

# User fees exemptions alone are not enough to increase indigent use of healthcare services

Nicole Atchessi,<sup>1,\*</sup> Valéry Ridde<sup>1</sup> and Maria-Victoria Zunzunegui<sup>1</sup>

<sup>1</sup>University of Montreal Hospital Research Centre (CRCHUM), Global Health Research Axis, Saint-Antoine Tower, 850 Saint-Denis St, Suite S03.312, Montreal, QC H2X 0A9, Canada

\*Corresponding author. University of Montreal Hospital Research Centre (CRCHUM), Global Health Research Axis, Saint-Antoine Tower, 850 Saint-Denis St, Suite S03.312, Montreal, QC H2X 0A9, Canada. E-mail: nicole.atchessi@umontreal.ca

Accepted on 7 December 2015

## Abstract

The aim of this study was to assess whether user fees exemptions increased healthcare services use among indigents in the Ouargaye district in Burkina Faso. In this pre–post study, we surveyed 1224 indigents in 2010 about their healthcare services use over the preceding 6 months. Of these, 540 subsequently received a user fees exemption card. A follow-up survey was conducted 1 year later with a 55.3% retention rate. Analyses were performed in accordance with Andersen and Newman’s model (Societal and individual determinants of medical care utilization in the United States. *Milbank Q* 1973;51:95–124) to explain healthcare services use by considering predisposing and facilitating factors and health needs indicators. Logistic regression analyses were performed. Among indigents exempted from user fees, 46.2% increased their healthcare services use in 2011, as opposed to 42.1% among the non-exempted. Being exempted was not associated with increased use of services (odds ratio, OR = 1.1, 95% confidence interval, CI [0.80–1.51]). Regardless of whether they were exempted or not, the indigents most likely to have increased their healthcare services use were older than 69 years of age (OR = 1.66, 95% CI [1.05–2.64]), male (OR = 1.44, 95% CI [0.99–2.08]), in low-income households (OR = 1.71, 95% CI [1.15–2.54]), and had received financial support from their families to obtain healthcare (OR = 1.59, 95% CI [1.1–2.28]). The indigents’ increased healthcare services use was not attributable to user fees exemptions. Some contamination of the intervention is conceivable. Interventions combining user fees exemptions with actions targeting other obstacles to healthcare access would probably be more effective in increasing indigents’ use of healthcare centres.

**Key words:** Evaluation, indigents, sub-Saharan Africa, use of healthcare services, user fees exemption

## Key Messages

- The indigents’ increased healthcare services use was not attributable to user fees exemptions.
- Interventions combining user fees exemptions with actions targeting other obstacles to healthcare access would probably be more effective in increasing indigents’ use of healthcare centres.

## Introduction

User fees exemption programmes have been implemented in certain low- and middle-income countries to improve the populations’ access to healthcare services (Wilkinson *et al.* 2001; Abdu *et al.* 2004;

Penfold *et al.* 2007; Witter *et al.* 2007; Criel *et al.* 2010; Ridde and Morestin 2011; Flores *et al.* 2013). In most cases, these led to increased use of services among the recipients, especially women and children (Wilkinson *et al.*, 2001; Abdu *et al.* 2004; Penfold *et al.*

2007; Witter *et al.* 2007; Ridde and Morestin 2011). In some cases, these programmes led to an increased use of healthcare services among the poorest (Deininger and Mpuga 2005; Nabyonga *et al.* 2005; Masiye *et al.* 2010). In other cases, even though the poorest were the targeted beneficiaries of these programmes, there was no observed impact on their use of services (Mills *et al.* 2008; Flores *et al.* 2013; Kanya *et al.* 2013; Ridde and Jacob 2013). In studies examining the impacts of user fees exemptions among the poor, the population of indigents, who are the poorest of the poor, has rarely received specific attention (Noirhomme *et al.* 2007; Criel *et al.* 2010). In general, the level of healthcare use is low among rural populations in Africa, and particularly in Burkina Faso (Institut National de la Statistique et de la Démographie du Burkina Faso 2007). Those whose healthcare use is most constrained by the financial barrier are indigents. Given their considerable healthcare needs, they should, when exempted from user fees, be using healthcare to a greater extent than others. However, there are many other factors besides the financial barrier—such as age, sex, physical or mental disabilities, and social exclusion—which are linked to their indigence and could influence their use of healthcare services even when they are exempted from user fees. On the face of it, user fees exemptions would appear to be a good way of improving indigents' use of healthcare services, but there is as yet very little evidence to that effect.

