

Analysis of National Health Insurance Holders Choice of a Preferred Primary Healthcare Provider in Ho Municipality, Ghana

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Authors' contributions

This work was carried out in collaboration between all authors. Author JT designed the study, performed the statistical analysis and wrote the protocol. Author ND wrote the first draft of the manuscript. Authors JT and ND managed the analyses of the study. Author MKD managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

This paper examines factors National Health Insurance holders consider in selecting their primary healthcare providers in Ho Municipality. The general purpose of the study is to bring to light the leading factors that influence a patient's choice of a healthcare provider, specifically, the study assesses the distribution of insurance holder's selection of healthcare providers, examines insurance holder's choice of a healthcare provider across age line, determines salient factors that influence choice of a healthcare provider and investigates gender perception on indicator variables that influence choice of a healthcare provider. The research used cross-sectional design and multi-stage sampling technique to collect data on 400 sampled NHIS insurance holders with age 18 years and above. Preliminary analysis was used to explore the demographic characteristics of the study unit, Man Whitney U test was used to compare gender views on indicator variables while chi-square test and factor analysis were used to compare choice of a healthcare provider across age

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group and salient factors that insurance holders consider in selecting their primary healthcare providers respectively. Results from the study indicate that majority of the insurance holders select or will select Municipal hospital as their primary care provider, and thus 70.5% of the time appreciates the introduction of the capitation policy. The study revealed four factors that insurance holders consider in selecting their primary care providers as; hospital service delivery, customer care and prestige, distance and family and peer influence factors. The study further shows that an insurance holders' choice of primary care provider is dependent on age. In order for healthcare providers to provide quality healthcare, it is suggested that NHIS should ensure timely discharge of funds whiles Ghana Health Service also should consider providing more medical equipment and manpower to healthcare provider's especially in the Municipal hospital since it seems to be the preference for patients thus the largest patient base.

Keywords: NHIS; choice; healthcare-providers; Ho municipality; Man-Whitney U-test; factor analysis.

1. INTRODUCTION

The greatest asset of every country is its citizenry to which Ghana, as a country, is no exception. The citizens' general well-being determines the overall progress and development of the national economy because an enhanced quality of life means higher productivity. Any country that has unhealthy population is bound to suffer in the implementation of developmental programmes towards improving the quality of life of its people [1]. The above prelude indicates clearly that any nation desirous of improving its productivity must put policies in place to ensure adequate access to quality healthcare.

According to research by [2] many households especially in developing countries are deprived of much health care because they cannot afford it. Other researchers [3] in their research also stated that many low-and middle-income countries rely heavily on patients' out-of-pocket health payments to finance their health care systems. Empirical evidences from other researches such as World Health Organization [4,5,6] also indicated that out-of-pocket health payment is the least efficient and most inequitable means of financing health care and prevents people from seeking medical care and may worsen poverty.

In 2005, the Member States of WHO adopted a resolution that encouraged countries to develop health financing systems aimed at providing universal coverage [7]. The 2004 World Health Report by WHO endorsed the pursuit of universal coverage and defined as ensuring that population get access to needed health services without the risk of financial catastrophe or impoverishment associated with obtaining care.

Ghana, over the years, has been struggling in financing quality health care. As [8] explained, in

1982, a revolving fund for drugs known as "cash-and-carry" was initiated by which all health institutions were to recover the full cost of drugs and keep this revenue to purchase drugs only. Informal fees with various shades of legality and unauthorized fees were also collected from users. The implementation of the "cash and carry" in some instances led to an increase in self-medication because many people could not afford the out-of-pocket user fees demanded at the point of treatment [9].

According to research by [2], the introduction of hospital fees and the "cash and carry" system in 1982 aimed at full recovery of cost of service, laid a huge financial burden on especially the poor and limit access to health care. As a result, many people died of common and treatable diseases. To remove these financial barriers to access to healthcare services and to ensure equitable access to quality services especially by the poor and vulnerable, "the Government initiated and passed the National Health Insurance Law, 2003 (Act 650) and the National Health Insurance Regulations, 2004 (L.I. 1809) aimed at abolishing the 'Cash and Carry' system and limiting out-of-pocket payments at the point of service delivery" (Government of Ghana, 2004; [10]. With the introduction of this scheme, registered individuals have the opportunity to seek healthcare service from any healthcare institutions that are accredited by National Health Insurance Scheme (NHIS).

The health insurance scheme as it stands now represents an ambitious reform of the health sector, rather than the creation of a new financing mechanism. A number of challenges remain for health planners in Ghana including how to set up a regulatory framework, and how to determine an appropriate payment mechanism to reimburse providers. It is with this many others that the NHIS is undergoing a capitation policy.

