Patterns of healthcare seeking among people reporting chronic conditions in rural sub-Saharan Africa: findings from a population-based study in Burkina Faso

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Abstract

OBJECTIVE   Non-communicable diseases are rapidly becoming one of the leading causes of morbidity and mortality in sub-Saharan Africa. Yet, little is known about patterns of healthcare seeking among people with chronic conditions in these settings. We aimed to explore determinants of healthcare seeking among people who reported at least one chronic condition in rural Burkina Faso.

METHODS   Data were drawn from a cross-sectional population-based survey conducted across 24 districts on 52 562 individuals from March to June 2017. We used multinomial logistic regression to assess factors associated with seeking care at a formal provider (facility-based care) or at an informal provider (home and traditional treatment) compared to no care.

RESULTS   1124 individuals (2% of all respondents) reported at least one chronic condition. Among those, 22.8% reported formal care use, 10.6% informal care use, and 66.6% no care. The presence of other household members reporting a chronic condition (RRR = 0.57, 95%-CI [0.39, 0.82]) was negatively associated with seeking formal care. Wealthier households (RRR = 2.14, 95%-CI [1.26, 3.64]), perceived illness severity (RRR = 3.23, 95%-CI [2.22, 4.70]) and suffering from major chronic conditions (RRR = 1.54, 95%-CI [1.13, 2.11]) were positively associated with seeking formal care.

CONCLUSION   Only a minority of individuals with chronic conditions sought formal care, with important differences due to socio-economic status. Policies and interventions aimed at increasing the availability and affordability of services for early detection and management in peripheral settings should be prioritised.

keywords   health services, primary health care, developing country, chronic diseases, socio-economic

Introduction

Non-communicable diseases (NCDs) are one of the major challenges of the 21st century. Each year, they are estimated to account for around 15 million premature deaths between the ages of 30 and 69 [1]. Facing a particularly dramatic epidemiological transition due to increased longevity, poor dietary behaviours and limited physical activity, today already more than three quarters of global NCD deaths occur in low and middle income countries (LMICs) [2, 3]. In sub-Saharan Africa (SSA), NCDs are projected to exceed communicable, maternal, perinatal and nutritional conditions as the most common causes of death by 2030 [4]. In 2017, the Global Burden of Disease Study estimated the age-standardised disease burden in SSA to be almost equal for NCDs and communicable diseases, with more than 20 000 DALYs lost per 100 000 population [5].

In light of this emerging disease burden, healthcare systems in SSA are often unable to meet the needs of people living with NCDs, due to shortages in supplies and equipment and constrained capacity to distribute resources evenly among population groups [6]. In spite of the efforts made to foster universal health coverage (UHC) and to increase social health protection [7], as stipulated in the 2030 Agenda for Sustainable Development [8], NCD care is still largely subject to user charges in many SSA countries [9–12]. Payments at point of use have repeatedly been shown to limit access, especially for the most vulnerable and socio-economically disadvantaged segments of the population [13], ultimately aggravating their disease burden [14].

Care for NCDs (hereafter referred to as chronic conditions, excluding human immunodeficiency virus and tuberculosis) requires continuity in form of regular access to affordable healthcare services. To date, only a handful of studies have addressed healthcare seeking for people affected by chronic conditions in SSA, documenting the role played by socio-demographic [11, 15], economic factors [11, 16–19], perceived severity of illness [17, 18] and health system factors [18]. Specific to Burkina Faso, chronic conditions have been estimated to cause almost one third of all deaths in 2017 [20], yet only one study has so far explored related healthcare seeking patterns, but focused exclusively on women with chronic breast-related symptoms [21]. This study explored determinants of healthcare seeking among people with chronic conditions in rural Burkina Faso.

