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## Social Science &amp; Medicine

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## Endorsement of universal health coverage financial principles in Burkina Faso

Isabelle Agier <sup>a</sup>, Antarou Ly <sup>b</sup>, Kadidiatou Kadio <sup>b</sup>, Seni Kouanda <sup>b</sup>, Valéry Ridde <sup>a, c, \*</sup><sup>a</sup> University of Montreal Public Health Research Institute (IRSPUM), Montreal, Canada<sup>b</sup> Institut de Recherche en Sciences de la Santé (IRSS/CNRST), Ouagadougou, Burkina Faso<sup>c</sup> University of Montreal School of Public Health (ESPUM), Montreal, Canada

## ARTICLE INFO

## Article history:

Received 6 July 2015

Received in revised form

6 January 2016

Accepted 9 January 2016

Available online 11 January 2016

## Keywords:

Burkina Faso

Universal health coverage

Health financing

Mixed methods

Anticipation

Risk sharing

Solitariness

Progressivity

## ABSTRACT

In West Africa, health system funding rarely involves cross-subsidization among population segments. In some countries, a few community-based or professional health insurance programs are present, but coverage is very low. The financial principles underlying universal health coverage (UHC) sustainability and solidarity are threefold: 1) *anticipation* of potential health risks; 2) *risk sharing* and; 3) *socio-economic status solidarity*. In Burkina Faso, where decision-makers are favorable to national health insurance, we measured endorsement of these principles and discerned which management configurations would achieve the greatest adherence.

We used a sequential exploratory design. In a qualitative step (9 interviews, 12 focus groups), we adapted an instrument proposed by Goudge et al. (2012) to the local context and addressed desirability bias. Then, in a quantitative step (1255 respondents from the general population), we measured endorsement. Thematic analysis (qualitative) and logistic regressions (quantitative) were used.

High levels of endorsement were found for each principle. Actual practices showed that anticipation and risk sharing were not only intentions. Preferences were given to solidarity between socio-economic status (SES) levels and progressivity. Although respondents seemed to prefer the national level for implementation, their current solidarity practices were mainly focused on close family. Thus, contribution levels should be set so that the entire family benefits from healthcare.

Some critical conditions must be met to make UHC financial principles a reality through health insurance in Burkina Faso: trust, fair and mandatory contributions, and education.

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## 1. Introduction

Recently, numerous studies have been conducted, either to understand the factors enabling certain low and middle income countries (LMIC) to move closer to universal health coverage (UHC) (Giedion et al., 2013; Lagomarsino et al., 2012; McIntyre et al., 2013; McKee et al., 2013), or to measure and monitor their current levels of UHC (The PLOS Medicine Editors, 2014). Nonetheless, extensive work remains to be done on both the action and research fronts (Horton and Das, 2014). The literature emphasizes how important it is to take into account country-specific social and political contexts when engaging in large-scale reforms (McKee et al., 2013; WHO,

2013b) to “translate UHC into country-specific reality” (Kutzin, 2013, p. 608). Moreover, “[UHC] can be achieved in many different ways. There is no single recipe” (Savedoff et al., 2012). Beyond the well-known and outdated dichotomy between tax-based (Beveridge) and contribution-based (Bismark) models, each country selects a path-dependent strategy adapted to their inherited health system (The PLOS Medicine Editors, 2014). Regarding financial schemes, the current recommendation is to opt for mandatory mechanisms, either tax- or contribution-based (Nicholson et al., 2015), as there is no evidence of the superiority of one over the other (Bump, 2015). However, in most LMICs, the “recent switch towards a health insurance model” (Fox and Reich, 2015, p. 406) seems to be at stake, as is the case in Burkina Faso, where the present study was conducted. This contextual adaptation is critically important especially for UHC funding, where the underlying concepts are complex. Therefore, “reforms to move towards UHC need to be planned very carefully” (WHO, 2013a, p. 14). UHC is a

\* Corresponding author. University of Montreal School of Public Health, IRSPUM, Pavillon 7101 Avenue du Parc, P.O. Box 6128, Centre-ville Station, Montreal, Quebec H3C 3J7, Canada

E-mail address: [valery.ridde@umontreal.ca](mailto:valery.ridde@umontreal.ca) (V. Ridde).

multidimensional concept involving legal, humanitarian, social, public health, and financial aspects. This paper focuses on the financial perspective.

Ghana is often cited as an example in West Africa of progression toward UHC (Mills et al., 2012; Witter et al., 2013), even though numerous challenges remain in terms of equity of coverage (Akazili et al., 2014). Africans, especially francophone populations, are quite critical of their governments' capacity and will to deliver basic healthcare (Abiola et al., 2011). In some West African countries, such as Senegal and Mali, health system performance has stagnated or even decreased (Asunka, 2013). In these conditions, public servants have refused to make financial contributions mandatory, so that governments have had to make them optional, thereby jeopardizing the establishment of national health insurance.

