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The role of non-medical providers in increasing access to cervical screening: a scoping review

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ABSTRACT

Introduction Involving non-medical providers (NMPs) in cervical screening interventions could be a promising strategy to increase cervical screening participation among never or underscreened populations. We undertook a scoping review of published literature to explore the potential role of NMPs in increasing cervical screening participation.

Methods We searched three databases (MEDLINE, EMBASE and CINAHL) to identify relevant scientific research articles published between 2016 and 2024 and extracted data using a standardised extraction tool.

Results Our review identified 35 studies (randomised controlled trials (RCTs): n=12, non-RCTs: n=23) from a breadth of geographical and country-level income settings including Australia and New Zealand (n=3), Africa (n=7), Asia (n=4), Europe (n=3) and North (n=15) and South (n=3) America. NMPs in the included studies were community health workers, nurses and midwives; and their key roles involved identifying and recruiting target populations, delivering health education and raising awareness of cervical screening, facilitating self-sampling and providing navigation and follow-up assistance. Most studies included screening participants aged ≥30 years, who were underscreened, not pregnant, from ethnic minority populations, and living in rural or remote communities. NMP-facilitated cervical screening interventions were largely feasible and acceptable among target populations. Compared with the standard of care, which did not involve NMPs, NMP-facilitated interventions generally demonstrated an increased uptake of cervical screening in RCTs (n=11 out of 12) with relative increases ranging from 1.11 to 42.73. In four RCTs, where NMPs facilitated self-sampling, cervical screening uptake rates ranged from 32.0% to 81.0%. Most non-RCTs (n=18) involved NMPs in facilitating self-sampling, with screening uptake rates ranging from 9.0% to 100.0%. Key strategies identified were capacity-building of NMPs through training, and employing outreach strategies to reach underscreened women.

Conclusion NMPs could play a wider and an important role in cervical screening, particularly in the context of self-sampling and have the potential to increase access and equity in cervical screening.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Worldwide cervical screening coverage is still far below the WHO elimination target.
⇒ Low cervical screening coverage is attributable to various barriers associated with clinician-based screening including individual-level or sociocultural barriers.
⇒ Non-medical providers could play a crucial role in delivering cancer screening interventions, particularly in resource-limited settings.

BACKGROUND

The World Health Organization's (WHO) global strategy for cervical cancer elimination recommends that, by 2030, each country should achieve a target of 70% of women screened with a high-performance human papillomavirus (HPV) test by age 35 years and again by 45 years, alongside targets for HPV vaccination and treatment.[1] Despite ongoing efforts to increase participation in cervical screening, worldwide screening coverage is still poor. A recent review of 202 countries and territories estimated that globally, 662 million (64%) women aged 30–49 years, had never been screened and 5-year screening coverage in women aged 30–49 years was only 32%, with substantial disparities between high-income countries (HICs) and low- and middle-income countries (LMICs) (77% vs 24%) and within countries.[2]

Low cervical screening coverage is attributable to various barriers associated with clinician-based screening including individual-level or sociocultural barriers such as limited knowledge of cervical cancer or screening, fear of screening, embarrassment to undergo screening, lack of family support to undergo screening and health system-related barriers such as lack of access to healthcare and shortage of trained cervical screening providers.[3–6] Offering HPV testing on a self-collected vaginal sample (self-sampling) can reduce many of these barriers and has been shown to increase the likelihood of participation in cervical screening for under or never-screened women in both LMICs and HICs.[7–11]

WHAT THIS STUDY ADDS

⇒ This scoping review includes a wide range of studies in a recent time period (2016–2024), focusing on activities most relevant in the era of self-sampling to assess the roles of non-medical providers including those with or without formal clinical qualifications, in cervical screening across diverse settings from both high-income and low- and middle-income countries.

⇒ Non-medical provider-led interventions were feasible and substantially improved the cervical screening uptake among target populations in both high-income, low- and middle-income countries, particularly in the context of self-sampling.

⇒ Providing cervical screening education was identified as a key role of non-medical providers.

⇒ Capacity building of non-medical providers through training was a key strategy.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The findings from our scoping review highlight the value of a wide variety of non-medical provider-facilitated approaches to enhance cervical screening participation, providing a foundation for designing implementation research and intervention trials aimed at reaching underscreened populations globally.

⇒ The findings provide actionable insights across different income settings for improving equity in access and uptake of cervical screening and achieving the WHO cervical cancer elimination target.

⇒ Our findings could inform future policy and workforce planning, offering evidence-based strategies to develop tailored interventions for communities facing screening barriers.

⇒ Policymakers and programme managers can leverage these insights to improve cervical screening participation globally by implementing innovative approaches, including expanding human papillomavirus self-collection.