Materials and Methods

Study setting

In Burkina Faso, around 70% out of a population of approximately 18 million live in rural areas [22]. Most healthcare provision occurs within a three-tiered system of over 2000 public health facilities distributed across 63 health districts [23]. Medical pluralism persists, with traditional healers operating in parallel to formal healthcare providers. In 2015, the government introduced a 5-year National NCD Strategy to reduce NCD mortality [24]. This strategic plan indicates that NCD care, including laboratory-based work-ups and glycaemia management, should be offered at the second level of the primary healthcare system, specifically at district hospitals [25]. While user fees for all services for maternal and child healthcare services have been abolished in June 2016, NCD care remains subject to user payments at point of use. In 2014, the government of Burkina Faso launched a Performance Based Financing (PBF) pilot targeting

maternal and child healthcare services in 12 districts distributed across six regions [26]. NCD care was neither part of the PBF incentivised service package nor of any other targeted intervention having taken place in the country over the past decade.

Study design and data sources

Our cross-sectional study used data from the endline household survey conducted between March and June 2017 in 24 districts (the above-mentioned 12 PBF intervention districts plus an additional 12 districts selected as controls) within the framework of the PBF impact evaluation [26]. The sample was derived in a three-stage cluster sampling procedure, described in detail elsewhere [26]. In brief, clusters were defined in relation to primary healthcare facility (Centre de Santé et Promotion (CSPS)) catchment areas. Within each cluster, one village was randomly selected, and within each village, 15 households were randomly selected among households with at least one woman currently pregnant or having completed a pregnancy in the prior two years. As such, the overall sample is biased to include households with a higher proportion of women of reproductive age than what would be observed in the population at large.

The survey collected information on household socio-demographic and economic characteristics from household heads or representatives. A distinct module asked all household members to report up to three chronic conditions and related health seeking behaviour. Primary caregivers responded on behalf of children below the age of 14.

Variables and measurement

In line with prior studies conducted using self-reported NCD morbidity [11, 16], we operationalised our outcome, healthcare seeking for individuals with chronic health conditions as an individual's self-reported illness status and related health service use in the four weeks prior to the survey date. We distinguished three use categories: formal provider, informal provider and no care. The choice of explanatory variables was based on the Andersen's behavioural model of health service use which defines an individual's healthcare seeking behaviour to be modulated by barriers and facilitators classified as (i) predisposing, (ii) enabling, (iii) need and (iv) health system factors [27]. Table 1 provides an overview of all variables included in our study and their measurement.

Analytical approach

First, we descriptively analysed the data, using chi-square (χ^2) tests to investigate potential selection bias in our

Table I Variables and measurement

Variable	Measurement
Outcome variable	
Formal provider	1 = National/university hospital (Centre Hospitalier Universitaire (CHU)), regional hospital (Centre Hospitalier Régionale (CHR)), medical centre with surgical units (Centre Médical avec Antenne surgicale (CMA)), medical centre (Centre Médical (CM)), primary healthcare facility (Centre de Santé et Promotion (CSPS)), isolated dispensary or maternity, private for-profit health facility, private not-for-profit confessional health facility, private infirmary
Informal provider	2 = Community health worker, modern or traditional self-medication, private pharmacy, vendor/ market, traditional practitioner/ healer
No care	3 = Prayer, other, no treatment
Explanatory variables	
Age group	0 = Elderly (50+) (reference group)
	1 = Prime working age (25–49)
	2 = Early working age (15–24)
	3 = Children (0–14)
Sex	0 = Female
	1 = Male
Religion	0 = Muslim
	1 = Christian
	2 = Other
Household head*	0 = No
	1 = Yes
Household with literate household head	0 = No (illiterate household head)
	1 = Yes (literate household head)
Socio-economic status (household wealth index†)	0 = 1st quintile (poorest) (reference group)
	1 = 2nd quintile
	2 = 3rd quintile
	3 = 4th quintile
	4 = 5th quintile (least poor)
Household size‡	0 = Above 6 members
	1 = Less or equal 6 members
	0 = No household member
Presence of household member reporting at least one chronic condition	1 = At least one household member
Perceived severity of reported chronic condition	0 = Low
	1 = High
Type of chronic condition§	0 = Minor chronic conditions (i.e. all others) (incl. epilepsy, gastric ulcer, urinary continence, joint pain, other chronic conditions)
	1 = Major chronic conditions (incl. cardiovascular problems, diabetes, respiratory conditions, cancer)
Multimorbidity	0 = One chronic condition
	1 = More than one chronic condition

