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Application of primary healthcare principles in national community health worker programmes in low-income and middle-income countries: a scoping review

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ABSTRACT

Objective To identify which primary healthcare (PHC) principles are reflected in the implementation of national community health worker (CHW) programmes and how they may contribute to the outcomes of these programmes in the context of low-income and middle-income countries (LMICs).

Design Scoping review.

Data sources A systematic search was conducted through PubMed, CINAHL, EMBASE and Scopus databases.

Eligibility criteria The review considered published primary studies on national programmes, projects or initiatives using the services of CHWs in LMICs focused on maternal and child health. We included only English language studies. Excluded were programmes operated by non-government organisations, study protocols, reviews, commentaries, opinion papers, editorials and conference proceedings.

Data extraction and synthesis We reviewed the application of four PHC principles (universal health coverage, community participation, intersectoral coordination and appropriateness) in the CHW programme's objectives, implementation and stated outcomes. Data extraction was undertaken systematically in an excel spreadsheet while the findings were synthesised in a narrative manner. The quality appraisal of the selected studies was not performed in this scoping review.

Results From 1280 papers published between 1983 and 2019, 26 met the inclusion criteria. These 26 papers included 14 CHW programmes from 13 LMICs. Universal health coverage and community participation were the two commonly reported PHC principles, while intersectoral coordination was generally missing. Similarly, the cultural acceptability aspect of the principle of appropriateness was present in all programmes as these programmes select CHWs from within the communities. Other aspects, particularly effectiveness, were not evident.

Conclusion The implementation of PHC principles across national CHW programmes in LMICs is patchy. For comprehensiveness and improved health outcomes, programmes need to incorporate all attributes of PHC principles. Future research may focus on how to incorporate more attributes of PHC principles while implementing national CHW programmes in LMICs. Better documentation and publications of CHW programme implementation are also needed.

Strengths and limitations of this study

- ► Community health worker programmes in developing and lower-middle-income countries are an essential aspect of the strategy to achieve health for all and sustainable development goals, and this scoping review can be considered as an important step towards reviewing national community health worker programmes in low-income and middle-income countries applying the lens of primary healthcare principles.
- ► Four bibliographic databases were searched using a basic search strategy that was modified as per the database requirement.
- ► The studies were heterogeneous in their methods and outcomes assessed and that posed a challenge in comparing primary healthcare principles.
- ► The generalisability of the results of this study is limited to larger national-level programmes in developing and lower-income and middle-income countries only.

BACKGROUND

Primary healthcare (PHC), as an approach to a reorientation of health services and provision of universal healthcare, has remained the benchmark for most countries' discourse on health since the PHC approach was mobilised by the Alma Ata Health for All (HFA) declaration for comprehensive, evidence-based responses to local health needs with reference to the social context.[1] PHC is a whole-of-society approach to health and aims to attain the highest possible level and distribution of health and well-being by providing

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an accessible and wide range of services, including health promotion; disease prevention, treatment and rehabilitation; and palliative care.[1]

'HFA' requires that health systems respond to the challenges of a changing world and growing expectations for better performance. PHC includes the key elements needed to improve health security, through a focus on community engagement, preventative collective action, access to good quality medicines, rational prescribing and a core set of essential public health functions, including surveillance and early response.[1] A PHC approach achieves this by strengthening community-based initiatives and building resilience.

Across a wide variety of settings in low-income, middle-income and high-income countries, PHC-oriented health systems have consistently produced better health outcomes, enhanced equity and improved efficiency.[1] In Brazil, for example, enrolment in the family health strategy has been linked to a higher likelihood of regular care, better access to medication and improved patient satisfaction. Hence, PHC has been rightly advocated as the key to achieving HFA and the 2018 Astana Declaration reiterated the importance of this approach for achieving universal health coverage (UHC).[2 3]

