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Enrolment of older people in social health protection programs in West Africa — Does social exclusion play a part?

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ABSTRACT

Although the population of older people in Africa is increasing, and older people are becoming increasingly vulnerable due to urbanisation, breakdown of family structures and rising healthcare costs, most African countries have no social health protection for older people. Two exceptions include Senegal's Plan Sesame, a user fees exemption for older people and Ghana's National Health Insurance Scheme (NHIS) where older people are exempt from paying premiums. Evidence on whether older people are aware of and enrolling in these schemes is however lacking. We aim to fill this gap. Besides exploring economic indicators, we also investigate whether social exclusion determines enrolment of older people. This is the first study that tries to explore the social, political, economic and cultural (SPEC) dimensions of social exclusion in the context of social health protection programs for older people. Data were collected by two cross-sectional household surveys conducted in Ghana and Senegal in 2012. We develop SPEC indices and conduct logistic regressions to study the determinants of enrolment. Our results indicate that older people vulnerable to social exclusion in all SPEC dimensions are less likely to enrol in Plan Sesame and those that are vulnerable in the political dimension are less likely to enrol in NHIS. Efforts should be taken to specifically enrol older people in rural areas, ethnic minorities, women and those isolated due to a lack of social support. Consideration should also be paid to modify scheme features such as eliminating the registration fee for older people in NHIS and creating administration offices for ID cards in remote communities in Senegal.

1. Introduction

In their 'manifesto for the world we want', The Lancet (2012) identified globally ageing population as a critical issue that must be addressed to help create sustainable improvements in health. By 2016 it is estimated that there will be more people older than 65 years than children under five, and 1.5 billion people over 60 will be added to the global population between now and 2050 (UN, 2009). Despite the demographic transition being more advanced in developed countries, between 1950 and 2000, 66% of the global increase in people over 60 occurred in low- and middle-income countries (LMIC); by 2050 it is projected that 80% of all older people (i.e. 1.6 billion) will be living in LMIC (Aboderin, 2012; Beard et al., 2011, pp. 4). This unprecedented and rapid demographic shift will have far-reaching consequences for health systems and many LMIC already face immense challenges in providing adequate, age-appropriate healthcare and a decent standard of living for older people.

In Sub-Saharan Africa (SSA) the issue of ageing has so far received little attention from both policy makers and researchers. However, in spite of the low relative share of older people in the total SSA populations (below 10%); the subcontinent still hosts a significant aged population, which is expected to grow at a steady pace. With life expectancy of 16 years for 60 year olds, getting old is no longer an exception in Africa.

Ageing in Africa raises particular concerns because of its strong association with increased vulnerability. Several risk factors are associated with this heightened vulnerability (Crooks, 2009;

Issahaku and Neysmith, 2013). First, older people in SSA usually retire in rural areas, characterized by poor infrastructures and acute problems of basic service provision. Second, many scholars point out the feminisation of the SSA aged population — 'a female society' according to Apt (2009). This makes Africa's older women twice as vulnerable, first due to the biological process of ageing, and, second, due to gender-related discrimination. Third, majority of older people are illiterate (67% in Africa (UN, 2009)), which is associated with poor access to public resources. Furthermore, most of the Africa's older people, especially women, have no formal employment records and thus no access to formal social security arrangements like pensions. It is estimated that only 17% of older people in SSA receive an old-age pension (International Labour Organization, 2014).

Historically the extended family structure in Africa has mitigated the effect of these combined risk factors. However, evidence suggests the situation is changing. Traditional respect and caring structures are facing substantial social challenges, hence refuting the widespread African myth of the "inexhaustible capacity of the extended family to withstand crisis" (Gysels et al., 2011).

Access to appropriate healthcare remains a major concern for the majority of the ageing population in SSA. Facts speak for themselves: not only do older people spend more per-capita on healthcare than others in LMIC, consequently bearing a heavy burden linked to user fees policies, they also face higher levels of unmet need for healthcare, with a greater proportion of older people reporting forgone treatments for illness than younger groups (McIntyre, 2004; Saeed et al., 2012). The gap between needs and access is expected to grow further in the short term, especially due to the escalating epidemic of non-communicable diseases (NCDs) among the ageing population (Alam et al., 2010; George-Carey et al., 2012; Holmes and Joseph, 2011).

Recognising the increased vulnerability of older people in relation to illness and healthcare expenditures, two West African countries, Ghana and Senegal, have implemented Social Health Protection (SHP) programs that specifically target older people. These programs aim to reduce the financial barriers faced by older people in accessing healthcare services.

