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Utilization of Community-Based Health Insurance among Residence of Katsina State, Nigeria

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Abstract

Enrollment into any form of insurance is very low in Katsina State, with most people paying out of pocket for health care. The utilization of community-based health insurance will provide financial risk protection and improve health outcomes. The objective of the study is to compare differences in Utilization between community-based health insurance member households and non-member households and to identify factors associated with the utilization. A comparative cross-sectional descriptive study was conducted among household heads in Katsina State, Nigeria. Targeted participants were selected using multistage sampling techniques. Primary data was generated using Open Data Kit (ODK), which was later downloaded and exported to SPSS version 20® for statistical analysis. Mean, and standard deviation from the mean (Mean ± SD) were used to study population characteristics towards utilization of CHI. The statistical significance level of analyzed variables were accepted at P≤0.05. The mean age of respondents was 46.82±13 and 44±12.5 years for CBHI enrolled and non-ensured groups, respectively. Heads of the households were predominantly males and currently married, with 97.3% and 93.3% for CBHI members compared to 82.7% and 99.3% of non-member households, respectively. The enrolled CBHI group utilizes PHC services more than the non-enrolled group(p<0.05) with age, marital status, education, number of children, and distance to health facilities all associated with Utilization. Utilization of CBHI was higher among enrolled groups than non-enrolled groups. Many factors, such as age, marital status, education level, and Payment of transportation to the facility, affect utilization of these services. We recommend CBHI be expanded, poor and vulnerable groups are given special consideration, and people not enrolled should be encouraged to join.

Keywords*: Community, Comparative, Health, Insurance, Utilization.*

Introduction

There is ample evidence that shows a direct link between health risks and poverty (1). Achieving. Universal Healthcare Coverage (UHC) has become difficult in most of developing countries, with most people remaining over-reliant on direct out-of-pocket (OOP) expenses that include over-the-counter payments for medicines and fees for consultations and procedures [2]. The World Health Organization (WHO) regards medical fees as a significant barrier to accessing healthcare coverage and utilization and has stated that the only way to reduce reliance on direct payments is for governments to encourage the risk-pooling prepayment approach [2]. In this regard, community-based health insurance (CBHI) has emerged as a substitute for user fees.

CBHI is a form of Micro Health Insurance, which is a predominant term for health insurance targeted at low-income earners. The unique

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feature of CBHIs is the community involvement in taking the lead in its setup and in its management. They are generally designed with the following features: Pooling of health risks and of funds occurs within a community or a group of people who share common characteristics, such as geographical location or occupation. Membership premiums are most times flat rate and independent of individual health risks. The scheme operates on a nonprofit basis and is often voluntary [3]. CBHI reduces out-of-pocket expenditure and improves cost recovery, and although its effect on the quality of health care and efficiency of health services are unclear, it appears to be the most appropriate insurance model for the informal sector and rural areas where incomes are unstable. Additional benefits of CBHI include- community-based health promotion and disease prevention activities, strengthening of the PHC system, and public-private partnerships in healthcare provision. Despite the above-mentioned benefits, studies have shown that only a small proportion of the nation's population are aware of CBHI, and the few schemes available are therefore under-utilized as even fewer are willing to pay or contribute to the scheme [4].

Katsina state with an estimated total population of over 8 million, population growth rate of 3%, has a high infant and under-5 mortality rates of 68/1000 and 135/1000 live births respectively, has recorded one of the poorest indices for vaccine and immunization coverage over time [5].

The majority of the residents (99.3%) of Katsina residents pay out of pocket for health care and only about 0.5% have some form of health security (insurance or *retainer ship*) [6,7].

Information is lacking on the implementation of CBHIS in the State and reason for underutilization of the scheme, and whether people have the requisite knowledge [7]. Findings from this study could help address gaps and help fashion out ways to improve uptake of the scheme. This study aims to compare the difference in utilization of CBHI between Community-Based Health Insurance member households and non-member households.

Materials and Methods

Study Area

Katsina state is located between latitude 11.70 and 13.320N and between longitude 6.520 and 9.020 E. The state shares a border with Zamfara and Sokoto state in the west, Kano and Jigawa state in the east, Kaduna state in the south, and Niger republic in the north. It has an area of 23,938 square kilometers and a projected population of 9,250,000 based on the 2006 census, with a projected growth rate of 3.0% per annum.

In Katsina, the health sector is financed through different sources and mechanisms, including but not limited to statutory allocation, tax revenue, out-of-pocket payments (OOPs), donor funding, and health insurance (social and community). The difference in the proportionate contribution from these stated sources determines the extent to which the health sector will go in achieving a successful healthcare financing system [6, 7]. There are 12 Mutual Health Associations with 41,219 registered financial members as contributors.

