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Knowledge and Practices of Community Health Workers Involved in Community Management of Childhood Illness and Implications for Community Access to Services in Two Health Districts in Burkina Faso

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Abstract

Background: Burkina Faso uses community health workers to provide care for children's illnesses. This study assessed the knowledge and practices of these workers in delivering community-based services. **Method:** A descriptive cross-sectional study was conducted in the health districts of Boussé and Boussouma, with data collected from December 20, 2022, to March 30, 2023. Stratified sampling selected households with at least one child aged five. Data were entered into KoboTools, and proportions were calculated using IBM SPSS software. **Results:** 183 CHWs and 960 household members participated in this study, which showed that the package offered consisted mainly of preventive and curative care. The CHWs knew the symptoms of the diseases targeted by the community-based integrated management of childhood illnesses but lacked knowledge about the complications. Their main mode of transport was bicycles, and they had difficulty transporting their supplies. Some lacked the

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necessary medicines for treatment. **Conclusions:** This study showed that the community-based integrated management of childhood illnesses is not being applied effectively, despite government efforts, due to a lack of knowledge and logistical gaps. More funding is needed to address these shortcomings.

Keywords

Community Health Workers, Knowledge, Community Care Access, Healthcare, Burkina Faso

1. Introduction

Low- and middle-income countries face many unmet social needs, including healthcare. These gaps are largely due to a lack of human resources [1] [2]. As part of a global effort to address these issues, primary healthcare [3], which was designed to bring services closer to the community [4], has been promoted since the 1980s. Several countries, including Burkina Faso, have adopted this approach [5] [6]. Community health development is considered one of the best options for achieving consistent progress at lower costs [7]. The strategy has evolved to involve community members, known as community health workers (CHWs), to provide affordable and accessible care [8]-[11]. Various formats have been implemented, particularly in sub-Saharan Africa [12]. After adopting primary healthcare in 1979, Burkina Faso experimented with several initiatives to involve the community in healthcare [13]-[16]. Strategic plans from 2008 and 2018, with the latest version adopted in 2024, have largely incorporated this approach. The implementation of these plans has been system-driven and strengthened in 2010 for the integrated community management of childhood illnesses [17]. Integrated Community Management of Childhood Illness (iCCM) is a strategy to reduce morbidity and mortality in children under five by providing high-quality services through volunteer or paid Community Health Workers (CHWs) to hard-to-reach groups. It focuses on managing deadly childhood diseases such as malaria, diarrhoea, and pneumonia [18]. Numerous pilot projects [15] [19]-[21] have been conducted to develop this profile of informal players (community health workers or community relays) to evolve towards a more institutionalised status known as community-based health workers [8] [22] [23]. These community health workers, recruited from within the community and trained in basic healthcare administration [24], were to offer a package of preventive, curative, and promotional care in the community [22] [25] [26]. While their contribution has been essential in improving access to healthcare in several countries [10] [27], bottlenecks or shortcomings have sometimes been reported regarding the level of education [13], the supervision or availability of healthcare products [28], and the involvement of managers in implementation, leading to differences in application levels [20]. This sometimes leads to poor results and low uptake of community-based care, with an unsatisfactory reduction in infant mortality in particular [29] [30]. The role of these

CHWs will be crucial if developing countries are to move towards universal health coverage [7] [12]. These observations motivated us to conduct this study to explore the services offered by these actors and gather their views on improving health coverage by focusing on the integrated management of childhood illnesses in the community. The aim of this study was to assess the knowledge and practices of community-based health workers compared to the guidelines for implementing this curative aspect of community health and to analyse the implications for access to the services offered to communities.

2. Methods

2.1. Type and Period of Study

We conducted a descriptive cross-sectional study with data collected from December 20, 2022, to March 30, 2023.

2.2. Study Framework

The study was conducted in the Centre Nord and Plateau Central regions of Burkina Faso. The two health districts involved were Boussouma and Boussé. The Boussouma health district is located in the Sanmatenga province (Centre Nord region) and has a population of 239,894, covering three rural communes: Boussouma, Korsimoro, and Ziga. The district has 29 health facilities. The Boussé health district is located in the Kourwéogo province (Plateau Central region) and covers five communes with a population of 199,999, served by 33 health facilities.

2.3. Study Population

Our study covered households with a child under five and community health workers in the Boussouma and Boussé health districts.

2.4. Tools and Techniques for Data Collection

Quantitative data were collected using questionnaires on smartphones with Kobotoolbox software. Interviews were conducted face-to-face and were recorded only electronically. Data were collected on variables such as socio-demographic characteristics of respondent household members and CHWs, household knowledge of common childhood illnesses and services offered by CHWs, service availability at CHWs, support levels, input availability, encountered difficulties, data transmission methods, biomedical waste disposal methods, availability of community health and iCCM reference documents (policies, directives, strategic plans, etc.), knowledge of these reference documents, and the level of support provided by CHWs. The quality of the tools was assessed using the Cronbach's Alpha coefficient, which was 0.9.