PHC, as an approach to achieve HFA goals,' was built on the principles of equity in access to health services and the right of people to participate in decisions about their own healthcare.[1] These principles that is, 'equity' and 'community empowerment' underpin preventive and promotive health services, appropriate technology and intersectoral collaboration.[4] Evidence suggests that if countries have explicitly organised their health systems around PHC principles, it has led to improved health outcomes. For example, in Portugal, by 2008, the life expectancy at birth increased 9.2 years more than it was 30 years ago. In Congo, the case-fatality rate after caesarean section dropped from 7% to less than 3% from 1985 to 2000. In, Iran, the under-five child mortality reduced from 80 per 1000 to less than 20 per 1000 in rural areas from 1980 to 2000.[5]

PHC's emphasis on community-based services is an important way to ensure access, in rural, remote areas and for disadvantaged populations. With limited resources and geographical and epidemiological context, it is a challenge for healthcare systems in low-income and middle-income countries (LMICs) to reach out to the whole population. Therefore, as part of the PHC approach and with a view to its principle of community empowerment, community health worker (CHW) programmes were envisioned as a way to reach a wider population for essential health needs and to achieve HFA. National CHW programmes were implemented by many governments from 1978, operating at the interface between communities and the primary care level of the health system.[6–10] Established under the PHC principles, these programmes were expected to encompass and promote them and in doing so achieve improvements in health outcomes.[11]

National CHW programmes, as vehicles to incorporate PHC principles into healthcare provision, have contributed significantly in reducing under-5 child mortality in Brazil,[12] Indonesia[12] and Nepal.[13] In Indonesia, immunisation coverage also improved many-fold with an increase in CHWs. These examples demonstrate a clear link and need for incorporating PHC principles when implementing CHW programmes. Over decades of implementation CHW programmes have also faced various challenges including the loss of the PHC movement.[14 15] Though, the PHC principles are evident in the programme design and policies of the CHW programmes in various countries.[16–20] There is not widespread/comprehensive evidence of the extent to which PHC principles are systematically applied across the national CHW programmes. This study aims to identify the PHC principles in the implementation of these programmes in LMICs and to understand their contribution to the outcomes of those programmes.

METHODS

A systematic scoping review was conducted using a predefined protocol[21] and reported as per the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for Scoping Reviews (PRISMA-ScR) guidelines.[22] The databases searched in September 2019 were PubMed (MEDLINE), CINAHL (EBSCOhost), EMBASE (Elsevier) and Scopus (Elsevier). The review only considered published primary studies on programmes, projects or initiatives utilising the services of CHWs in LMICs. We focused on the national level CHW programmes defined as any CHW programme that is operated or implemented by the government of a specific country, on multiple sites (jurisdictions/provinces/regions) within a country and has been functional for a minimum of 3 years. We considered national CHW programmes with a maternal and child health (MCH) focus as it is a national priority in the majority of LMICs.

Papers published only in the English language from October 1978 to September 2019 were considered as 1978 was the year of the Alma-Ata declaration that promoted the establishment of national-level CHW programmes under the PHC principles. Excluded were study protocols, narrative reviews, commentaries, text and opinion papers, viewpoints, editorials, conference proceedings/abstracts, correspondences, systematic and scoping reviews and the papers on the CHW programmes operated by a non-government organisations. Papers were also excluded if they involved health professionals other than CHWs such as midwives, nurses and traditional birth attendants. Papers were not excluded based on the unavailability of the abstract.

The search strategy, including all identified keywords and index terms, was adapted for each included database (online supplemental appendix 1—logic grid). The search terms used included 'community health worker', 'Program', 'Maternal and Child Health' and 'Low-and

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Middle-Income Countries'. The results of the search are presented in the PRISMA-ScR flow diagram in the results section.