1.1. The Ghanaian National Health Insurance Scheme (NHIS)

The Ghanaian NHIS, launched in 2003, is a national health financing system with decentralised operations. Each district has its own insurance fund, which is financed by central-level funds and premiums. All formal sector employees and their dependents are automatically enrolled, and their premiums are collected at the central level via payroll deductions. Self-employed individuals and informal sector workers need to enrol directly in NHIS. NHIS is largely funded by value-added tax (61% of the total NHIS revenue in 2009). Investment income (17%), and the Social Security and National Insurance Trust pensioners (SSNIT is a national pension scheme which is mandatory for formal sector employees but voluntary for self-employed) premiums (16%) constitute a small proportion of the NHIS budget. NHIS covers almost 95% of the disease burden in Ghana. Services include outpatient, inpatient and emergency care, deliveries, dental care, and essential drugs. Individuals need to register with the NHIS once in their lifetime and then renew their membership annually. Renewal can be done at the District Mutual Health Insurance Scheme (DHMIS) office or by an agent of the scheme. Children under 18, pregnant women, indigents (i.e. the poor and destitute), and all people over 70 are exempted from paying premiums, although they still need to register and renew their membership annually. Exempt groups including people over 70 pay a small registration fee at the time of renewal. In 2011, 8.2 million people (33% of the population) were

active members (registered and had renewed their membership that year) of NHIS and 4.9% of the active members were over 70s (National Health Insurance Authority, 2011).

1.2. Senegal's Plan Sesame

Unlike NHIS, Plan Sesame directly and exclusively targets older people. Launched in 2006 during the presidential address to the nation, Plan Sesame aims to provide free access to public healthcare services to all citizens over 60 — an estimated 5.9% of the total population (ANSD, 2012). Costs of consultations, diagnostics, essential drugs, and hospitalisations are covered by the scheme. Although there is no specific registration process, older people who want to benefit from this exemption are required to present a national ID card at the point of service. The national ID card is mandatory for all citizens aged over 15 years. It can be obtained in person at police stations for a fee of approximately $2 and by presenting a birth certificate or an old ID card (the card is valid for ten years). According to our study 89% of older people have the new national ID card. Plan Sesame is largely funded by taxation. Some funds are also received from the *Institut de Prévoyance Retraite du Sénégal* (IPRES) and the *Fonds National de Retraite* (FNR), the national contingency/pension fund for formal employees in the private sector. Plan Sesame has suffered from under funding and short staffing, and no communication plan is implemented to promote the scheme (Mbaye et al., 2013; Leye et al., 2013).

Although the demand for SHP has recently gained momentum in LMIC, evidence on whether SHP schemes have been successful in providing equitable healthcare to older people where they have access to healthcare on the basis of need, irrespective of their income, age, residency, or sociocultural factors, is limited. In Ghana, NHIS still struggles to overcome inequities in enrolment (Jehu-Appiah et al., 2011; Sarpong et al., 2010) and evidence on whether NHIS has benefitted older people is rare (Lloyd-Sherlock, 2000). Enrolment in itself does not guarantee access to health services, there are likely to be barriers to accessing healthcare even for people who are insured (Biritwum et al., 2013). However, these schemes have been designed in such a way that enrolment is a prerequisite for accessing free care at the point of use for the populations covered, and as such enrolment constitutes an important first step (and potential barrier) to accessing care. It is therefore crucial to study this step to identify individuals at risk of inequities in enrolment.

This study tests the hypothesis that socially excluded older people are less likely to enrol in NHIS and Plan Sesame. This hypothesis is supported by wider literature, which points to social exclusion in the healthcare sector (Marmot et al., 2008) and in the social sector more broadly (Popay et al., 2008). To the best of our knowledge, this is the first study that investigates the role of social exclusion in SHP uptake among the ageing population in West Africa.

2. Methodology

2.1. The SPEC (social, political, economic and cultural) framework

We used the SEKN (Social Exclusion Knowledge Network) definition of social exclusion — 'dynamic, multidimensional processes driven by unequal power relationships interacting across four main dimensions — Social, Political, Economic and Cultural': SPEC (Popay et al., 2008). This definition was operationalized in two steps. First, we conducted an extensive literature review to develop a SPEC framework based on the SEKN framework of social exclusion, and identified domains related to resources and participation that are important for understanding social exclusion. Resources

are *means* such as wealth, assets, education or values that can be used to meet human needs, and participation refers to the *power* and *ability* people have to utilise the resources available to them (Popay et al., 2008). Within these domains we identified measurable indicators or variables of social exclusion, which can be considered as *risk factors* of social exclusion. Having a risk factor does not indicate that the person is socially excluded; rather it indicates that the person is vulnerable to social exclusion. Second, local expert teams in Ghana and Senegal reviewed the SPEC framework and identified domains and variables they thought to be relevant and important in their contexts. Although all four SPEC dimensions are interdependent and interact to affect social exclusion, the social and cultural dimensions in particular were felt to be so intricately interlinked that they were combined into one dimension – sociocultural. The domains and variables, and hypothesis on how they are linked to social exclusion and access to social protection programs, are described in the Supplementary file 1.

Domains and variables (as shown in Table 1) identified by local teams, common to both the settings and relevant for understanding social exclusion among older people were used to construct an index for each dimension of social exclusion. All dimensions were given equal weightage (i.e. 100%). Each domain, within the dimensions, was also given equal weightage and they add up to 100%. Therefore, each index has a max value of 100% and higher the index, greater the vulnerability of the older persons to be social excluded in that dimension.