The WHO cervical screening guidelines suggest that either self-samples or healthcare provider-collected samples can be used for HPV DNA testing.[12] As of 2021, HPV self-sampling has been included within national cervical screening recommendations in 17 countries (as one of the primary collection methods in 9 and for reaching underscreened populations in 8) and in a piloting phase in 10 more countries.[13] Since then, access to HPV self-sampling has increased in several HICs including Australia,[14] the Netherlands,[15] Sweden[16] and New Zealand.[17] Some settings offer self-sampling via mail-out models, others through clinic-based models. Both approaches have limitations: for mail out, these include wastage and associated high costs or relatively low uptake and low follow-up rates of screen positives; while clinic-based approaches are limited by an inability to reach those not attending healthcare settings.

Prior research has highlighted the pivotal role of non-medical providers (NMPs) (ie, non-physicians) including those with clinical qualifications (eg, nurses, midwives) and without clinical qualifications (eg, community health workers (CHWs)) in improving screening uptake across various cancer types including breast and colorectal cancer by acting as patient navigators or delivering health education,[18–20] with nurses or midwives also contributing through performing clinical examinations.[20] Integrating NMPs into the delivery of cervical screening interventions, particularly for self-sampling, could be a promising strategy to achieve the WHO's 2030 target for cervical screening. This approach could expand access to cervical screening for underscreened individuals, improve equity and also facilitate addressing healthcare workforce shortages. Flexible models involving NMPs could potentially forge a middle path, where clinic attendance may not be required but support and connection to a follow-up pathway are incorporated for those who require it.

To inform health policy recommendations aimed at improving access to cervical screening, there is a compelling need to map the evidence on the roles that NMPs could play in increasing cervical screening uptake. While a previous scoping review by Donovan *et al* and systematic review by Driscoll *et al* mainly considered the roles of CHWs in cervical screening within LMICs,[21 22] there still remains a dearth of reviews assessing the roles of all types of NMPs. These include those with or without formal clinical qualifications, in cervical screening across diverse settings, encompassing both HICs and LMICs. We, therefore, undertook a scoping review of published literature to collate the roles of NMPs in increasing cervical screening participation. Specifically, we aimed to summarise the evidence pertaining to the contributions of NMPs and to identify the most effective strategies for enhancing cervical screening participation within target populations.

METHODS

Search strategy

We conducted a scoping review in accordance with the framework proposed by the Joanna Briggs Institute methodology.[23] First, an initial limited search of MEDLINE (OVID) and Embase was undertaken to identify articles on the role of NMPs in cervical screening to identify relevant keywords and appropriate index terms. Second, the text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy to perform a comprehensive search of MEDLINE, EMBASE and CINAHL to identify and retrieve scientific research articles relating to our topic (online supplemental tables S1–S3). Third, the reference lists of articles included in the review were searched and screened to identify additional relevant literature. For our scoping review, we defined 'NMPs' as healthcare providers who are not physicians or doctors by their education.

Eligibility criteria, screening and article selection

Studies were selected if they met the eligibility criteria in box 1. Relevant citations were exported using EndNote and then imported into Covidence online software to perform data extraction.[24] Duplicates were removed.

Box 1 : Inclusion criteria for the scoping review

Inclusion criteria

⇒ Peer-reviewed publications between 2016 and 2024 in order to focus on activities that would be most relevant in the era of self-sampling.
⇒ Studies that focused on the involvement of non-medical providers in cervical screening, which could include promotion, education or facilitation of the cervical screening process.
⇒ Original research only (eg, commentaries, letters, opinion pieces, study protocols, reviews and conference proceedings with only an abstract available were not included).
⇒ Studies published in English.

Titles and abstracts were screened by two independent reviewers (MN and MAS) to identify articles for full-text review. Potentially relevant papers were retrieved, and the full text of selected citations was assessed against the inclusion and exclusion criteria by two independent reviewers (MN and MAS). Any discrepancy between reviewers was resolved through discussion. Reasons for the exclusion of papers after full-text review were recorded and reported in figure 1. The search results were reported in the Preferred Reporting Items for Systematic Reviews and Meta-analyses for Scoping Reviews flow diagram.[25]

Data extraction

Data from each study meeting the inclusion criteria were extracted by MN using a data extraction tool developed by the reviewers (MN and MAS). The tool included specific details about the population, study methods, roles and descriptions of NMPs, outcomes and strategies used to improve the outcome in relation to cervical screening. The data extraction tool was modified and revised as necessary during the process of extracting data from each included paper.

Patient and public involvement

Patients or the public were not involved in any aspect of this review.