Following the search, all identified records were collated and uploaded into Covidence software[23] and duplicates removed. Two authors (SP and ZL) independently screened titles and abstracts and then matched the full texts selected during screening against the inclusion criteria. The reference lists of relevant papers were also searched for additional studies. Papers meeting the inclusion criteria were included in the review for data charting. In scoping reviews, the data extraction process is referred to as charting the results.[24] SP and ZL completed data charting using a pre-developed data charting form. Key attributes of the data charting form included the country of origin, study objective, design and key findings, name of the CHW programme, objective and reflection of PHC principle/s in programme objective, implementation activities, and stated outcomes along with the selection process of CHWs (online supplemental appendix 2). The data charting form was pilot tested and modified accordingly. The operational definition of the PHC principles used as reference in this scoping review are as follows:

1. UHC: all people receive the health services they need, including public health services designed to promote better health, prevent illness and to provide treatment, rehabilitation and palliative care of sufficient quality to be effective, while at the same time ensuring that the use of these services does not expose the user to financial hardship.[2 25]
2. Community participation: Active community involvement in defining health problems and needs, developing solutions and implementing and evaluating programmes.[2]
3. Intersectoral coordination: The linkage between health and development.[2]
4. Appropriateness: Services should be effective, culturally acceptable affordable and manageable.[2]

We examined the included studies in light of all or any of the subattribute of the above listed four PHC principles and reported accordingly. The evidence is reported if it was mentioned explicitly in the article or inferred by the researchers reflecting the implementation of PHC principles even if the evidence was about only one aspect of a principle. The relevant evidence is extracted and reported in the results section.

There was no quality assessment conducted of the included studies. The findings were synthesised in a tabular and narrative manner. The conceptual framework, including definitions of the four principles, for collating and summarising the data is presented in the published protocol.[21]

Patient and public involvement

We did not involve patients or the public in this scoping review.

RESULTS

Search results

We identified 1280 citations through database searches. After removing duplicates and screening out non-relevant abstracts, we assessed 281 full-text papers for eligibility. 263 of those 281 were excluded as these did not meet the eligibility criteria. In total, 18 papers,[17–20 26–39] published from 1983 to 2019 met the eligibility criteria (figure 1). Eight[40–47] papers were further included from the reference lists of the included studies, making a total of 26 papers.

Of the 26 papers, two studies were conducted in western Asia,[17 35] 12 studies were conducted in South Asia[18 27 29 31 33 37 38 40–44] and 1 study in South East Asia.[28] Seven studies were conducted in Africa ranging from the Horn of Africa,[19 30 45 46] Central Africa,[20] Western Africa[32] and South Africa.[39] Two studies were conducted in South America,[34 47] one in Central America[36] and one study was conducted in the Caribbean.[26] Altogether, these 26 studies covered 14 CHW programmes from 13 LMICs.

Fourteen of the 26 included studies were quantitative[19 26 28 31 32 34–36 40 42 43 45–47] and 12 studies were qualitative.[17 18 20 27 29 30 33 37–39 41 44] Online supplemental table 1 provides an overview of the included studies outlining the key objective/s, methods and findings as reported by the authors.

Application of PHC principles

The PHC principles were applied to a varied extent in the objective/s, implementation and outcome of the national CHW programmes reviewed in this study (table 1). The evidence found in the objective, implementation or the outcome of the included studies related to the application of the four PHC principles is organised in online supplemental table 2.

'Universal health coverage' and 'community participation' were the two commonly reflected PHC principles in the national CHW programmes across their objective/s, implementation and outcomes. 'Intersectoral coordination' was only mentioned in the outcome of Iran's Women Health Volunteers programme.[17] The objective of two CHW programmes not reported in the papers reviewed.[28 29] In addition, studies from Nepal,[18 44] Bangladesh[29] and Niger[32] did not report on the outcomes of the CHW programmes.