2.2. Household surveys

We used data from cross-sectional household surveys conducted in 2012 in Senegal and Ghana. Since the target population for NHIS and Plan Sesame differs, we applied different sampling strategies in the two countries. In Ghana, the survey was carried out in five relatively underdeveloped and predominantly rural regions – Central, Eastern, Ashanti, Brong-Ahafo and Northern. From each

region, one district was selected for sampling. The districts were selected after consulting the Ghana Statistical Service to ensure a mix of urban and rural areas. In Ghana 52% of the population lives in urban areas and the remaining 48% in rural areas (CIA, 2014). In each selected district, 27 nationally representative Enumeration Areas (EAs) were selected. We visited each EA and created a list of all households present there. From each EA, 30 households were randomly sampled for interviews, i.e. a total of 4050 households overall. We selected 30 households per EA as advised by the MEASURE Demographic Health Surveys Program (ICF International, 2012).

In Senegal the survey was conducted in Dakar, Diourbel, Matam and Tambacounda regions. These regions were selected to ensure that the sample selected would be heterogeneous in terms of rural–urban population, poverty and access to healthcare. In Senegal 42.5% of the population lives in urban areas and 57.5% in rural areas (CIA, 2014). Except Dakar, the other three regions are predominantly rural, and all of them have a regional hospital. For sampling, the list of EAs was obtained from the National Agency of Statistics and Demography. From this list, EAs were randomly selected proportional to the number of households, and then household compounds were randomly selected. If more than one household was found in the compound, the interviewer randomly selected the household to be interviewed. If the household did not have a person over 60, the household was replaced. A total of 2933 households were selected.

The household survey consisted of two parts. Part I was administered to the household head and collected data on basic demographics and socio-economic situation of the household and its members. For Ghana, this part also gathered information on health status, healthcare utilisation, and awareness and utilisation of NHIS. Part II included questions on social exclusion and was administered to those members that were eligible for NHIS and Plan Sesame in Ghana and Senegal respectively. In Ghana the household head and his/her spouse were interviewed, while in Senegal a person over 60, preferably the household head was interviewed. In case the household head was under 60 or unavailable, another person over 60 from the household was interviewed. For Senegal, besides questions on social exclusion, Part II also covered questions on health status, healthcare utilisation and, awareness and utilisation of Plan Sesame.

Although efforts were made to include similar worded questions in both surveys, owing to the differences in contexts and scheme features, many questions were adapted to local settings. The survey was drafted in English in Ghana and French in Senegal but interviews were conducted in local languages if the respondent was not fluent in the official language.

In Ghana, as the survey was administered to study social exclusion in NHIS and since NHIS is offered to all Ghanaians and not only to people over 70, the respondents were not necessarily over 70. For Ghana we therefore used data on persons over 70 who had answered Part II of the questionnaire i.e. 435 older people. In Senegal all persons over 60 had answered Part II, so we used the entire sample i.e. 2933. In both countries, the household head was interviewed if possible. Therefore, older people in our sample are more likely to be household heads.

For NHIS, although registration needs to be done once, membership needs to be renewed each year. People over 70 were considered enrolled if they had a valid card – they were registered and had renewed their NHIS membership that year. Those that had renewed their membership but had not received their cards were considered as not enrolled as they did not possess a valid card to use NHIS.

In Senegal people over 60 are not required to register for Plan Sesame. However, they are required to present their national

Table 1
SPEC dimensions and variables.

Dimension	Domain	Variables	Weightage
Sociocultural (SC)	Social and community participation	Not a member of any association or club; not participating in religious events	25%
	Social isolation	Single or living alone	25%
	Social discrimination	Feel that elders are not respected in society	25%
	Social dependence	Require help in undertaking activities of daily living	25%
Political (P)	Access to healthcare	Do not have a health facility close by	20%
	Access to information	Do not have access to a television or a radio	20%
	Political and civil participation	Do not exercise their voting rights; not a member of any political party	20%
	Decision making role	Do not have a decision making role in an association	20%
	Access to safe housing	Live in an unsafe neighbourhood (Feel that it is not safe to walk alone in the night in the neighbourhood)	20%
Economic (E)	Relative poverty	Belong to the poorest quartiles (Q1 & Q2)*	33%
	Economic dependence	Do not have an independent source of income	33%
	Precariousness of shelter	Not living in a family-owned household*	33%

Notes: Variables denoted by (*) are estimated at the household level; all other are individual level variables.

biometric identity card (or IPRES or FNR cards) at health facilities to get exemptions. Hence, in Senegal people over 60 require a valid card and they should be aware of Plan Sesame to avail exemptions. We therefore considered persons as enrolled, if they had a valid card and also knew about Plan Sesame.

In this study we wanted to compare older people who are eligible for free healthcare, however they were defined differently as per the scheme eligibility. For NHIS, people over 70 are eligible for exemptions. While Plan Sesame exemptions are offered to people over 60. We therefore included persons who are benefitting from SHP as over 70 years in Ghana and over 60 years in Senegal.