Variable	Measurement
Distance to nearest health facility¶	0 = Close to both CSPS & CM and CMA & CHR (reference group)
	1 = Close to CSPS & CM and far from CMA & CHR
	2 = Far from CSPS & CM and close to CMA & CHR
	3 = Far from both CSPS & CM and CMA & CHR
Performance Based Financing impact evaluation#	0 = Control district
	1 = Intervention district

Table I (*Continued*)

*Based on assumption of intra-household allocation [28].
†Constructed through an asset-based approach using multiple correspondence analysis [29].
‡According to average numbers from most recent population statistics [30].
§Based on WHO classification of non-communicable diseases [31].
¶Derived from Global Positioning System coordinates measured in km and dichotomised in close and far using the median distance, that is 5 km to CSPs and CMs and 25 km to CMAs and CHRs, respectively.
#Has been described in more detail elsewhere [26].

study sample compared to the overall survey population. Second, we used three regression models (Model A, B and C) to capture associations between explanatory variables and health service use categories. Model A and Model B were logistic regression models comparing 'no care' to 'formal provider' (Model A) and 'no care' to 'informal provider' (Model B). For models A and B, bivariate regressions were conducted by including only one of the explanatory variables. Model C was a multiple multinomial logistic (MNL) regression analysis including all three service use categories. 'No care' was defined as the reference category in all models. We relied on robust standard errors to adjust for clustering at the household level. Significance level α was set at 5%. Complete case analysis was conducted using Stata version 15 IC, and residual plots were performed using R version 3.5.2.

Results

Of 52 562 surveyed individuals, 1173 reported at least one chronic condition. Among those, we had complete information on 1124 (95.8%) individuals, who, compared to the population sample, tended to be: older, Christian, household heads and living in households led by a literate head (see Appendix, Table S1). Most frequently reported chronic conditions were related to gastric ulcers ($n = 348$), joint pain ($n = 323$) as well as cardiovascular problems operationalised as heart problems ($n = 184$) and hypertension ($n = 157$); the least frequently reported conditions were diabetes ($n = 12$) and cancer ($n = 5$) (Table 2).

Table 3 shows the sample distribution according to our outcome variable classification. Of 1124 individuals, 749 (66.6%) did not seek any care for their chronic condition in the four weeks prior to the survey, while 256 (22.8%) and 119 (10.6%) sought care at formal and informal providers, respectively.

Table 4 displays results from the three multiple regression models (A, B, C). Relevant results from the bivariate analyses are shown in Table S2. For the MNL regression analysis (Model C), both the suest-based Hausman and the Small-Hsiao test confirmed that the model did not violate the independence of irrelevant alternatives (IIA) assumption. Model C shows that households with the highest socio-economic status (SES) households (Relative Risk Ratio (RRR) = 2.14, 95%-CI [1.26, 3.64]), higher perceived severity (RRR = 3.23, 95%-CI [2.22, 4.70]), reporting one of the major chronic conditions, that is chronic obstructive respiratory disease, cardiovascular problems, diabetes or cancer (RRR = 1.54, 95%-CI [1.13, 2.11]) and living in a district with PBF (RRR = 1.97, 95%-CI [1.27, 3.03]) were positively

associated with seeking care at a formal provider in comparison to no care, whereas households with at least one household member reporting a chronic condition (RRR = 0.57, 95%-CI [0.39, 0.82]) were negatively associated with the use of formal care in comparison to no care. Furthermore, younger age groups (0–14 years: RRR = 3.40, 95%-CI [1.50, 7.67]; 15-24 years: RRR = 3.29, 95%-CI [1.39, 7.79]; 25–49 years: RRR = 2.16, 95%-CI [1.21, 3.89]), living in a household with more than six household members (RRR = 2.05, 95%-CI [1.21, 3.45]) and a higher perceived severity (RRR = 2.03, 95%-CI [1.22, 3.37]) were all positively associated with seeking care at an informal provider in comparison to no care. Results from the logistic regression models for formal providers (Model A, Table S3) and informal providers (Model B, Table S3) agree closely with the results from the MNL regression model. Residual plots for all three regression models did not show any relevant violations of underlying assumptions.