UHC in Burkina Faso is representative of francophone West Africa in general. In 2010, only 0.5% of women and 1.5% of men were covered by health insurance (INSD, 2011). Current health system funding is fragmented and does not allow for cross-subsidization among population segments (Ridde et al., 2014). The 2011–2020 national health development plan (*Plan national de développement sanitaire* - PNDS) aims to increase the public health budget and to implement strategies for moving toward UHC (Zett and Bationo, 2011). Decision-makers have identified several challenges related to the financial aspects of UHC, including a reduced tax base, low political will and governance issues, low contributive capacity of households, and problems in administering health insurance (Zida et al., 2010). A parliamentary workshop held in September 2014 finalized a bill concerning UHC strategies. This bill, scheduled for parliamentary debate in October 2014 (Gouvernement du Burkina Faso, 2013; Siribie and Badiel, 2014), was finally adopted in September 2015 by the National Transitional Council. It stipulates that coverage will be conditional on an (eventually mandatory) contribution, to be set according to each household's capacity. Operational issues such as the healthcare package and third-party payment will be set by decrees (Ministère de la fonction publique du travail et de la sécurité sociale, 2014). A three-year pilot program will be conducted to evaluate different funding models and care packages (WHO, 2014).

The financial principles underlying UHC sustainability and solidarity are threefold: 1) contribution by *anticipation* (with or without smoothing) of potential future risk (in our case, adopting a household budget management approach that included anticipating risks, rather than pre-payment, which had not yet been implemented); 2) *risk sharing* (cross-subsidization of those in need of healthcare), with non-refundable contributions that only benefit healthcare users; and 3) *socio-economic status solidarity*, referring to cross-subsidization among different socio-economic status (SES) levels, with larger contributions from those who are better off financially (Goudge et al., 2012). Very little is known in Africa about population endorsement of UHC financial principles during early stages of strategy implementation, as is the case in Burkina Faso. As far as we know, only Goudge et al. (2012) have addressed this question, in the contexts of Tanzania, Ghana, and South Africa. To attain UHC goals, WHO strongly encourages academics to improve knowledge in this area (WHO, 2013b). The present study was conducted within this context of knowledge needs at the national and international levels. Its objectives were twofold: 1) to measure population endorsement of the three UHC financial principles, and 2) to discern which management configurations (e.g. which institutions and implementation levels) would achieve the greatest adherence among the population as strategies are implemented to move toward UHC.

## 2. Methodology

Because health system funding, population exposure to health insurance concepts, and decision-makers' preoccupations are different in Burkina Faso than in the countries studied by Goudge et al. (2012), their methodological approach needed to be adapted to our study context. Additionally, an important limitation of Goudge et al.'s (2012) study is that it considered only prospective measures ('hypothetical scenarios'). Especially in the African context, however, desirability bias (Boutin, 1997) may strongly affect results of surveys on such a complex and sensitive issue. We addressed this concern by reporting responses to both prospective questions (indicating willingness) and retrospective questions (actual practices), to strengthen response reliability.

Our study is a variant of sequential exploratory design (instrument development design) (Creswell and Plano Clark, 2007). In a first (qualitative) step, we adapted an instrument proposed by Goudge et al. (2012) to Burkina Faso. Then, in a second (quantitative) step, we incorporated this adapted instrument to measure endorsement of UHC financial principles within the specific context.

### 2.1. Instrument adaptation (qualitative phase)

We interviewed representatives of financial services to households, to benefit from their experience in communicating with and educating the local population, and to adapt the vocabulary and explanation of the complex concepts involved in this study to the local context. Nine heads of community-based health insurance (CBHI – *mutuelle de santé*) schemes, two heads of micro-finance institutions (MFIs), and a representative from the national CBHI network (*Réseau d'appui aux mutuelles de santé* - RAMS) were interviewed individually.

We then set up focus groups to: 1) assess people's comprehension of the concepts by having participants illustrate them with examples from everyday life, which then were used to develop corresponding vignettes in the questionnaire, and 2) test graphic illustrations to be used in the questionnaire for choosing preferred scenarios of SES solidarity. Focus groups were stratified by area (rural vs. urban), household SES (high, middle, and low), and gender (household heads and influential spouses separately) to capture diversity of activities and practices, as well as potential divergences in their understanding of the abstract concepts involved. In total, 68 people participated in 12 groups of four to six people (except for one group with nine women). The results were subjected to thematic analysis.

### 2.2. Household survey (quantitative phase)

The households sample was drawn from an annual cohort that had already been observed over a three-year period in two districts of central Burkina Faso: Kaya and Zorgho (Druetz et al., 2015). The Kaya district was selected due to the presence of the Kaya Health and Demographic Surveillance System (HDSS), which follows approximately 8000 households (around 50,000 individuals) (Kouanda et al., 2013). Zorgho is a comparable district, with the exception that there is no fee exemption intervention in place, as there is in Kaya. In both districts, households were randomly sampled from the cohort, while ensuring an equal distribution by area type—half urban, half rural. We then interviewed each household head along with the most influential spouse (as determined by the household head's responses to the series of questions beginning with, "Who finds money when savings are insufficient to deal with unexpected expenses regarding ..."). Our sample consisted of 1255 respondents from 619 households.

### 2.3. Quantitative instruments: financial principles and management

The questionnaire included questions on the three UHC financial principles, on management of UHC strategies, and on respondents' profiles (demographic, SES, and exposure to financial tools such as a Rotating Savings and Credit Association (ROSCA), microfinance, or CBHI).

