Trends in Health Insurance Subscription at Cape Coast, Ghana: A Retrospective Study from 2005 – 2014

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Abstract

Even though a major objective of the Ghana National Health Insurance Scheme at its promulgation in 2003 was a universal subscription by 2008, the scheme covered 38.3 per cent of the Ghanaian population by 2014. We examined trends in health insurance subscription at Cape Coast from 2005 to 2014. The study was conducted with data from the National Health Insurance Scheme from 2005 to 2014. A record review approach was adopted in extracting records of insurance subscription within the period under review. Data collected were presented using percentages and chi-square statistics. Subscription to the scheme declined from 43.9 per cent in 2005 to 40.6 per cent in 2014. There were more female than male subscribers in all the years under review. Subscription increased for persons under 18 years and those in the informal sector over the ten-year period, but declined for Social Security and National Insurance Trust contributors and pensioners, the aged, indigents, and pregnant women. The study underscores the need for the National Health Insurance Authority to increase subscription to the scheme through innovative ways such as sharing the scheme's achievements through improved advertisement and contracting private entities through public-private partnerships to augment its efforts at recruiting more subscribers.

Keywords: Trends, health insurance, NHIS, subscription, special group, health financing.

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Introduction

The world faces challenges in financing health care for its over 1.3 billion poor people (Amu & Dickson, 2016). This is mainly because many of its poor lack the required access to affordable and effective health care interventions (Amu & Dickson, 2016). While developed countries such as Canada and Australia have been successful in adequately financing the health needs of their populace by combining both public and private insurance schemes (Dalinjong & Laar, 2013), the cost of financing health care in many developing countries has remained a major economic challenge (Carman & Eibner, 2014). Several developing nations, therefore, continuously explore varied avenues of funding their health care systems including health insurance.

The trends in health insurance subscription, including trends according to sex and special groups, have seen improvements years and decades after the introduction of such schemes in some developing countries (Blanchet, Fink, & Osei-Akoto, 2012). In other countries, however, the health insurance schemes have either made no improvements or experienced retrogression in the trends of subscription after their introduction (Blanchet, Fink, & Osei-Akoto, 2012). When Colombia, for instance, approved its Universal Health Insurance Scheme (Law 100) in 1993, a 49 per cent subscription rate was recorded in that same year and it currently covers more than 95 per cent of the country's population (Escobar, Giedion, Giuffrida, & Glassman, 2010). Prior to 1993, coverage of health insurance was 24 per cent of the country's population (Escobar, 2005).

Like Colombia, Thailand, which introduced the scheme in 2001, met its full implementation target of covering over 95 per cent of its total population by 2012 (Health Insurance System Research Office [HISRO], Thailand, 2012; Sakunphanit, 2012). Unlike Thailand, Taiwan, and Colombia, Nigeria's National Health Insurance Scheme has not been a success story (Arin & Hongoro, 2013). Launched in 1999, the scheme still covers less than 10 per cent of the country's population (Arin & Hongoro, 2013; Mensah, 2011).

Health care financing in Ghana started after independence, with a tax-funded system called free health care, which provided health care services free of charge to all persons resident in Ghana (Blanchet et al., 2012). This policy progressively became financially unsustainable with the Ghanaian economy stagnating in the 1970s (Blanchet et al., 2012). User fees were, therefore, introduced for hospital services, to offset the financial burden of health care on the state, giving rise to cost sharing (Amu & Dickson, 2016). The cost sharing policy also became financially unsustainable, leading to the introduction of full cost recovery (cash and carry), whereby patients bore the full cost of health care at the point of service delivery. The National Health Insurance

Scheme (NHIS) subsequently replaced the cash and carry system (Kumi-Kyereme, Amu, & Darteh, 2017).

The law promulgating the NHIS was passed in 2003 through the National Health Insurance Law (Act 650 of Parliament). Mandatory health insurance, however, had a legal framework in 2004 through the National Health Insurance Regulations (Legislative Instrument. 1809) (Government of Ghana, 2003, 2004). The scheme was introduced to ameliorate the adverse impacts of cash and carry, especially on the poor (Blanchet et al., 2012). In practice, however, most subscribers to the scheme are people in the upper wealth quintile, as the poor in society are less likely to subscribe to the scheme (Kumi-Kyereme & Amo-Adjei, 2013).