Study Design

The study was a cross-sectional comparative study.

Study Population

The study populations were households in Katsina State. This is because CBHI coverage is modeled as the household head's coverage in the country. Household heads will be considered as the study unit.

Inclusion Criteria

The inclusions criteria of the study were households heads that are 18 years old and above, who were engage in the informal sector for source of living, who enrolled into the CBHIS and benefited for more than one year, and who were not covered by other insurance

schemes for health (i.e., social health insurance and Private Health Insurance).

Exclusion Criteria

The exclusion criteria were household heads that were employed in the formal sector for a source of living (including pension) and/or covered by other insurance schemes.

Sample Size Determination

The sample was estimated using study design for comparisons of two groups' population proportions formula with the following assumptions: 80% statistical power with a level of significance at 5%, insured to an uninsured ratio of 1;1, and the proportion of health service utilization was 35% for the insured household and 20% for the uninsured household (8).

$$n = \frac{K\,[P_1(1-P_1) + P_2(1-P_2)]}{(P_1 - P_2)^2}$$

Where:

n = minimum sample size per group.

K = constant, which is a function of α and β.

The level of significance shall be set at 5% (α=0.05).

The power of the study shall be set at 80% (0.8) at α 0.05 and 1-β of 80% K = 7.8.

P_1 =Proportion of health service utilization was 35% for the insured =0.35 (Mebratie, 2015).

P_2= Proportion for the uninsured household is 20% = 0.2 (Mebratie, 2015).

1-P_1 (q_1) = complementary probability of P_1 = 1-0.35 =0.65.

1-P_2 (q_2) = complementary probability of P_2 = 1-0.2=0.8.

$$n = \frac{7.8\,[0.35 \times 0.65) + (0.2 \times 0.8)]}{(0.35 - 0.2)^2}$$

$$= \frac{7.8 \times 0.2275 + 0.16}{0.0225} = \frac{3.0225}{0.0225} = 134$$

Allowing for 90% response rate, the minimum sample size (n_s) is given as; $n_s = n/0.9$= 134/0.9 = 149.

≈ 150 per group.

Sampling Technique

The Mutual Health Association constitutes 12 Community (units) with 41,219 registered financial members (Sampling frame) (6).

Stage 1

Selection of one community from each senatorial zone using the Simple Random Sampling Technique.

Katsina zone; Dutsinma was selected with 2,995.

Daura zone; Mashi was selected with 3,390.

Funtua zone; Dabai was selected with 5,727.

Therefore**,** the proportionate allocation was used to select the study respondents (sample unit) from the sample frame that is:

$$\frac{\text{Registered financial members in a community}}{\text{Total registered financial members in all the community}} \times \text{Sample size}$$

Dutsin-ma = 2,995/12,112 × 150 = 37.

Mashi =3,390/12,112 x 150 = 42.

Dabai = 5,727/12,112 x 150 = 71.

These give the number of study respondents to be interviewed from each community.

Stage 2

Systematic sampling was used to select the study subject, using Dutsin-ma with 2,995 financial members and 37 study respondents as an example,

$$\text{Sample interval} = \text{Sample frame} / \text{Sample size}$$

$$= \frac{2{,}995}{37} = 81.$$

Using simple random sampling, a number was selected from 1-81 by balloting to be the starting point for selecting the respondents and continued skipping every nth number till the desired number was enrolled.

Study Instrument

The data was collected using a hard copy structured questionnaire and an Open data kit (ODK) pre-loaded on the android phone of the enumerators.

Collection Technique

The data was collected from the selected

CBHI member and non-member households using pre-tested interviewer-administered structured questionnaires adopted from the Katsina State Contributory Healthcare Management Agency Household Baseline Survey for implementation of the scheme in the State. Then the survey questionnaires were developed to elucidate information on the basic demographic and socio-economic characteristics of the households, knowledge of CBHIS and healthcare utilization. The survey questionnaire was translated into Hausa, the State language in which most of the study area residents adequately listen and speak, and then back-translated into English to validate its consistency. Interviews were conducted in a location at the respondent's home where he/she felt comfortable. The survey time was estimated after piloting the survey tools. And was done using both the hard copy and ODK install application in the android phone.

Pre-Testing of Instrument

The survey instrument was pre-tested in Batagarawa LGA (which is not one of the wards selected for the study) by the supervisors and the field enumerators, where 10% of the total sample size of households were enrolled in the pilot study. The pre-test provided a means to review the validity, reliability, appropriateness, sufficiency, and relevance of the questions. The pre-test also helped in validating the questions within the sections to have a logical flow and correct some skip instructions in the ODK.