Universal health coverage

We reviewed the national CHW programmes for the application of this fundamental PHC principle in terms of coverage and access, equity and comprehensiveness. UHC was reflected in the objective of 11 CHW programmes[18–20 26 27 32 34–37 39] and in the implementation of 14[17–20 26–29 32 34–37 39] programmes through the service provision by CHWs in the MCH and family planning domain. These 14 programmes reported improvements in the scope (population coverage) and range (comprehensiveness) of health services provided. For example, an outcome of the CHW programme in Iran

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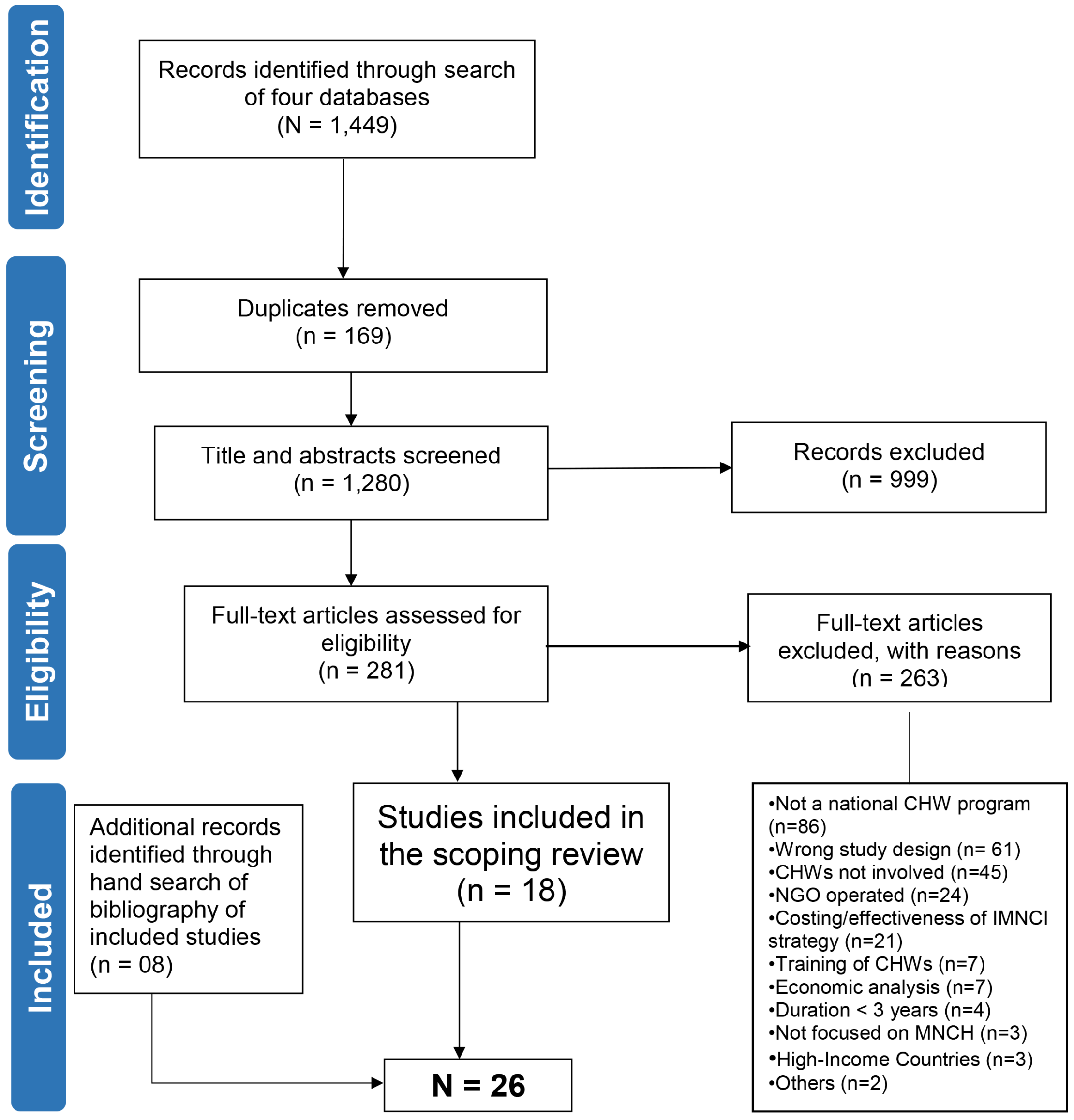