In Burkina Faso, all users have been required to pay for healthcare at the point of service since the mid-1990s. To facilitate access to care for indigents, in 2009 the Ministry of Health asked health centre management committees (COGESs) to allocate to each health centre an annual budget to cover user fees exemptions for this group. As part of an action research project, indigents were selected in 2010 through a community-based process to receive these exemptions (Ridde *et al.* 2009). Village health committees (CVSs) were set up. Using a participatory process, and based on a consensual definition of indigence, these CVSs selected people in their village whom they considered to be indigent. This process led to the selection of the more vulnerable (Atchessi *et al.* 2014).

Because the COGESs were not financially able to exempt all indigents designated by the CVSs, they selected, from among them, those they considered worst-off. This second selection was not based on pre-defined criteria, but rather on the COGES members' own judgment. The indigents selected by the COGESs then received an official card attesting to their status and exempting them from user fees. From then on, healthcare services were free at the point of service for them. Indigents who had been selected by the CVSs but not by the COGESs were not exempted. They had to pay for consultations and drugs like everyone else in the country, and those fees are the same for all users, regardless of income.

The aim of these exemptions was to increase indigents' use of healthcare services. The model developed by Andersen and Newman (1973) is therefore relevant for our study, as our aim was to test the hypothesis that user fees exemptions would lead to increased healthcare use by indigents. The model has been widely used in studies exploring determinants of healthcare use, particularly among the elderly (Bazargan and Baker 1998; Burnette and Mui 1999; Wallace and Gutierrez 2005). In this respect, it is particularly suitable for our study, as 78% of the indigents selected by the CVSs were >50 years old. This model takes into account several variables that determine healthcare use, organized into three groups: predisposing factors, facilitating factors and needs.

The objective of this study was to assess whether user fees exemptions enabled indigents who had not used healthcare services in

2010, before being exempted, to use them in 2011 after receiving an exemption card.

## Method

### Research design and study population

The research was a pre-post design with two observation periods, in October 2010 and October 2011.

The study was conducted in the Ouargaye district of the centre-east region of Burkina Faso. Of the country's 13 regions, this is the fifth poorest, with 55% of the population considered poor, defined as living on an annual income below 82 672 F CFA, or around 200 USD/year (Institut National de la Statistique et de la Démographie du Burkina Faso 2007).

The study population consisted of all indigents older than 18 years of age who were selected by the CVSs in 2010 and had not used healthcare services in the 6 months preceding the survey ( $n = 1224$ ). Some ( $n = 540$ , or 44.1%) were subsequently selected by the COGESs to receive user fees exemption cards signed by the Ministry of Health.

In 2011, of the 1224 indigents who had been surveyed in 2010, we were able to locate and survey 677, for a retention rate of 55.3%. Of these, 290 (42.8%) had received an exemption card in 2010.

To calculate sample size, we referred to the results of previous studies on the impact of user fees exemption programmes on services use (Nabyonga *et al.* 2005; Masiye *et al.* 2010; De Allegri *et al.* 2012). Based on those, we considered that a minimum increase in services use of 20% could be expected among those with cards, compared with those without cards. To be worth implementing, a subsidy programme would need to produce an increase in services use of at least 20%. The sample size in our study is sufficient to detect a 20% increase in services use with a Type I error = 0.05 and statistical power of 90%. These calculations were made using OpenEpi software ([http://www.openepi.com/Menu/OE\\_Menu.htm](http://www.openepi.com/Menu/OE_Menu.htm)).

The indigents were invited to take part in the survey during a home visit. A consent form was signed using either their fingerprint or signature. Ethical approval for this research was obtained from the authors' institute.

The data collection instrument was a questionnaire administered during face-to-face interviews in the respondents' homes by trained surveyors.

### The variables

The exposure was the possession of a card providing free healthcare services.

The dependent variable in our study was the self-reported use of healthcare services in the 6 months preceding the 2011 survey. The use of healthcare services was defined as a consultation with a health worker in a public healthcare facility. Predisposing factors were age, sex and marital status. Age was self-reported and categorized into three categories: <50 years, 50–69 years, and >69 years. Marital status was divided into two categories, widowed and not widowed, to highlight the particular vulnerability associated with the 'widowed' marital status.

In our study, facilitating factors were as follows:

- The existence of an income-generating activity.
- The income level for the indigent's household; this was measured using household consumption as a proxy, taking into account total per capita expenses in the indigent's household over the

preceding year. These were expenses related to healthcare, food, school and other items; this was a continuous variable divided into quintiles.

- Recourse to support from outside the household to obtain food.
- The existence of instrumental support, if the person required assistance to carry out activities of daily living. This variable was divided into three categories: (1) no assistance needed, (2) assistance needed and provided by someone in the person's entourage and (3) assistance needed but not provided.
- Cohabitation; this variable measured the indigent's family support network in four mutually exclusive categories: (1) living alone (no cohabitation), (2) cohabitation with spouse and children 15 years of age and over, (3) cohabitation with children less than the age of 15 years and (4) cohabitation with father/mother or brothers/sisters or friends.