2.5. Sampling

We conducted a two-stage cluster sample using the list of villages as a sampling

frame, randomly selecting villages from the two districts. A purposive sample of 20 households was chosen after enumerating the total number of households in each village. Considering the list of villages in the eight communes with a design effect of two, we estimated a total sample size of 768. We then interviewed the heads of the selected households with a child under five. Interviews were also conducted with community relays in the sampled villages.

2.6. Data Processing and Analysis

Quantitative data were collected, extracted, and cleaned using Excel, then analysed with IBM SPSS 25. Proportions were calculated to assess levels of service availability, resource allocation, and knowledge levels of CHWs and households.

2.7. Ethical Considerations

This study was authorised by the Burkina Faso Ministry of Health and the Ministry's National Health Research Ethics Committee in deliberation N˚2023-03-061. We obtained written consent, with responses recorded on data collection forms, and participation was voluntary. The collected data was compiled in an electronic file secured by a code.

3. Results

The study involved 960 caregivers of children under the age of five. They lived an average distance of 7.3 km from the health center and were 78.1% female. The household respondents had a median age of 34 years (range: 16 to 80) and were mostly farmers (50.7%) or housewives (35%), with no schooling (64.8%).

Of the CHWs (n = 183) included in the study, 52.5% were male, with a median age of 35 (range 17 - 63). A total of 95.7% had a primary school certificate, 56.3% were farmers, and 12.6% were traders, most of whom were married. In 86.8% of cases, these CHWs had been working for at least 3 years.

3.1. Knowledge and Practices of CHWs Applying the iCCM

In terms of knowledge of the symptoms of various iCCM target diseases, the CHWs cited fever in 89.1% (163/183) of malaria cases, liquid stools in 91.3% (167/183) of diarrhoea cases, and cough in 78.7% (144/183) of pneumonia cases (**Table 1**).

They all stated they conducted household communication activities on malaria, but 21.9% (40/183) did not do so for pneumonia. Advocacy among village leaders was the least reported activity at 29.5% (54/183) (**Table 2**).

The diagnosis of malaria was confirmed using rapid diagnostic tests (RDTs) in 81.4% of cases. The CHWs (n = 183) provided a range of services, including preventive care (75.4%) and curative care (62.3%).

CHWs are used for various interventions beyond integrated community management of childhood illnesses. Several complications of the three diseases were not well known (**Table 3**).

Table 1. ASBC's knowledge of symptoms.

Main symptom of malaria (fever/hyperthermia/history of hyperthermia within 72 hours) cited by the ASBC		
	Frequency	**Percent**
No	20	10.9
Yes	163	89.1
Total	183	100.0
Main symptom of diarrhoea (liquid salt count) cited by ASBC		
No	16	8.7
Yes	167	91.3
Total	183	100.0
Main symptom of pneumonia (cough) cited by ASBC		
No	39	21.3
Yes	144	78.7
Total	183	100.0

Table 2. Communication techniques used by CHWs.

Types of activity/group discussions		
	Frequency	Percent
No	9	4.9
Yes	174	95.1
Total	183	100.0
Types of activity/Home visits		
No	20	10.9
Yes	163	89.1
Total	183	100.0
Types of activity/Awareness-raising with megaphone		
No	75	41.0
Yes	108	59.0
Total	183	100.0
Types of activity/Advocacy with village leaders		
No	129	70.5
Yes	54	29.5
Total	183	100.0

Table 3. ASBC's knowledge of several complications.

	Frequency	Percent
Criterion used to identify sick children to be sent to the CSPS/High fever (very high temperature)		
No	27	14.8
Yes	156	85.2
Total	183	100.0
Criterion used to identify sick children to be sent to the CSPS/Acceleration of breathing		
No	64	35.0
Yes	119	65.0
Total	183	100.0
Criterion used to identify sick children to send to CSPS/Convulsion (intense tremor)		
No	55	30.1
Yes	128	69.9
Total	183	100.0
Criterion used to identify sick children to send to CSPS/Vomiting difficult to stop		
No	60	32.8
Yes	123	67.2
Total	183	100.0
Criterion used to identify sick children to be sent to the CSPS/vomiting blood		
No	138	75.4
Yes	45	24.6
Total	183	100.0
Criterion used to identify sick children to be sent to the CSPS/Eye and palm jaundice		
No	91	49.7
Yes	92	50.3
Total	183	100.0
Criterion used to identify sick children to send to CSPS/Blood in urine		
No	138	75.4
Yes	45	24.6
Total	183	100.0
Criterion used to identify sick children to be sent to the CSPS: Number of liquid stools greater than 4.		
No	66	36.1
Yes	117	63.9
Total	183	100.0
Criterion used to identify sick children to send to CSPS/Sels with blood		
No	107	58.5
Yes	76	41.5
Total	183	100.0

CHWs reported offering more swallowable medicines 77% (141/183) and did not administer injectable products to households during the management of their patients (Table 4).