Given the population's low exposure to insurance principles and the personal sensitivity of the concepts, we strengthened reliability by including both retrospective and prospective questions. For each principle being explored, we asked about both recent practice and hypothetical cases, illustrated by vignettes describing in a detailed and meaningful way the attributes and principles to be explored (see Appendix 1).

Anticipation was measured retrospectively by asking whether respondents had any savings strategy to cope with unexpected health spending. We also investigated smoothing by asking whether precautionary savings or reimbursement for health expenses were made once a year, a few times a year, or more regularly. For a prospective measure, respondents were also asked whether they considered anticipatory (non-refundable) mandatory health insurance contributions to be a problem or an advantage.

Risk sharing was measured both retrospectively, based on respondents' actual practices of donating and lending in response to solicitations for assistance (in line with the social relationship between the person asking and the one solicited), and prospectively, by asking who should receive help from the respondent to cover health costs.

Representation of solidarity across SES levels was measured by having respondents choose among four scenarios of contribution distribution. Three SES levels were illustrated by corresponding housing and vehicle types, with different versions for urban and rural areas. Each scenario presented how the three SES levels should contribute. The number of chickens (the usual savings strategy) that each SES level would have to contribute varied by scenario, but the total contribution remained the same: 60 chickens (see Appendix 2 and Appendix 3) for examples of scenario illustrations). In the first scenario, each household contributed the same amount regardless of household SES. In the second, each household's contribution was proportional to its income (e.g. each paid 10%). In the third, contributions were progressive, so that higher SES households paid a higher fraction of their income than did those with lower SES (e.g. 5% for the lowest SES level, 10% for the middle level, and 15% for the highest). In the fourth, contributions were also progressive, but the poorest were exempt.

For each administrative level (village, municipality, district, region, central government), respondents were asked whether they would agree to implement universal health insurance. The highest

accepted administrative level was derived from these responses. To measure the relative degree of confidence in various institutions' ability to manage health insurance, respondents were asked to rank nine types of institution from one (trustworthiest) to nine (least trustworthy). We used this ranking to assign a grade to each institution: eight points for first place, seven for second place, and so on, with no points for the last place.

Table 1 summarizes how endorsement of the three UHC financial principles and management preferences were measured.

### 2.4. Profile of respondents

To study the potential effects of SES on endorsement of the three principles and on preferences regarding UHC management, households were assigned an essential needs satisfaction score based on self-assessment on 40 items (Mpatswenumugabo et al., 2007) and grouped into five quintiles based on their scores.

The essential needs score was constructed in four phases. First, three focus groups (household heads from rural and urban areas and surveyors who knew the region well) were organized to determine what were considered essential needs in Burkina. Second, the items identified were compared to those used in the UNDP study in Niger and were found to be very similar; they could be classified into the following categories: food safety, health, education, clothing, housing, durable goods, animals, agriculture equipment, other (safety, social network, etc.). Third, households were asked, in a questionnaire, whether they were able to meet these needs and whether they considered them essential. Lastly, the households' scores were built by weighting each need according to the proportion of households that considered it essential (Mpatswenumugabo et al., 2007).

As the UHC principles under study are highly related to household financial management, we assessed respondents' exposure to financial tools to take into account its potential effect on adherence. This exposure was measured through the strength of their link with: 1) a CBHI scheme; 2) a microfinance institution; and 3) a Rotating Savings and Credit Association (ROSCA). The list of financial structures was established based on preliminary identification work performed in the area. When respondents reported being located in a community with one of the three financial structures, one point was attributed; when a relative or friend was a member, three points were attributed; and, when the respondents themselves were members, six points were attributed, up to a maximum of 30 points (if the respondent was a member of all three schemes, was located in a community with all three schemes, and had a friend/member in all of them). Respondents were then grouped into four balanced categories based on their financial exposure score: none, low, moderate, and high.

**Table 1**  
Retrospective and prospective measures of the three UHC financial principles and management preferences.

UHC principle	Retrospective measures	Prospective measures
Anticipation (and smoothing)	Practices adopted to anticipate large health expenses and smoothing of savings or reimbursement for own health expenses	Opinion on anticipatory mandatory contributions (whether a problem or an advantage).
Risk sharing	Practices of donation or loan as an answer to solicitations to pay health expenses	Opinion on help that should be given to the less healthy and received from the more healthy to pay health expenses
SES solidarity	Practices not measured but scenario illustrations based on current practice of precautionary savings strategies	Opinion about help that should be given to the poor and received from the less poor to pay health expenses + scenarios on contribution distribution by SES level
UHC Management	Retrospective measures	Prospective measures
Management level	Not applicable	Highest administrative level of UHC management approved
Trust	Not applicable	Trust score based on institution ranking

## 2.5. Analysis

Descriptive statistics (mean, standard deviation, and frequency) are presented in Table 2 and Fig. 2. Regressions of the main variables measuring the three principles against the respondent profile are presented in Table 3. Ordered logit analysis was used for ordered categorical variables (contribution scenario preferences) and logit analysis for dummy variables (all the remaining variables of interest). Marginal effects (Greene, 2012) were reported and the reference modality (the lowest one) for each categorical variable was indicated in parentheses.

The data on solicitation for health expense assistance were rearranged so that one observation corresponded to one decision for each type of help seeker. This allowed us to include the social link between the help seeker and respondent in the regression.