The Senior Monitoring and Evaluation Officer in the Northern Region [11] in his address at a sensational forum organized by GNA-SEND Ghana in collaboration with National Health Authority published by Ghana News Agency dated Apr 17, 2015 explained that, the capitation policy is a providers' payment mechanism whereby providers are paid in advance and predetermined fixed rate to provide a defined set of service for the individual enrolled over a fixed period of time. As part of the capitation, all insured individuals of NHIS were or will be required to choose a Preferred Primary Provider (PPP) to visit for treatment however; capitation members have the option to change their PPP at least six months after enrolment.

The aims of the capitation policy was to,

- Improve cost containment and viability of NHIS
- Share financial risk between schemes, providers and subscribers
- Introduce managed competition for providers and choice for patients (compatible with portability) to increase the responsiveness of the health system
- Improve efficiency and effectiveness of health services through more rational resource use
- Correct some imbalances created by the Diagnosis Related Groups (G-DRG) e.g. OPD supplier-induced demand
- Simplify claims processing
- Address difficulties in forecasting and budgeting

Since the introduction of NHIS, patients are faced with indecision regarding the particular type of healthcare provider from whom they would seek healthcare because to them, whichever hospital they visit it's quite free. Now, insured individuals, with directives from NHIS are required to choose a particular healthcare provider that will attend to all their health needs. However, since the introduction of the National Health Insurance Scheme in Ghana in 2003, there has been little evidence with regards to factors that influence insured person's choice of a healthcare provider.

In view these concerns, the researcher believes there is the need to research into insurance holders' choice of a healthcare provider. Specifically, to assess the distribution of insurance holder's selection of healthcare providers, examine insurance holder's choice of

a healthcare provider across age line, to determine salient factors that influence choice of a healthcare provider and investigate gender perception on indicator variables that influence choice of a healthcare provider. It is hoped that findings from Ho municipality could help serve as a literature that could give true or close to true picture on the ground for effective and quality healthcare delivery.

1.1 Review of Related Empirical Studies

Many empirical studies in today's competitive health care industry tries to report factors which influence choice of healthcare provider in many countries. As stated by [12], the ability to provide reachable and cost-effective health services to patients depends on a detailed understanding of the factors associated with the choice and use of services, especially those factors which can be manipulated to improve the provision of healthcare services. Hence, in order to understand why patients choose one hospital over another, it is important to look at the major factors that patients consider.

The researchers [13] pointed out that in a typical healthcare system where providers are heterogeneous in terms of qualification, efficiency and other dimensions, the choice of provider by the customer depends on a number of factors like service fee, quality of care, access to care, perception of the providers, flexibility of payment system, type of illness, severity of illness and socioeconomic and demographic conditions of the consumers. In their study based on data collected from advanced and non-advanced villages in Upazilla, Bangladesh, they found out that 52% of the people in the selected area received healthcare treatment from informal providers. They also found out that those patients with low household educational level preferred informal providers because of cheap treatment, easy access, and availability whenever needed.

[14] conducted a study on preferred primary healthcare provider choice among insured persons in Ashanti region, Ghana. He used multinomial logistic regression technique for analyzing data collected from insurance holders through questionnaire. The findings of the study showed that patients select their preferred primary providers based on such factors as availability of doctors and essential drugs, reputation, waiting time, income, and their residence.

The Study conducted by [12] involving 303 respondents from randomly selected health care centres in Riyadh, Saudi Arabia, revealed that the main factors associated with choosing a hospital were medical services, accessibility, age, sex and education. Little importance was given to income and occupation.

[15] collected data from 1100 households in Ndop, a health district in the Northwest Province of Cameroon to confirm that there were many factors that influence the choice of healthcare. Among these factors were, quality of care, the most important factor, while the time spent seeking treatment, household income and size, distance, and cost of health care. The study found that those with higher income tend to choose private health units and those with larger families tend to choose government health units. He concluded that since household income influences the choice of private health units, policies targeting poverty alleviation should be instituted in the rural areas to provide households with income. Tembon's conclusion on income as an influence on choice however seems to be relevant in this study since the aim of NHIS is to remove financial barriers to access to healthcare services and to ensure equitable access to quality services especially by the poor and vulnerable.

Results from study conducted by [16] on choice of a health care provider in Nigeria revealed that both distance and cost of treatment are significant factors in discouraging individuals from seeking modern health care services. However, cost of treatment was less important as a determinant of the choice of health care provider.