Figure 1 PRISMA flow chart for study selection and inclusion process. CHW, community health worker; IMNCI, integrated management of newborn and childhood illness; MNCH, maternal newborn and child health; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-analyses.

was increased utilisation of MCH care services as a result of the active follow-up by CHWs.[17] The increase in immunisation coverage of children in the rural areas was also attributed to the 'active' approach and vigilance of CHWs and vaccinators serving the PHC network of Iran.[35] In Pakistan, the CHW programme was claimed to be contributing to the increasing utilisation of antenatal care and family planning services.[27] In Rwanda, mHealth was reported as improving communication between CHWs and community members leading to better use of the health services.[20]

The concept of 'care according to need' was reflected in the objective of Pakistan's CHW programme that focuses on the provision of care in underserved areas.[27] Service provision to ethnic minorities was one of the focus areas of Nepal's CHW programme.[18]

Community participation

Only three[17–19] of the 14 CHW programmes included in this review incorporated community participation in their programme objective. In terms of implementation, 10 programmes[17 18 20 27–31 35 36] reflected community participation as they engaged CHWs from within the local communities to provide care to the local population. Moreover, the selection of CHWs from the local community they serve facilitated their access to households, development of good relationships and high acceptability in the community.[27 30 32] Three programmes[32 34 39] did not mention the selection process of CHWs while in Jamaica it was not mandatory to select CHWs from within the local community.[26]

Examples of other activities reflecting the process of community participation[2] beyond the selection of

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Table 1 Application of primary healthcare principles as reflected in the National community health worker programmes

Serial no.	Country/CHWP/year commenced	PHC principle/s observed in the CHWP Objective	PHC principle/s observed in the implementation of the CHWP	PHC principle/s observed in the stated outcome/achievement of the CHWP
1.	**Iran**/Women Health Volunteers Programme/1992[17]	Community participation	▶ Universal health coverage ▶ Community participation*	▶ Universal health coverage ▶ Community participation ▶ Intersectoral coordination
2.	**Iran**/Primary Healthcare Network —Expanded Programme on Immunisation/1983[35]	Universal health coverage	▶ Universal health coverage ▶ Community participation*	▶ Universal health coverage ▶ Appropriateness
3.	**Pakistan**/National Programme for Family Planning and Primary Healthcare/1994[27 33]	Universal health coverage	▶ Universal health coverage ▶ Community participation*	▶ Universal health coverage ▶ Community participation
4.	**India**/Accredited Social Health Activist Programme/2005[31 37 38]	▶ Universal health coverage ▶ Appropriateness	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage
5.	**Bangladesh/**National MCH and Family Planning Programme/1976[29]	Not reported	▶ Universal health coverage ▶ Community participation*	Not reported
6.	**Nepal/**Female Community Health Volunteer Programme/1988[18]	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage ▶ Community participation*	Not reported
7.	**Cambodia/**Village Malaria Worker Project as part of National Malaria Control Programme/2001[28]	Not reported	▶ Universal health coverage ▶ Community participation*	▶ Universal health coverage
8.	**Ethiopia/**Health Extension Programme/2003[19 30]	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage ▶ Community participation ▶ Appropriateness
9.	**Rwanda**/RapidSMS programme/2013[20]	▶ Universal health coverage ▶ Appropriateness	▶ Universal health coverage ▶ Community participation* ▶ Appropriateness	▶ Appropriateness (use of technology, acceptability)
10.	**Niger/**Rural Health Improvement Programme/1970s[32]	▶ Universal health coverage	▶ Universal health coverage	Not reported
11.	**South Africa/**ward-based outreach teams-national CHW programme/2011[39]	▶ Universal health coverage	▶ Universal health coverage ▶ Community participation	▶ Appropriateness
12.	**Brazil/**Family Health Programme (Programa de Saude da Familia, PSF)/1994[34]	▶ Universal health coverage	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage
13.	**El Savador/**Rural Health Aide Programme/1976[36]	▶ Universal health coverage	▶ Universal health coverage ▶ Community participation*	▶ Universal health coverage
14.	**Jamaica/**Community Health Aide programme/1978[26]	▶ Universal health coverage	▶ Universal health coverage ▶ Community participation	▶ Universal health coverage

*Community participation consisted of only selection of community health workers from the local community in these programmes.
CHWP, Community Health Worker Programme; MCH, maternal and child health; PHC, primary healthcare.

