

## Original Research Article

# Determinants of utilization of National Health Insurance Fund cover in public health facilities by public health care workers in Makueni County

Angeline M. Muia\*, Kezia Njoroge, Musa Oluoch

Kenya Methodist University, Meru, Kenya

**Received:** 21 September 2022

**Revised:** 03 October 2022

**Accepted:** 04 October 2022

### \*Correspondence:

Angeline M. Muia,

E-mail: [angelinemuia@gmail.com](mailto:angelinemuia@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Robust healthcare funding systems are seen as critical for guaranteeing universal healthcare access. This implies that health services should be adequately accessible to everyone ensuring health situation doesn't reduce the patient and their family to poverty making analysis of determinants of National Health Insurance Fund (NHIF) cover utilization critical.

**Methods:** Descriptive research design was used to study utilization of NHIF cover among health professionals in public hospitals in Makueni County. Stratified random sampling technique was used to sample the facilities across the different levels. The study sample was 291 from a target population of 1183 health professional. The data was collected using structured questionnaires. Statistical package for social science (SPSS version 25) was used to code and analyze the raw data. Pearson's coefficient of correlation and multiple regressions were used to assess the association between determinants and NHIF utilization.

**Results:** The study found and concluded that at the significance level of 95%, alternative insurance covers, perceived quality of health services and NHIF communication strategy significantly influenced utilization of NHIF cover by public health care workers at  $\alpha=0.05$ . On the other hand, NHIF scheme characteristic was an insignificant determinant of utilization of NHIF cover among public health care workers in Makueni County.

**Conclusions:** The study concludes alternative insurance covers, NHIF scheme characteristics, perceived quality of health services influenced utilization of NHIF cover and NHIF communication strategy influenced utilization of NHIF cover among health workers.

**Keywords:** Perceived quality of health services, NHIF scheme characteristics, NHIF communication approaches, Alternative insurance covers, Utilization of NHIF cover

## INTRODUCTION

As COVID-19 presents a significant danger to healthcare systems, economy, and society as we know them, the globe is presently facing an unprecedented health concern.<sup>1</sup> The current COVID-19 epidemic has highlighted existing vulnerabilities within our health-care systems and the need to protect frontline health workers.<sup>2</sup> Health care workers as the front-line workers in provision of health care services

have the greatest risk of contracting infections such as COVID-19.<sup>3</sup> Health insurance is for these populations are critical.

Without insurance cover for health care workers, this would lead to large out-of-pocket medical costs while seeking medical treatment.<sup>4</sup> Access to healthcare (medical care provision services) is still a global problem because many people cannot afford costs of health services.<sup>5</sup>

Equitable health systems are critical for accomplishing health-related sustainable development goals, according to governments and international organizations around the world.<sup>6</sup> This is especially so for sustainable development goals (SDGs)-goal 3 theme 8 on universal health coverage (UHC) which calls for achieving UHC by 2030, including security against financial risk and access to high-quality healthcare, medications, and vaccinations.<sup>7</sup>

As a result, robust healthcare finance schemes have indeed been deemed necessary for maintaining universal coverage accessibility.<sup>8</sup> This means that every individual ought to have access to essential medical attention that really are functional and of adequate standard, and that no one ought to face economic hardship as an outcome of treatment.

In order to attain universal health coverage and access, most governments throughout the world, particularly developing ones, have lately shifted to a health insurance model.<sup>9,10</sup> Different countries throughout the world have varying degrees of usage of health insurance. According to the available research, consumption levels are high in industrialized countries but remain low in developing countries.<sup>8</sup>

In The United State of America, private health insurance (PHI) is a considerable way of meeting medical care expenses, accounting for approximately 35% of total healthcare expenditure, whereas public usage accounts for 44.9 percent.<sup>11</sup> Utilization of the health insurance plan in the UK is high and is determined by the quality in provision of health services in the hospitals included in the public national health insurance.<sup>12</sup>