The violation of independent observations hypothesis applies to all data, as spouses were interviewed in the same household, and even more so to the rearranged data, as eight decisions per respondent are included. This is taken into account in the variance–covariance matrix structure by including household clusters in regressions 1, 2, and 7, and two-way clusters (households and respondents) in regressions 3 to 6. Robust standard errors are reported (Cameron et al., 2006).

## 3. Ethical approval

This study was approved by the health research ethics committees of Burkina Faso and of the University of Montreal Hospital Research Centre (2012-11-85 and 12.273). Each respondent enrolled and signed a consent form after being informed of the objectives and consequences of the study. No compensation was given for participating in the study.

## 4. Results

### 4.1. Profile of respondents

Of our respondents, 54.7% were residents of Kaya, 48.7% were urban dwellers, and 50.7% were women. The distribution of respondents among the financial exposure levels (none, low, moderate, and high) was 23.4%, 21.0%, 26.6%, and 28.9% respectively. Two-thirds (66.3%) had no education at all, 12.4% were literate thanks to a literacy program, 13.6% had a primary education, and 7.7% had a secondary or higher education, although instances of higher education were extremely rare. The average age of respondents was 43.6 years. The proportions of respondents cohabiting with a household member with chronic disease or with a physical or mental handicap were 18.5% and 17.8%, respectively.

**Table 2**  
Descriptive statistics: adherence to the three principles and UHC management.

R: retrospective measures; P: prospective measures	Mean	Std. Dev.	N
<b>Principle 1: Anticipation and smoothing of health expenses</b>			
R: Anticipation of large unexpected health expenses			
Have an anticipation strategy to cope with large unexpected health expenses	0.948	0.222	1190
Number of strategies adopted to cope with large unexpected health expenses	3.891	2.108	4883
R: Saving or timing requests to cope with large unexpected health expenses			
Saving a little at time without knowing if a health expense will occur	0.758	0.428	950
Saving all at once when a major money inflow occurs without knowing of an expense	0.379	0.485	475
Borrowing when an expense arises and repaying a little at time afterward	0.378	0.485	474
Borrowing when an expense arises and repaying when a major money inflow occurs	0.231	0.421	289
Requesting help when a health expense occurs	0.460	0.499	577
P: Anticipatory and non-refundable contribution to UHC seen as an advantage	0.986	0.119	1237
<b>Principle 2: Risk sharing</b>			
R & P: See Fig. 2 for responses to solicitations to pay health expenses			
P: I should help people who incur health expenses more often than I do	0.997	0.056	1251
P: People who incur health expenses less often than I do should help me	0.990	0.101	1242
<b>Principle 3: SES solidarity</b>			
P: I should help people poorer than me to pay their health expenses	1.000	0.000	1255
P: People less poor than me should help pay my health expenses	0.996	0.063	1250
P: Preferred distribution of the contribution			
Same amount (regardless the income)	0.028	0.165	35
Proportional to income	0.231	0.422	290
Progressive, paid by all	0.358	0.480	449
Progressive, exempting indigents	0.383	0.486	481
<b>Implementation: Health coverage management</b>			
P: Highest management level accepted			
Neighborhood	0.010	0.097	12
Sector (urban area)/Village (rural area)	0.037	0.188	46
Communal	0.032	0.176	40
Provincial	0.011	0.105	14
Regional	0.004	0.063	5
National	0.907	0.291	1138
P: Trust level (score) to manage UCH funds			
Village committee (CVD)	3.090	1.923	
Health center community management committee (COGES)	3.129	2.230	
City hall (municipal)	3.323	1.830	
District	3.601	2.028	
Central government	5.588	2.212	
Association	5.891	1.934	
NGO	6.332	2.113	
Microfinance institution (MFI)	6.680	1.936	
CBHI (Mutual health organization)	7.331	2.041	
<b>Observations</b>			1255

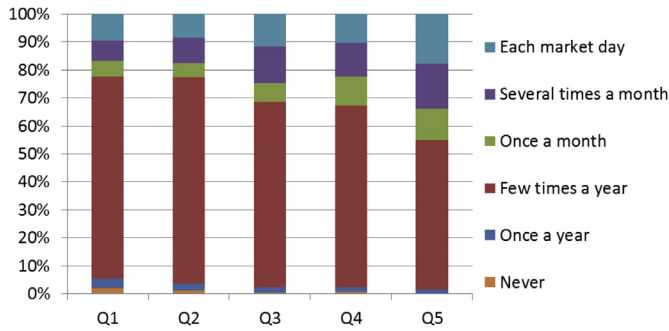


Fig. 1. Frequency of income inflow to the household.

4.2. Anticipation and smoothing

Anticipation was very widespread, as 94.8% of respondents had adopted at least one strategy to cope with large unexpected health expenses, with 3.89 different strategies adopted on average per household. When no strategy was adopted, the main reason was lack of resources. When anticipation occurred, precautionary savings were mostly accumulated progressively (75.8%) rather than all at once on the occasion of a major inflow of money (37.9%). Smoothing occurred afterward as well, with 37.8% of respondents having repaid their borrowing progressively, while 23.1% repaid it at once. Nonetheless, saving and borrowing were largely complemented by donations (46%). For 98.6% of respondents, anticipatory (non-refundable) mandatory contributions were seen as an advantage rather than a problem. The logit regression revealed no difference in anticipation among wealth quintiles, but a higher likelihood of anticipation in Zorgho and a higher likelihood of smoothing anticipation in urban areas, when financial exposure was high or when respondents were younger.

