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Determinants of Non-Insurance in A-Duiem Administrative Unit, White Nile State, Sudan 2018

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ABSTRACT

Background

Population knowledge and attitudes toward health insurance are important factors that facilitate health insurance coverage. National studies on these parameters are limited.

Aim

This study aims at assessing determinants of non-insurance in A-Duiem Administrative Unit and calculating as a secondary objective the household's health insurance coverage.

Methods

The study was a descriptive cross-sectional community-based conducted in A-Duiem Administrative Unit, Sudan. It collected quantitative data from non-insured households and qualitative data by interviewing community leaders and conducting focus group discussions with community organizations members. Quantitative data analyzed using the Statistical Package for Social Sciences (SPSS) version 20, and the thematic analysis for the qualitative data.

Results

The study interviewed 419 non-insured households' heads and thirteen community leaders and conducted eight focus group discussions with sixty community organizations members. Around 37.9% (95% CI: 33.4-42.7) of the heads of the non-insured households did not know the health insurance, while only 2.4% (95% CI: 1.5-4.7) had good knowledge. The knowledge of non-insured community leaders and members of the community organizations was moderate. The study participants showed positive attitudes towards health insurance, as 97% (95% CI: 95.1-98.4) of the heads of the non-insured households wanted to join the health insurance and 65% (95% CI: 59.2-70.1) of them stated that they could pay its premium. Most of the community leaders and members of the community organizations had health insurance cards. Those who were not enrolled, have limited knowledge about health insurance while almost all believe they should join it. The study identified 52.4% of non-insured households (95% CI: 48.9-55.8). The study showed low health insurance coverage among families, despite their positive attitude. This is mostly attributed to poor awareness of the heads of the non-insured households about health insurance. The National Health Insurance Fund (NHIF) should address this gap through effective communication strategies using motivated community institutions.

Keywords

Health insurance; Non-insured; Population coverage; Knowledge; Attitudes; Sudan.

BACKGROUND

Universal Health Coverage (UHC) is defined by the World Health Organization (WHO) as "*ensuring all people have access to needed health services (including promotion, prevention, treatment, rehabilitation, and palliation) of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship*". This definition entails assurance of equitable access to quality health-services, that improves the health of those receiving services and ensuring that the cost of services does not put people at the risk of financial hardship.[1,2]

Globally about 150 million people annually suffer from financial hardship and nearly 100 million people are in poverty due to out of pocket (OOP) spending on healthcare.[3]

Sudan, with an estimated population of 43,660,260 in 2020,[4] has a health care system that is mainly financed through the (OOP) payments, that accounted to 79.4% in 2015.[5] This situation, where 46.5% of the population live below the poverty line,[5] hinders much the overall accessibility of considerable percentage of the population to health services and has an impact on impoverishing others.

Health insurance (HI) is a system of social solidarity that enables different groups of society to access health services without financial barriers. It is a method of health financing where an entity provides the needed fund to cover the whole or part of a person incurring health expenses and hence replaces the user fees charged.[6] The implementation of the current HI system in Sudan started in 1995 and achieved a coverage rate of 53.8% of the total population by the end of June 2017.[7]

In mid-2017, HI coverage rate in White Nile State ranked the 12th of the 18 States at an estimated rate of 46.9%.[7] Community awareness on HI and the knowledge about how to be enrolled, service package and premium of HI are key parameters that facilitate HI coverage increment among any community.[8] Attitudes defined as overall evaluations of things are important, because they affect both the way people perceive things and how they behave.[9] Thus attitudes regarding the need for and value of HI may affect HI coverage.[10]

This study aims at identifying the determinants that encourage or otherwise impede the community in DAU to enroll in HI. As well it seeks to understand the knowledge of the population in DAU and their attitudes towards HI as important determinants for enrolment and as a secondary objective, to calculate the household's coverage with health insurance.

