur out of pocket expenditure or even use alternative means to meet their health service demands. Sussmuth-Dyckerhoff & Jin, (2010) reported similarly high levels of out-of-pocket payments even among those under China's health insurance scheme. These findings are in concordance with WHO's assertion that health insurance should, but does not always guarantee financial protection (World Health Organization, 2018). This situation is likely to slow progress towards UHC, as it has been shown that out-of-pocket payments of whatever form generally hinder people from seeking care (Chuma *et al*, 2009; Malonza, 2009). Driscoll *et al*, (2012) also reported that participating in a health insurance scheme does not always lead to improved access to needed services, in part because of additional out-of-pocket payments.

Socio-economic factors were shown to influence enrollment into NHIF with employment status and wealth index showing the strongest significant association. Those in formal employment had the highest odds of being covered by the fund compared with the self-employed and unemployed. This is likely due to the fact that the law mandates employers to deduct premiums from wages and salaries of those in formal employment (Republic of Kenya, 2012). But even among those in formal employment, only 69% were subscribed with NHIF, meaning some employers were not adhering with the mandatory deduction policy. Despite recent efforts and campaigns to increase coverage among the self-employed and those in the informal sector (NHIF, 2014), enrollment among these groups was found to be low. Similarly, Kirigia *et al*, (2006) reported that one of the main challenges faced by most countries in the WHO African region implementing social/public health insurance schemes was ways to improve coverage among those working in the informal sector. Despite subsidy programs to cover the poor, vulnerable and indigent (Kenya National Bureau of Statistics, 2018a; Mwaura et al., 2015; NHIF, 2018; The World Bank, 2014), NHIF enrollment was still more prevalent among those in the higher wealth quintiles. The findings agree with those of Kimani *et al*., (2012) in Kenya, Owusu-Sekyere & Chiaraah, (2014) and Sarpong *et al*., (2010) in Ghana, Bendig, (2011) in Sri Lanka, Ghosh, (2013) in India as well as Fang *et al*, (2012) in Taiwan who reported that those in high wealth categories were more likely to subscribe to public health insurance programs compared with those in low wealth categories. Those who preferred self-medication/visiting a pharmacy had significantly lower odds of being NHIF-subscribed compared to those who visited health facilities. This attests to the fact that being under health insurance cover is a motivating factor to seek the right medical attention. The findings concur with those of Dalaba *et al*, (2012) who in their study in Ghana reported that those who were insured were more likely to seek care from a formal health facility rather than resorting to self-medication compared to those who were not insured.

More than half (53.7%) of those not enrolled with NHIF cited cost of premiums as the reason for non-enrollment. This is similar to findings by Sundays *et al* (2015) who in their study in Western Kenya reported that 63% of those not enrolled with NHIF attributed it to the cost of premiums. High cost of premiums was also found to be a barrier to enrollment into a national health insurance scheme in rural Nigeria (Oyekale, 2012) and in Ghana (Boateng & Awunyor-

Vitor, 2013; Fenny *et al*, 2016). These findings support the assertions of Lagomarsino & Kundra, (2008) that if the objectives of health insurance are to be met especially in areas with large proportions of people working in the informal sector, setting premiums should take into account affordability as well as predictability of incomes.

A quarter (25%) of those who were not enrolled with NHIF reported they did not know how to enroll or how the fund works, 17.6% reported they did not find NHIF to be useful and 3.7% were not interested. Further, it was noted from the FGDs that limited knowledge on eligibility and the scope of services offered under NHIF influenced the extent of its utilization. Similar to the findings of Mathauer *et al*., (2008), some thought NHIF was only for those in the formal sector. Mathauer *et al.*, (2008) similarly found inadequate knowledge about the enrollment options and procedures, especially for informal sector workers to be a barrier for demand for NHIF. Owusu & Ackah, (2012) also reported inadequate knowledge of basic insurance concepts, particularly on insurance products and premiums in Ghana. Khan& Ahmed, (2013) found a significant increase in willingness to pay for health insurance after an educational interventional that involved training on basic concepts, rationale for health insurance and enrollment procedures in Bangladesh.

Inconsistent availability of services and commodities was reported to be a major barrier to NHIF utilization; hindering enrollment and retention in the fund and forcing those enrolled to incur out of pocket expenditure when they seek alternative sources of care. This is similar to findings reported by Masengeli *et al*, (2017) in their study in Western Kenya that stock-outs of essential drugs and supplies in accredited health facilities discouraged enrollment to insurance schemes. Oyekale, (2012) made similar observations that inadequacy of health infrastructure, commodities and personnel in rural Nigeria hindered the community from fully benefiting from the national health insurance scheme. A study in Ghana also reported service delivery challenges such as shortage of drugs in health facilities as major barriers to enrolment and retention in the country's national health insurance scheme (Kotoh *et al*, 2017).

Slow flow of capitation/reimbursement funds from NHIF through the county accounts, as well as centralized management of these and other funds at county headquarters rather than facility level were reported as hindrances to procurement of needed commodities in a timely manner to optimize service delivery. This is in line with WHO's assertion that if UHC is to be more than just empty rhetoric, there should be adequate, reliable and predictable flow of funds to health facilities so as to ensure effective delivery of health services to those who need them(WHO, 2018). Further, unstable cash flow is a major contributor to shortages of essential medicines and other critical supplies in public facilities, and those without funds to seek care privately may not be able to access the services they need (WHO, 2018).

Distance to accredited health facilities also influenced the extent to which those enrolled with NHIF actually utilized the fund to meet their health service needs and ultimately retention to the fund. If the accredited facility was far, subscribers reported they preferred to incur out of pocket expenditure in a nearby facility or self-medicate, with some in the FGDs saying they didn't see the point of being enrolled with NHIF in such circumstances. These findings corroborate those of Nketiah-Amponsah, (2009) who found that distance to the nearest accredited health facility was inversely related to demand for health insurance in Ghana.

Conclusion

NHIF has received tremendous attention given its role towards achievement of universal health coverage in Kenya. This assessment concluded that NHIF enrolment in this community is low,

and majority of those enrolled still have to pay out of pocket or even use alternative means to meet their health service demands thus predisposing them to catastrophic health spending. Barriers to utilization of NHIF, particularly the cost of premiums, inadequate information and difficulty accessing needed services threaten to reverse the gains made so far in health insurance and universal health coverage.

Efforts to increase NHIF utilization should be intensified, particularly among those in the informal sector and the indigent. This can be achieved by subsidizing the premiums and/or differentiated premium levels that are convenient to different socio-economic groups among those who are self-employed/in the informal sector to mirror what happens for those in formal employment. There should be more sustained awareness creation about NHIF services, packages and eligibility criteria. The number of accredited facilities should be increased and service delivery strengthened, especially at lower level facilities to improve public confidence, enhance effectiveness of the fund and provide value for money for those enrolled. The benefit package should be reviewed and enforced in all accredited health facilities in a manner that ensures maximum benefit to the insured to reduce the need to incur out-of-pocket expenditure or failure to access needed services.

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