The prevalence of smoothing practices would seem to advocate for spreading out contributions. However, income inflow occurred only a few times a year (i.e., infrequently) for 72% of the lowest SES households (Q1), as well as for more than half (53%) of the highest (Q5) (Fig. 1). Frequent income (monthly, several times a month, or each market day) was much less common, occurring mainly among the highest SES levels.

4.3. Risk sharing (cross-subsidization between healthy and ill people)

The strongest and most significant characteristic related to the likelihood of respondents being solicited by others and of helping them, both retrospectively and prospectively, was the strength of respondents' social bond with the help seeker. Retrospectively, the closer the link, the more likely it was that solicitations were made and were met by a donation rather than a loan. From closest to farthest, social links included offspring (closest), spouses, siblings and parents, other members of the family, friends, neighbors, other villagers, and finally others from outside (farthest). Respondents' prospective willingness to help offspring, spouse, siblings, and parents was similar, but decreased with geographical distance when the help seeker was not part of the close family.

Regression analysis revealed that only the highest quintile (Q5) was more likely to respond to solicitations with donations. Prospectively, no linear effect was observed among quintiles. Financial exposure was strongly associated with frequency of solicitations, responding to solicitations by lending (rather than outright donation), and prospective willingness to help.

Respondents with a disabled person in the household were more likely to be solicited and to help through donations rather than loans. They were particularly more solicited by offspring, who were probably the disabled people in the household—a hypothesis we were unable to confirm without profile data on household members, which was not part of our questionnaire.

4.4. SES solidarity (cross-subsidization between wealth levels)

Extremely high endorsement of solidarity between SES levels was declared in both directions. Respondents showed a clear preference for progressivity: 2.8% would opt for uniform contributions regardless of household wealth, 23.1% for contributions proportional to household income, 35.8% for progressive contributions by all, and 38.3% for progressive contributions with exemptions for indigents. The ordered logit considered the four scenarios, following a natural order from the most regressive (equal contribution) to the most progressive (progressive with exemptions). No significant difference was observed in terms of preferences among quintiles. Urban residents favored progressivity.

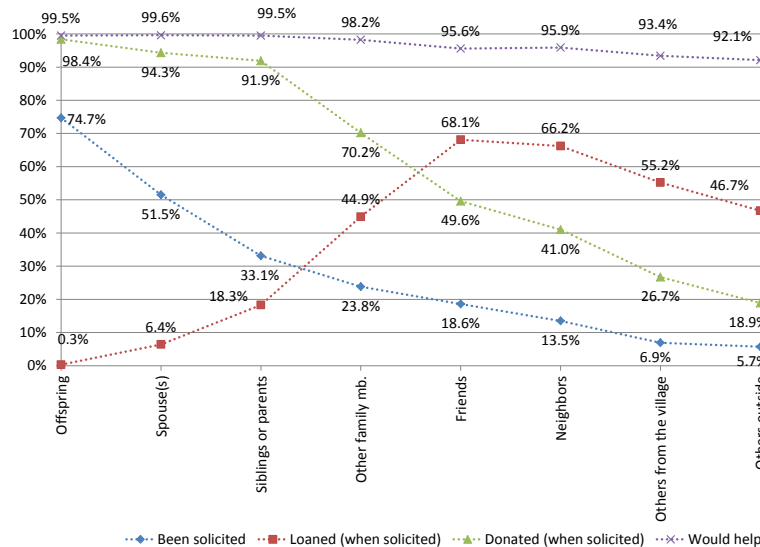


Fig. 2. Risk sharing: retrospective and prospective responses to solicitations for health expenses.