MATERIALS AND METHODS

Study Design and Area

The study was a descriptive cross-sectional, community-based study involving mixed quantitative and qualitative methods. It was conducted in DAU, A-Duiem Locality in the White Nile State, which lies 190 km southwest of Khartoum, the capital of Sudan. The study area is an important center for the trade of agricultural and pastoral crops and has played a significant role in the political life, educational, and intellectual development in the country.[11] DAU is composed of 34 smaller Popular Administrative Units called "Hai" composed of 11,681 house-holds (HHs) accommodating 76,000 inhabitants.[12]

The study population included the heads of HHs, the heads of the non-insured HHs (HNIHs), community leaders, and members of the community organization.

Sample Size and Sampling

The sample size for the HNIHs was calculated to be 420 using the formula n=Z2PQ*deff/d2*RR where Z=1.96 (the value in the normal distribution that cuts an area 95% which corresponds to the level of confidence); p=0.5 (Estimated proportion of population knowledge/awareness about health insurance); Q=1-p=0.5; deff. (Design Effect) taken as 1.5; d=Margin of Error=0.06 and RR (Response Rate)=0.95.

A cluster sampling technique was used where the Hai represents a cluster. Twenty of the 34 Hai were randomly selected. One Hai was chosen twice in the sampling process and 40 non-insured households (NIHs) were included from it, whereas 20 NIHs were included from each one of the others.

The selection of the NIHs was done following a systematic random sampling where the number of the households of each Hai was divided by the sample size in the Hai to determine the sampling interval. The first HH in each Hai was selected randomly and other households were selected according to the sampling interval.

The community leaders and the community organizations were purposively[13] selected based on their proactive role, acceptability by the community, and representation to community organizations such as religious groups, women and youth unions, local Non-Governmental Organisations (NGOs), etc.

Data Collection

The study collected data using four tools developed and tested by the research team. The first two were used for the collection of data from the heads of the HHs through face to face interviews. A preliminary form which was completed with heads of all selected HHs to identify the HNIHs, then an extended, structured, pre-coded, and a pre-tested interviewer-administered questionnaire was completed with HNIHs using Android Tablets. The data collectors visited the first randomly selected HH in each Hai to identify the HI status if the family is not insured they fill the extended questionnaire, and if insured they skip to the next household according to the sampling interval. They did so till they reached their target of the NIHs in each Hai.[14]

The third tool was an in-depth interview guideline, used to collect data from the community leaders, including tribal leaders, chairpersons of women; youth; community organizations; and sports clubs.

The fourth tool was interview guidelines, used to collect data through focus groups discussions (FGDs) with selected community organizations such as members of students, youth, and women unions together with members of community organizations, religious leaders, and chairpersons of the community committees. The sample selection process ensured the representation of all enumerated community groups. Two data collectors conducted the FGDs, one was a chairperson and the other recorded the responses manually.

Before the starting the discussion, the data collectors registered names and characteristics of the group's members. Data collectors were carefully selected, trained, and supervised by two expert field supervisors: one for quantitative and the other for qualitative data.

The study variables included dependent variables such as knowledge, attitudes, out of the pocket expenditure on diseases, and the insurance status and independent variables such as age, sex, education, occupation, monthly income, presence of illness in the family during the last month, and presence of chronic disease in the family.

Data Analysis

The data supervisors revised the questionnaires in the field to ensure completeness and consistency. The statistician analyzed the quantitative data from the preliminary form manually to calculate the HI coverage in the administrative unit, and she used the Statistical Package for Social Sciences (SPSS) version 20 to analyze data from the extended questionnaire.

The study team agreed on three key indicators to assess the level of knowledge including the process of enrollment into HI, service package offered by HI, and HI premium's cost. The results were qualified as good, moderate, poor, or did not know when the interviewee knew the three, two, one, or zero of the specified indicator/s respectively.

Descriptive statistics were carried out for quantitative data and inputs summarized as frequencies and proportions at a 95% confidence level. Inferential statistics using chi-square (χ) were conducted to test the association between knowledge level and HNIHs characteristics that considered a probability value of 0.05 or less as statistically significant.

Qualitative data were revised in the same day. It was transcribed, ordered, coded, summarized, and analyzed manually using the thematic approach. The outcome was presented in terms of texts and quotes. This was performed by a qualitative data specialist.