Discussion

As one of the very first studies assessing healthcare seeking practices for chronic conditions in rural SSA, and to our knowledge the first population-based one in rural Burkina Faso, our study makes an important contribution to the scarce literature on the topic. Although the survey was not initially designed to capture chronic condition reporting and associated healthcare seeking, its geographical scope offered an unprecedented opportunity to collect relevant information on a sample covering over one third of all districts in the country. This wide coverage is a key feature of our study and sets it apart from other studies on healthcare seeking for chronic conditions in rural SSA whose geographical focus is much more restricted [11, 16–19, 21].

Table 2 Reported chronic conditions

Type of reported chronic conditions*	N
Gastric ulcer	348
Joint pain	323
Heart problems	184
Hypertension	157
Epilepsy	74
Other chronic conditions	64
Asthma	54
Urinary incontinence	29
Diabetes	12
Cancer	5
Total	1250

*Some individuals reported more than one chronic condition.

The first finding deserving particular attention pertains to the small proportion of individuals, approximately 2% of the total sample, who reported a chronic condition. At first glance, this low proportion may appear startling given that epidemiological studies indicate the prevalence of hypertension and of diabetes to be, respectively, at 14.8% and 4.4% among adults aged 25–64 years in rural communities [32]. This discrepancy between our findings and published epidemiological estimates, however, can be explained in light of the fact that unlike the STEPS surveys [33], our study included all population strata and not exclusively adults. Moreover, our population-based survey did not attempt to measure the actual prevalence of NCDs, but purposely relied on individual self-reporting of all chronic conditions as an indication of illness awareness and as such, as the essential starting point in the healthcare seeking process [27]. Nevertheless, this discrepancy between self-reported and epidemiological data remains worrisome since it suggests that many people in rural Burkina Faso may not be aware of asymptomatic early stage conditions and of their related early healthcare needs.

To this regard, findings from our population-based survey resonate with the wider literature on care cascades for NCDs [34] and suggest that screening services are probably not adequate to create sufficient awareness of one's illness status. For instance, the fact that in a sample of over 50,000 individuals, only 15 reported being diabetic and only 5 reported being affected by cancer denotes fundamental shortcomings in respect to early detection and routine screening for common chronic conditions [21, 24], a challenge previously highlighted by facility-based studies in East Africa [35, 36]. In a context characterised by poor geographical accessibility [11], the fact that district hospitals, rather than CSPS, serve as entry care points for chronic conditions likely introduces a substantial barrier to early diagnosis and proper disease management [24]. Individuals in need of early therapeutic interventions may thus go undiagnosed for years until their health status worsens and more likely result in premature deaths [37].

The second relevant finding pertains to the fact that even among those who reported a chronic condition, less than one fourth sought care at a formal health facility in the month prior to the survey date. While not all chronically ill individuals may need care on a monthly basis, the utilisation rate detected in our study is worrisome and below the one reported in Kenya (33.1%) [16], and Malawi (42.5%) [17], but aligned with the one reported in Nigeria (20.1%) [19]. Low utilisation rates suggest untreated chronic conditions, which contribute to a rising burden and premature death [37]. These findings point at