The following needs were measured:

- The presence of chronic illness if the person was suffering from an illness lasting more than 6 months.
- The presence of visual impairment as was done by the World Health Organization in its World Health Surveys. Distance vision was considered impaired if, over the previous 30 days, respondents had experienced difficulty in recognizing someone known to them from a distance of about 20 m; near vision was considered impaired if, over the previous 30 days, they had experienced difficulty recognizing an object they were holding in their hand. They were also asked if they wore corrective lenses. When respondents answered yes to at least one of these three questions, they were considered to have impaired vision. In all other cases, they were considered to have no vision impairment.
- In exploring the presence of physical functional limitations, we drew upon the work of Nagi (1976) and Guralnik *et al.* (1994):
  - Upper limb strength is limited when the person has difficulty lifting or carrying weights >5 kg, such as a sack of millet (in the local context, this represents a quantity of flour weighing around 5 kg) or a pail of water (Nagi 1976).
  - Mobility is limited when the person has difficulty walking a distance of 400 m (Guralnik *et al.* 1994).
  - Fine finger dexterity is limited when the person has difficulty picking up or manipulating small objects with his fingers (Nagi 1976).
  - Upper limb abduction is limited when the person has difficulty raising his arms above his head (Nagi 1976).

## Analyses

We began by carrying out descriptive analyses of the study population using IBM SPSS 19 to present the characteristics of the sample.

A univariate logistic regression was performed between the dependent variable (healthcare services use in 2011) and each variable corresponding to the sample characteristics.

A multivariate logistic regression was performed by taking into consideration the variables found to be significant in the univariate logistic regression with  $P < 0.25$ . We constructed three models. We included in Model 1 only predisposing factors variables. In Model 2, we retained the predisposing variables that remained significantly associated ( $P < 0.05$ ) with services use in the first stage and added the facilitating variables. In Model 3, we retained the predisposing and facilitating variables that remained significantly associated ( $P < 0.05$ ) with services use in the second stage and added needs variables. The final model took into account all the variables that had

achieved statistical significance ( $P < 0.05$ ). We also retained sex and age, in the final model because of its demographic importance.

## Results

### Sample characteristics

Table 1 presents the characteristics of the 677 indigents who had not used healthcare services in 2010.

The proportion of men and women was approximately equal, as was the proportion of widowed vs non-widowed. More than 70% of these indigents were older than 50 years of age.

Around 45% of them had received an exemption card. The proportion of indigent persons who increased their use of services in 2011 was slightly higher among those with cards (46.2%) than those without (42.1%), but not statistically significant.

Table 2 presents the unadjusted odds ratios (ORs) for the variables associated with the increased use of healthcare services for the 677 indigents who had not used services in 2010. Men (OR = 1.36, 95% confidence interval, CI [1.0–1.80]) appeared to have a greater tendency to increase their use of healthcare services. Having an exemption card had no apparent influence on the increase in healthcare services use. Indigents from low-income households (OR = 1.5, 95% CI [1.0–2.2]) and those who received no financial assistance from their families to obtain healthcare services (OR = 1.44, 95% CI [1.0–2.0]) were more likely to increase their use of services.

No health need appeared to be associated with the increase in healthcare services use.

Table 3 presents the adjusted ORs for the factors associated with increased use of healthcare services among the indigent who did not use services in 2010. According to Model 1, indigents between 50 and 69 years of age were more likely to increase their healthcare services use than were indigents younger than 50 years. Men were more likely than women to increase their healthcare services use.

In Model 2, having an exemption card was not associated with increased healthcare services use (OR = 1.1, 95% CI [0.80–1.51]). The facilitating factors associated with increased use were low household income and absence of financial assistance from the family for obtaining care.

In this model, indigents aged 50 and older were more likely to increase their healthcare services use than those younger than 50 years. Men were more likely to use services than women.

In Model 3, health needs were not associated with increased healthcare services use. Age remained a significant variable. The influence of sex was also unchanged; men were more likely to use services than women, but the 95% CI for the OR became less precise when including the value of 1. Low household income and absence of financial assistance from the family for obtaining care also remained significant variables.

### Indigents lost to follow-up

Table 4 compares the indigents lost to follow-up (those met in 2010 and not found in 2011) with those still in the cohort in 2011.

The attrition was not associated with possession of an exemption card; although those lost to follow-up had some characteristics that were different from those who remained in the cohort, those differences were unrelated to possession of a card.