Shu in his study conducted in 2010 using 18 factors on service quality and patients' choice of hospitals involving 244 respondents revealed that there is no difference in selection factors by hospital users. The only two selection factors that showed a difference were "Personal experience with the hospital/clinic" and "shorter waiting time/prompt service".

2. METHODOLOGY

2.1 Research Design

The research design employed for this work was cross-sectional. "It is a positivistic methodology design to obtain information on variables in different context but at the same time" (Collis et al, 2003). This technique was adopted because

data was collected (simultaneously) approximately at the same time period at the various locations in Ho Township. Multi stage sampling technic was used in administering questionnaires. The town was divided into many parts but four strata were used. Each stratum was allotted 100 questionnaires and data was obtained from houses. There was no listing of houses. The first house was picked and subsequently every fifth house was visited based on the judgment of the researcher since the total number of houses for each stratum was unknown. If the subsequent house visited has no eligible member, the next house is visited in order to get eligible participant. Once in the house, anybody (male or female) present could answer the questions posed by the researcher provided he/she satisfies the eligibility criteria of being NHIS member.

2.2 Population and Study Area

The population for the research was all insured individuals of NHIS in the Ho municipality hence making Ho municipality our area of study. The target population is insured individuals with the age range of 18 years and above since "one is legally independent and free to make legal binding decisions and choice without parents or guardians permission" [17].

2.3 Sample AND Sampling Techniques

The estimated sample size for the study based on *Scott smith's* sample size formula using 95% confidence and 5% error level was 385 but the researcher, in order to make the study robust, interviewed 400 respondents. According to [18], the formula can be used when the population size is unknown or more than 10,000.

Scott formula;

$$n = \frac{(z - score)^2 * sd(1 - sd)}{(error\ margin)^2}$$

Where

Z-score = critical value for confidence level from a normal distribution (95% confidence level = 1.96)

SD = standard deviation (0.5). 0.5 is used because it is the most forgiving number and ensures that our sample size is large

Error margin = 0.05

n = required sample size

$$n = \frac{(1.96)^2 * 0.5(1 - 0.5)}{(0.05)^2} = 385$$

The sampling technique used in the study was Multi stage sampling probabilistic procedure. With this sampling method, we selected a sample by using blends of different sampling methods. Multi stage sampling was adopted because the intention of the researcher was to know the main factors that might influence patients - the insured of NHIS, choice of a healthcare provider hence the need to choose samples who are insured of NHIS. In the first stage, stratified sampling was employed in putting Ho Township into four strata on the basis of closeness to a healthcare facility which comprised market/Dome area, Civic center/Anlokordzi/Ahoe area, Ho polytechnic/power house and their surroundings, and Guinness/Regional hospital/medical village area. In another stage, Systematic sampling method was used to select houses to visit in order to interview respondents. Finally, the respondents were interviewed in the selected houses.

2.4 Data Collection

Data for this study was from primary source by administering of questionnaire which consisted of close ended and liker type of questions. The question was designed to consist of two parts. The first part consist of bio data of the respondent i.e. Gender, age, academic qualification and hospital they have chosen or will choose to be their primary healthcare provider etc. The other part of the questionnaire consists of factors that influence respondent's choice of a healthcare provider. Responses here ranged from strongly agree, agree, uncertain, disagree and strongly disagree and respondents were required to indicate their level of agreement to the factors.

Previous to questionnaire administration, the four strata were allotted 100 questionnaires each because population sizes from these four strata were assumed close to equal. Data was obtained from insurance holders only. There were no listing of houses however; In order to enhance the systematic distribution, the use of constant distance was adopted thus distance between two electric poles 50 m within the selected areas. This method of distance between two electric poles method was adapted from Adedibu and Jelili (2005). Data was thus collected from insurance holders located in every first house within two pole distance. If the subsequent house visited has no eligible member, the next house is

visited in order to get eligible participant. Once in a house, anybody (male or female) present could answer the questions posed by the researcher provided he/she satisfies the eligibility criteria i.e. an NHIS insurance holder with age 18 and above.

2.5 Test of Hypotheses for the Study

Chi-square test was employed to compare patient choice of a healthcare provider across the age groups whiles Man-Whitney U test was used to determine if there exist differences between male and female rating on indicator variables that influence choice of a healthcare provider.