The NHIS is financed by Valued Added Tax (insurance levy) on goods and services (2.5%), deductions from the pension contributions of formal sector Social Security and National Insurance Trust (SSNIT) workers (2.5%), and funds allocated by the legislature to the Health Insurance Fund (HIF) (Universal Access to Health Care Campaign Coalition, 2013). The NHIS is also financed through annual premiums paid by adults who are 18 years and above, in addition to donations, grants, investments, gifts, and voluntary contributions (Boakye-Frimpong, 2013). People who are seventy years and above, SSNIT contributors and pensioners, children under eighteen years, the indigent, and pregnant women, however, are exempted from payment of the yearly premium (Universal Access to Health Care Campaign Coalition, 2013).

Coverage of the NHIS extends up to about 95 per cent of Ghana's disease burden (Amu & Dickson, 2016). It encompasses operations including repair of hernia, out-patient services such as diagnostic testing and most in-patient services including care by specialists, most surgeries, accommodation at the wards, and emergency care (Kumi-Kyereme & Amo-Adjei, 2013). It also covers treatment for oral health and maternal care related services including caesarean sections. All drugs listed on the medicines' list of the NHIS are also covered by the scheme (Blanchet et al., 2012).

Prior to 2010, an old methodology was used to calculate active subscribers to the scheme. This was done by subtracting the number of all expired identification cards since the implementation of the NHIS from the sum of all cards issued and those renewed (National Health Insurance Authority [NHIA], 2010). A major challenge with this method was that the cumulative number of cards issued included members who had done multiple registrations and thus, over-estimated the number of card holders (NHIA, 2010). It also included subscribers who were deceased. As a result of these and other challenges, a new methodology was introduced in 2010 (NHIA, 2010). Active membership of the NHIS then started being calculated based on the total of number of new subscribers registered in a particular year and the total number of renewals recorded in the same year (Asuming, 2013).

Even though a number of studies have been conducted on subscription to the NHIS (Amu & Dickson, 2016; Kumi-Kyereme & Amo-Adjei, 2013; Gajate-Garrido & Ahiadeke, 2013; Asuming, 2013; Jehu-Appiah, Aryeetey, Agyepong, Spaan, & Baltussen, 2012; Jehu-Appiah, Aryeetey, Spaan, De-Hoop, Agyepong, & Baltussen, 2010), these have not focused on NHIS subscription over time, at the national and/or the sub-national level. Our study was conducted in the Cape Coast Metropolis because available data from the NHIA indicated that out of the ten administrative regions in Ghana, the Central Region, of which Cape Coast is the administrative capital, has recorded the least regional percentage subscription to the scheme over the years (Ghana Statistical Service [GSS], 2013). We, therefore, examined annual trends in health insurance subscription in the Cape Coast Metropolis, in addition to trends according to sex and special groups, over a ten-year period so as to properly understand the variations in the trends of subscription since actual subscription onto Ghana's NHIS started in 2005.

Conceptual Framework

Diffusion of Innovation (DOI) Theory was adopted as the conceptual framework for this paper. The theory was propounded by Everett Mitchell Rogers in 1962 to explain how over time, an innovation gains momentum and diffuses through a social system. Innovation was defined as an idea, practice, or object perceived as new (Rogers, 2003). Rogers noted that diffusion is a process by which an innovation is communicated through certain channels over time among the members of a social system. There are five major factors which influence adoption of an innovation (Wright, 2004; Roger, 2003). These are; relative advantage, compatibility, complexity, triability, and observability.