## Discussion

This study showed that healthcare services use increased in 2011 for indigents who had not used healthcare services in 2010. The factors

**Table 1.** Characteristics of the indigents who did not use services in 2010 ( $n = 677$ )

Variables		N	% in each category	% of respondents who had increased use of services	
Predisposing factors	Sex	Female	346	51.1	47.1
		Male	331	48.9	39.6
	Age	<50 years	143	21.8	36.4
		50–69 years	275	41.7	44.7
		>69 years	259	36.5	45.9
Marital status	Not widowed	331	51.8	41.4	
	Widowed	346	48.9	45.4	
Facilitating factors	Card holder	No	527	55.1	41.3
		Yes	429	44.9	46.2
	Income-generating activity	Yes	38	6.0	42.1
		No	639	94.0	43.5
	Household income (tertile)	High	225	33.3	36.0
		Medium	216	33.4	47.7
		Low	236	33.4	46.6
	Financial support	Receives financial support from family	184	29.0	37.0
		Receives no financial support from family	493	71.0	45.8
	Food	Not seeking food from external sources	562	82.8	44.5
		Seeking food from external sources	115	17.2	38.3
	Instrumental assistance	No need	381	56.4	44.9
		Receives assistance	227	33.1	42.7
		Needs, but does not receive	69	10.6	37.7
	Cohabitation	Spouse/children $\geq 15$ years	77	10.9	39.0
Father/mother/siblings/neighbours		52	8.3	44.2	
Children <15 years		175	27.5	48.0	
Needs	Chronic illness	Alone	373	53.3	42.1
		No	410	53.5	43.2
	Vision impairment	Yes	267	46.5	42.8
		No	342	51.2	40.6
	Impaired mobility	Yes	335	48.8	46.3
		No	398	58.8	43.0
	Limited muscle strength	Yes	279	41.2	44.1
		No	305	43.7	41.0
	Limited fine finger movements	Yes	372	56.3	45.4
		No	517	76.5	44.1
	Limited abduction, upper extremities	Yes	160	23.5	41.3
		No	552	81.7	43.5
	Services use in 2011	Yes	125	18.3	43.2
		No	383	56.6	
		Yes	294	43.4	

associated with this increase were being male, being 50 years of age and older, belonging to a low- or medium-income household, and having no financial assistance from the family for obtaining health-care services. Neither possession of an exemption card nor health needs were associated with this increase in healthcare services use.

### The user fees exemption card alone is not enough to increase the use of healthcare services

The results of this study showed that having a user fees exemption card was not associated with increased healthcare services use. This conclusion differs from those of most studies on the impacts of user fees exemptions. In general, those studies have shown that the exemption is associated with increased healthcare services use among women, children and the worst-off (Wilkinson *et al.* 2001; Abdu

*et al.* 2004; Deininger and Mpuga 2005; Penfold *et al.* 2007; Masiye *et al.* 2010; Ridde and Morestin 2011). However, the methodologies of these studies conducted in Ghana, South Africa and Uganda indicate that no control groups were used, such that it is impossible to assert that the measured increases in services use were formally attributable to user fees exemptions. In our study, we also observed an increase in healthcare services use, but by introducing a control group into the statistical analyses, we could see the increase was not attributable to the user fees exemption.

The results of this study are congruent with those of the small number of studies which found that, for certain populations in Ghana, Uganda and Cambodia, user fees exemptions had not resulted in increased healthcare services use among the poorest (Mills *et al.* 2008; Flores *et al.* 2013; Kanya *et al.* 2013). Access to health-care services is defined by financial, geographic and sociocultural

**Table 2.** Bivariate analyses

Variables		Raw OR	95% CI	P value	
Predisposing factors	Sex	Female	Ref		
		Male	1.36	1.0–1.8	0.048*
	Age	<50 years	Ref		
		50–69 years	1.41	0.9–2.1	0.10
Marital status	>69 years	1.48	0.9–2.2	0.063	
	Not widowed	Ref			
Facilitating factors	Card holder	Widowed	1.17	0.86–1.6	0.29
		No	Ref		
	Income-generating activity	Yes	1.2	0.8–1.6	0.20
		No	0.94	0.4–1.8	0.86
	Household income (tertile)	High	Ref		
		Medium	1.6	1.1–2.3	0.013*
		Low	1.5	1.0–2.2	0.021*
	Financial support	Receives financial support from family	Ref		
		Receives no financial support from family	1.44	1.0–2.0	0.038*
	Food	Not seeking food from external sources	Ref		
		Seeking food from external sources	0.7	0.5–1.1	0.22
	Instrumental assistance	No need	Ref		
		Receives assistance	0.74	0.43–1.2	0.26
		Needs, but does not receive	0.91	0.65–1.2	0.60
	Cohabitation	Spouse/children $\geq 15$ years	Ref		
		Father/mother/siblings/neighbours	1.13	0.68–1.88	0.61
Children <15 years		1.44	0.83–2.49	0.18	
Alone		1.24	0.60–2.50	0.55	
Needs	Chronic illness	No	Ref		
		Yes	1.02	0.7–1.4	0.86
	Vision impairment	No	Ref		
		Yes	1.25	0.9–1.7	0.14
	Impaired mobility	No	Ref		
		Yes	1.04	0.7–1.04	0.77
	Limited muscle strength	No	Ref		
		Yes	1.1	0.8–1.6	0.24
	Limited fine finger movements	No	Ref		
		Yes	0.89	0.6–1.2	0.52
	Limited abduction, upper extremities	No	Ref		
		Yes	0.98	0.66–1.4	0.95

Note: Factors associated with increased health services use in 2011 among indigents who had not used services in 2010 ( $n = 677$ ).