Table 3 Sample characteristics

	Study sample		No care		Formal provider		Informal provider	
	N = 1124		N = 749		N = 256		N = 119	
	n	%	n	%	n	%	n	%
Age group								
Elderly: 50+	222	19.8	158	21.1	49	19.1	15	12.6
Prime working age: 25–49	598	53.2	395	52.7	138	53.9	65	54.6
Early working age: 15–24	121	10.8	86	11.5	21	8.2	14	11.8
Children: 0–14	183	16.3	110	14.7	48	18.8	25	21.0
Sex								
Female	589	52.4	412	55.0	131	51.2	46	38.7
Male	535	47.6	337	45.0	125	48.8	73	61.4
Religion								
Muslim	663	59.0	418	55.8	172	67.2	73	61.4
Christian	322	28.6	231	30.8	60	23.4	31	26.1
Other	139	12.4	100	13.4	24	9.4	15	12.6
Household head								
No	687	61.1	462	61.7	160	62.5	65	54.6
Yes	437	38.9	287	38.3	96	37.5	54	45.4
Household head literacy								
No	688	61.2	464	61.9	155	60.6	69	58.0
Yes	436	38.8	285	38.1	101	39.5	50	42.0
Socio-economic status								
1st quintile (poorest)	188	16.7	136	18.2	31	12.1	21	17.6
2nd quintile	214	19.0	130	17.4	49	19.1	35	29.4
3rd quintile	208	18.5	140	18.7	50	19.5	18	15.1
4th quintile	221	19.7	152	20.3	50	19.5	19	16.0
5th quintile (least poor)	293	26.1	191	25.5	76	29.7	26	21.9
Household size								
≤6 members	426	37.9	293	39.1	99	38.7	34	28.6
>6 members	698	62.1	456	60.9	157	61.3	85	71.4
Household member reporting at least one chronic condition								
1 member	736	65.5	476	63.6	188	73.4	72	60.5
>1 member	388	34.5	273	36.5	68	26.6	47	39.5
Perceived severity of reported chronic condition								
Low	350	31.1	282	37.7	42	16.4	26	21.9
High	774	68.9	467	62.4	214	83.6	93	78.2
Type of chronic condition (applicable to 1st one reported*)								
Minor chronic conditions	733	65.2	499	66.6	149	58.2	85	71.4
Major chronic conditions	391	34.8	250	33.4	107	41.8	34	28.6
Multimorbidity								
No (Chronic condition ≤ 1)	1,001	89.1	674	90.0	227	88.7	100	84.0
Yes (Chronic condition> 1)	123	10.9	75	10.0	29	11.3	19	16.0
Distance (km) to nearest primary health facility (CSPS/CM) & district/regional hospital (CMA/CHR)								
Close to CSPS/CM (≤5 km) & CMA/CHR (≤25 km)	372	33.1	240	32.0	93	36.3	39	32.8
Close to CSPS/CM (≤5 km) & far from CMA/CHR (>25 km)	300	26.7	201	26.8	69	27.0	30	25.2
Far from CSPS/CM (>5 km) & close to CMA/CHR (≤25 km)	180	16.0	114	15.2	42	16.4	24	20.2
Far from CSPS/CM (>5 km) & CMA/CHR (>25 km)	272	24.2	194	25.9	52	20.3	26	21.9
Performance Based Financing impact evaluation								
Control district	272	24.2	207	27.6	35	13.7	30	25.2
Intervention district	852	75.8	542	72.4	221	86.3	89	74.8

*Since up to three conditions could be reported, we limited this category to the first one reported to avoid spurious over-representation caused by multimorbid respondents.

Table 4 Results of multinomial logistic regression model (Model C)

	Model C				
	Formal provider *vs.* No care			Informal provider *vs.* No care	
	RRR†	[95%-CI]		RRR†	[95%-CI]
Intercept	0.05*	[0.02, 0.12]		0.02*	[0.01, 0.07]
Age group					
Elderly: 50+	(ref.)			(ref.)	
Prime working age: 25–49	1.24	[0.85, 1.83]		2.16*	[1.21, 3.89]
Early working age: 15–24	0.79	[0.42, 1.51]		3.29*	[1.39, 7.79]
Children: 0–14	1.50	[0.84, 2.66]		3.40*	[1.50, 7.67]
Sex					
Female	(ref.)			(ref.)	
Male	1.48	[0.90, 2.42]		1.63	[0.91, 2.92]
Religion					
Muslim	(ref.)			(ref.)	
Christian	0.87	[0.59, 1.27]		0.81	[0.47, 1.39]
Other	0.80	[0.48, 1.33]		0.90	[0.46, 1.76]
Household head					
No	(ref.)			(ref.)	
Yes	0.73	[0.42, 1.29]		1.44	[0,71, 2.92]
Household head literacy					
No	(ref.)			(ref.)	
Yes	1.01	[0.73, 1.40]		1.29	[0.83, 2.01]
Socio-economic status					
1st quintile (poorest)	(ref.)			(ref.)	
2nd quintile	1.65	[0.97, 2.81]		1.52	[0.76, 3.05]
3rd quintile	1.68	[0.97, 2.91]		0.71	[0.32, 1.56]
4th quintile	1.64	[0.95, 2.82]		0.72	[0.33, 1.57]
5th quintile (least poor)	2.14*	[1.26, 3.64]		0.69	[0.33, 1.43]
Household size					
≤6 members	(ref.)			(ref.)	
>6 members	0.85	[0.60, 1.21]		2.05*	[1.21, 3.45]
Household member reporting at least one chronic condition					
1 member	(ref.)			(ref.)	
>1 member	0.57*	[0.39, 0.82]		1.10	[0.68, 1.78]