The nature of an innovation in itself may serve as an important drive for people to either adopt it or not. Depending on how driven an individual is, he or she then decides whether or not to adopt the innovation. After taking the decision to adopt an innovation, the individual searches for support for his or her decision. The decision to adopt an innovation may be reversed if the individual is exposed to negative messages about the innovation (Rogers, 2003). There are usually cost-benefit analyses conducted by the individual which also drive the adoption of an innovation (Nybakk, Crespell, Hansen, & Lunnan, 2009). The benefits of an innovation refer to the positive consequences which serve as motivations for its adoption, while the costs refer to the barriers hindering adoption (Mhere, 2013). The tenets of the theory are summarised in Figure 1. There are also five categories of adopters (Rogers, 2003). These are: innovators, early adopters, early majority, late majority, and laggards, in order of adopting an innovation (Figure 2).

There are four main elements of behaviour change posited by the theory (innovation, time, communication channels, and social systems) which, in the case of the NHIS, may play important roles in people's decisions to subscribe to the scheme (Rogers, 2003). The decision to subscribe may also be influenced by the relative advantage the scheme offers over the cash and carry system it replaced. As indicated by Rogers (2003), residents of the Cape Coast Metropolis could be classified as innovators, early adopters, early majority, late majority, and laggards in terms of subscription to the NHIS. The decision to subscribe to the NHIS is bound by time. In effect, subscription to the scheme is expected to be higher with time, as more and more people decide to subscribe after the innovators and early adoptors have done so.