2.3. Regression models

Our basic regression model for determinants of enrolment can be defined as:

$$\text{logit}(p) = \log(p/1 - p) = \beta_0 + X_i \cdot \beta_{i1} + \text{SE}_i \cdot \beta_{i2} \quad (1)$$

Enrolled is a binary outcome variable indicating enrolment status as 0/1, and p is the probability that the individual has enrolled in the scheme i.e. $p = \text{prob}(Enrolled = 1)$. SE_i is a set of SPEC variables (as described in Table 1), X_i is a set of remaining variables that may influence enrolment, and βs are the model parameters.

We estimated three logistic regression models for each country. First, we estimated a simple regression model (Model A) with only X_i variables, we then ran the regression with all variables − X_i and SE_i variables in Model B, and in the third model (Model C) we included X_i variables and the SPEC indices. Bivariate analyses were also conducted as a preliminary step to the multivariate models. These analyses are presented in Supplementary file 2.

Since more than one older person could have answered Part II of the questionnaire in Ghana (for example if both the household head and his/her spouse were over 70), the standard errors for Ghana were adjusted for clustering at the household level. All models were estimated using Stata 12.

2.4. Variables

The variables used in this study are described in Table 2.

The dependent variable, *Enrolled*, is a binary variable indicating the enrolment status i.e. having a valid NHIS card in Ghana. In Senegal there is no Plan Sesame specific card. Older people are required to show their national biometric ID, IPRES or FNR cards at health facilities to access free care. Hence, a person was considered enrolled if he/she had a valid card and had heard of Plan Sesame.

Core variables identified in Table 2 were included in all regressions. Since majority of persons were illiterate, *Education* was constructed as a binary variable and persons who had any formal education were coded as 1. Whether persons belong to majority or minority religious and ethnic groups could determine if they experience exclusion and discrimination. To capture this, two variables, *Majority_religion* and *Majority_ethnicity*, were included. In Ghana majority religion was Christianity while in Senegal Islam. Akan, Ga and Ewe were regarded as majority ethnicities in Ghana and Wolof in Senegal. Previous studies (Jehu-Appiah et al., 2011; Chankova et al., 2008) have found that households in urban areas and female-headed households tend to have higher levels of enrolment and healthcare utilisation; we therefore included variables, *Urban* and *HHHmale*. Presence of adverse selection (when high-risk individuals who have a higher probability of using healthcare services enrol more than lower-risk or healthier individuals) in voluntary schemes has been noted before (Parmar et al., 2012). This is captured by *Chronic* and *Hospitalised*. Respondents were asked if they have any chronic illness as diagnosed

Table 2
Definition and descriptive statistics of variables, by country.

Variables	Definition	Percentage	
		Ghana	Senegal
Enrolled	1 if enrolled; 0 otherwise	71.7%	47.7%
Core variables			
Male	1 if male; 0 otherwise	48.1%	53.4%
Educated	1 if education; 0 otherwise	32.6%	26.8%
Head	1 if elder is the household head; 0 otherwise	89.9%	68.1%
Majority_religion[a]	1 if belongs to the majority religion; 0 otherwise	66.7%	96.5%
Majority_ethnicity[b]	1 if belongs to the majority ethnicity; 0 otherwise	72.6%	47.6%
Urban	1 if living in an urban area; 0 otherwise	50.6%	48.8%
HHHmale	1 if household head is male; 0 otherwise	49.9%	73.9%
Chronic	1 if has any chronic illness; 0 otherwise	27.8%	25.1%
Hospitalised	1 if hospitalised in the past 12 months; 0 otherwise	11.5%	7.7%
Sociocultural (SC)			
Single	1 if single or living alone; 0 otherwise	56.1%	40.5%
No_respect	1 if feel elders are not respected these days; 0 otherwise	4.8%	30.7%
No_association	1 if not member of any association or club; 0 otherwise	64.4%	74.8%
Religious_participation	1 if does not regularly attend religious events; 0 otherwise	24.8%	46.4%
Needhelp_adl	1 if needs help in activities of daily living; 0 otherwise	7.6%	25.4%
Political (P)			
Lessaccess_info	1 if living in a household without a radio or TV; 0 otherwise	36.6%	8.9%
Decision_making	1 if not in any formal decision making position; 0 otherwise	81.6%	85.8%
Political_participation	1 if not part of any political party/group or did not vote in the previous general elections; 0 otherwise	4.1%	29.4%
Far	1 if PHC or health post is within 15 min' walk; 0 otherwise	48.5%	44.3%
NotSafe	1 if feel it is not safe to walk alone in the night in the neighbourhood; 0 otherwise	8.1%	30.6%
Economic (E)			
No_income	1 if does not have any independent source of income; 0 otherwise	29.0%	41.0%
Rented_house	1 if living in a rented house; 0 otherwise	24.8%	13.8%
Wealth quartiles	Q1–Q4, with Q1 referring to the poorest 25% households and Q4 to the richest 25% households.		
	Q1	25.3%	25.1%
	Q2	25.7%	24.6%
	Q3	23.9%	25.1%
	Q4	25.1%	25.1%

[a] Majority religion is Christianity in Ghana and Islam in Senegal.
[b] Majority ethnicity is Akan, Ga and Ewe in Ghana and Wolof in Senegal.

by a healthcare provider (e.g. doctor) or if they were hospitalised in the past 12 months. It is expected that older people suffering from chronic illnesses that require regular healthcare and those having hospitalisation needs will tend to enrol more.