**Table 3**  
Regressions: adherence to the three principles by respondents' profile.

Marginal effects reported	Principle 1		Principle 2			Principle 3	
	Anticipate big health expense	Smooth anticipation	Have been solicited	Loaned (if solicited)	Gave (if solicited)	Would help (prospective)	Contribution distribution
	Logit	Logit	Logit	Logit	Logit	Logit	Ord. Logit
Quintile (Q1)							
Q2	0.00242 (0.0201)	-0.0448 (0.0369)	-0.00566 (0.0208)	0.00438 (0.0241)	0.0244 (0.0256)	0.0306*** (0.00935)	-0.00491 (0.00661)
Q3	0.0278 (0.0192)	-0.0476 (0.0377)	0.0384* (0.0218)	-0.0349 (0.0263)	0.0520** (0.0239)	0.0361*** (0.00903)	-0.00926 (0.00644)
Q4	0.0252 (0.0209)	0.0115 (0.0372)	0.00900 (0.0215)	-0.0404 (0.0256)	0.0350 (0.0266)	0.0266*** (0.00993)	-0.000365 (0.00726)
Q5	0.0337 (0.0206)	-0.0342 (0.0396)	0.0389* (0.0214)	-0.0142 (0.0252)	0.0636*** (0.0241)	0.0150 (0.0118)	-0.00629 (0.00692)
Kaya	-0.0746*** (0.0172)	-0.0517* (0.0268)	0.0928*** (0.0140)	0.148*** (0.0179)	0.0797*** (0.0181)	-0.0358*** (0.00747)	-0.00669 (0.00452)
Urban	0.00528 (0.0133)	0.0981*** (0.0251)	0.00220 (0.0138)	-0.0310* (0.0173)	0.0533*** (0.0163)	0.00455 (0.00626)	0.0131*** (0.00463)
Women	-0.0101 (0.0146)	-0.0601** (0.0274)	-0.0941*** (0.0155)	0.0193 (0.0171)	-0.0337* (0.0185)	-0.00328 (0.00672)	-0.0124** (0.00491)
Financial exposure (None)							
Low	-0.000243 (0.0219)	0.0470 (0.0379)	0.0380** (0.0180)	0.0717*** (0.0272)	-0.0180 (0.0274)	0.0402*** (0.0105)	-0.00844* (0.00496)
Moderate	0.0110 (0.0201)	0.0354 (0.0358)	0.0759*** (0.0178)	0.0763*** (0.0230)	0.00934 (0.0222)	0.0415*** (0.00919)	0.0104* (0.00624)
High	0.0326* (0.0188)	0.127*** (0.0344)	0.0999*** (0.0195)	0.0731*** (0.0232)	-0.000744 (0.0236)	0.0379*** (0.0104)	0.00524 (0.00595)
Chronic disease in household	-0.00925 (0.0164)	-0.0725** (0.0298)	0.0214 (0.0156)	-0.000447 (0.0213)	0.00839 (0.0224)	0.00620 (0.00970)	-0.00819 (0.00532)
Handicap in household	0.0151 (0.0176)	-0.0278 (0.0307)	0.0662*** (0.0166)	-0.00705 (0.0197)	0.0470** (0.0214)	0.0290** (0.0120)	-0.00994* (0.00547)
Education (None)							
Literate	0.0207 (0.0177)	0.0971*** (0.0325)	0.0225 (0.0196)	0.0742*** (0.0250)	-0.0311 (0.0238)	-0.00640 (0.00903)	0.0155* (0.00792)
Primary	0.0353** (0.0150)	0.0310 (0.0370)	0.0372* (0.0208)	0.0385* (0.0222)	0.0192 (0.0206)	-0.00723 (0.0114)	0.00203 (0.00564)
Sec. or higher	0.0272 (0.0210)	0.0315 (0.0487)	-0.00491 (0.0243)	-0.0713*** (0.0238)	0.0314 (0.0267)	-0.00697 (0.0109)	0.0236** (0.0116)
Age	-0.000394 (0.000519)	-0.00284*** (0.000953)	0.00126** (0.000547)	5.70e-05 (0.000689)	0.000993 (0.000703)	-6.58e-05 (0.000228)	0.000218 (0.000166)
Help seeker (offspring)							
Spouse(s)			-0.231*** (0.0142)	0.0694*** (0.0103)	-0.0430*** (0.00841)	0.000829 (0.00152)	
Siblings or parents			-0.414*** (0.0158)	0.179*** (0.0178)	-0.0683*** (0.0128)	0.000235 (0.00275)	
Other family members			-0.507*** (0.0159)	0.432*** (0.0250)	-0.287*** (0.0250)	-0.0128*** (0.00415)	
Friends			-0.611*** (0.0145)	0.629*** (0.0303)	-0.583*** (0.0343)	-0.0353*** (0.00572)	
Neighbors			-0.561*** (0.0153)	0.657*** (0.0290)	-0.518*** (0.0308)	-0.0377*** (0.00586)	
Others from the village			-0.678*** (0.0135)	0.534*** (0.0365)	-0.725*** (0.0393)	-0.0600*** (0.00693)	
Others outside			-0.690*** (0.0133)	0.497*** (0.0356)	-0.783*** (0.0355)	-0.0719*** (0.00722)	
Observations	1255	1253	10,040	3040	3040	10,040	1255

Household clusters included in regressions 1, 2 and 7, and two-way (households and respondents) clusters in regressions 3 to 6. Robust standard errors in parentheses, \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

#### 4.5. UHC management

Concerning the highest level at which respondents would approve of UHC being implemented (as described in the vignettes), 90.7% indicated the national level, 3.7% the sector or village level, and 3.2% the municipal level (just above sector or village). Very few chose the neighborhood, provincial, or regional levels (1% or less per option).

The CBHI scheme was ranked as the trustworthiest type of institution (highest score) for managing UHC funds, followed by local organizations such as microfinance institutions (MFIs), NGOs,

and associations. Only after these came the central government, the district (local representation of the central government), or the city hall. Least trusted were community organizations such as CVDs (village development committees) and COGESs (management committees of health centers).

## 5. Discussion

### 5.1. Normative answers or commitment?

For each principle, both retrospective and prospective questions

were asked to prevent a potential desirability bias that might be introduced by prospective questions about future UHC. Indeed, for each of the principles some prospective questions revealed a very high level of endorsement. Near-unanimity was found in: 1) considering the mandatory aspect to be a positive advantage; 2) agreeing to help others who are less healthy; and 3) agreeing to help pay healthcare costs for those who are poorer. Even though respondents' actual practices showed that anticipation and risk sharing are a reality in everyday life, the results described above should probably be taken to represent normative answers rather than an actual commitment. Similar discrepancies have been well documented among street level workers in West Africa questioned about public policies implementation (Olivier de Sardan, 2013; Ridde, 2008), but lay people's views were less documented.