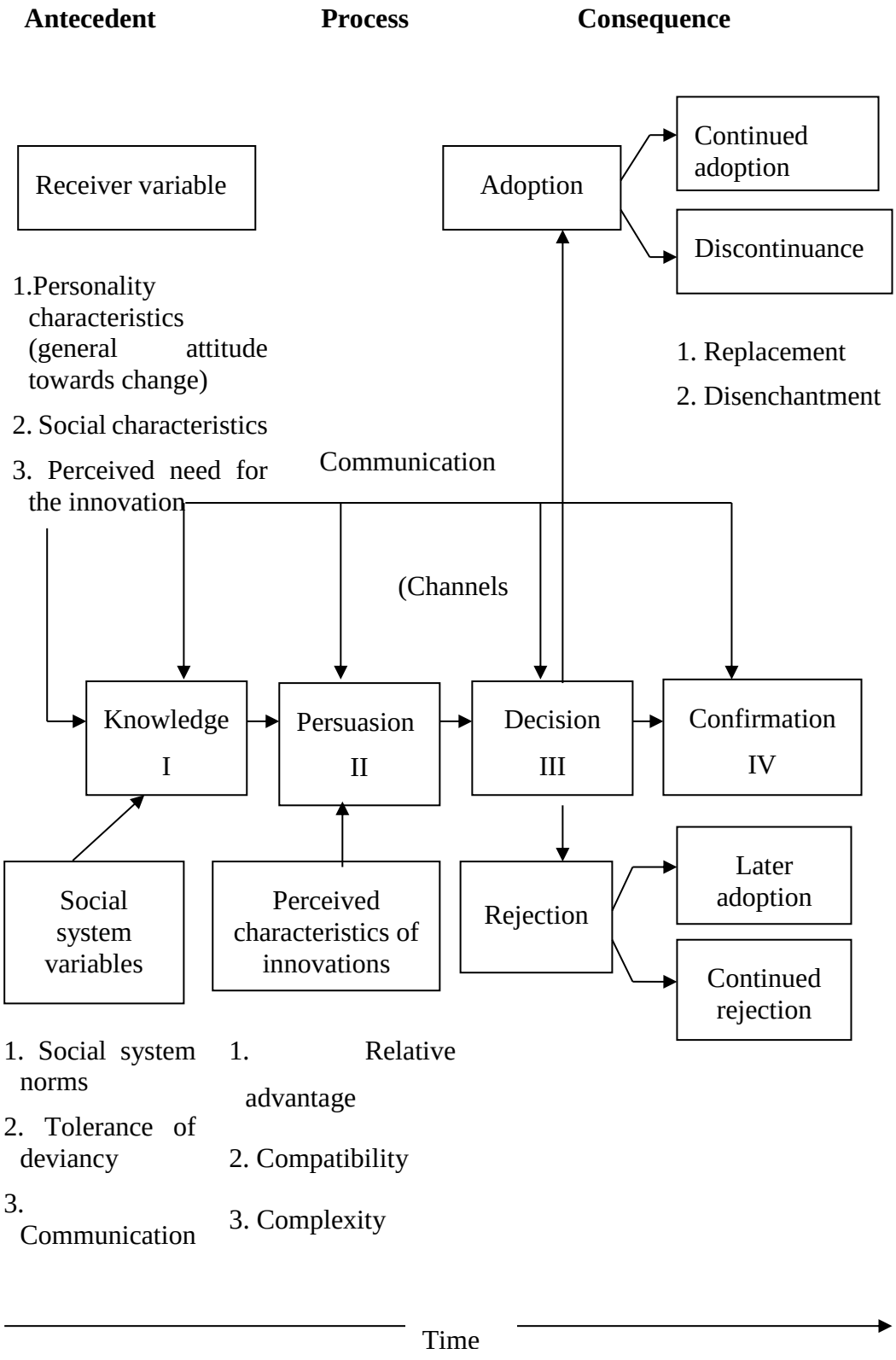

Figure 1: Diffusion of Innovation Model

Source: Rogers (2003)

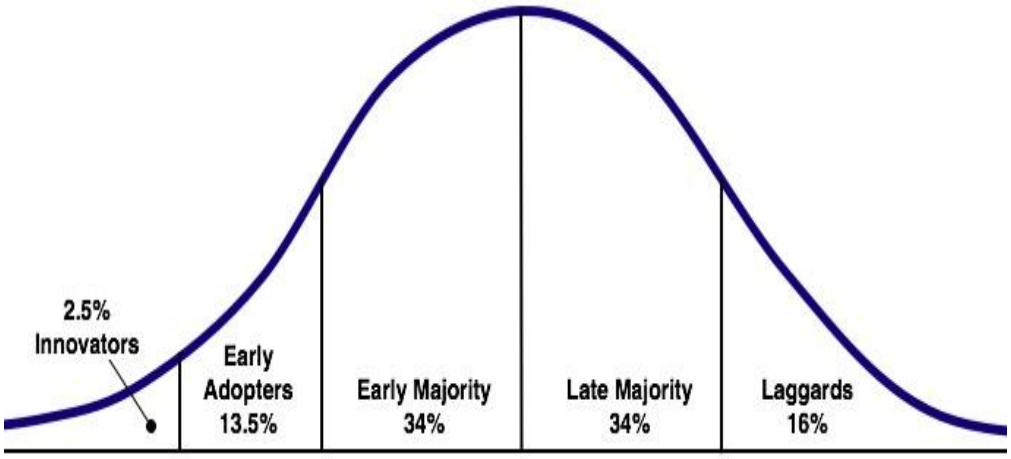

Figure 2: Adopter Categorisations Based on Innovativeness

Source: Rogers (2003)

Materials and Methods

The study was conducted with data already collected by the NHIA, Cape Coast Metropolis. Although the scheme was introduced in 2003, actual subscription started in 2005. For this reason, data on subscription to the NHIS in the Cape Coast Metropolis were collated from 2005. The study was a retrospective one which collected data on subscription to health insurance in the Cape Coast Metropolis from 2005 to 2014. Data were extracted from the records of 526364 NHIS subscribers. This comprised 41000, 4943, 74897, 44327, 20717, 51868, 58632, 70353, 83380, and 76247 subscribers respectively from 2005 to 2014. A checklist was used for the data collection. It was divided into two sections, 'A' and 'B'. Section 'A' was used to collect data on general trends in subscription to the NHIS from 2005 to 2014 and subscription based on sex, while Section 'B' focused on subscription by special and exempt groups from 2005 to 2014.

Ethical clearance for the study was waived by the University of Cape Coast Ethical Review Board. An approval was, however, obtained from the NHIA before the study was conducted in their facility. Steps were taken to ensure that data collected were kept confidential. Hard copies were for instance hidden from sight, while soft copies were locked in a computer application called 'My Lockbox'.