Data Management and Analysis

Study Variables

The dependent variable of the study was the utilization of CBHIS. Independent variables were the CBHI scheme membership status of the households; demographic and socio-economic characteristics of the individual head and the household (such as age, sex, marital status, education and occupation of the household head and monthly income and size of the household); access related factors include distance to the health facility, means of transport to Health Facilities, the amount paid to reach health facility, coverage for health contributions for family members and amount spent by family members for Health out of pocket.

Measurement of Variables

Utilization of healthcare was measured as the number of visits made by at least one household member at least once in the previous 6 months for health services (diagnostic or treatment).

To ensure quality of household survey data, training was conducted for data collectors and field supervisors on the data collection tools, sampling the study subjects, ethical issues, and data collection procedures.

Data Analysis

The data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 25 software. Data were cleaned by running frequency before analysis and re-coded when necessary. Descriptive statistics were computed using cross tab, percentage, and mean. Chi-square tests were used to identify the various variables mentioned as the outcome measures, T-test for comparing means of the quantitative variable which could be determinants for membership of the CBHI scheme, and all relationships were tested at 0.05 level of significance.

Ethical Considerations

Ethical approval was sought and obtained from the Ethical and Scientific Committee of the Katsina state ministry of health Ethics and Research Committee (MOH/ADM/1152/1/491). Informed written consent from the participants was obtained before participating in the study. Permission was obtained from PHC departments as well as District Heads of the respective LGAs.

Results

The study included a sample of 150 CBHI members and 150 non-member households, yielding a 100% response rate (Table 1). The mean age of respondents was 46.82 ±13 and 44

± 12.5 years for ensured and non-ensured groups, respectively. Heads of the sample households were predominantly males and currently married, with 97.3% and 93.3% for CBHI members compared to 82.7% and 99.3% of non-member households, respectively. The greater proportion of the sampled households had Qur'an education, of which 31.3% of the CBHI members and 24% of the non-member households had completed primary-level education.

Table 1. Relationship between Utilization of Outpatient Services in CBHIS Members and Non CBHIS Members and Socio-demographic Variables

Variables	**CBHIS Members**		**Non CBHIS Members**		**P-Value**
	Yes	**No**	**Yes**	**No**	
Age					
20-40	22	31	47	32	-
41-60	35	42	27	34	0.01*
>60	10	10	7	3	-
Gender					
Male	64	82	71	49	0.1
Female	3	1	10	20	-
Marital Status					
Single	2	6	1	8	-
Married	62	67	80	46	0.04*
Separeted	5	8	0	15	-
Ethnicity					
Hausa	86	31	76	55	0.11
Fulani	32	1	5	14	-
Level of Education					
primary	32	5	19	22	-
secondary	10	7	10	6	-
Tertiary	12	2	8	0	0.00001*
Quran only	63	18	37	48	-
Others	1	0	0	0	-
Occupation					
Farmer	62	3	28	33	-
Civil Servant	1	0	0	1	-
Business	25	31	44	26	0.000006*
Unemployed	11	4	3	5	-
Retired	6	3	3	1	-
Others	3	1	3	3	-
Number of Children in the Household					
<5	31	15	23	15	-
5-10	47	21	38	35	0.0005*
>10	29	7	20	19	-

Table 2. Health Care Utilization and Community Health Insurance Enrolment in Katsina State Nigeria

Variable PHC Service Utilization				
Insurance Status	**Yes n(%)**	**No n(%)**	**ƛ**	**P Values**
CBHIS Enrolled	96(64)	54(36)	21.1	0.011
CBHIS Non Enrolled	82(54.7)	68(45.3)	-	-

Almost all respondents from the member group (95.3%) and 99.3% from the non-member group were Hausa by tribe. The estimated monthly income for the study households ranged between N900.00 and N 300,000.00. (USD 2-700) The mean monthly income was N21,751 (51 USD) for CBHI members compared to N19,186 (USD45) for non-member households. Almost half of the member group (44.7%) had a Family size of 5-10, while over half (52%) of non-member group had a family size of 5-10. The insured group utilize PHC services more than the uninsured group, and the difference is statistically significant (Table 1). Socio-demographic variables such as age, marital status, level of education, occupation, and number of children have been found to be associated with utilization of CBHI. ($p< 0.005$, Table 1).

Healthcare access-related factors that affect utilization in this study are Payment for transport to the health facilities, the amount spent on transport means of transportation, coverage for health contributions for family members, and the amount spent by family members for Health out of pocket. (Table 3).