The following hypothesis were however developed in the study

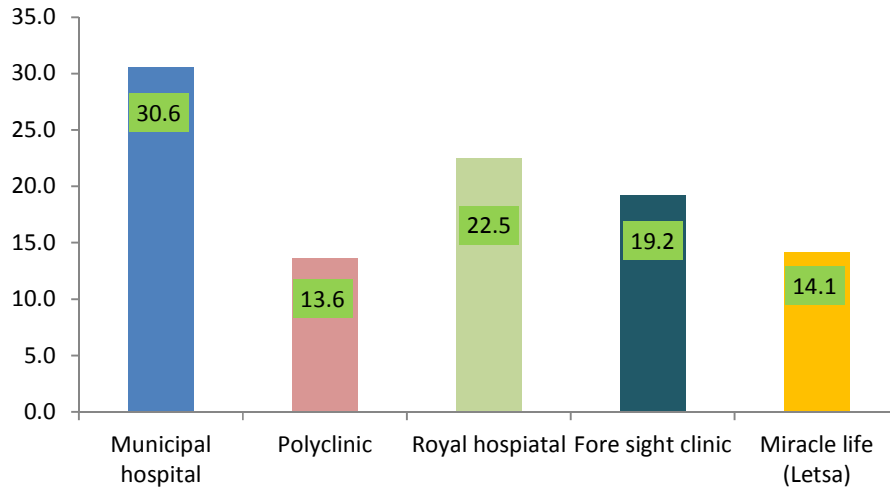
H1: The choice of a healthcare provider is independent of age

H2: There is no difference between male and female rating on indicator variables influencing choice of a healthcare provider.

3. RESULTS

On the whole, 400 participants were contacted for the research. However, 396 were the retained non defective questionnaires for data analysis after questionnaires were cross checked for errors.

Most of the respondents for the study were females indicating a percentage of 59.3 whiles and 40.7 percent of them were males. The analysis also reveals that the study is mainly of respondents between 18-27 years which constitute 32 percent, followed by those in 28-37 years representing 21 percent, respondents with ages 38-47, 48-57 and 58 above also constitute percentage of 17, 15 and 15 respectively. Clearly, the analysis shows that there is a negative correlation between age group and respondent sampling thus, the higher the age dimension the lesser the number of respondents chosen. Analysis on the highest education attainment of the respondents as shown in Table 1 shows that 8.1% have no education qualification, 10.9% had primary education, 15.9% schooled up to JHS, 26.3% have SHS education and 38.9% of them had tertiary education. This obviously shows that there is positive correlation between educational level and respondent sampling thus, the higher the educational level the higher the number of respondents chosen.



Graph 1. Distribution of healthcare providers by respondents' choice

Source: Field survey data (2016)

Table 1. Demographic characteristics of respondents

Variables	Frequency	Percentage
Gender		
Female	235	59.3
Male	161	40.7
Age distribution		
18-27	126	31.8
28-37	84	21.2
38-47	66	16.7
48-57	61	15.4
58+	59	14.9
Education level		
None	32	8.1
Primary	43	10.9
JHS	63	15.9
SHS	104	26.3
Tertiary	154	38.9

Source: field survey data (2016)

The output above reveals that Municipal hospital is likely to have 30.6% of the patient population to offer medical care while Poly-clinic is likely to provide primary healthcare to 13.6% of the patient population. Royal hospital is also likely to provide medical care to 22.5% of the patient population while foresight clinic and Miracle life (Letsa) hospital are likely to attend to 19.2% and 14.1% of the patient population respectively.

3.1 Chi-square Test for Choice of Healthcare Provider across Age Line

The count part of Table 3 shows that majority of respondent having ages from 18-47 years will choose Municipal hospital as their primary care provider; respondents with age 48-47 will also prefer to seek healthcare from Foresight clinic: respondents 58 years and above will under NHIS capitation policy end up seeking care from Miracle life (Letsa) hospital.

Table 2. Chi-square test for choice of healthcare provider across age line

Count	Healthcare provider					Total	
	Municipal hospital	Polyclinic	Royal Hospital	Foresight clinic	Miracle life (Letsa)		
Age	18-27	57	9	34	21	5	126
	28-37	26	11	22	12	13	84
	38-47	18	11	11	15	11	66
	48-57	10	10	11	17	13	61
	58+	10	13	11	11	14	59
Total	121	54	89	76	56	396	
Chi-square test		Value	df	Asymp. Sig. (2-sided)			
Pearson Chi-Square		48.004	16	.000			
N of Valid Cases		396					

Source: Field survey data (2016)

The chi-square part of the table also shows that the test is significant and so the hypothesis that age is independent of choice of a healthcare provider is not true and hence we fail to accept it hence says that respondent's age influence provider selection.