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Table 4 (*Continued*)

	Model C			
	Formal provider vs. No care		Informal provider vs. No care	
	RRR†	[95%-CI]	RRR†	[95%-CI]
Perceived severity of reported chronic condition				
Low	(ref.)		(ref.)	
High	3.23*	[2.22, 4.70]	2.03*	[1.22, 3.37]
Type of chronic condition (applicable to 1st reported)				
Minor chronic conditions	(ref.)		(ref.)	
Major chronic conditions	1.54*	[1.13, 2.11]	0.92	[0.57, 1.49]
Multimorbidity				
No (chronic condition ≤ 1)	(ref.)		(ref.)	
Yes (chronic condition > 1)	1.04	[0.65, 1.68]	1.73	[0.90, 3.31]
Distance to nearest primary health facility (CSPS/CM) & district/regional hospital (CMA/CHR)				
Close to CSPS/CM (≤5 km) & CMA/CHR (≤25 km)	(ref.)		(ref.)	
Close to CSPS/CM (≤5 km) & far from CMA/CHR (>25 km)	0.97	[0.65, 1.43]	0.84	[0.47, 1.51]
Far from CSPS/CM (>5 km) & close to CMA/CHR (≤25 km)	0.95	[0.59, 1.54]	1.28	[0.68, 2.43]
Far from CSPS/CM (>5 km) & CMA/CHR (>25 km)	0.79	[0.52, 1.19]	0.82	[0.46, 1.46]
Performance Based Financing impact evaluation				
Control district	(ref.)		(ref.)	
Intervention district	1.97*	[1.27, 3.03]	0.89	[0.52, 1.53]

Tests for Model C
IIA assumption:
Suest-based Hausman tests
Omitted formal care: $P = 0.843$
Omitted informal care: $P = 0.988$
Small-Hsiao tests
Omitted formal care: $P = 0.084$
Omitted informal care: $P = 0.334$.
*Statistically significant at $P < 0.05$.
†Relative Risk Ratio.

the urgent need to review existing service provision models and call for the integration of screening and early management of chronic conditions in the CSPS service package to increase the uptake of treatment seeking at formal care providers. Such a shift would entail closing implementation gaps to translate into everyday practice what is already outlined as an objective in the national NCD plan, that is implementing the WHO Package of essential non-communicable disease interventions (PEN) at primary level [38].

Third and last, our results from the MNL shed some light on existing barriers to accessing care. Similar to findings from Kenya [16], Ethiopia [18], and Nigeria [11], individuals from wealthier households were found to be more likely to seek care at formal providers. This underlines the decisive role that households' ability to pay plays in shaping access to services, suggesting the persistence of pervasive inequities in fee-based systems [39]. Albeit beyond the scope of our study, reliance on direct user payments is also likely to result in extreme financial distress for those households which decide not to forego care, as suggested by prior literature [17]. In line with prior evidence from Malawi [17], the fact that individuals from households with multiple chronically ill members were less likely to seek formal care provides additional evidence that considerations on affordability and intra-households resource allocation limit proper health seeking [28]. Our findings suggest that policies aimed at reducing morbidity and mortality due to chronic conditions must not only aim at reforming healthcare provision structures, bringing quality services closer to communities, but also aim at removing direct payments at point of use, possibly expanding the scope of the recent *gratuité* policy [38].