Table 3. Healthcare Access-Related Factors and Enrolment of Study Participants in Community-based Health Insurance

Study Variable	**Response**	**CBHIS Enrollee**	**Non CBHIS Enrollee**	**P-value**
		n (%)	**n (%)**	
Time taken to get to the nearest health facility?	1. Short time (<30mins)	112(74.7)	97(64.70	-
	2. Medium (30-60 mins)	27(18)	30(20)	0.04*
	3. Long time (>60 mins)	5(3.3)	19(12.7)	-
Payment of money to get to the nearest facility	No	`	64(42.7)	0.001*
	Yes	110(73.3)	86(57.3)	-
Amount spent to get to the nearest health facility, and come back home	1. 100-200 Naira	71(47.3)	63(42)	-
	2. 201-400 Naira	24(16)	11(7.3)	0.01*
	3. 401-600 Naira	6(4)	6(4)	-
	4. More than 600 Naira	1(0.7)	5(3.3)	-
	5. Other specify	48(32)	65(43.3)	-
means of transport to reach Health facility	1. Foot	57(38)	64(42.7)	-
	2. Motorcycle	78(52)	71(47.3)	0.01*
	3. Car	12(8)	13(8.7)	-
	4. Canoe/Boats	1(0.7)	0(0)	-
	6. Others (specify)	2(1.3)	2(1.3)	-
Time taken to see a health care provider after reaching HF	1. Short time (<30mins)	105(70)	67(44.7)	-
	2. Medium (30-120 mins)	36(24)	51(34)	0.05
	3. Long time (>2 hours)	3(2)	26(17.3)	-
	4. Don't remember	4(2.7)	3(2)	-
	5. Other Specify	2(1.3)	3(2)	-

Payment for health services	1. Out of Pocket (OOP)	43(28.7)	149(99.3)	-
	2. Health contributions	14(9.3)	1(0.7)	-
	4. Free health care	2(1.3)	0(0)	0.05
	5. Mutual Health Association	90(60)	0(0)	-
	6. Other Specify	1(0.7)	0(0)	-
Coverage for health contributions plan for family members	Don't know	5(3.3)	0(0)	-
	No	32(21.3)	149(99.3)	0.04*
	Yes	67(44.7)	1(0.7	-
Amount spent by family on healthcare monthly out of pocket	<5000	83(55.3)	61(50)	0.001*
	5000-10000	49(32.7)	66(44)	-
	>10000	18(12)	23(6)	-

Discussion

This study aimed to compare differences in healthcare utilization between CBHI member households and non-member households, and the study identified factors for CBHI enrolment. Findings from this study revealed that households enrolled in CBHI utilize PHC services more than the non-enrolled members. This is like previous studies in Burkina Faso (9), North Ethiopia (10), Northwest Ethiopia (11), and Lao people's democratic (12). This finding is likely since enrolled members are less likely to pay out of pocket for health expenditures and therefore, not prone to catastrophic health expenditures.

The non-enrolled members tend more to visit traditional healers and chemists than enrolled members. The implication is that they spend money in these places, and they present late in the health facility when complications are likely to occur. Findings from this study showed that Age, marital status, level of education, occupation, and family size showed a significant difference between enrolled and non-enrolled members, while sex (gender) and ethnicity did not show any significant difference. This is like a study in Northwest Ethiopia where educational status, family size, occupation, and marital status showed a significant difference between the insured versus the uninsured households, but the variables age and sex did not show variation between the insured and uninsured households. This is important when designing the program to consider these factors (11). Another study by in Ethiopia (13) found that income, education, community participation, marriage, occupation, and family size were found to be significant predictors and were positively related with the scheme's utilization. This agrees with our findings.

Regarding health access-related factors, our findings indicate that time taken to reach the health facility, Payment of money and the amount of money spent on transport, means of transportation, coverage of family members, and out-of-pocket expenses by family members showed a significant difference between enrolled and non-enrolled members.

This is like findings in Ethiopia where illness experience, benefit package, awareness level, previous out-of-pocket expenditure for health care service, and health service status (quality, adequacy, efficiency, and coverage) were significantly and positively related but the premium amount, self-rated health status and bureaucratic complexity were found to be negative predictors (13).

The implication is that these factors identified could affect the success or otherwise of the program. Distance to the health facility leading to Payment of money for transport could serve as both financial and geographical barriers to utilizing the scheme for enrolled members.

Conclusion

Utilization of CBHI is higher among insured groups than non-insured but there. Many factors such as age, marital status, education level and number of children as well as health related access factors such as distance to the health facility and Payment of transportation to the facility affects utilization of these services.

To ensure that health care is accessible to all, CBHI should be expanded, poor and vulnerable groups should be given special consideration and people not enrolled should be encouraged to join.

Conflict of Interest

The authors wish to declare no conflict of interest in this manuscript.

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