The next analysis however uses factor analysis as a statistical tool to select latent factors from a list of 15 indicators that the researchers perceived are influential in choosing a healthcare provider. The original indicators used are defined as:

- V₁ =Hospital environment is clean
- V₂ =My house is close to the hospital
- V₃ =Appointment time is convenient
- V₄ =Waiting time for consultation is convenient
- V₅ =Personal experience of the hospital
- V₆ =My friends and families goes there
- V₇ =Reputation of the hospital
- V₈ =Hospital staffs are friendly
- V₉ =The hospital is well organized
- V₁₀ =There is availability of quality food within the hospital premises to buy
- V₁₁ =Provide quality healthcare
- V₁₂ =My financial status
- V₁₃ =Hospital have standard facility
- V₁₄ = Waiting time in consulting room is convenient
- V₁₅ =Able to see consultant of my choice

3.2 Factor Analysis Data Presentation

The high Kaiser-Mayer-Olkin's value of 0.8 in (Table 3) implies that the data is qualified for

factoring. The high significant value of the Bartlett's test also provides credibility to the fact that factor analysis technique is suitable. The correlation matrix presented in (Table 4) revealed that the variables exhibit quite very high correlation among themselves indicating 0.4 as the highest correlated value, an indication that there are homogenous groups among the original indicators. According to Tabachnick & Fidell, (2007), two variables are considered correlated if their correlated value is 0.3 and above.

Table 3. KMO and Bartlett's test

Measure	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.8
Bartlett's Test of Sphericity critical value	983.9
Bartlett's Test degree of freedom	105.0
Bartlett's Test significant value	0.0

Source: Field survey data (2016)

Table 4 shows the inter-correlation between all possible pairs of variables considered in the analysis. The output reveals that the variables exhibit quite high correlation among themselves indicating 0.4 as the highest correlated value. However, Tabachnick & Fidell (2007) reveal that two variables are regarded correlated if they exhibit a correlation value of 0.3 and above. It can therefore be seen that there is quite a high (0.4) correlation between variable v4 and v3. This means about 40% of the respondents rated convenience of appointment time and convenience of waiting time for consultation as the same factor that influence choice.

Table 4. Correlation matrix

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15
V1	1.0														
V2	0.0	1.0													
V3	0.3	0.1	1.0												
V4	0.2	0.1	0.4	1.0											
V5	0.1	-0.1	0.2	0.2	1.0										
V6	0.2	0.2	0.2	0.2	0.2	1.0									
V7	0.3	0.2	0.3	0.2	0.1	0.3	1.0								
V8	0.2	0.0	0.3	0.2	0.2	0.2	0.3	1.0							
V9	0.3	0.0	0.2	0.1	0.1	0.1	0.3	0.3	1.0						
V10	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.1	1.0					
V11	0.2	-0.2	0.2	0.2	0.2	0.0	0.1	0.3	0.3	0.1	1.0				
V12	0.1	0.1	0.1	0.2	0.0	0.2	0.2	0.3	0.1	0.1	0.0	1.0			
V13	0.2	0.0	0.3	0.3	0.1	0.2	0.3	0.3	0.2	0.2	0.3	0.2	1.0		
V14	0.3	0.0	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.3	1.0	
V15	0.1	0.0	0.2	0.2	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.1	0.3	0.3	1.0

Source: Field survey data (2016)

The following groupings of factors also have significant correlation value of 0.3 implying that for each of the correlated groupings below, 30% of the respondents rated them same.

- Group 1 (v1, v7, v9, v14 and v6)
- Group 2 (v8, v13 and v12)
- Group 3 (v11, v13 and v15)

From the output, it was realized that there was no correlations between variable (v1 and v2), (v5 and v12) and (v6 and v11).

The total variance explained by the table (Table 5) lists the eigen values associated with each linear component before extraction, after extraction and after rotation. Before extraction, SPSS has identified 15 linear components within the data set. The eigen values associated with each factor represent the variance explained by that particular linear component and the table also further displays the eigen value in terms of the percentage of variance explained. The output clearly shows that the first few factors explained relatively large amounts of variance whereas subsequent factors explained small amounts of variance.

SPSS later extracted all factors significantly greater than one which leaves us with four factors. Even though components 5, 6, and 7 have eigen values greater than one, SPSS regarded them not significant since the cumulative variance % of the first four components accounted for more than 50% of the total variation in the data set.

The eigen values associate with the extracted factors are again displayed (and the percentage of the variation explained) in the columns labelled Extraction Sum of Squared Loadings. The values in this part are the same as the values before extraction except that the values for the discarded factors are ignored. In the final part of the table (Rotation Sums of Squared Loadings), the eigen values are displayed. Rotation has the effect of optimizing the factor structure and one consequence for these data is that the relative importance of the four factors is equalized. Before rotation, factor one accounted for more variance than the remaining three thus 24.16% compared to (12.14%, 8.10% and 7.13%). However after rotation, it accounts for only 17.72% of variance compared to (12.96%, 10.57% and 10.28%) respectively.