2.4.1. Sociocultural variables

We created variable, *No_association*, to reflect whether a person was a member of any association (e.g. social clubs, sports clubs, religious associations, women's groups). Variable, *Religious_participation*, was included to reflect the intensity and regularity of participating in religious events. Variable *No_respect* indicates whether older people feel respected. The questionnaire included a statement ('Older people are respected these days') and responses

were captured by a Likert scale (strongly agree to strongly disagree). Persons who require help with activities of daily living may have difficulties in participating in social and cultural events and *Needhelp_adl* captured this. Persons living alone or who are single may feel isolated, and may be vulnerable to socially exclusion. We included variable, *Single*, to investigate this.

2.4.2. Political variables

Some groups may not have access to necessary resources that are needed to participate in society — either due to the unavailability of resources or due to barriers that prevent these groups from accessing these resources. Variables that capture access to health facilities and safe housing and the ease of accessing information were included. For Ghana, clinics run by missions and NGOs could have NHIS accreditation and be entitled to provide free care to enrolled persons. For this reason these two types of clinics were also considered while defining access to health facilities by variable, *Far*. Variable, *Political_participation*, reflects participation in democratic processes. It includes two activities — participated in recent elections and being member of a political party.

2.4.3. Economic variables

Relative wealth was estimated at the household level by using principle components analysis (PCA). Household ownership of durable goods (e.g. TV, radio, car), housing conditions (material of roof, number of rooms) and livestock were used. Based on their PCA scores, household were divided into quartiles with Q1 representing the poorest 25% and Q4 the richest 25% households. Since composition of household assets differ in rural and urban areas, quartiles were constructed separately for rural and urban households. As a result, quartiles for the whole sample (rural and urban combined) may not exactly consist of 25% of the persons. Economic dependence is reflected by variable *No_income*, which captures whether a person has any source of independent income e.g. from pensions, salary or rent.

Ethical approval for this research was obtained from the Noguchi Memorial Institute for Medical Research Institutional Review Board, Ghana [069/11-12] and from the National Ethics Committee for Research in Health, Senegal [674/MSAS/DS/DER].

3. Results

3.1. Descriptive statistics

Table 2 shows the percentage or means of variables that were included in the regressions in the two countries. More older people were enrolled in NHIS in Ghana than in Plan Sesame in Senegal (72% vs. 48%). Majority of older people were uneducated in both countries, although more were educated in Ghana than in Senegal, despite the fact that persons, as included in this study, were relatively older in Ghana than in Senegal. We have a higher proportion of older people who were household heads in both settings.

Around 1/4th of the older people reported having a chronic illness (28% in Ghana and 25% in Senegal) and 11% in Ghana vs. 8% in Senegal reported being hospitalised in the past 12 months. Access to health facilities was poor as majority of them lived more than 15 min' walk from any PHC or health post. For those that do not possess a car (90% of households in Senegal and 99% in Ghana as per our sample), reaching health facilities could be a challenge. A large proportion of older people are either single or live alone, most are not members of any association, but many regularly attend religious events, with attendance being higher in Ghana.

3.2. Determinants of enrolment

Results from the logistic regressions models, with enrolment status as the dependent variable, are presented in Table 3.

With regard to the core variables, men, household heads, having some formal education and living in urban areas increased the odds of enrolling in Plan Sesame by almost two folds. This remained relatively consistent for all models, even after other covariates and SPEC indices were introduced. For NHIS these variables were not found to be significant. Belonging to majority ethnicity (i.e. Wolof) increased the odds of enrolling in Plan Sesame while belonging to majority religious group (i.e. Christianity) increased the odds for enrolling in NHIS, although found to be significant only in Model A for NHIS.

Strong evidence of adverse selection was found for both schemes, with NHIS being associated with higher adverse selection. Older people who had a chronic illness were significantly more likely to enrol in NHIS and Plan Sesame. Being hospitalised in the last 12 months increased the odds of enrolling by four folds in NHIS and almost two folds in Plan Sesame.

With regard to sociocultural variables, those who were not members of sociocultural associations were less likely to enrol in Plan Sesame. Surprisingly, those who felt that older people are not generally respected in society were more likely to enrol in NHIS. This could be because a very small sample of them (4.8% as mentioned in Table 2) actually felt that older people are not respected.

Older people vulnerable to political exclusion as reflected from lower political and civic participation, living in relatively unsafe neighbours and having limited access to information channels, had lower odds of enrolling in Plan Sesame. For NHIS, lower political and civic participation (significant only at 10%) and living far from health facilities were found to lower the odds of enrolling.

The results show that older people belonging to richer households (Q3 and Q4) are 1.6 and 2.3 times more likely to enrol in Plan Sesame and 2.6 and 4 times in NHIS as compared to the poorest 25% households. This shows that both schemes have a pro-rich bias, with NHIS being more inequitable.

As mirrored in the odds ratio in Model B for both countries, those who were vulnerable in all dimensions of social exclusion had lower odds of enrolling in Plan Sesame, as seen from the SPEC indices in Model C. For NHIS, only the political dimension was found to significantly lower the odds of enrolling. However, it should be noted that the indices, although found to be highly significant, are very close to 1.