Indeed, real-life conditions are complex, and several issues around governance, corruption, and trust need to be tackled prior to implementing UHC (Abiola et al., 2011; Gilson, 2003; Mladovsky, 2014). Awareness-raising and education regarding UHC (by those responsible for communicating with the public) are also necessary. Nevertheless, our finding that endorsement of the three principles is quite high is very encouraging for UHC strategies implementation, given that social homogeneity and cohesion are determinants of UHC success (McKee et al., 2013).

One might expect the highest SES level to display less solidarity and to be reluctant to endorse the most progressive contribution distribution scenarios, as found in other sub-Saharan African countries by Goudge et al. (2012). Anthropological studies in the region show that solidarity is disintegrating and is limited to close social networks, thus leaving out people without social and economic capital (Roth, 2010; Vuarin, 1994). Nonetheless, we found no significant difference in preferences among SES levels. Although the qualitative phase of our study validated the relevance of our drawings illustrating the different levels of wealth, the survey was conducted outside of the capital (Ouagadougou) in which the country's elite is concentrated. We cannot presume that the wealthiest residents of that city would have been so favorable to progressive contributions.

## 5.2. Anticipation

Precautionary saving is strongly rooted in everyday practices. We specifically asked people what anticipatory strategies they adopted to ensure their precautionary savings could indeed be used for health expenses. Because such savings are used to deal with the first shock that arises, if unplanned expenses are first incurred for a shock that is not health-related, resources may no longer be available. UHC contributions would dedicate resources to health shocks and thereby obviate this risk of competing shocks. Furthermore, compared to other shocks, health shocks are more frequent, affect the poorest the most, and require more adaptation within households (Mazumdar et al., 2014; Wagstaff and Lindelow, 2014).

A commonly heard explanation for low adherence to CBHI schemes in Burkina Faso or Benin is that people are afraid having a dedicated contribution will attract health problems (De Allegri et al., 2006; Turcotte-Tremblay et al., 2013). This argument does not seem to hold, as our respondents showed a high level of anticipation in practice. Furthermore, willingness to anticipate does not appear to be an obstacle to future UHC. Rather, a much more relevant concern is distrust of institutions (compromised by corruption, public finances mismanagement, poor governance, impunity) and of their integrity when it comes to managing UHC contributions for their intended purposes (Bationo, 2013; De Allegri et al., 2006; Mladovsky et al., 2015; Mladovsky et al., 2014; Ridde et al., 2010; Schneider, 2005).

## 5.3. Risk sharing

Both reported practices and prospective opinions indicated that risk sharing for expenses resulting from health shocks was widely accepted among our sample population. This finding is in line with results of experimental studies reported by the World Bank (World Bank, 2015), which concluded that people around the world generally prefer to cooperate—conditional upon others also cooperating—than to behave individually. Moreover, the strength of social bonds is the most important determinant of the type of response to solicitations for assistance. Thus, social norms seem to be much more important than level of wealth in determining what kind of help is requested and provided.

In the financial exposure index we constructed, respondents with higher exposure were those with stronger links to micro-finance institutions, ROSCAs, and/or CBHI schemes. Their higher propensity to lend when solicited could have been interpreted as a sign of greater solidarity if their propensity to donate had been higher as well. However, such was not the case. A possible explanation is that this group is more tightly integrated into a financial network where help through loans is, on one hand, associated with stronger guarantees through peer pressure (Ghatak and Guinnane, 1999; Li et al., 2013; van Bastelaer and Leathers, 2006) and, on the other, more likely to be rewarded by reciprocal help when needed (Defourny and Failon, 2011). These two mechanisms strengthen the incentive to lend.

## 5.4. UHC management

The great majority of respondents identified the national level as the highest acceptable level for UHC implementation. At the same time, they identified local institutions as most trustworthy for UHC management. This may seem contradictory at first glance, but can be explained by the difference in the essential issues addressed by these two questions. The first has to do with the notion of national solidarity, whereas the second reflects (mis)trust in central government per se. Given this finding, local or regional organization coupled with a federal structure at the national level might be an interesting avenue to explore. It would also offer the advantages of a re-insurance mechanism (Waelkens and Criel, 2007).

Willingness to accept UHC implementation at the national level is an encouraging start, and respondents' perceptions regarding the appropriate management level seem to be aligned in principle with experts' recommendations. Although corruption is on the rise in Burkina Faso, it is perceived as an issue to be dealt with rather than one to be accepted with fatalism (Bationo, 2013; CGD, 2013). The distrust expressed by our respondents with respect to the central government and its local representatives shows how critical an adequate and trustworthy management of UHC funds would be to achieving real adherence. For instance, delays in reimbursements by the central government have undermined trust in the case of user fees exemption in West African countries (Meessen et al., 2011; Ridde et al., 2012).

Furthermore, although the national level seems to be preferred for UHC implementation, current solidarity practices are focused on close family and, to a lesser extent, on friends and neighbors. Few solicitations are received from more distant people, who are less frequently helped. Thus, if national UHC is implemented, contribution levels should be set so that coverage is provided for entire families.