The Screw plot confirms the importance of the first component in explaining difference that exist or will exist in provider selection by the population. However the curve is quite difficult to interpret because the curve begins to tail off after the first three factors moreover, it does not show significant decline between the fourth component which our test extracted based on the eigen value greater than one and the fifth component. Nonetheless, even though the screw plot confirms the significant extraction of three factors but could not show a clear decline from the fourth and fifth component, significant extraction of the four factors will be based on the eigen value greater than one assumption.

Table 5. Total variance explained

Component	Initial eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.63	24.16	24.16	4.63	24.16	24.16	3.39	17.72	17.72
2	2.33	12.14	36.31	2.33	12.14	36.31	2.48	12.96	30.68
3	1.55	8.10	44.41	1.55	8.10	44.41	2.02	10.57	41.25
4	1.36	7.13	51.53	1.36	7.13	51.53	1.97	10.28	51.53
5	1.19	6.22	57.75						
6	1.15	6.01	63.77						
7	1.13	5.89	69.66						
8	0.91	4.77	74.43						
9	0.89	4.66	79.09						
10	0.84	4.41	83.50						
11	0.80	4.15	87.66						
12	0.68	3.56	91.21						
13	0.64	3.35	94.57						
14	0.57	2.99	97.56						
15	.468	2.442	100.000						

Source: Field survey data (2016)

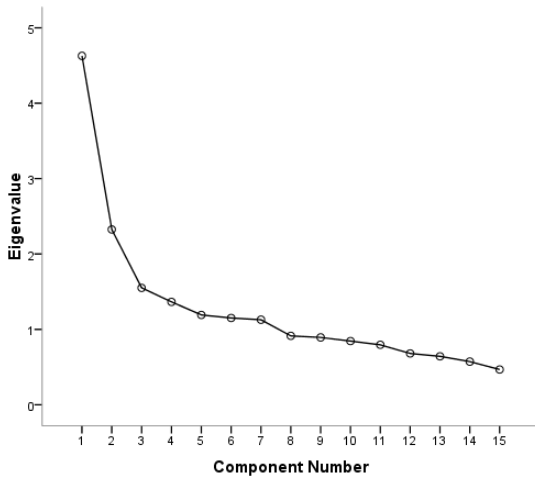


Fig. 1. Screw Plot of original variables
 Source: Field survey data (2016)

Table 6 shows the rating of respondents on the indicator variables by the level of agreement to factors that influence their choice of healthcare providers with a scale of 5 being the highest level of value for those who agree through to one being those who disagree. The output revealed that most of the variables were rated around 3 indicating the indifference of respondents towards them except for variable V2 (My house is close to the hospital) which was rated low. It is worth commenting on the indicator with the highest rating i.e. V11 = provision of quality healthcare. This implies that this indicator have a great deal of importance attached to it by the respondents.

Table 6. Descriptive statistics of indicators

	Mean	Std. deviation
V1	3.97	1.085
V2	2.82	1.345
V3	3.50	1.107
V4	3.53	1.069
V5	3.79	1.009
V6	3.32	1.399
V7	3.49	1.125
V8	3.79	1.116
V9	3.82	1.020
V10	3.17	1.129
V11	4.12	.952
V12	3.00	1.185
V13	3.66	1.045
V14	3.58	1.115
V15	3.47	1.184

Source: Field survey data (2016)

The unrotated factor matrix shown in (Table 7) gives clues to the interpretability of the

underlying factors that seeks to explain choice of a healthcare provider. At a cut-off point of 0.5, it can be seen that the first factor is highly loaded on by seven variables which are v3 (convenience of appointment time), v4 (convenience of waiting time for consultation), v6 (friends and families goes there), v7 (reputation of the hospital), v8 (friendliness of hospital staff), v13 (hospital have standard facility) and v14 (convenience of waiting in consulting room).

Table 7. Unrotated factor matrix

Variable	Components			
	1	2	3	4
V1	.49	.00	-.42	.07
V2	.18	-.80	.05	.49
V3	.58	.05	-.38	.11
V4	.52	.09	-.09	.08
V5	.40	.18	-.19	-.21
V6	.55	-.53	-.17	-.58
V7	.60	-.14	-.03	.23
V8	.61	.12	.23	.05
V9	.46	.17	-.14	.20
V10	.41	.06	.43	.12
V11	.40	.57	-.10	.10
V12	.35	-.20	.59	-.18
V13	.58	.14	.10	.04
V14	.62	.23	-.12	.12
V15	.48	.26	.40	-.08

Source: Field survey data (2016)

The highest loadings on the second factor is from the eleventh indicator, v11 (provides quality healthcare). However the most negative loading 0.8 and 0.53 from v2 (closeness of house to hospital) and v6 (friends and families goes there) respectively must not go unmentioned which is an indication they are inversely related.