Table 4. Types of care provided by CHWs.

		Frequency	Percent
Treatment procedures/Administration of oral medications			
	No	42	23.0
	Yes	141	77.0
	Total	183	100.0
Procedures carried out as part of the treatment/sticking/injection			
Valid	No	183	100.0
Procedures carried out as part of the treatment/administration of vitamin D			
	No	42	23.0
	Yes	141	77.0
	Total	183	100.0
Procedures performed as part of micro nutrition treatment/supplementation			
	No	75	41.0
	Yes	108	59.0
	Total	183	100.0
Acts performed in the management/administration of the CEP malnutrition input (PPN/PPS)			
	No	101	55.2
	Yes	82	44.8
	Total	183	100.0
Treatment/advice/awareness-raising activities			
	No	31	16.9
	Yes	152	83.1
	Total	183	100.0

The application of treatment is hindered by a lack of stock for treating these three diseases (Table 5).

The majority of CHWs used bicycles for transport (58.5% or 107/183), and 47.5% (87/183) reported difficulties in transporting inputs.

Data collection media were readily available, and data from the treatment were reported to health facilities according to the CHWs' assertions. This transmission requires financial resources.

Several CHWs (66.7% or 122/183) stated they did not receive their motivations regularly, and only 29% (53/183) said they received them at the end of the quarter.

They commented on inadequate storage conditions, noting that medicines and reporting media are exposed to humidity and termites.

Table 5. Availability of medicines for CHWs.

	Frequency	Percent
Availability of medicines to treat malaria		
No	69	37.7
Yes	114	62.3
Total	183	100.0
Availability of medicines to treat diarrhoea		
No	63	34.4
Yes	120	65.6
Total	183	100.0
Availability of medicines to treat pneumonia		
No	75	41.0
Yes	108	59.0
Total	183	100.0

3.2. Household Perceptions of iCCM Target Diseases and Access to CHWs' Services

In 91.6% (879/960) of cases, childminders recognised malaria as a frequent illness in children under five. They also recognised diarrhoea and pneumonia as frequent illnesses in 47% (451/960) and 72.1% (692/960) of cases, respectively. We measured this perception for malnutrition, and it was low at 29% (278/960).

Additionally, 99.5% (955/960) of careers said they had access to ASBC care, and 96.8% (929/960) were satisfied. Children were cared for at the ASC in 38.1% (366/960) of cases or at home in 61.9% (594/960).

Household comments mainly focused on the need to provide medicines, materials, and work equipment for CHWs and to build health centers in the villages.

4. Discussions

This study assessed the CHWs' implementation of activities. The service package offered consisted largely of preventive and curative care. The CHWs had a good knowledge of the symptoms of the diseases targeted by the iCCM but were not sufficiently familiar with the complications.

Our results show that household members surveyed have a good understanding of malaria frequency but are less aware of the significance of diarrhoea and pneumonia in child morbidity. This knowledge gap is even more pronounced for malnutrition, which was considered in this part of our study. However, according to CHW reports, communication activities are conducted, though some techniques, such as advocacy, are underutilised. These gaps in household knowledge raise questions about the effectiveness of CHW-led communication activities, which should enable better prioritization of iCCM target diseases in community care-seeking and may be related to the inadequacies of our CHWs. Some studies [31]

recommend retraining community health workers. Strengthening the quality of supervision, training, and improving communication between different levels of the health system are aspects that have been shown [32] to improve the performance of CHWs. We recommend retraining our CHWs in community transformative communication techniques and methods. Precise communication activities enable early referrals and help reduce healthcare costs [33].

The types of care provided are broadly consistent with the package recommended by national guidelines. CHWs provided oral treatments. This aligns with the Burkina Faso national reference framework describing the profile of CHWs and the iCCM guidelines [22]. Compliance with national guidelines was reported in a study conducted in Uganda [34]. However, a lack of knowledge about some complications was reported. This has led to fears that serious cases will be managed by CHWs, resulting in unfortunate consequences for both patients and the reputation of CHWs. Poor understanding of the definitions of complications could negatively impact continuity of care due to a lack of referrals. Consequently, the quality of care could be inadequate, reducing household confidence in the services provided by these CHWs. A study conducted in Ethiopia reported that around half of the children in the study were screened for danger signs, and less than half were referred according to guidelines. This lack of adherence to guidelines was identified as a risk for misdiagnosis and a lack of potentially life-saving treatment [35]. To solve such problems, we can learn from successful experiences in other countries. In Liberia, the performance of CHWs has improved by using a consensual clinical instrument to validate the quality of their services. This has enhanced the quality of CHW services [36]. In the digital age, designing a self-training capsule with a minimum grid for checking CHW skills through remote clinical units is a credible way to improve the services offered by CHWs.