In Kenya, health insurance is availed by the public National Health Insurance Fund (NHIF), commercial insurance firms, as well as a few communities organized health financing plans.<sup>13</sup> In Kenya, the NHIF system was expanded to all other individuals, including the jobless, pensioners, and people working in the informal sector, in 2011. The GOK made a concerted effort to make NHIF an all-inclusive program in order to assist the health-care system.<sup>14</sup> Kenya has progressed in achieving universal health care, as seen by expanded policy recommendations and amendments of health-related legislation like the Kenyan Health Policy Framework (KHPF) (1994–2010), Vision 2030, the constitution of 2010, and the health bill of 2015.<sup>15</sup> The UHC program is open to all Makueni residents and non-residents who have lived in the area for at least six months. Over thirty-three percent of the annual budgetary allocation is given to the healthcare program in Makueni County. Health care workers fall in the category of employees with both private insurance cover and NHIF cover in the County. The study focuses on utilization of NHIF cover by health care workers for outpatient services in public health amenities in Makueni County. The objective of this study was to investigate the determinants of utilization of NHIF cover in public health hospitals by public health workers in Makueni County.

### **Statement of the problem**

NHIF has continued to put efforts in serving as employees' first pillar of social health cover. However, despite this provision of public health insurance, NHIF has 36% coverage of the population.<sup>16</sup> Furthermore, despite this small percentage of coverage, the numbers that utilize the NHIF are minimal. In Embu, which is one of the 47 counties in Kenya, only 37.2 % of those enrolled in NHIF predominantly use NHIF cover for their medical service needs.<sup>17</sup> Utilization of the NHIF can be significantly affected by quality of services at the accredited facilities such as long waiting hours and insufficient number of health workers.<sup>18</sup>

Before the realization of UHC in Makueni County, most of the residents' medical expenses were catered for from their own pockets. A number of medical affiliations are currently available including NHIF, Makueni Care and other privately sponsored medical covers. Health workers are however hesitant to utilize NHIF cover to access outpatient health care services in the public health facilities, where they work as the front-line workers in those facilities. This continues to risk the health workers who depend on out-of-pocket payments for their health care services and consequently affecting their household income. In a situation where the peoples' house hold income is negatively affected by medical out of pocket payments, there may be high cases of morbidity and mortality hence County underdevelopment. There are few scholarly works that have been done to assess the influence of medical insurance affiliation on health care equity and access in Makueni County. However, there exists limited literature on utilization of NHIF cover by public health workers in the public health facilities in Makueni County.

### **METHODS**

The study adopted the use of descriptive research design. It is appropriate for the study since the study sought to describe factors that are associated with utilization of NHIF cover among public health workers in Makueni County. The study focused on all the health workers in public hospitals in Makueni County. There were 1,183 health professionals working in all the 291 public facilities in Makueni County.

#### **Inclusion criteria**

All health professional contracted by the county government of Makueni and attached to a facility were included in the study.

#### **Exclusion criteria**

Health professionals who were not attached to a facility such as volunteering health professional and students taking internship were excluded from the study. Also, health professional in private health facilities were excluded from this study.

Sample size for health facilities and health workers was estimated through use of the following formula by Krejcie and Morgan.<sup>19</sup>

$$n = X^2NP(1 - P) \div d^2(N - 1) + X^2P(1 - P)$$

Where, n denotes sample size; N denotes the target population size; P denotes the population proportion d denotes the degree of accuracy).

For the sake of manageability, the study sampled the healthcare centres by the use of simple random sampling. The sample size for this study was 291 healthcare workers.

The study questionnaire used in this study had six sections; section A of the participants' demographic data was obtained. In B through E, data on the factors of NHIF utilization amongst health personnel in Makueni County was collected, and a 5-point Likert scale was employed. Part F sought information on NHIF services utilization amongst public health personnel. Pretesting of the research tools was done on 29 health workers who were excluded from participating in the main study from Mbooni Sub County hospital in Mbooni Sub County. The Cronbach alpha coefficient was used in this study. Cronbach Alpha coefficient ranges from 0 to 1 and if it is equal or greater than 0.7 then the outcomes of the study are deemed fit for generalization.<sup>20</sup>

The surveys were self-administered healthcare personnel in Makueni County's government health facilities. The administration of survey was done using the 'drop and pick' technique. This was done to allow for sufficient time to realize adequate information for analysis. The statistical package for the social sciences (SPSS) version 25 was used to code and analyze the raw data realized from the field. A p value of <0.05 suggested a statistically significant association in the utilization of NHIF cover among public health workers in Makueni County. The research also used ordinal linear regression model to explore the connection between the dependent variable, Utilization of NHIF cover and the independent variables; alternative insurance covers NHIF scheme characteristics, perceived quality of health services public health facilities, NHIF communication strategy. The use of the ordinal regressions was informed by the need for the correlation between the variables. The regression model will be as follows.

$$Y = \beta J_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Where, Y=utilization of NHIF cover, X<sub>1</sub>=alternative insurance covers, X<sub>2</sub>=NHIF scheme characteristics, X<sub>3</sub>=perceived quality of NHIF services, and X<sub>4</sub>=NHIF communication strategy.