RESULTS

Sample Coverage and Characteristics of the Study Population

A total of 800 HHs were visited to encounter the targeted 420 HNIHs, one HNIH refused to participate revealing a 99.8% response rate.

The majority (77.6%) of the HNIHs were males. Almost half of them (48.9%) were in the age group 25 to 44-years, (38.1%) were 45 to 64-years-old, while fewer were elderly (8.9%), and (4.1%) were younger than 25-years-old. About 42% of the study population received eight years of education or less, 39.4% received secondary and higher education and 18.6% were illiterate. Almost half (51.6%) of the HNIHs work in small enterprises and 10.5% were laborers. On the other hand, 69% have monthly income more than 1000 Sustainable Development Goals (SDGs) (Table 1).

Table 1. *Characteristics of the HNIHs in DAU, A-Duiem Locality, White Nile State, Sudan 2018*

Characteristic	Count (%)	Knowledge about HI (*p*-value)
Sex		**0.068**
Male	325 (77.6)	
Female	94 (22.6)	
Educational Level		**0.000**
Illiterate	78 (18.6)	
Khalwa	43 (10.3)	
Primary school	133 (31.7)	
Secondary School	118 (28.2)	
University Graduate	45 (10.7)	
Postgraduate	2 (0.5)	
Monthly Income in SDGs		**0.838**
Less than 500	37 (8.8)	
500-1000	93 (22.2)	
1001-1500	87 (20.8)	
More than 1500	202 (48.2)	
Occupation		**0.03**
Government Employee	29 (6.9)	
Laborer	44 (10.5)	
Farmer	10 (2.4)	
Enterprises	257 (61.3)	
Unemployed	28 (6.7)	
Other	51 (12.2)	

In more than three-quarters (75.4%) of the NIHs, at least one member was sick during the previous month of the survey, of them, 95.9% spent 70 SDGs or more on medicines. Almost a quarter (24.8%) of the families had at least one member with a chronic disease, out of them, 85.6% use medications on regular basis and

the cost of the monthly medications of 80.9% of them were equal or more than 70 SDGs (Table 2).

Table 2. *Morbidity and Chronic Diseases among the NIHs' Family Members During the Previous Month and the Cost of their Medication Bill in DAU, A-Duiem Locality, White Nile State, Sudan 2018*

Disease Prevalence among the NHHs' Family Members	Response	Count (%)
Was sick during the last month	Yes	316 (75.4)
	No	103 (24.6)
The cost of medicines incurred last month in SDGs	Less than 50	10 (3.2)
	50-69	3 (0.9)
	70 or more	303 (95.9)
Having a chronic disease	Yes	104 (24.8)
	No	315 (75.2)
Use of medications continuously for the chronic disease	Yes	89 (85.6)
	No	15 (14.4)
Average monthly cost of medicines for the chronic disease in SDGs	Less than 50	9 (10.1)
	50-69	8 (9.0)
	70 and more	72 (80.9)

About 30.5% of the HHs said that they were not able to pay the premium. Twelve of the community leaders were males, the majority were 30-46-years-old. All of them had secondary education or above and most of them were businessmen.

Knowledge about Health Insurance

Around 37.9% (95% CI: 33.4-42.7) of the HNIHs were not aware about the health insurance. The least (4.1%) was about the premium (95%CI: 1.5-4.7), while only 2.4% respondents had good knowledge about HI. About 59.2% were informed about HI by neighbors and relatives, (34.7%) through mass media and (33.3%) by community committees.

The knowledge of the non-insured community leaders and members of the community organizations was good regarding the enrollment process and the services package and poor about the premium. A statistically significant association was found between education (p-value 0.03) and occupation (p-value 0.00) of the HNIHs and knowledge. Association between sex and monthly income to respondents' knowledge was insignificant (p-values were 0.068 and 0.838 respectively). The HNIHs suggested many methods to assist in community awareness raising on HI, the higher percentage was through TV programmes and community committees (40.3% and 39.6% respectively), and the least was the health personnel (12.9%).