Coverage in our study is defined as subscription divided by total population. From 2005 to 2009 and 2011 to 2014, data were not provided for the total population of the Cape Coast Metropolis. Using the country's 2000 and 2010 population and housing census figures as reference points, a formula was used to estimate these populations for further analysis. The formula is given as: $P(t) = P_0e^{rt}$. Where; P(t) = the current population, P_0 = Initial population, e = natural log, r = rate of growth, and t =time period (years). Chi-square tests were conducted to examine the influence of sex and

special group on health insurance subscription in the metropolis. The acceptable level of significance for the q-square tests was $p<0.05$.

Results

Table 1 presents results on the annual trends in subscription from 2005 to 2014. It is also based on subscription according to sex. The results show that percentage subscription to the scheme in the metropolis was 43.9 per cent in 2005, but declined to 40.6 per cent in 2014. There were, however, variations in the pattern of subscription in the various years under review. In 2007 for instance, subscription increased to 76.4 per cent but declined progressively for two years. From 2010, however, subscription to the scheme increased consistently until it peaked in 2013. The year 2014 also saw a reduction in subscription.

The 2010 population and Housing Census of Ghana indicates that in the Cape Coast Metropolis, males constitute 48.7 per cent while females constitute 51.3 per cent (Ghana Statistical Service, 2014). Based on this premise, the present study was interested in ascertaining whether the same percentages pertain to NHIS subscription in the Cape Coast Metropolis. From Table 1, female subscribers were generally more than males in all the years reviewed. Chi-square tests conducted showed that the sex differences in subscription were statistically significant.

Table 1: Annual Trends in Health Insurance Subscription from 2005 – 2014 and trends according to sex

Years	National Ghana's Population	NHIS subscription	% coverage	Cape Coast Population of Cape Coast	NHIS subscription	% coverage	Male (%)	Female (%)	P-value
2005	21430193	1348160	6.3	93247	41000	43.9	0.0	0.0	
2006	21951891	2521372	11.5	95609	0	0.0	0.0	0.0	
2007	22528041	6643371	29.5	98029	74897	76.4	42.2	57.8	0.003**
2008	23115919	9914256	42.9	100510	44327	44.1	46.5	53.5	0.000***
2009	23713164	10638119	44.9	103055	20717	20.1	37.2	62.8	0.000***
2010	24658823	8163714	33.1	169894	51868	30.5	42.9	57.1	0.000***
2011	25235268	8227823	32.6	174194	58632	33.7	44.9	55.1	0.000***
2012	25824920	8885757	34.4	178604	70353	39.3	37.0	63.0	0.000***
2013	26427760	9596991	36.3	183126	83380	45.5	46.9	53.1	0.000***
2014	27043093	10365154	38.3	187762	76247	40.6	48.7	51.3	0.000***

Source: Field work, 2015; NHIA, 2009, 2010, 2011, 2012. No data was provided by sex, for Ghana, and in 2005 and 2006, for Cape Coast.

No data was also provided in the Cape Coast Metropolis for 2006. **p<0.01, ***p<0.00

Subscription to the NHIS was examined by special group (Table 2). Special groups, according to NHIS classification, comprise Social Security and National Insurance Trust (SSNIT) pensioners, SSNIT contributors, persons under 18 years of age, pregnant women, the aged who are 70 years and above, indigents, as well as those employed in the informal sector. Percentage subscription generally increased for persons under 18 years and those in the informal sector from 2005 to 2014. It, however, declined for the other special groups (SSNIT pensioners, SSNIT contributors, the aged, indigents, and pregnant women) over the same period.

There were variations in the yearly subscription to the scheme by the various special groups. For instance, about four per cent of subscribers in 2005 were SSNIT pensioners, and this figure remained virtually the same in the following year (Table 2). In 2007, the percentage of SSNIT pensioners increased marginally before reducing in 2008 and 2009. Percentage subscription for SSNIT pensioners again remained stable for 2010 and 2011 but declined in 2012 and 2013. Subscription for SSNIT contributors increased from 2005 to 2007. However, in the last two years under review, subscription to the scheme among the group reduced significantly (Table 2).