While  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  were coefficients of determination and  $\varepsilon$  was the error term.

The researcher was given approval by the science and ethical review committee (SERC) at KEMU. Further the

National Commission for Science and Technology innovation (NACOSTI) gave researcher authority to collect data required for this study. The researcher ensured that the use of information gathered for academic purpose was clarified. In addition, all materials used in the study was properly acknowledged and credited. Upholding of privacy with response provided and confidentiality was communicated to participants prior their participation. The study was kept private thanks to the researcher's efforts.

## RESULTS

### *Response rate*

The study sample was 291 health care workers at the public health facilities within the boundaries of Makueni County. Out of 291 questionnaires distributed, 225 participants filled them, yielding a response rate of 77.3%.

### *Demographic information*

The finding established females represented the largest majority of the respondent accounting for 64% while males were only 36%. Most participants 90 (40%) were aged 26-35 years, 71 (32%) were aged 25 years and below, 14% were aged between 31 and 35 years, 10% aged above 50 years, 7% were aged 25 years or younger. While 36-45 years and over 45 years categories accounted for 14% of the respondents each. This suggest the largest proportion of health workers were aged 26 and 35 years and it is an age group that is at its optimum age for productivity and much focused for personal and organizational growth. Majority (53.8%) of the participants had a diploma as the highest education level, 20.0% were first degree graduates, 19.1% had a certificate while 7.1% of the respondents had post graduate level of academic qualification. Since majority had achieved minimum academic and professional training for healthcare workers depending on their cadre. Therefore, the respondents were deemed competent enough to respond to questions contained in the questionnaires. Additionally, the findings stress role of professionalism factor in recruitment of health workers within Makueni County. Most participants 130 (58%) had served in the health facilities for 1-5 years and 42 (19%) had served for less than 1 years prior study period. Further, 27 (12%) and 26(11%) of the respondents had served for 6-10 years and above 10 years respectively.

Most 116 (51%) of the participants had worked under the ministry of health for 6-10 years. In addition, 69 (31%) had served for 1-5 years; 23 (10%) had served under MoH for over 10 years while 17 (8%) of health workers in the region had served for less than 1 years with MoH. Most participants 101 (45%) worked at the dispensary; 73 (32%) worked within health centre while 51 (23%) of the respondents were working in hospitals. Makueni County is a rural County and therefore majority of the health facilities are dispensaries which targets specific health needs of the community hosting it.

**Table 1: Demographic information.**

Variables	Frequency (N)	Percent (%)
<b>Respondents' gender</b>		
Male	82	36.4
Female	143	63.6
Total	225	100.0
<b>Respondents' age (years)</b>		
25 and below	71	32.0
26-35	90	40.0
36-45	32	14.0
Over 45	32	14.0
Total	225	100.0
<b>Level of education</b>		
Certificate	43	19.1
Diploma level	121	53.8
Graduate/degree	45	20.0
Postgraduate	16	7.1
Total	225	100.0
<b>Duration of service (years)</b>		
Less than 1	42	19
1-5	130	58
6-10	27	12
Over 10	26	11
Total	225	100
<b>Duration worked under MOH (years)</b>		
Less than 1	17	8
1-5	69	31
6-10	116	51
Over 10	23	10
Total	225	100
<b>Level of the health facility</b>		
Hospital	51	23
Health centre	73	32
Dispensary	101	45
Total	225	100

**Alternative insurance covers**

Table 2 shows description on the alternative health insurance cover among the health workers.

Most health workers agreed that the private insurers offer flexible packages tuned to match specific needs of the customers (56.4%). The respondents agreed that private covers were more likely to receive both in-patient and outpatient than those under NHIF cover (71.1%). On the attractiveness of the private cover, the study found that the agreement among the participants that the packages provided by alternative covers was attractive than the packaging by NHIF (58.7%). The respondents further agreed that there was preference of private health insurance as it was customized compared to NHIF (71.6%). In cases where a person had other insurance cover, it was noted that at least one third preferred to use health insurance cover provided by other insurance cover that they had (38.7%).