\* $P < 0.05$ .

access (McIntyre *et al.* 2009; Jacobs *et al.* 2012). The user fees exemptions in the Ouargaye district of Burkina Faso did not cover the costs of transportation to get to the health centre. As such, the indigents probably encountered a geographic obstacle. This phenomenon has been observed in previous studies in urban and rural areas of Burkina Faso, where proximity to a health centre remained a significant determinant of services use, even in a context of user fees exemptions (Kafando *et al.* 2013; Beogo *et al.* 2014). However, a study in Cambodia showed that a user fees exemption programme that included coverage of transportation costs did not lead to a significant increase in healthcare services use (Flores *et al.* 2013) even though it reduced households' healthcare expenses. In these interventions, other parameters probably need to be taken into account.

To reach a health centre, the indigent—most often elderly persons with compromised mobility and diminished capacity to move about in their environment—generally needs to be accompanied. In this environment, the social networks of indigents are shrinking, and many are socially isolated (Kadio 2013; Kafando *et al.* 2013). When they cannot obtain assistance to get to the health centre, they are prevented from using services. Also, when even procuring the basic

necessities of life such as food is difficult, indigents may simply relegate healthcare to the background (Vialla 2009). There might also be other factors, either sociocultural or related to their beliefs, that would explain why the exemption does not have the intended effect on services use (McIntyre *et al.* 2009).

### Indigent men use more healthcare services than do indigent women

This study showed that, after the intervention, the men were more likely than the women to use healthcare services. This result was contrary to most studies' demonstrations that women use healthcare services much more than men (Bertakis *et al.* 2000). As such, with user fees exemptions, we would have expected to see women's use of services increase. Yet instead, it was the men whose use of services increased. In rural Africa, and particularly in Burkina Faso, regardless of the household's socioeconomic status, there are certain social factors that compel women to submit to a process of negotiation with their husband before they can access healthcare (Nikiema *et al.* 2008; Samb *et al.* 2013). Likewise, to pay the costs of



**Table 3.** Factors associated with increased healthcare services use in 2011 among indigents who did not use services in 2010

Variables	Model 1		Model 2		Model 3			
	adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI		
Predisposing factors	Sex	<b>Female (Ref)</b>						
		Male	1.46*	[1.02–2.08]	1.43	[0.99–2.07]	1.44	[0.99–2.08]
	Age	<b>&lt;50 years (Ref)</b>						
		50–69 years	1.59*	[1.02–2.48]	1.84*	[1.15–2.93]	1.65	[0.96–2.85]
		>69 years	1.50	[0.98–2.30]	1.73*	[1.11–2.71]	1.66*	(1.05–2.64)
	Marital status	<b>Not widowed (Ref)</b>						
		Widowed	0.9	[0.63–1.30]	0.90	[0.61–1.32]	0.89	[0.61–1.31]
Facilitating factors	Card holder	<b>No (Ref)</b>						
		Yes		1.1	[0.80–1.51]	1.09	[0.79–1.50]	
	Financial support	<b>Receives financial support from family (Ref)</b>						
		Receives no financial support from family		1.54*	[1.07–2.20]	1.59*	[1.1–2.28]	
	Household income (tertile)	<b>High (Ref)</b>						
		Medium		1.71*	[1.15–2.54]	1.70*	[1.14–2.52]	
	Low		1.71*	[1.15–2.53]	1.71*	[1.15–2.54]		
	Cohabitation	<b>Spouse/children ≥ 15 years (Ref)</b>						
		Father/mother/siblings/ neighbours		1.15	[0.68–1.94]	1.17	[0.69–1.97]	
		Children <15 years		1.38	[0.77–2.48]	1.42	[0.79–2.57]	
		Alone		1.19	[0.56–2.52]	1.18	[0.56–2.52]	
Needs	Vision impairment	<b>No (Ref)</b>						
		Yes				1.24	[0.85–1.82]	
	Limited physical performance	<b>No (Ref)</b>						
		Yes				0.97	[0.66–1.43]	

\**P* < 0.05.

transportation, they are dependent on their husband. Thus, women very likely continue to encounter these constraints related to negotiation processes and transportation costs.