CHWs were reported only in Ethiopia's Health Extension Programme.[30] In this programme the performance of health centres was evaluated by the community quarterly and the CHWs were monitored by the community volunteers.[30]

Intersectoral coordination

PHC ought to involve the health sector and all related sectors and aspects of national and community development that have an impact on health.[2 48] Intersectoral coordination was not reflected in the objective/s or implementation of any CHW programme and only in the outcome of one[17] programme. The WHV Programme of Iran explicitly described the intersectoral link between health and education sectors for transmitting health messages to the people.[17] The Accredited Social Health Activist (ASHA) programme from India, while not reporting intersectoral collaboration directly, did report actions to enhance the role of women by creating opportunities by working with other sectors to empower women.[38]

Appropriateness

The final PHC principle assessed in this review was appropriateness, that is, services that are effective, culturally acceptable and financially affordable. The included studies reflected one or another of these attributes but none reported all three attributes of appropriateness. For

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example, the concept of appropriateness was reflected explicitly in the objective of India's ASHA programme (to provide affordable and quality healthcare) but did not mention cultural appropriateness.[31] The RapidSMS programme of Rwanda reported the cultural acceptability of technology (phone messaging services) and its affordability considering that almost all populations had access to a mobile phone.[20]

DISCUSSION

This study has provided insights into the application of PHC principles in the implementation of national CHW programmes. PHC principles do not appear to be applied with the rigour and regularity as one would expect considering the emphasis laid on these during conceptualisation of this significant public health movement called 'PHC'.

Our results show that 'UHC' and 'community participation' were the most common PHC principles reflected in the national CHW programmes. In contrast, intersectoral coordination was stated in the outcome of only 1 of the 14 CHW programs[17] while none of the studies described the programmes with reference to all three attributes of appropriateness (effective, culturally acceptable and financially affordable).

'Enhanced coverage' attribute of UHC was most commonly reflected by the national CHW programmes. There is limited evidence in the reviewed 26 papers on the implementation of other two attributes, that is, coverage on the basis of need (equity) and comprehensiveness. This finding complements the fact that soon after Alma-Ata, selective PHC was proposed as an interim strategy for disease control in LMICs.[49,50] Many vertical programmes utilised CHWs under different names and with different roles[51] resulting in a fragmented and disease-specific approach operating within the context of fragile health systems of LMICs. CHWs however, are not a 'panacea for weak health systems.' They require well-structured support from the formal health systems with which national CHW programmes are linked. Therefore, achieving UHC requires strengthening of health systems with effective integration of comprehensive CHW programmes in LMICs as PHC can only work when a country has the structures, skills and data to ensure that all people are covered.[15]

This review found that the implementation of community participation was patchy, and when it was employed it mainly reflected in the selection of CHWs from the local community. This is not surprising as after the Alma-Ata declaration several governments started CHW programmes as a means for people's participation with local lay people trained to administer basic first-line healthcare in their communities.[7,15] While CHWs' position as community members themselves may provide a 'natural link' between them and the community, it may also appear to safeguard trust in[30,32] and respect for them from the community side and enhanced self-esteem from the CHW side.[30]