The third factor is highly loaded on by variable v12 (financial status).

Finally, the fourth factor has a high negative loading on v6 (friends and families goes there) which also implies that the fourth factor is inversely related to variable v6.

Table 8 gives us an opportunity to have a simpler factor structure that can be meaningfully interpreted. It also follows a cut-off point of 0.5 for interpretability.

After rotation, it was observed that the loadings on the first factor are now from v1 (cleanness of the hospital environment), v3 (convenience of appointment time), v7 (hospital reputation), v9 (well organize of hospital), v11 (provision of

quality healthcare) and v14 (convenience of waiting time in consulting room). A close look back at the correlation table reveals that these variables are correlated among themselves and hence gives a confirmation that these variables have a lot in common. With this, the name of the first factor as *hospital service delivery factor*.

The second factor is highly loaded highly on by v8 (friendliness of hospital staff), v10 (availability of quality food to buy), v12 (financial status) and (convenience of waiting time in consulting room). It can be seen that there is vast variation in the mean of the variables thus some recording high means and others recording low means. Also, a look at the correlation table reveals high correlation between three variables (v8, v10 and v11). This is an indication that customer care and prestige factor determines choice of a healthcare provider.

The third factor has a very high significant loading on variable v2 (closeness of house to hospital). But a very close look at the mean of this factor indicates a value of 2.82, which implies that most of the responses were undecided and that the variable is just worth explaining the factor as the distance factor.

The last factor is highly loaded on by v6 (friends and families goes there) and a look at its mean (3.32) indicates that most responses were rated undecided and agreed. We can proceed and consider this factor as *family and peer influence factor*.

At a significance level of $\alpha = 0.05$, it appears that all the asymptotic significance are greater than 0.05 except for variable V9 and V10 thus (the hospital is well organized and there is availability of quality food within the hospital premises to buy) whose asymptotic significance are less than 0.05. It therefore suggest that there is no significance difference between the male and female respondents rating for thirteen variables but significance difference exist between gender rating on 2 variables (V9 and V10) as shown in appendix Table 1.

The findings above are supported by the output in appendix Table 2 where it could be seen that the mean ranks don't show any significance difference including the V9 and V10 that was rejected by the significance test. Even though the mean rank of V9 and V10 do not show any significance, conclusion is based on the significance test which suggests there is a difference.

4. DISCUSSION OF RESULTS AND CONCLUSION

The aim of the study is to analyze factors National Health Insurance holders consider in selecting preferred primary healthcare providers in Ho municipality. In particular to, access the distribution of insurance holder's selection of healthcare providers, examine insurance holder's choice of a healthcare provider across age line, to determine salient factors that influence choice of a healthcare provider and investigate gender perception on indicator variables that influence choice of a healthcare provider. The study brought to bear that with the implementation of NHIS capitation policy, 30.6% of insurance holders sought care from Municipal hospital, 13.6% from Polyclinic whiles 22.2%, 19.2% and 14.1% seek care from Royal hospital, Foresight clinic and Miracle life (Letsa) respectively. The result, however, implies that Ho municipal hospital is most likely to be the biggest care provider to insurance holders.

The chi-square test revealed that age group is dependent on choice of a healthcare; hence, insurance holders falling within a particular age group will prefer selecting a particular healthcare as their primary care provider. This, however, confirms part of existing research by [12] which revealed that the main factors associated with choosing hospital were medical service, accessibility, age, sex and education. The test, therefore, indicate clearly that majority of

Table 8. Rotated factor matrix

Variable	Component			
	1	2	3	4
V1	.62	-.08	.05	.18
V2	.08	.05	.94	.09
V3	.69	.01	.03	.14
V4	.49	.22	.00	.07
V5	.38	.08	-.25	.23
V6	.22	.13	.13	.93
V7	.52	.28	.28	.09
V8	.39	.53	-.01	.05
V9	.52	.15	.00	-.07
V10	.14	.58	.08	-.07
V11	.51	.19	-.39	-.23
V12	-.13	.67	.12	.25
V13	.44	.41	-.05	.06
V14	.62	.26	-.09	.01
V15	.19	.62	-.21	.01

Source: Field survey data (2016)

Significance test for difference in male and female ratings on factor indicator variables

insurance holders with age 18-37 will choose or have chosen municipal hospital as their primary healthcare provider, majority of insurance holders with age 48-67 have chosen or will select foresight clinic as their care provider while majority of insurance holders with age group 58 above will select or have chosen miracle life and polyclinic as their primary care provider.