### Those targeted by the intervention are the most likely to increase their use of services: contamination effects?

Indigents aged 50 and over and those who are most limited financially were the targets of the community selection process to allocate user fees exemptions. The results of this study showed that they were the ones most likely to increase their healthcare services use after this community action, whether or not they received an exemption card. The fact that those who most needed healthcare appeared to be benefiting from the increased use of services is good news. However, it was surprising to see that this increase also occurred among those who were not given exemption cards. This can be explained by a contamination phenomenon, often observed in interventional research in communities (Petticrew *et al.* 2005; Melnyk and Morrison-Beedy 2012). Members of the community were probably all informed that there was a user fees exemption programme targeting older persons and those living in very tight financial circumstances. Given that the process was participatory, and usually in very small villages, it would be nearly impossible to organize interventions without all the inhabitants being aware of them. As such, a large number of people targeted by the intervention would have gone to the health centres, with or without cards, seeking free care.

### Strengths and weaknesses

The study's main strength lies its pre–post design that, by using two observation periods, measured the change in healthcare services use

among the same group of persons. Also, the substantial size of our population ( $n = 677$ ), which is exceptional for studies on indigents, provided good statistical power.

The entire population of indigents was included in the study, giving this research strong internal validity. Although this population is not representative of other indigent populations in Burkina Faso, we can expect that similar results could be observed in other poor rural regions in the country.

This study nevertheless had certain limitations. The main weakness is the possibility that the two groups—those 'exposed' to exemption cards and those 'non-exposed'—might not be comparable. Even though the COGESs did not use explicit criteria to select recipients, we would expect them to have selected people whom they judged to be the most destitute and disabled. Thus, those in the 'exposed' group were not randomly selected, as required for a randomized controlled trial. We compensated for this lack of comparability by introducing several potential confounders into the analyses. This situation is commonly encountered in natural observational studies (Petticrew *et al.* 2005).

This pre–post design used two measurement points. Additional measurement points with a longitudinal design would have allowed us to estimate the trajectory of healthcare use more precisely.

If levels of use had been measured, rather than comparing use versus non-use, then a program effect may have been detected given the overall increase in service utilization. This cannot however be confirmed through this study.

Attrition is another weak point in this study, yet despite the loss of statistical power, this attrition probably did not introduce a selection bias, as it was not associated with the intervention, which was

**Table 4.** Comparison of indigents lost to follow-up and those continuing in the cohort in 2011 among the population of those who did not use services in 2010

Variables			N	% Continuing	% Lost to follow-up	P value
Predisposing factors	Sex	Female	598	48.9	48.8	0.50
		Male	626	51.1	51.2	
	Age	<50 years	298	21.1	28.3	0.014*
		50–69 years	479	40.6	37.3	
		>69 years	447	38.3	34.4	
Marital status	Widowed	547	51.1	36.7	0.0001**	
	Not widowed	677	48.9	63.3		
Facilitating factors	Income-generating activity	No	1162	94.4	95.6	0.36
		Yes	62	5.6	4.4	
	Household income (tertile)	Low	225	34.9	38.4	0.13
		Medium	153	31.9	33.6	
		High	378	33.2	28.0	
	Financial support	Receives financial support from family	344	27.2	29.3	0.23
		Receives no financial support from family	880	72.8	70.7	
	Food	Seeking food from external sources	206	17.2	16.3	0.46
		Not seeing food from external sources	1018	83.0	83.4	
	Instrumental assistance	No need	721	56.3	62.2	0.075
		Receives assistance	393	33.5	30.3	
		Needs, but does not receive	110	10.2	7.5	
	Cohabitation	Alone	646	55.1	49.9	0.0001**
		Father/mother/siblings/neighbours	112	7.7	11.0	
		Spouse/children $\geq 15$ years	234	11.4	28.7	
Children <15 years		232	25.8	10.4		
Needs	Chronic illness	No	742	60.6	60.7	0.50
		Yes	482	39.4	39.3	
	Vision impairment	No	629	50.5	52.5	0.26
		Yes	595	49.5	47.5	
	Impaired mobility	No	478	58.8	63.6	0.048*
		Yes	746	41.2	36.4	
	Limited muscle strength	No	565	45.1	47.5	0.21
		Yes	659	54.9	52.5	
	Limited fine finger movements	No	952	76.4	79.5	0.10
		Yes	272	23.6	20.5	
	Limited abduction, upper extremities	No	1008	81.5	83.4	0.40
		Yes	216	18.5	16.6	
	Card holder	No	684	57.2	54.3	0.32
		Yes	540	42.8	45.7	

\* $P < 0.05$ \*\* $P < 0.005$ .

possession of an indigent exemption card. In fact, for attrition to cause a selection bias in a study aimed at evaluating a measure of association, the attrition would need to be related as much to exposure (possession of a card) as to outcome (services use) (Szklo and Nieto 2006).