A higher level of community participation where the community is given a stake in the evaluation and redefining of services was evident only in the Ethiopian CHW programme.[30] A successful CHW programme requires the support and ownership of the community through their active involvement in the entire process of defining health problems and needs, developing solutions, implementing and evaluating the programme, as well as establishing a supportive social and policy environment for community participation at national, district and local levels.[52] CHW programmes often struggle to be successful when not part of a broader community engagement process which requires explicit methods for involving individuals and communities, clearly defined roles and responsibilities, training of policymakers and adequate funding.[52] Recent WHO guidelines have explicitly recommended ways to select CHWs, engage and mobilise the community and this can be achieved if there is a supportive social and policy environment.[53] With little or no evidence as noted by this scoping review on community involvement in needs assessment, the design of programmes and evaluation may indicate that invoking community participation is a challenge for these programmes.[15] Community participation is a context-dependent, gradual process that is less controllable and less measurable, thereby making it harder to track.[54] There is a need for robust programme evaluations of community participation activities that measure long-term outcomes and provide support for the CHW programmes to broaden their scope of community participation. Moreover, CHW programmes need to give attention to the experiences of CHWs themselves to address the feelings of powerlessness, and frustrations expressed by CHWs about how organisational processual and relational arrangements hindered them from achieving the desired impact. CHW programmes should systematically identify disempowering organisational arrangements and take steps to remedy these.[55]

The operational problems related to partnerships working (intersectoral, interinstitutional, interdisciplinary and professional/lay partnerships) were highlighted in the early implementation years of CHW programmes in LMICs.[56] Our review informs that this is still the case.[17] This finding corresponds with the fact that working relationships between partners have often proved difficult,[54,56] as each sector has its priorities.[54] Though some of the CHW programmes reflect that the CHWs do understand how various actors relate to each other, and where their interests lie and how they 'use this understanding in particular situations to provide an interpretation of the situation and frame courses of action that appeal to existing interests and identities,' inducing cooperation among a range of phenomena.[57]

The PHC literature reports that community participation and intersectoral coordination are the two

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most weakly implemented principles.[15 54] Our review findings also support this evidence. National CHW programmes ought to view these principles as two pillars that help achieve the UHC of services that are appropriate for the community and their context.

By its nature, the provision of MCH services to women by female CHWs who are also selected from within the local community tends to make it culturally acceptable and meet the principle of appropriateness. However, CHW programmes need to incorporate 'appropriateness' more explicitly in their objectives and then diligently pursue this in programme implementation and outcomes, which may contribute to addressing the current lack of evidence on the effectiveness of these programmes.[58]

Based on the findings of this scoping review, it can also be inferred that if the CHW programmes follow PHC principles they can be better positioned to help in current pandemic response and prevent future infectious outbreaks/epidemics by increasing access to health products and services, distributing health information, increasing social mobilisation, completing surveillance activities and reducing the burden of formal healthcare system.[59]

The review has a number of limitations. First, it relied solely on the information reported in the papers to assess the application of PHC principles within the programmes. Many papers did not clearly articulate these principles or provide sufficient descriptions of the programme to allow an assessment to be made. As such the authors needed to interpret the evidence about principles in how the programme was implemented. These principles may be delineated elsewhere, for example, programme reports or funding agreements. Therefore, it is likely that we underestimated the application of PHC principles in these programmes. However, the very fact that the research papers that we reviewed failed to document the implementation of those principles, illustrates less than the adequate emphasis on the application of these principles in national CHW programmes.

Second, we reviewed the CHW programmes identified only through the search of peer-reviewed published journal articles and there may be CHW programmes that apply the PHC principles but are not published in peer-reviewed journals in a way to be captured in our search. This scoping review can be considered as a first step towards reviewing national CHW programmes in LMICs applying the lens of PHC principles. Future studies on the analysis of non-peer-reviewed publications or 'grey' literature may produce further evidence on this phenomenon.

CONCLUSION

This scoping review informs that the application of PHC principles across national CHW programmes in LMICs is patchy. For comprehensiveness and improved health outcomes, programmes need to incorporate all attributes of PHC principles. The findings also point to the limited research and published studies on this important topic. Better documentation and publications of programme implementation with reference to PHC principles are needed. Further research is needed to identify reasons for this inadequate emphasis on historic PHC principles, and to find out what other principles are adhered to by the current CHW programmes. Future research may also focus on how to incorporate more attributes of the PHC principles while implementing national CHW programmes in LMICs.

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