Attitudes Towards Health Insurance

Ninety-seven percent (97%) (95% CI: 95.1-98.4) of the HNIHs were willing to be enrolled in HI and 65% (95% CI: 59.2-70.1) confirmed that they were financially capable to pay the premium. All the non-insured community leaders and members of the community organizations were willing to join the HI.

The HNIHs mentioned the high-cost of the premium (30.5%), poor quality of services (15.5%), and far distance to services (14.3%) as reasons for why they were not able to join HI (Table 3). Almost three quarters (76.3%) of the HNIHs regarded, as reasons to be enrolled in HI, the management of common illnesses, (50.1%) mentioned the emergencies/injuries and the cost of operations, while (26%) mentioned the management of chronic diseases and others. As well (18.1%) regarded HI as a religious matter of solidarity. As depicted from (Table 3), twelve of the HNIHs were reluctant to enroll in HI, because of the poor quality of services, low demand, poor geographical access, and inability to pay the premium (some mentioned more than one reason).

Table 3. *Distribution of the HNIHs by Reasons of Non-enrolment and Reasons for Willingness for Enrolment, in HI in DAU, A-Duiem locality, White Nile State, Sudan 2018*

Characteristic	Count (%)
Reasons for Non-enrollment in HI*	
Couldn't pay the premium	128 (30.5)
Services are not good	65 (15.5)
Services too far to reach	61 (14.6)
Don't need the HI	30 (7.2)
Others	195 (46.5)
Reasons for Willingness for Enrollment in HI*	
Religion matter	76 (18.1)
Chronic diseases	109 (26.0)
Emergency cases and injuries	210 (50.1)
Operations	213 (50.8)
Common illnesses	303 (72.3)
Others	17 (4.1)
Reasons for Unwillingness for Enrollment*	
Can't pay the premium	8 (66.7)
Services are not good	6 (50)
Services too far to reach	2 (16.7)
Don't need the HI	1 (8.4)
Others	2 (16.7)
*Multiple answers	

Almost half of the community leaders rated the insurance services as either very good or better, while the other half-think that it was moderate or less. Overall, the members of the community organizations were satisfied with the quality of the insurance services, however, concerns were raised about administrative processes "*Issuance of the insurance card may take two months*" said a 50-years lady from the Women Union executive board.

With respect to the health services provided by the HI,

some of the leaders rated it as good or less, while few rated it as more than good. The availability and quality of medicines was the major problem mentioned by the leaders; "*HI Fund avail cheap and low-quality medicines*" stated a 70-years-old man from the community committees and a religious man of the same ages, "*there are no medicines in the remote health facilities*" said a member of the University Student's Union. The same was also mentioned by a 30-years old man from the Youth Union. . Other problems included poor referral procedures "*If you were referred to Khartoum you do not know where to go, how to start and what the procedures are; all are not clear*" said a 75-years-old man who is the tribal leader in A-Duiem Locality.

Coverage with Health Insurance

As a byproduct of this study, the HI population coverage was found to be 47.6%. Almost all community leaders and community organizations members were ensured.

DISCUSSION

In this study, the association between the HNIHs knowledge about HI and education background of the study population was statistically significant, whereas it was not for gender. This finding is supported by a study in Imphal, India; however, it contrasts with occupation background which was significant with our study.[8]

Almost three-quarters of HNIHs working in the small informal sector, where their education background might be below average, and no entity takes the responsibility of paying the premiums for them. This situation is also noted in a study in Douala, Cameroon, in which the informal sector had inadequate knowledge about the basic concepts of the HI scheme.[15] This situation should encourage the government to sensitize the small private sector to enroll in HI and enact legislation to ensure compliance of the sector towards employees.

The study showed that the monthly income of more than two-thirds of HNIHs was more than one thousand SDGs, this may enable them to pay the monthly family premium of 70 SDG. Most of the families pay equal or more than the monthly premium on medicines at each episode of sickness and/or for chronic diseases, confirming that financial limitation was not the cause for the low coverage.