## Conclusion

Although there was no significant effect on the use of care after the intervention, the general pattern was indicative of some increase, especially among the poorest and those who had less family aid to pay for healthcare, both of whom were precisely the target of the intervention. Whether or not they received a card, this target population used more healthcare services. Thus, indigents probably have to contend with other obstacles to healthcare access, related to such things as transportation or social accompaniment, as they often live in somewhat isolated conditions. Gender issues are also at work, as women are less likely to increase their use of healthcare than men. This may be due to the fact that women are still likely to have to

negotiate with their husbands to obtain financial resources, and to contend with transportation costs before they can obtain healthcare. In fact, women's limited decision-making power and poor physical access to healthcare facilities have been identified in many countries as non-financial barriers to the use of healthcare services (O'Connell *et al.* 2015). Interventions to improve indigents' use of healthcare services might be more effective if they combined several aspects related to user fees exemptions, such as covering the costs of transportation and food as well as of accompaniment to the health centre. Further studies are needed to confirm these hypotheses.

## Acknowledgements

Valéry Ridde holds a Canadian Institutes of Health Research (CIHR)-funded Research Chair in Applied Public Health. This study was funded by the International Development Research Centre (IDRC) of Canada and by the Global Health Research Initiative (GHRI), a research funding partnership that includes the CIHR, the Canadian International Development Agency (CIDA), Health Canada, the IDRC and the Public Health Agency of Canada. We thank Kadidiatou Kadio and Yamba Kafando for their involvement in

coordinating and carrying out this study. We also thank the study participants, the members of the community of Ouargaye district and the District Management Team, for their collaboration in this study. We also thank Donna Riley, who translated this article.

*Conflict of interest statement.* None declared.