On the promotiveness of payment of health facility by insurer and presence of paperless claim process, the study observed a disagreement; that is private insurer did not pay the health providers promptly (59.6%). At least 50% of the respondent agreed that private insurer had paperless claims process (53.6%). This suggests that the study health workers were aware of the existence of alternative health insurance providers who offered competitive packages compared to those offered by the NHIF.

**NHIF scheme characteristics**

Table 3 provides findings on NHIF scheme features.

Table 3 shows that majority of health agreed that very little documentation was required before enrolment into NHIF Scheme (72.0%). NHIF registration was fast for the healthcare workers (77.8%). Also, study found under NHIF scheme health could choose public health hospitals to go to for health services (74.2%). In addition, the respondents agreed that monthly contribution remittances were done without the workers' permission as it was an automated process (61.8%) and that the rate for contribution towards the NHIF scheme was standardized for all the healthcare staff (68.9%) and that worker' dependents were registered alongside the registration of the workers (77.8%). Further the respondents agreed that work identity verification during service was the only requirement during registration into NHIF scheme (37.3%) and that NHIF scheme characteristics had special packages for the health staff (43.6%).

**Perceived quality of outpatient services**

Table 3 shows description on the perception on the quality of outpatient services of health cover and its utilization among health workers.

Table 4 above, the respondents agreed that specialist doctors were available in public health facilities (81.3%). There was also an agreement that the hygiene was maintained in public health facilities (78.7%). The respondents agreed that the waiting time before receiving services was satisfying (58.2%). Also, participants agreed that the health services in public health facilities were safe (53.8%) and that radiology services were available in public health facilities (46.2%). Further the respondents neither agreed nor disagreed on the sufficiency of healthy workers as implied by 41.3% who reported neutral that there was sufficient number of health workers in public health facilities. There was a varied response on the issue of functionality of laboratory in NHIF accredited health facilities which is shown by a third of respondents (35.6%) and further agreed that those drugs were available in all NHIF accredited public health facilities (44.4%).

**NHIF communication strategy**

Table 5 shows description of NHIF communication approaches.

Table 5 shows majority of health workers agreed that the NHIF frequently disseminated customized information to their subscribers (67.6%) and had adequate accessibility to information about NHIF via social media platforms (72.0%). In addition, the respondents agreed that they were conversant with the channels used in communication by the NHIF (70.7%); that vertical system of communication was used by NHIF and communication had to move from the top to the end users of the NHIF Products (64.0%) and that NHIF used mobile phones to communicate with clients/customers (65.3%). Moreover, the respondents agreed that NHIF subscribers are obligated to inform the NHIF regarding their admission or admission of dependant(s) within 24 hours of admission to a hospital (45.8%) and that NHIF had an effective client feedback system (51.8%). Further the respondents disagreed that NHIF language of communication was customized to healthcare workers (35.6%) and that NHIF used emails to communicate with clients/customers (42.2%)

**Utilization of NHIF services by public health care workers**

Table 6 study assessed utilization of NHIF services among public health workers.

Majority of respondents agreed that the NHIF financial reservoirs sometimes depleted (75.1%) and that sometimes use out-of-pocket for any medical services given (68.0%). In addition, the respondents agreed that NHIF limited the medical services that they could get (60.4%); that some requests for medical funds were left unfunded under NHIF (64.4%). A reasonable proportion of respondent reported NHIF covered all health needs for their dependents (62.4%). Moreover, the respondents agreed that the NHIF delayed in the dissemination of funds after request from the customers had been placed (57.8%). The study further found that participants used NHIF for all their outpatient services (45.8%) and that NHIF covered surgeries for all the healthcare workers (48.4). The findings show that the respondents were understood the position of the NHIF in the funding of specific medical activities.

**Inferential analysis**

*Regression analysis*

In establishing the predictive power of the predictor factors in use of NHIF cover in public health facilities by public health care workers, the researcher adopted the use of an ordinal linear model. SPSS version 25.0 was employed in the coding and analysis of the data. Table 7 below presents the model summary.