4. Disscussion

The implementation of Plan Sesame and NHIS exemptions for people over 70 represent significant efforts to remove financial barriers to healthcare access for older people. There is currently limited evidence to show how successful these schemes have been at enrolling the ageing population and whether inequities in enrolment exist. Our study has addressed these issues by analysing data from household surveys in Ghana and Senegal to ascertain enrolment rates for targeted persons, to analyse determinants of enrolment, and to explore whether social exclusion is restricting access to these SHP schemes.

Our results show evidence of persisting inequities in enrolment for older people in NHIS and Plan Sesame caused by a combination of economic, political and sociocultural dimensions. The impact of each of these dimensions is discussed in turn in the remainder of this section.

Table 3
Determinants of enrolment, 2012.

	Variables	Ghana – National Health Insurance Scheme						Senegal – Plan Sesame					
		Model A		Model B		Model C		Model A		Model B		Model C	
		OR SE	CI	OR SE	CI	OR SE	CI	OR SE	CI	OR SE	CI	OR SE	CI
	Male	0.696 (0.511)	0.165–2.938	0.617 (0.405)	0.170–2.235	0.698 (0.573)	0.139–3.492	2.207 (0.307)***	1.680–2.900	2.141 (0.345)***	1.561–2.937	2.114 (0.306)***	1.592–2.808
	Educated	1.048 (0.301)	0.597–1.839	0.708 (0.222)	0.384–1.308	0.762 (0.223)	0.429–1.353	2.038 (0.202)***	1.679–2.474	1.596 (0.169)***	1.297–1.963	1.766 (0.181)***	1.445–2.157
	Head	1.250 (0.544)	0.533–2.936	1.636 (0.696)	0.710–3.767	1.309 (0.609)	0.526–3.259	1.735 (0.207)***	1.373–2.191	1.482 (0.197)**	1.142–1.923	1.378 (0.172)**	1.079–1.758
	Majority_religion	2.478 (0.913)**	1.204–5.102	1.439 (0.582)	0.651–3.180	1.852 (0.702)	0.882–3.892	0.997 (0.225)	0.640–1.551	1.086 (0.257)	0.683–1.727	1.003 (0.231)	0.638–1.576
	Majority_ethnicity	0.563 (0.228)	0.254–1.246	0.862 (0.412)	0.338–2.198	0.833 (0.355)	0.362–1.919	1.408 (0.115)***	1.198–1.653	1.212 (0.109)**	1.017–1.445	1.394 (0.119)***	1.180–1.647
	Urban	1.420 (0.329)	0.901–2.236	1.414 (0.402)	0.810–2.469	1.392 (0.355)	0.844–2.296	1.810 (0.169)***	1.507–2.173	1.953 (0.217)***	1.571–2.429	1.963 (0.191)***	1.621–2.376
	HHHmale	0.911 (0.645)	0.228–3.646	0.873 (0.597)	0.228–3.336	0.614 (0.488)	0.129–2.917	1.011 (0.146)	0.761–1.341	0.909 (0.140)	0.672–1.230	0.890 (0.133)	0.664–1.193
	Chronic	2.141 (0.650)**	1.181–3.882	2.044 (0.686)**	1.058–3.946	2.276 (0.725)***	1.219–4.249	1.686 (0.164)***	1.393–2.040	1.689 (0.175)***	1.378–2.069	1.731 (0.173)***	1.424–2.105
	Hospitalised	4.161 (2.262)***	1.434–12.077	3.841 (2.214)**	1.241–11.888	4.430 (2.482)***	1.477–13.284	1.596 (0.243)***	1.184–2.151	1.856 (0.298)***	1.354–2.544	1.788 (0.281)***	1.314–2.432
Sociocultural	Single			1.118 (0.393)	0.561–2.226					0.753 (0.089)**	0.598–0.949		
	No_respect			0.147 (0.076)***	0.053–0.403					0.963 (0.089)	0.804–1.153		
	No_association			0.785 (0.293)	0.378–1.633					0.494 (0.068)***	0.377–0.647		
	Religious_participation			0.744 (0.224)	0.412–1.344					1.027 (0.104)	0.842–1.252		
	Needhelp_adl			0.971 (0.478)	0.370–2.549					0.885 (0.090)	0.725–1.079		
Political	Lessaccess_info			0.956 (0.349)	0.467–1.956					0.671 (0.110)**	0.486–0.926		
	Decision_making			0.701 (0.347)	0.265–1.851					1.003 (0.173)	0.716–1.406		
	Political_participation			0.414 (0.215)*	0.149–1.148					0.522 (0.053)***	0.428–0.638		
	Far			0.559 (0.145)**	0.336–0.930					0.916 (0.081)	0.771–1.089		
	NotSafe			1.681 (0.886)	0.598–4.725					0.797 (0.079)**	0.657–0.967		
Economic	No_income			1.257 (0.366)	0.710–2.225					0.846 (0.079)*	0.705–1.016		
	Rented_house			0.553 (0.170)*	0.302–1.009					0.950 (0.126)	0.733–1.233		
	Wealth: Q2			1.287 (0.440)	0.659–2.514					1.237 (0.154)*	0.970–1.578		
	Wealth: Q3			2.575 (1.120)**	1.098–6.041					1.557 (0.200)***	1.211–2.003		
	Wealth: Q4			3.861 (1.771)***	1.572–9.486					2.286 (0.310)***	1.753–2.982		
	SC Index					0.993 (0.008)	0.978–1.009					0.991 (0.002)***	0.987–0.995
	P Index					0.978 (0.008)***	0.963–0.993					0.983 (0.002)***	0.978–0.987
	E Index					0.992 (0.005)	0.982–1.002					0.990 (0.002)***	0.987–0.994
	Observations	435		434		435		2917		2902		2917	