## References

- Abdu Z, Mohammed Z, Bashier I, Eriksson B. 2004. The impact of user fee exemption on service utilization and treatment seeking behaviour: the case of malaria in Sudan. *The International Journal of Health Planning and Management* 19: S95–106.
- Andersen R, Newman JF. 1973. Societal and individual determinants of medical care utilization in the United States. *Milbank Quarterly* 51: 95–124.
- Atchessi N, Ridde V, Zunzunégui MV. 2014. Is the process for selecting indigents to receive free care in Burkina Faso equitable? *BMC Public Health* 14: 1158.
- Bazargan M, Bazargan S, Baker RS. 1998. Emergency department utilization, hospital admissions, and physician visits among elderly African American persons. *Gerontologist* 38: 25–36.
- Beogo I, Liu CY, Chou YJ, Chen CY, Huang N. 2014. Health-care-seeking patterns in the emerging private sector in Burkina Faso: a population-based study of urban adult residents in Ouagadougou. *PLoS One* 9: e97521.
- Bertakis KD, Azari R, Helms LJ, Callahan EJ, Robbins JA. 2000. Gender differences in the utilization of health care services. *Journal of Family Practice* 49: 147–52.
- Burnette D, Mui AC. 1999. Physician utilization by Hispanic elderly persons: national perspective. *Medical Care* 37: 362–74.
- Criel B, Samba Bâ A, Kane F, Noirhomme M, Waelkens MP. 2010. Une expérience de protection sociale en santé pour les plus démunis: le fonds d'indigence de Dar-Naïm en Mauritanie. Studies in Health Services Organisation & Policy 26. <http://www.medicusmundi.org/en/contributions/reports/2010/dar-naïms-community-health-insurance-scheme/2010-itm-criel-dar-naim.pdf>, accessed 13 November 2014.
- De Allegri M, Ridde V, Louis VR *et al.* 2012. The impact of targeted subsidies for facility-based delivery on access to care and equity—evidence from a population-based study in rural Burkina Faso. *Journal of Public Health Policy* 33: 439–53.
- Deininger K, Mpuga P. 2005. Economic and welfare impact of the abolition of health user fees: evidence from Uganda. *Journal of African Economies* 14: 55–91.
- Flores G, Ir P, Men CR, O'Donnell O, van Doorslaer E. 2013. Financial protection of patients through compensation of providers: the impact of health equity funds in Cambodia. *Journal of Health Economics* 32: 1180–93.
- Guralnik JM, Simonsick EM, Ferrucci L *et al.* 1994. A short physical performance battery assessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. *Journal of Gerontology* 49: M85–94.
- Institut National de la Statistique et de la Démographie du Burkina Faso. 2007. *Tableau 06.04: Evolution du taux de consultation selon le sexe et le milieu de résidence. Tableau 04.04: Evolution des indices de pauvreté.* <http://www.insd.bf/>, accessed 12 November 2014.
- Jacobs B, Ir P, Bigdeli M, Annear P, Van Damme W. 2012. Addressing access barriers to health services: an analytical framework for selecting appropriate interventions in low-income Asian countries. *Health Policy and Planning* 27: 288–300.
- Kadio K. 2013. Perception de l'entraide et de la solidarité de la part d'indigents provenant de ménages du quintile le plus riche du district sanitaire d'Ouargaye au Burkina Faso. In: Fournier P, Haddad S, Ridde V (eds). *Santé maternelle et accès aux soins en Afrique de l'Ouest*. Louvain-la-Neuve: L'Harmattan.
- Kafando Y, Marcotte Shoemaker C, Kadio K, Ridde V. 2013. L'exemption du paiement des soins améliore-t-elle les conditions de vie des indigents? L'exemple de Ouargaye (province du Koulpélogo). In: Ridde V, Jacob JP (eds). *Les indigents et les politiques de santé en Afrique: expériences et enjeux conceptuels*. Louvain-la-Neuve: Academia-L'Harmattan, 345–61.
- Kanya L, Obare F, Warren C *et al.* 2013. Safe motherhood voucher programme coverage of health facility deliveries among poor women in South-western Uganda. *Health Policy and Planning* 29 (suppl 1): i4–i11.
- Masiye F, Chitah BM, McIntyre D. 2010. From targeted exemptions to user fee abolition in health care: experience from rural Zambia. *Social Science & Medicine* 71: 743–50.
- McIntyre D, Thiede M, Birch S. 2009. Access as a policy-relevant concept in low- and middle-income countries. *Health Economics, Policy and Law* 4: 179–93.
- Melnik BM, Morrison-Beedy D (eds). 2012. *Intervention Research: Designing, Conducting, Analysing and Funding*. New York: Springer.
- Mills S, Williams JE, Adjuik M, Hodgson A. 2008. Use of health professionals for delivery following the availability of free obstetric care in Northern Ghana. *Maternal and Child Health Journal* 12: 509–18.
- Nabyonga J, Desmet M, Karamagi H *et al.* 2005. Abolition of cost-sharing is pro-poor: evidence from Uganda. *Health Policy and Planning* 20: 100–8.
- Nagi SZ. 1976. An epidemiology of disability among adults in the United States. *Milbank Quarterly* 54: 439–67.
- Nikiema B, Haddad S, Potvin L. 2008. Women bargaining to seek healthcare: norms, domestic practices and implications in rural Burkina Faso. *World Development* 36: 608–24.
- Noirhomme M, Meessen B, Griffiths F *et al.* 2007. Improving access to hospital care for the poor: comparative analysis of four health equity funds in Cambodia. *Health Policy and Planning* 22: 246–62.
- O'Connell TS, Bedford KJA, Thiede M, McIntyre D. 2015. Synthesizing qualitative and quantitative evidence on non-financial access barriers: implications for assessment at the district level. *International Journal for Equity in Health* 14: 54.
- Penfold S, Harrison E, Bell J, Fitzmaurice A. 2007. Evaluation of the delivery fee exemption policy in Ghana: population estimates of changes in delivery service utilization in two regions. *Ghana Medical Journal* 41: 100–9.
- Petticrew M, Cummins S, Ferrell C *et al.* 2005. Natural experiments: an under-used tool for public health? *Public Health* 119: 751–7.
- Ridde V, Jacob JP (eds). 2013. *Les indigents et les politiques de santé en Afrique: expériences et enjeux conceptuels*. Louvain-la-Neuve: Academia-L'Harmattan.
- Ridde V, Morestin F. 2011. A scoping review of the literature on the abolition of user fees in health care services in Africa. *Health Policy and Planning* 26: 1–11.
- Ridde V, Yaogo M, Sanfo O *et al.* 2009. A community-based targeting approach to exempt the worst-off from user fees in Burkina Faso. *Journal of Epidemiology and Community Health* 64: 10–5.
- Samb OM, Belaid L, Ridde V. 2013. Burkina Faso: la gratuité des soins aux dépens de la relation entre les femmes et les soignants? *Revue Humanitaire* 35: 34–43.
- Szklo M, Nieto FJ. 2006. *Epidemiology: Beyond the Basics*, 2nd edn. Burlington, MA: Jones & Bartlett Learning.
- Violla F. 2009. Le refus de soins peut-il induire une discrimination? La réforme annoncée de l'article L. 1110-3 du Code de la santé publique. *Médecine Et Droit* 2009: 2–9.
- Wallace SP, Gutiérrez VF. 2005. Equity of access to health care for older adults in four major Latin American cities. *Pan American Journal of Public Health* 17: 394–409.
- Wilkinson D, Gouws E, Sach M, Karim SS. 2001. Effect of removing user fees on attendance for curative and preventive primary health care services in rural South Africa. *Bulletin of the World Health Organization* 79: 665–71.
- Witter S, Arhinful DK, Kusi A *et al.* 2007. The experience of Ghana in implementing a user fee exemption policy to provide free delivery care. *Reproductive Health Matters* 15: 61–71.