The four predictor factors were responsible for 25.8% of variation in the utilization of NHIF cover in public health facilities by public health care workers as represented by the R<sup>2</sup>. This is an implication that factors outside this study influence 74.2% of use of NHIF cover to settle medical bill in public health facilities by public health care workers. Hence, additional research should be conducted with the aim of determining the other factors that influence 74.2% of utilization of NHIF cover in public health facilities by public health care workers in Makueni County.

*Analysis of variance (ANOVA)*

The study tested the ability of regression to predicted utilization of NHIF cover in public health facilities by public health care workers in Makueni County (Table 8).

The p value (sig.) was 0.000 (p>0.05) shows using NHIF communication strategy, alternative insurance covers, NHIF scheme characteristics and perceived quality of health services are statistically significant predictor of the utilization of NHIF cover in public health facilities by public health care workers using regression model at  $\alpha=0.05$ .

**Coefficient of determination**

The study also adopted the use of multiple regression analysis to assess the relative contribution of the utilization of NHIF cover by public health care workers in Makueni County. The findings are shown in Table 9.

**Table 2: Alternative insurance covers.**

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	N	%
<b>The private insurers offer flexible packages tuned to match specific needs of the customers</b>	82	36.4	16	7.1	127	56.4	225	100
<b>Other covers besides NHIF offer better terms</b>	22	9.8	59	26.2	144	64.0	225	100
<b>Private covers are more likely to receive both inpatient and outpatient compared to NHIF cover</b>	37	16.4	28	12.4	160	71.1	225	100
<b>The packages provided by alternative covers is attractive than the packages by NHIF</b>	55	24.4	38	16.9	132	58.7	225	100
<b>I prefer private health insurance as it is customized compared to NHIF</b>	10	4.4	54	24.0	161	71.6	225	100

Continued.

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	N	%
I prefer to use health insurance cover provided by other insurance cover that I have	82	36.4	56	24.9	87	38.7	225	100
Private insurer always pays health providers promptly	134	59.6	28	12.4	63	28.0	225	100
Private insurer has paperless claims process	120	53.6	49	21.9	55	24.6	224	100

**Table 3: NHIF scheme characteristics.**

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	N	%
Very little documentation is required before enrolment into NHIF Scheme	14	6.2	49	21.8	162	72.0	225	100
NHIF registration is fast for the healthcare workers	10	4.4	40	17.8	175	77.8	225	100
NHIF allows me to choose public health facilities	3	1.3	55	24.4	167	74.2	225	100
Monthly contribution remittances are done without the workers permission as it is an automated process	39	17.3	47	20.9	139	61.8	225	100
The rates for contribution towards the NHIF scheme is standardized for all the healthcare staff	31	13.8	39	17.3	155	68.9	225	100
Dependents are registered alongside the registration of health workers	17	7.6	33	14.7	175	77.8	225	100
Work identity verification during service is the only requirement for NHIF cover	69	30.7	72	32.0	84	37.3	225	100
NHIF Scheme characteristics have special packages for the health staff	86	38.2	41	18.2	98	43.6	225	100

**Table 4: Perceived quality of outpatient services.**

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	N	%
Specialist doctors are available in public health facilities	12	5.3	26	11.6	187	83.1	225	100
Hygiene is maintained in public health facilities	3	1.3	45	20.0	177	78.7	225	100
The waiting time before I receive services is satisfying	61	27.1	33	14.7	131	58.2	225	100
The health services in public health facilities are safe	45	20.0	59	26.2	121	53.8	225	100
Radiology services are in public health facilities	49	21.8	72	32.0	104	46.2	225	100
There is sufficient number of Health workers in public health facilities	58	25.8	93	41.3	74	32.9	225	100
Laboratories are always functional in NHIF accredited health facilities	76	33.8	69	30.7	80	35.6	225	100
Drugs are available in all NHIF accredited public health facilities	91	40.4	34	15.1	100	44.4	225	100

**Table 5: NHIF communication strategy.**

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	n	%
The NHIF frequently disseminates customized information to their subscribers	7	3.1	66	29.3	152	67.6	225	100
I am able to access information about NHIF via social media platforms	13	5.8	50	22.2	162	72.0	225	100
I am conversant with the channels used in communication by the NHIF	22	9.8	44	19.6	159	70.7	225	100
Vertical system of communication is used by NHIF and communication must flow from the top to the end users of the NHIF products	36	16.0	45	20.0	144	64.0	225	100
NHIF use mobile phones to communicate with clients/customers	46	20.4	32	14.2	147	65.3	225	100
Subscribers of the NHIF must notify the programme within 24 hours of being admitted to a hospital	45	20.0	77	34.2	103	45.8	225	100

Continued.