To separate the risk sharing principle from quality of care issues, we specified in our prospective questions that, even though the hypothetical contribution would depend on each contributor's wealth status, the quality of care would be the same for all (see last vignette in Appendix 1). If, however, the overall quality of care in

the UHC covered services is perceived to be poor, this premise is not very reassuring, and the acceptability of the three principles demonstrated above could easily be jeopardized, especially the mandatory and redistributive aspects.

Finally, we observed a discrepancy between income inflow and smoothing practices (see Fig. 1), which suggests to us that a wide range of options should be offered for the timing of UHC contributions, rather than just a choice between a one-time payment or installment payments.

### 5.5. Methodological limitations

Our study sample was embedded in a larger cohort whose wealth was measured using the essential needs index, an appropriate tool for classifying households by wealth, especially in sub-Saharan Africa, where the informal sector and self-production are substantial. This method does not compute monetary ability-to-pay, which would have been a key measurement in a willingness-to-pay approach. Also, in our methodology, we defined exposure to financial tools by combining exposure to CBHI, ROSCAs, and microfinance, which are different mechanisms. Given the limited financial literacy of our study population, our goal was simply to capture exposure to such tools, regardless of the financial mechanism. CBHI is not widespread enough in our context to be considered alone. Finally, with regard to the practice of loans and donations, it is possible that these could have been motivated by clientelism rather than real solidarity.

Given their distrust linked to negative past experiences with CBHI in Africa, potential enrollees are likely to wait and see how CBHI is evolving prior to enrolling (De Allegri et al., 2006; Defourny and Failon, 2011; Oriakhi et al., 2012). One unexpected finding of this survey was the high level of trust in CBHI schemes to manage UHC. At first glance, this is inconsistent with our population's low level of CBHI knowledge and enrolment. However, this finding may be the result of confusion in the vocabulary used in our questionnaire. At the very beginning, in assessing knowledge about CBHIs (called *mutuelles* in French), we introduced the notion for the first time to respondents who had no prior exposure. The questionnaire presented the UHC principles one by one through vignettes, by giving everyday examples and explaining that UHC would be, in essence, like a giant *mutuelle*. If knowledge of this institution had been more widespread among the population, it might have provided a good teaching tool to help people imagine how UHC would be, but given that very few of them knew about CBHIs, the use of the term *mutuelle* in the vignettes probably generated confusion more than it helped. In retrospect, the CBHI option in the question on institutional trust should have read "UHC-dedicated administration." Given the high preference for this institution indicated by the responses, however, we cannot discount the potential bias created by our choice of vocabulary in the questionnaire.

## 6. Conclusion

Given that the UHC financial principles were widely endorsed within our sample, UHC implementation should not be expected to encounter any obstacles in terms of acceptance by citizens. Nonetheless, certain critical conditions must be met to make UHC financial principles a reality.

First, if contributors trust the mechanism from the outset, they are more likely to collaborate and, in turn, to encourage others to collaborate, ultimately resulting in an inclusive virtuous equilibrium. Second, contributions *must be mandatory*. Third, public education and communication are powerful tools for improving adherence, especially in countries where exposure to insurance principles is quite low. Fourth, while the concept of progressivity

seems well accepted, determining and enforcing *fair contribution* levels nevertheless represent huge implementation challenges, given the substantial size of the informal sector. Finally, public health funding remains very low. In a recent study of 43 African countries, only 12 had allocated internal resources of at least \$60 per person, which is the minimum amount required for a basic healthcare package (Avila et al., 2013).

Discussion on UHC strategies funding should guide policy makers toward more universal healthcare systems. Providing larger and more equitable healthcare systems would improve coverage and access, with positive consequences for population health (Moreno-Serra and Smith, 2015). The current political upheavals in Burkina Faso, which began in late 2014, may provide a window of opportunity for promoting greater and more equitable public UHC funding, as exists in other countries (McKee et al., 2013; Savedoff et al., 2012). Political will alone, however, is insufficient. Civil society, professionals, and the general public will have to be strongly involved to ensure that "by 2030, everyone (100%) has coverage to protect them from financial risk," as advocated by WHO and the World Bank (WHO & World Bank, 2013).

### Authors' contributions

IA and VR designed the study. IA designed the collection tools with support from VR and KK and performed the statistical analysis; KK, AL and SK were in charge of data collection. IA and VR wrote the original draft. All authors reviewed the manuscript and read and approved the final version.

### Funding sources

This study was funded by the Canadian Institutes of Health Research (CIHR) through the project "Community research studies and interventions for health equity in Burkina Faso" (Grant number ROH-115213). VR holds a CIHR-funded Research Chair in Applied Public Health (CPP 137901).

### Conflict of interest

The authors declare that they have no competing interests.

### Acknowledgment

The authors wish to thank Jane Goudge and colleagues for kindly sharing the tools used in their study (Goudge et al., 2012) and Manuela de Allegri and two anonymous reviewers for useful comments that improved this work. This study was funded by the Canadian Institutes of Health Research (CIHR) through the project "Community research studies and interventions for health equity in Burkina Faso" (Grant number ROH-115213). VR holds a CIHR-funded Research Chair in Applied Public Health (CPP 137901). Thanks to Donna Riley and Patrick Riley for translation and editing support.

### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2016.01.017>.

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