In 2008, 5.2 per cent of subscribers to the NHIS were pregnant women. This increased to 19.6 per cent the following year. Subscription of pregnant women on the scheme remained relatively stable for the rest of the years, even though reductions were recorded after the highest percentage subscription in 2009. Even though subscription of the aged onto the scheme generally declined from 2005 to 2014, the decline was fairly stable over the ten-year period. Subscription for the indigent declined from 4.7 per cent in 2005 to 2.4 per cent in 2008, and figures further decreased from 2009 to 2011. The group's subscription, however, increased in 2012 and 2013, although the last year under review recorded only 0.8 per cent. The variations in subscription by the special groups were found to be statistically significant (Table 2).

The share of the exempt group in the subscription to health insurance generally increased from 47.5 per cent in 2005 to 56.1 per cent in 2014. Some of the years under review, however, deviated from this general pattern of increase. While some of the years, such as 2013, experienced very high subscription rates, others, such as 2009, recorded low figures (Table 2). The fact that the exempt group covered 56.1 per cent of subscription to the scheme meant that 43.9 per cent of the subscribers either paid yearly premiums or had deductions made (SSNIT contributors) from their remuneration before enjoying benefits from the scheme.

Table 2: Trends in Health Insurance Subscription by Special and Exempt Group

Special Group	Year (%)									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
SSNIT Pensioners	3.7	0	4.0	0.9	0.1	1.1	1.0	0.5	0.4	0.5
SSNIT contributors	20.5	0	21.5	14.4	6.2	10.1	14.6	16.8	10.9	7.6
Persons under 18 years	31.8	0	32.2	35.6	26.5	36.1	42.0	41.1	40.5	45.3
Pregnant women	0	0	0	5.2	19.6	8.7	7.0	6.0	4.8	4.4
Aged 70 years and above	7.3	0	5.7	3.5	6.4	5.2	7.5	5.0	4.7	5.1
Indigents	4.7	0	3.0	2.4	0.005	0.008	0.007	2.8	10.6	0.8
Informal sector	1.6	0	20.3	28.1	41.2	38.8	27.9	27.8	28.1	36.3
Non-special groups	30.4	0	13.3	13.9	0	0	0	0	0	0
Total subscription	100	0	100	100	100	100	100	100	100	100
P-value	0.025*	0	0.020*	0.041*	0.032*	0.044*	0.002**	0.001**	0.046*	0.029*

Source: Field work, 2015. *p<0.05, **p<0.01
Note: No data was provided for 2006 and for pregnant women from 2005 to 2007

Discussion

Residents who subscribed to the scheme in 2005 as posited by the conceptual framework are the innovators, as they happened to be the first subscribers to the scheme. The health insurance subscription for 2007 in the Cape Coast Metropolis declined from 2008 to 2009. As an innovation, this reduction implies that most of the people who subscribed to the NHIS scheme in 2007 got disoriented or dissatisfied with services rendered to them, or that the processes involved in subscribing to the scheme and utilising health care services with their membership were too cumbersome for them, for example, due to long queues and prolonged waiting time, as opined by Mulupi, Kirigia, and Chuma (2013). As such, the people decided not to subscribe to the scheme the following year. In relation to the conceptual framework (Rogers, 2003), the decline in subscription from 2008 to 2009 may be likened to disenchantment discontinuance, where the adopter rejects the innovation because he or she is not satisfied with its performance or the innovation does not meet his/her needs.

The decline from 2008 to 2009 may also be related to Boateng and Awunyor-Vitor's (2013) argument that people are usually unable to afford the cost of subscribing to the scheme, which prevents them from doing so and fits appropriately with the conceptual framework that there are two main costs associated with the drive for subscription; direct and indirect costs. Direct costs are

usually related to financial uncertainty and the economic state of the potential subscriber; such costs may be too high for some subscribers, who have no option than to discontinue their subscription (Mhere, 2013).