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	n	%
NHIF has an effective client feedback system	32	14.2	69	30.7	124	55.1	225	100
NHIF language of communication is customized to healthcare workers	69	30.7	76	33.8	80	35.6	225	100
NHIF use emails to communicate with clients/customers	81	36.0	49	21.8	95	42.2	225	100

Table 6: Utilization of NHIF services by public health care workers.

Statements	Disagree		Neutral		Agree		Total	
	N	%	N	%	N	%	N	%
The cost of health services sometimes exceeds the NHIF cover limit	34	15.1	22	9.8	169	75.1	225	100
I sometimes use out-of-pocket for any medical services	47	20.9	25	11.1	153	68.0	225	100
NHIF limits the medical services that I can get	30	13.3	59	26.2	136	60.4	225	100
Some requests for medical funds are left unfunded under NHIF	48	21.3	32	14.2	145	64.4	225	100
NHIF covers all health needs for my dependents	56	24.9	20	8.9	149	66.2	225	100
The NHIF are prompt in dissemination of the funds after request from the customers	63	28.0	32	14.2	130	57.8	225	100
I use NHIF for all my outpatient services	68	30.2	54	24.0	103	45.8	225	100
NHIF covers surgeries for all the healthcare workers	83	36.9	33	14.7	109	48.4	225	100

Table 7: contribution of determinants to the utilization of NHIF cover among health workers.

Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.508a	0.258	0.244	0.51131

A: Predictors: (constant), NHIF communication strategy, alternative insurance covers, NHIF scheme characteristics, perceived quality.

Table 8: Model ability to predict utilization of NHIF cover among health work using selected determinants.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	19.985	4	4.996	19.110	0.000 <sup>b</sup>
	Residual	57.515	220	0.261		
	Total	77.500	224			

a: Dependent variable: utilization of NHIF outpatient services in public health facilities; b: predictors: (constant), NHIF communication strategy, alternative insurance covers, NHIF scheme characteristics, perceived quality of NHIF services.

Table 9: Relative contribution of determinants to the utilization of NHIF cover among health workers.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	Constant	0.919	0.345		2.664	0.008
	Alternative insurance covers	0.334	0.054	0.371	6.222	0.000
	NHIF scheme characteristics	-0.028	0.057	-0.029	-0.485	0.628
	Perceived quality of NHIF services	0.273	0.065	0.272	4.211	0.000
	NHIF communication strategy	0.195	0.069	0.185	2.839	0.005

Fitting the coefficients obtained in Table 9, we get the following equation.

$$Y = \beta J_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

$$Y = 0.919 + 0.334X_1 + (-0.028)X_2 + 0.273X_3 + 0.195X_4 + \epsilon$$

Setting NHIF communication strategy, alternative insurance covers, NHIF scheme characteristics and

perceived quality of health services at zero, utilization of NHIF cover in public health facilities by public health care workers in Makeni County would be 0.919. The results indicate that with the four variables, a unit rise in alternative insurance covers leads to a 0.334 rise in utilization of NHIF cover by public health care workers. A unit rise in NHIF scheme features leads to a 0.028 decrease in the utilization of NHIF cover by public health care workers. A unit increase in perceived quality of quality of services leads to a 0.273 rise in utilization of NHIF cover

by public health care workers; while a unit rise in NHIF communication strategy leads to a 0.195 rise in utilization of NHIF cover by public health care workers. At the significance level of 95%, alternative insurance covers and perceived quality of health services were the most significant in influencing utilization of NHIF cover by public health care workers with significance values of 0.000. Further, NHIF communication strategy was a significant determinant of utilization of NHIF cover by public health care workers with significance value of 0.005. In addition, the outcomes show that NHIF scheme characteristics was an insignificant determinant of utilization of NHIF cover by public health care workers in Makueni County.