Dependent variable: Binary choice variable for enrolment.
Acronyms: Odds Ratio (OR); Standard Errors (SE); Confidence Interval (CI); Sociocultural (SC); Political (P); Economic (E).
Robust SE in parenthesis.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

4.1. Economic exclusion and enrolment

Pronounced economic inequalities are evident in both schemes, with older people in the richest quartiles being more likely to enrol than those in the poorest quartile. In Ghana, older people who live in family-owned houses are more likely to enrol in NHIS than those living in rented houses (nearly 25%), while older people with their own source of income in Senegal (nearly 59%) were more likely to enrol in Plan Sesame than individuals with no income. These findings are consistent with existing literature that finds substantial evidence of low enrolment for the most economically vulnerable individuals in SHP schemes that are specifically targeted towards the poor in LMIC (Jehu-Appiah et al., 2011; Sarpong et al., 2010). Although both schemes have taken steps to reduce financial barriers to access, it is clear that richer persons are more likely to activate their entitlements to access Plan Sesame or to receive exemptions from NHIS. In Ghana, potential financial barriers to enrolment for the poor still exist. Despite being exempt from paying the full premium, older people are required to pay a small registration to join. Removal of this registration fee may increase enrolment among the poor as the existence of even a small fee has previously been shown to prevent the poor from enrolling (Wang et al., 2005).

4.2. Political exclusion and enrolment

Our results show that the political dimension is an important determinant of enrolment in NHIS and Plan Sesame. Older people that take an active role in civic society by voting were shown to have higher odds of enrolment. For Plan Sesame this is partly explained by individuals who intend to vote being required to have the same ID card to obtain a voter registration ID, as they need to access Plan Sesame; an individual that intends to vote therefore has an additional incentive to acquire an ID card. Voting may also be significant as individuals who take an interest in politics are more likely to have heard of these financing schemes and to be influenced by the opinions of political and local leaders. Additionally, people who participate in the democratic system may have a higher level of trust in the democratic system and political structures and may be more likely to participate in government initiatives such as Plan Sesame and NHIS (Ottone, 2007). Geographical inequities are shown to exist for individuals living in remote areas, with individuals living close to a health facility in Ghana having significantly increased odds of enrolling in NHIS and urban individuals more likely to enrol in Plan Sesame. Links between lack of physical access to healthcare and lower enrolment has been well established (Schneider and Diop, 2004). This apparent geographical segregation and exclusion suggests that further investment in health centres is needed in Ghana. In Senegal, distance to a health facility is not significantly related to enrolment, suggesting that low enrolment among rural individuals may instead be due to barriers to accessing administrative offices to apply for an ID card. Efforts should therefore be taken to create ID card centres in remote areas of Senegal.

4.3. Sociocultural exclusion and enrolment

Our results also show the importance of social support networks and solidarity in influencing enrolment patterns in Plan Sesame. SHP schemes are founded on the principle of social solidarity and we initially hypothesized that greater feelings of solidarity would increase odds of enrolment (Barrientos and Lloyd-Sherlock, 2000). In our regression models respect afforded to older people were included as proxy measures for solidarity felt with fellow citizens. Having a positive perception on the respect afforded to older

people in Ghana increased the odds of being enrolled in NHIS, confirming our initial hypothesis. Being a member of an association significantly increased the odds of being covered by Plan Sesame, while being single, decreased odds of enrolment. These variables signify the existence of a social support network and indicate that an individual is not isolated from the community. Social support networks are important in ensuring that individuals are able to actively participate in society and benefit from opportunities that are afforded to them as networks with many social connections are more likely to introduce new ideas and opportunities to their members (Putman, 1993). Being a member of an association is therefore likely to enhance the probability of having heard of Plan Sesame and an individual's ability to register for an ID card.

The SEKN and Commission on Social Determinants of Health have both affirmed that health inequalities and access to SHP are affected by hierarchical systems of social stratification based on gender, class, education, age, ethnicity, and religion (Marmot et al., 2008; Popay et al., 2008). Unsurprisingly, a number of these sociocultural variables are shown to be significant determinants of enrolment in Plan Sesame and NHIS. In Senegal, being male, educated, household head or belonging to the majority ethnicity increases the odds of being covered. In Ghana, although these variables are not significant, belonging to the majority religion significantly increases the odds of enrolment. The significance of these variables may indicate that discriminatory processes are present and religious minorities in Ghana and ethnic minorities and women in Senegal are being excluded from SHP. Efforts should be made to target older women and minorities to ensure they are fully aware of their entitlements. As highlighted in previous literature, education is unsurprisingly significant as higher education leads to a greater understanding of the scheme and therefore a higher tendency to enrol (Chankova et al., 2008; Jehu-Appiah et al., 2011).