Care is accessible according to the surveyed households. The services offered by the iCCM have also been accessible in other countries. In a study on community engagement and resource mobilization in Nigeria, some authors found communities satisfied with malaria management by CHWs, who were considered accessible, diligent, and effective [37]. However, this access is relative, as our study showed some CHWs lacked drugs to treat the three iCCM target diseases. The drug stock-outs identified may be due to inadequate supply in a context where free care is being extended to the community level [38]. They could also be explained by supply difficulties, particularly in the transport sector, reported by 47.5% (87/183) of CHWs. Most travelled by bicycle and had difficulty transporting their inputs. Some lacked the medicines needed for treatment. Community-based management programs for childhood illnesses face similar difficulties in other countries, as reported in other studies [37] [39]. These logistical aspects are essential in researching the effects of applying the iCCM [23]. The surveyed household members called for support for CHWs. Several points in the results align with the matrix proposed by Smisha Agarwal et al. [40] for measuring CHW performance. Community healthcare access could be further reduced. Our results

showed that CHWs work in the commercial sector (12%) amidst irregular payment of financial incentives, which could lead to low availability for service provision to households in need. A study on time uses by community health workers in three rural districts of Tanzania found that their investment in community health activities was low, reducing community access to services [41]. Previous studies have shown low uptake of CHW services in Burkina Faso [30] [42]. Efforts must be made to avoid a deterioration in access to quality services and to ensure effective use of the community-based care offered by CHWs. To achieve this, iC-CMs need strong support, based on confidence in the quality of the care provided [43]. This low uptake needs to be countered by effective communication about the iCCM. Prescribing drugs outside the iCCM generates income and negatively affects perceptions of community care quality, impacting community uptake. This issue is exacerbated by a funding mechanism that favours hospital care, resulting in insufficient resource allocation for iCCM implementation [44]. Efforts must be made to change the funding paradigm to improve service delivery through community health workers (CHWs) recruited and distributed throughout the country if Burkina Faso is to seize the opportunity offered by their introduction to achieve universal health coverage [12] [45] [46].

Our study reported that CHWs experienced delays in financial motivation. Given their importance and the operational challenges involved, programs to strengthen community care using CHWs as new human resources deserve special attention from policymakers and health system managers [19]. A study on delegating immunization tasks to CHWs in the Sahel region of Burkina Faso also noted irregular motivational payments to CHWs [47]. These motivational issues could reduce CHWs' commitment to their work. The regularity of financial incentive payments needs improvement to ensure CHWs remain committed to their work [37].

In terms of the implications of this research for community health programmes, particularly for the management of CHWs, the researchers have proposed a redesign of the system architecture to provide research and development support services. Basic and advanced levels of technical capacity, within a two-kilometer radius of the village, could improve CHW performance in areas like quality of care, commitment, and community initiatives. By the end of this study, improvements in communication methods for better community empowerment on iCCM target diseases, retraining of CHWs, and the introduction of continuous self-training tutorials supported by revised and more effective supervision arrangements should be considered. Additionally, the introduction of clinical devices for skill validation, leveraging digital technology, are important aspects for CHW management programs to achieve better results and satisfactory community use.

Our study has some limitations. The sample size of community relays does not allow for generalization. Additionally, household responses may be biased when assessing CHW services because they live in the same community. Finally, recall bias may affect the responses of those who have not recently seen their child.

5. Conclusions

This study allowed us to revisit the role of CHWs in the context of free community health care in two health districts implementing iCCM. The health system benefits from the services offered by CHWs, but major shortcomings that existed before the implementation of free health care have not been resolved by extending free health care to community care for children. Efforts have been made to institutionalise CHWs and to establish a community health financing scheme. Nevertheless, the delay in motivating CHWs and the lack of medicines among them indicate that the resources allocated to implementing this strategy are insufficient to meet the challenges. Access to services, confirmed by the parents of children under five interviewed, is a source of satisfaction. However, the battle for effective use of these services remains unresolved and can only be won if the issues of motivating CHWs and the availability of medicines are addressed.

In its quest to achieve universal health coverage, Burkina Faso should review the funding paradigm of its health system by increasing the share of funding allocated to community health in the Ministry of Health's budget. This would relieve the burden on health facilities and allow investment in economies of scale to improve their technical facilities.

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Informed Consent Statement

"Informed consent was obtained from all subjects involved in the study".

Data Availability Statement

The data produced has been transmitted to the additional files.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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