## DISCUSSION

The study found that alternative insurance covers positively and significantly influenced the utilization of NHIF cover by public health care workers. The findings are contrary to the findings by Pozen and Stimpson that the availability of private covers had insignificant influence on the subscription and use of the national health insurance cover in Liverpool, UK.<sup>21</sup> In addition, the findings agree with Wang, Temsah and Mallick that the involvement of private insurance covers to a great extent influenced the enrollment and use of the national insurance cover.<sup>22</sup> The findings also supports Barasa, Rogo, Mwaura and Chuma who found despite the possession of alternative, customer continued to use NHIF.<sup>23</sup>

Further the study found that NHIF scheme characteristics negatively and insignificantly influenced the utilization of NHIF cover by public health care workers. The findings are inconsistent with Owusu-Sekyere and Chiaraah that the characteristics of the national insurance cover had significant influence on the utilization of the national insurance cover in Ghana.<sup>23</sup> Moreover, the findings disagree with findings of Kironji NHIF administrative processes had a statistically significant impact on private university workers in Nairobi using NHIF outpatient services.<sup>25</sup>

The study also found that perceived quality of health services positively and significantly influenced the utilization of NHIF cover by public health care workers. The findings are consistent with Mulupi, Kirigia, and Chuma that people's perceptions of low service quality at NHIF-accredited institutions were a key factor in dropout rates and deterring individuals from enrolling in health insurance plans.<sup>26</sup>

In addition, the study found that NHIF communication strategy significantly and positively influenced the utilization of NHIF cover by public health care workers. The findings are consistent with Crawford that health communication often integrates and promotes positive changes in attitudes and behaviors in regard to the consumption of the health products: those communication strategies positively and significantly influenced on the

consumption of the health products available.<sup>27</sup> Further the findings agree with Ophir that health communication strategies had a positive and significant subscription and use of the national health insurance cover in an evolving media environment.<sup>28</sup> Also, findings were consistent with Barasa, Mwaura, Rogo and Andrawes who found HHIF communication strategy significantly influenced the use of NHIF services.<sup>29</sup>

## CONCLUSION

The study concludes alternative insurance covers influenced utilization of NHIF cover; the private insurers offer flexible packages tuned to match specific needs of the customers and that other covers besides NHIF offer better terms. Also, the study concludes NHIF scheme characteristics influenced utilization of NHIF cover; study concludes that very little documentation was required before enrolment into NHIF scheme; NHIF registration was fast for the healthcare workers and that the scheme allowed them to choose public health hospitals to go to for health services. Further, the study concludes perceived quality of health services influenced utilization of NHIF cover; specialist doctors were available in public health facilities and that hygiene was maintained in public health facilities. Finally, the study concludes NHIF communication strategy did not significantly influence utilization of NHIF cover.

## ACKNOWLEDGEMENTS

Authors would like to thank supervisors Dr. Kezia Njoroge and Mr. Musa Oluoch, and Kenya Methodist University's entire administration for providing a wonderful and conducive learning atmosphere during the studies.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Gostin LO, Habibi R, Meier BM. Has global health law risen to meet the COVID-19 challenge? Revisiting the International Health Regulations to prepare for future threats. *J Law Med Ethics*. 2020;48(2):376-81.
2. Nagesh S, Chakraborty S. Saving the frontline health workforce amidst the COVID-19 crisis: Challenges and recommendations. *J Glob Health*. 2020;10(1):010345.
3. Greenberg N. Mental health of health-care workers in the COVID-19 era. *Nature Rev Nephrol*. 2020;16(8):425-6.
4. Chaganti S, Higgins A, Mattingly MJ. Health insurance and essential service workers in New England: Who lacks access to care for COVID-19. Federal Reserve Bank of Boston: Boston, MA, USA. 2020;20-3.