4.4. SPEC indices of social exclusion

A similar pattern to the above results is seen when looking more closely at the SPEC indices of social exclusion. In our third regression model (Model C), sociocultural, political and economic indices are all significantly related to enrolment in Plan Sesame, indicating that individuals at risk of social exclusion are less likely to enrol. Results from Ghana suggest that individuals at risk of social exclusion in the political domain are less likely to enrol in NHIS, although the economic and sociocultural indices are not significant. These results confirm our initial hypothesis and indicate that access to SHP schemes can be restricted by social exclusion. Efforts to reform both schemes should be undertaken to ensure that socially excluded individuals are aware of their entitlements and to ensure that all older people enjoy the same rights and ability to access these schemes.

More research on NHIS and Plan Sesame is needed to explore the underlying causes or pathways that explain the results presented in this study. A number of non-financial indicators, such as access to information and administrative processes, may be preventing older people from enrolling. Richer and educated individuals are likely to have better access to media, giving them greater exposure to scheme-related information and education campaigns which enhance their awareness and understanding of SHP (Schneider and Diop, 2004). Indeed, results from our regression analysis indicate that older people with access to a TV or radio were more likely to enrol. Although general awareness of NHIS is high in Ghana, we are not aware of any study that has looked at the awareness of exemptions among older people.

In addition to lack of awareness, complex administrative procedures may be discouraging vulnerable older people from

enrolling. In Senegal older people are required to obtain an ID card from officials by either presenting a birth certificate or taking three Senegalese witnesses to confirm their Senegalese nationality. These requirements may be difficult for some persons to fulfil, particularly those that are socially isolated, in poor health or living in remote communities.

4.5. Limitations

Our results are based on an analysis of quantitative data on social exclusion and thus capture social exclusion as a set of binary/dichotomous variables. Although a quantitative assessment of the multiple indicators of disadvantage presents important insights into the analysis of social exclusion, further research is needed to fully capture the complexity and dynamics of social exclusion processes. In addition, the survey in Ghana was part of a larger study exploring enrolment of all individuals in NHIS and was not specifically targeted towards the ageing population. In comparison, our Senegalese survey was targeted towards older people, ensuring the sample size in Ghana was far smaller (435) than in Senegal (2933). This may have been responsible for some variables to be insignificant in the regression models for Ghana. Practical considerations ensured that interviews were primarily conducted with older persons who were household heads. We therefore miss the experience of those who are not household heads, who may be more likely to experience social exclusion and barriers to accessing SHP and healthcare. Furthermore, due to the differing design of the schemes, our analysis of NHIS was conducted on persons over 70 while our analysis of Plan Sesame was for over 60s. This should be taken into consideration while comparing the results between these two schemes. It was also not possible to explore all possible variables influencing enrolment. More research is needed to explore whether prior experience of enrolling in SHP schemes and utilizing healthcare services, and perceptions on quality of healthcare can further explain the differences in enrolment rates among the socially excluded groups in these countries. Since NHIS has been operational for nine years and Plan Sesame for almost six years, there is a need to understand program-level barriers faced by older people and how these barriers can be removed so that the most vulnerable are not left out. Finally, we did not study the impact of either scheme on utilization of healthcare or health outcomes as this was beyond the scope of the study. Previous studies have shown that although SHP schemes often increase utilization and reduce the risk of catastrophic health payments; these benefits are often unequally distributed amongst vulnerable groups, particularly those in the lowest quintile (Lu et al., 2012; Lloyd-Sherlock et al., 2012). It is therefore important for future research to determine if these SHP schemes benefit the most vulnerable older people.

5. Conclusion

Our study makes a valuable contribution to the evaluation of SHP for older people in LMIC. Plan Sesame and exemptions for older people in NHIS are both significant policies that have taken steps to address the inequities experienced by older people in relation to healthcare access. However, results from our study indicate that older people at risk of social exclusion are currently disadvantaged in enrolment and neither scheme has yet achieved the goal of equity in access for older people. Although these schemes aim to reduce financial barriers to enrolment, economically vulnerable persons still suffer from inequities in enrolment and efforts should be taken to identify the very poorest to ensure they are aware of and enrol in SHP schemes. Simply targeting the removal or reduction of financial barriers may not be enough. Enhanced efforts

should also be made to reach older populations in remote areas, those who belong to ethnic minorities, women, and those isolated due to a lack of social support. Consideration should also be paid to modifying scheme features such as eliminating the registration fee for older people in NHIS and creating administration offices for ID cards in remote communities in Senegal. Recognising and taking steps to address factors hindering enrolment of older people at risk of social exclusion will ultimately improve the prospect of achieving equity and universal coverage in older populations.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.socscimed.2014.08.011.

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