In September 2010, the NHIA conducted a special registration exercise with the aim of increasing its subscriber base (GSS, 2013). This initiative targeted mainly the vulnerable and poor in all communities and at congregation centres including markets, mosques and churches. The special registration exercise was carried out all over the country, enabling people who were already subscribed to the NHIS to renew their subscription and new members to register. This, therefore, might have accounted for the progressive increase in the active subscriber base of the NHIS from 2010 to 2013 in the Cape Coast Metropolis.

The conceptual framework posits five major factors including relative advantage and compatibility which influence the innovation adoption decisions of individuals (Wright, 2004; Rogers, 2003). While relative advantage in our study refers to the extent to which the NHIS is seen by people as better than the cash and carry system which it replaced, compatibility deals with how consistent the scheme is with the experiences, values, and needs of intended subscribers. These factors, therefore, probably worked in favour of the NHIS in 2010, 2011, 2012 and 2013 to ensure that people kept renewing their subscription while new ones accepted the scheme.

A reason for the increase in NHIS subscriber base from 2010 to 2013 might have been the fact that the potential subscribers weighed the barriers of subscribing to the scheme against the benefits of doing so, as argued by Schultz et al. (2013) in a randomized control trial among clients of microfinance institutions in Ghana. For these potential subscribers to the scheme, motivation to subscribe was a major drive which outweighed the barriers to subscription. On the other hand, individuals were not driven to subscribe in the last year under review for reasons including the affordability of the yearly NHIS premium (Duku et al., 2013).

This resonates with the conceptual framework of the study that potential subscribers to the health insurance basically weigh the costs (barriers) of subscribing to the scheme against the benefits (motivations) of doing so (Schultz, Metcalfe, & Gray, 2013). If the motivation to subscribe outweighs the barriers, the individual is likely to subscribe to the scheme, as the drive to do so becomes high (Schultz et al., 2013). On the other hand, the individual may decide not to subscribe to the scheme if the barriers to subscription outweigh the motivation to subscribe or renew membership (Duku, Fenenga, Alhassan, & Nketiah-Amponsah, 2013).

The decline in subscription by pregnant women from 2010 to 2014 may also be due to challenges encountered by the women - such as long queues and waiting times - in previously subscribing to

the scheme, as observed by Nguyen, Rajkotia and Wang (2011). The decline in subscription by indigents from 2006 to 2011 may be related to the argument by the NHIA (2012) that "the inadequate coverage could be attributed to the difficulty in identifying them (indigents)" (p. 32). In relation to the conceptual framework, it could mean that the NHIS was not relatively advantageous to the group, compared to the cash and carry system it replaced (Rogers, 2003).

The majority of NHIS subscribers belonged to the exempt groups. The implication is that only a few people who subscribe to the scheme actually contribute towards its financing. As noted by the NHIA (2012), "financial sustainability of the scheme remains a big challenge to management given the increasing demand for health insurance (for SSNIT pensioners, indigents, pregnant women, and persons under 18 years) and its consequential increase in health care service utilisation" (p. 39). Despite the important findings made by the study, its potential limitation is worth noting. Since the data were already collected by the NHIA in the past, we were unable to account for potential confounding factors which might have influenced the trends observed in subscription.

Conclusion

A major objective of the NHIS upon its inception was to achieve universal coverage after 5 years. That the scheme has not achieved this feat since its inception, therefore, calls for stringent measures to improve its acceptance by the Ghanaian populace. The study underscores the need for more informal sector workers to be encouraged to subscribe to the scheme through special registration exercises organised by the NHIA to offset the high percentage of exempt groups on the scheme and thereby improve the economic viability of the insurance. There is also the need for the NHIA to increase subscription through innovative ways such as sharing the scheme's achievements through improved advertisement in both traditional and social media. Also, the NHIA should contract several private companies through public-private partnerships to augment its efforts at recruiting more subscribers.

Authors' contributions

HA conceived the study. HA and UKMD designed and performed the analysis. HA and AK drafted and edited the manuscript. All authors proof-read the final manuscript and approved it.

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