5. World Health Organization. Antimicrobial resistance and primary health care (No. WHO/HIS/SDS/2018.56). 2018. Available at: <https://apps.who.int/iris/bitstream/handle/10665/326454/WHO-HIS-SDS-2018.56-eng.pdf>. Accessed on 12 June 2022.
6. World Health Organization. Stronger collaboration for an equitable and resilient recovery towards the health-related sustainable development goals: 2021 progress report on the global action plan for healthy lives and well-being for all. 2021. Available at: <https://apps.who.int/iris/handle/10665/341411>. Accessed on 12 June 2022.
7. Makokha TW. An examination of the legal, Policy and Institutional Framework for Universal Health Coverage in Kenya. University of Nairobi. 2019.
8. Liaropoulos L, Goranitis I. Health care financing and the sustainability of health systems. *Int J Equity Health*. 2016;14(80):1-4.
9. Chemouni B. The political path to universal health coverage: power, ideas and community-based health insurance in Rwanda. *World Development*. 2018;106:87-98.
10. McIntyre D, Meheus F, Røttingen JA. What level of domestic government health expenditure should we aspire to for universal health coverage? *Health Economics, Policy and Law*. 2017;12(2):125-37.
11. Gammage S, Sultana N, Glinski A. Reducing vulnerable employment: Is there a role for reproductive health, social protection, and labor market policy? *Feminist Economics*. 2020;26(1):121-53.
12. Papanicolas I, Woskie LR, Jha AK. Comparing Spending on Medical Care in the United States and Other Countries—In Reply. *JAMA*. 2018;320(8):840.
13. Kimani J, Ettarh R, Kyobutungi C, Mberu B, Muindi K. Determinants for participation in a public health insurance program among residents of urban slums in Nairobi, Kenya: results from a cross-sectional survey. *BMC Health Services Res*. 2019;12(66):112-23.
14. Kipaseyia JS. Factors influencing membership uptake of National Hospital Insurance Fund among the poor: a pastoralist' perspective. Nairobi, Kenya: Master's Thesis, Strathmore University, Strathmore Business School. 2016.
15. Otenyo EE. Policy images in Africa. In *Routledge Handbook of Public Policy in Africa*. 2021;95-106.
16. Onsomu E, Munga B, Mugo P, Nafula N, Muraya R, Mwami M, et al. Policy Brief No. 48 of 2018-2019 on an assessment of Health Care Delivery under Devolution: County Briefs. 2018.
17. Ombiro ON, Otieno G. Utilization of the National Hospital Insurance Fund in Embu County, Kenya. *Int J Health Pharm Res*. 2019;5(1):34-46.
18. Kironji KM, Tenambergen WM, Mwangi EM. Effects of Perceived Image of NHIF Outpatient Facilities on Utilization of Primary Care Services by Private University Employees in Nairobi County. 2019.
19. Krejcie RV, Morgan DW. Determining sample size for research activities. *Educ Psychol Measurement*. 1970;30(3):607-10.
20. Sekaran U, Bougie R. Research methods for business: A skill building approach. John Wiley & sons. 2016.
21. Pozen A, Stimpson JP. Navigating Health Insurance Alexis. 2018. Available at: <https://www.jblearning.com/catalog/productdetails/9781284113129>. Accessed on 12 June 2022.
22. Wang W, Temsah G, Mallick L. The impact of health insurance on maternal health care utilization: evidence from Ghana, Indonesia and Rwanda. *Health Policy Planning*. 2017;32(3):366-75.
23. Barasa E, Rogo K, Mwaura N, Chuma J. Kenya National Hospital Insurance Fund Reforms: Implications and Lessons for Universal Health Coverage. *Health Syst Reform*. 2018;4(4):346-61.
24. Owusu-Sekyere E, Chiaraah A. Demand for health Insurance in Ghana: what factors influence enrollment? *Am J Public Health Res*. 2014;2(1):27-35.
25. Kironji KM. Determinants of utilization of national hospital insurance fund outpatient services by private university employees in Nairobi (Doctoral dissertation). 2019.
26. Mulupi S, Kirigia D, Chuma J. Community perceptions of health insurance and their preferred design features: implications for the design of universal health coverage reforms in Kenya. *BMC Health Services Res*. 2013;13(1):1-12.
27. Crawford EC. Strategic urban health communication. Okigbo cc, editor. Springer. 2014.
28. Ophir Y. Risk and Health Communication in an Evolving Media Environment. 2018;33(4):352.
29. Barasa EW, Mwaura N, Rogo K, Andrawes L. Extending voluntary health insurance to the informal sector: experiences and expectations of the informal sector in Kenya. *Wellcome Open Res*. 2017;2:94.

**Cite this article as:** Muia AM, Njoroge K, Oluoch M. Determinants of utilization of National Health Insurance Fund cover in public health facilities by public health care workers in Makueni County. *Int J Community Med Public Health* 2022;9:xxx-xx.