Echoing results from studies conducted in Malawi [17], Ethiopia [18], and Uganda [15], perceived illness severity was observed to increase the probability of seeking care at both formal and informal providers. This finding suggests that in the absence of functioning early screening and detection options, people act upon their illness only when major discomfort arises at an advanced disease stage. Considering the potential negative public health consequences derived from such behaviour and in line with what already mentioned earlier, this finding calls for the immediate expansion of early detection and routine screening, accompanied by proper information campaigns to increase awareness on the need to seek care even during asymptomatic stages [15].

Contrary to what was reported in prior literature for Nigeria [11] and Uganda [15], our findings do not highlight the existence of a gender bias in health seeking for chronic conditions. This discrepancy between our findings and prior published literature is interesting and surely deserving of further qualitative inquiry. It is curious that confirming findings from a very early study conducted in Burkina Faso [28], our work suggests that while resource scarcity appears to shape decisions on intra-household resource allocation, gender does not do so, at least not sufficiently strongly to be captured by our quantitative models. Burkina appears to stand aside from its continental counterparts on such matters, and understanding why this may be the case is surely worth investigating to inform policy developments adequately.

In line with the early onset of symptoms and premature health decline noted by Miszkurka et al. (2012) [40], our findings suggest that younger individuals are more likely to seek treatment at informal providers. It is likely that due to resource constraints, younger individuals, not yet affected severely, stay away from a healthcare system that may impose a considerable financial burden upon seeking care. As such, most likely, informal providers are used to overcome potential barriers in accessing formal services. Again, in line with what stated earlier, given the central role that early access to treatment plays in curbing the chronic disease epidemic, this calls for action in improving accessibility and affordability of adequate healthcare services, following the example set by LMICs, which introduced health insurance coverage as a an important policy tool [41].

Methodological considerations

Besides its originality and the strength derived by a large population-based sample covering almost a third of the country, several limitations inevitably affect this study calling for cautious interpretation of results. First, we assessed healthcare seeking behaviour within a 4-week recall period, potentially introducing recall biases that lead to incomplete data and a subsequent underestimation of the actual number of individuals seeking care after reporting a chronic condition. Second, measurement bias could have affected our results since we relied on self-reported health status information from individuals rather than objective disease measures. This leaves open the possibility that people could not distinguish between acute and chronic conditions. Yet, such limitation does not threaten the validity of our results per se since we explicitly aimed at exploring healthcare seeking behaviour based on one's own reported health. This goal was further enriched by applying a prominently used theoretical framework allowing the inclusion of variables that holistically reflect important determinants in health service use. Third, the households' sampling strategy (privileging households with a recent history of pregnancy)

might have resulted in a sample not truly representative of the Burkinabè population. Last, we cannot exclude illness reporting bias, meaning that some individuals, in our case household heads and individuals who were of older age, Christians and living with a literate household head, were more likely to report a chronic condition. It is unlikely that these features characterise the underlying distribution of chronic conditions at the population level since various authors identified variables such as socioeconomic status [40, 42–44], age [40, 42, 44], gender [40, 44], household food insecurity [42] or urban residency [42] as characterising features for chronic conditions and their risk factors. In our case, it is rather likely that they are an indication of illness awareness, possibly introducing some bias in the truncated sample used for analysis [45].

Conclusion

Findings from this population-based study suggest the urgent need to invest in interventions aimed at improving service provision and enhancing affordable access for early detection and management in peripheral settings in order to reduce the burden of chronic health conditions. Our study calls for further qualitative inquiry into the reasons inducing people to forgo formal care seeking as means of understanding more comprehensively their implications and inform policy design adequately.

Acknowledgements

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Table S1 Population and study sample characteristics.
Table S2 Results of bivariate analyses.
Table S3 Results of logistic regression models (Model A and B).

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