Results from Man Whitney U test indicate that there is no significant difference between male and female selection on thirteen indicator variables that influence choice of a healthcare provider, but however on different views on two indicator variables that influence choice which are "cleanness of hospital environment and availability of quality food to buy". Shu in his study in 2010 using 18 indicator variables found that there is no difference in 16 indicator variables selection by hospital user while significance difference exist for two indicator variables which are "cleanness of hospital environment and availability of quality food to buy". This indicates that result in this study contradict existing literature by [19].

It can be seen from the factor analysis data presentation that four factor solution is appropriate and adequate in explaining factors that influence choice of healthcare providers among insurance holders in Ho Municipality. These findings, however, reflect some of the by other research in consideration of individual indicator variables that influence choice of a healthcare provider.

1. Hospital service delivery factor
2. Customer care and prestige factor
3. Distance factor
4. Family and peer influence factor

5. RECOMMENDATIONS

Healthcare providers should try and put more measures in place to improve the provision of healthcare since patients give priority to the factor findings above.

In order for healthcare providers to equip themselves with medical equipment to ensure quality service delivery, National Health Insurance Authority (NHIA) should consider releasing funds on time.

The researchers further recommend that Ghana Health Service should deem providing more medical equipment and manpower to healthcare

provider's especially Municipal hospital since it's going to be having more patient base. The researchers recommend further research in the area of challenges facing the implementation of capitation policy.

6. LIMITATION

The study cannot be generalized to cover all other areas in the Ghana but limited to only the population of subscribers of NHIS in Ho Municipality. The problem of naming factors after determining the significant loadings on each component; since the loadings on one factor usually comes from more than one indicator the names giving to the factors are more of the researchers opinion and imagination, they may not probably reflect all the variables that are loaded on that factor.

ETHICAL APPROVAL

The ethical concerns in our research work was minimised even though our data was collected from human subjects (respondents) but respondents' identities were not disclosed. The researchers have received ethical approval from the institution (NHIS Ho Municipal Manager) to carry this research. We (the researchers) sent a letter from Mathematics and Statistics Department of our school to NHIS office and they gave the researchers information (some workshop materials on insurance capitation and educates us on the capitation policy) on capitation, we also requested total registered members of their scheme but he (the manager) told us that, the data is a continuous data and that was the reason why we used an unknown population total is calculating for the sample population. The participants voluntarily accepted to participate in the research and were assured that their identities would not be disclosed. The respondents were also assured that the research would help improve on the capitation policy.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Table 1. Significance test for difference in male and female population rating on factor indicator variables

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15
Mann-Whitney U	17357.0	18193.0	18676.0	18161.0	18560.5	17644.5	18424.0	18576.0	16246.5	16662.5	18735.5	18085.5	17164.0	18530.0	18774.0
Wilcoxon W	30237.0	45923.0	31556.0	45891.0	31440.5	45374.5	31304.0	31456.0	29126.5	29542.5	31615.5	45815.5	44425.0	31410.0	46504.0
Asymp. Sig. (2-tailed)	.168	.575	.908	.549	.821	.282	.723	.833	.016	.048	.950	.578	.164	.802	.981

Table 2. Mean rank for samples from male and female population on indicator variables

	Gender	N	Mean rank		Gender	N	Mean rank		Gender	N	Mean rank
V1	male	160	188.98	V6	male	160	205.22	V11	male	160	197.60
	female	235	204.14		female	235	193.08		female	235	198.27
	Total	395			Total	395			Total	395	
V2	male	160	201.79	V7	male	160	195.65	V12	male	159	201.25
	female	235	195.42		female	235	199.60		female	235	194.96
	Total	395			Total	395			Total	394	
V3	male	160	197.23	V8	male	160	196.60	V13	male	160	206.23
	female	235	198.53		female	235	198.95		female	233	190.67
	Total	395			Total	395			Total	393	
V4	male	160	201.99	V9	male	160	182.04	V14	male	160	196.31
	female	235	195.28		female	235	208.87		female	235	199.15
	Total	395			Total	395			Total	395	
V5	male	160	196.50	V10	male	160	184.64	V15	male	160	198.16
	female	235	199.02		female	235	207.10		female	235	197.89
	Total	395			Total	395			Total	395	

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