Awareness about HI was poor among HNIHs and moderate among the community leaders and the members of the community organizations. The knowledge of the community organizations members about the HI premium was notably poor. This is consistent with the result of a study in Sennar State in Sudan, which revealed that the lack of awareness among the community was a key factor behind the dropout from HI services.[16] As well it is consistent with two similar studies in Nigeria capital city and a Suburb in Lagos, in which levels of awareness of the studies' population about the HI were estimated at 13% and 19.8% respectively.[17,18] The main source of knowledge about HI for the HNIHs, was neighbors and relatives (59.2%) which was in line with a study in an urban community, Imphal, India.[8] It is recommended to the National Health Insurance Fund (NHIF) to implement evidence-based policies and communication strategies to raise the awareness of the target population. This can include home visits by volunteers using the network of the members of the community organization in DAU and television (TV) programmes which were suggested by respondents. Social media, in general, might also play a great role in health promotion.

The positive attitudes of the HNIHs, community leaders and members of the community organizations who were willing to enroll in HI scheme is in line with the study in Sennar State, in which the study participants were willing to be enrolled in HI.[16] It is also in line with the studies in Nigeria capital city and Lagos suburb where (97%) and (62.5%) of the respondents, respectively, had the interest to join the HI.[17,18] It seems that the lack of awareness about HI was the cause of the low insurance coverage in the DAU, as the study showed that the participants had the intention to be enrolled and most of them could pay the premium. Even when they were asked about reasons for not being enrolled in HI only 30.5% said that they were not able to pay the premium.

The underlying factors (mainly access to and quality of medicines) for not enrolling in HI as perceived by the HNIHs, community leaders and members of the community organizations were similar to those claimed in the study in Sennar, where poor awareness along with the poor quality of health services, mainly access to medicines and organization of work at the facility level as factors to drop out of HI.[16] This is consistent with results of a study among health workers in the University of Nigeria Teaching Hospital, where most of the respondents were concerned about bureaucracy, unavailability of expensive drugs and long queues while using the HI Scheme services.[19]

Despite the package of the health services offered by HI scheme is one of the best packages compared to similar countries[20-22] it was not appreciated by the HNIHs. This might be due to unfamiliarity of respondents with the contents of the service package. It is important to build community trust, this necessitates a huge effort in advocacy for HI, quality improvement in HI management systems; improved organization, distribution and quality of health services, focusing on access to and provision of quality medicines and laboratory services as well as overall referral system.

The estimates of HI coverage at DAU (47.6%), was consistent with coverage estimates (49.1%) of the While Nile State in 2017; yet it was very low compared to two localities in the same State, namely Kosti (87.2%) and Al Gabalain (83.2%) and higher than that of Goli (26.7%). As well, it was lower than the national coverage (55.7%), Central Darfur State (100%), and Khartoum State (72%) for the same year.[23] Compared to regional and international levels it was also lower than the coverage of Amman (73%) in 2018 and the United States of America (87.8%) in 2018 for the age group 19-65-years.[24,25]

This low coverage might be due to the knowledge gap

about HI, scope, or inadequate quality of services. As mentioned above the Sudan NHIF should adopt a strategic communication plan and try improvements in other aspects of the services to increase the coverage rate of HI.

CONCLUSION

In conclusion, the HI coverage of the heads of HHs in DAU was low, especially among those working in the small informal sector, despite the positive attitude of almost all the HNIHs, community leaders, and members of the community organizations. The information received from the HNIHs indicated a knowledge gap about enrollment processes, premium cost, and contents of the service package.

The community leaders and the members of the community organizations had negative perception of the quality of the insurance service and the health services provided, mainly the problems of the availability and the quality of medicines, geographical in-accessibility, long queues and delayed administrative enrollment process, and misconception about the low quality and unavailability of some investigations.

STRENGTH AND LIMITATIONS OF THE STUDY

Though the study included different categories of populations and used both quantitative and qualitative methods for data collection, however, the study was limited to one administrative unit and the group of seniors might be too small (13 members) to generalize the results to other localities in Sudan. Nevertheless, it will encourage the NHIF to promote the HI and engage community leaders and organizations.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical and administrative approvals were obtained from the Ministry of Health in the White Nile State and DAU respectively and oral informed consent was obtained from the study population according to the guidelines of the National Health Research Ethics Committee.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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