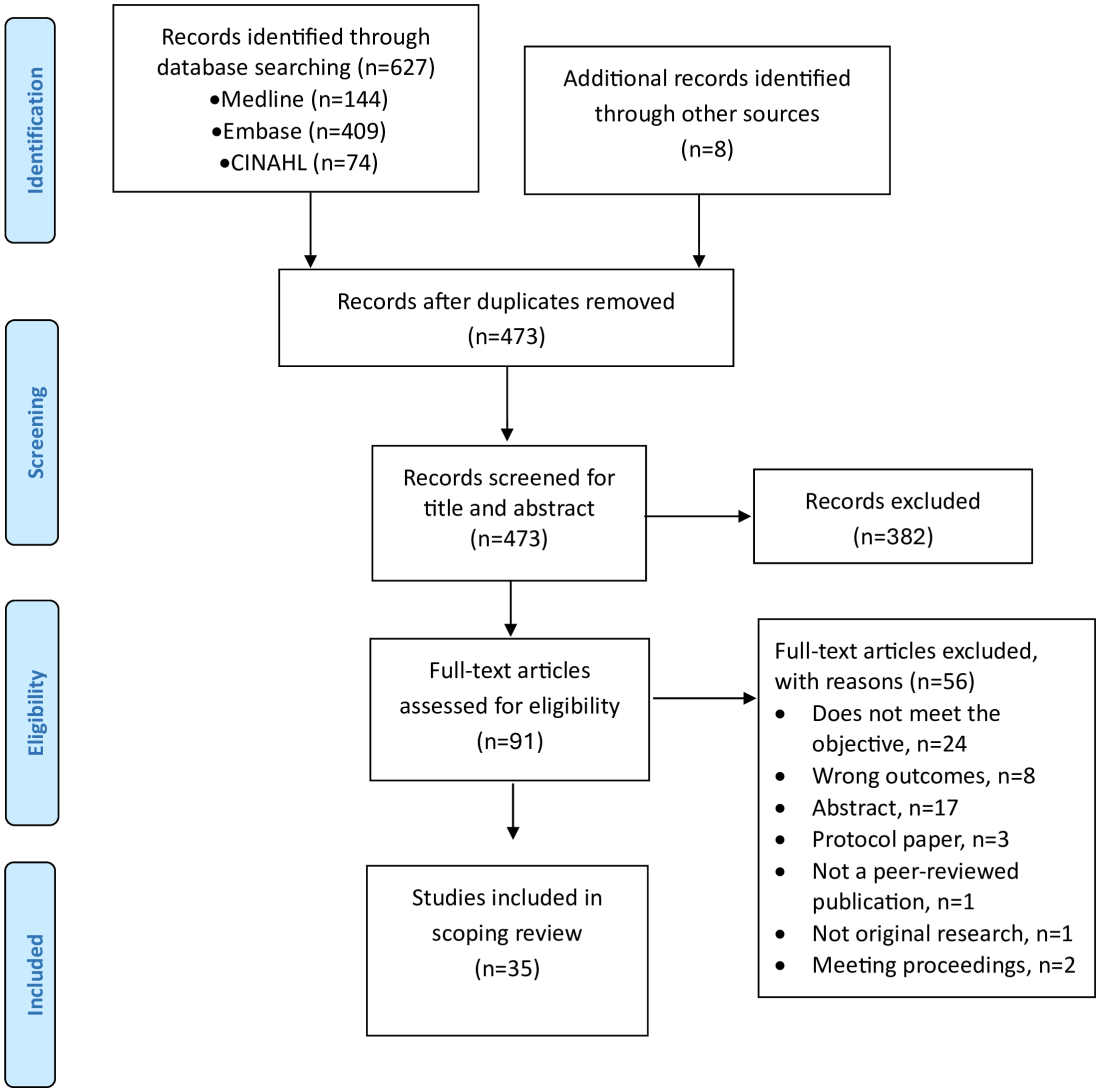

Figure 1 : PRISMA-Scr flowchart summarising the selection of eligible studies. PRISMA-ScR, Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews.

RESULTS

Search results

Our initial database searches yielded a total of 627 articles, and we also reviewed the full text of eight additional references from other sources which were not picked up by our database searches. After removing 162 duplicates, 473 articles underwent title and abstract screening, and 91 articles advanced to the full-text screening phase. A further 56 articles were excluded in this phase, yielding 35 peer-reviewed articles[26–60] included in this scoping review (including the eight additional articles identified from other sources[35 41 44 46 53 54 56 59]) (figure 1).

Study characteristics

The 35 included studies conducted between 2016 and 2024 span diverse geographical and country-level income settings including Australia and New Zealand (n=3), Africa (n=7), Asia (n=4), Europe (n=3) and North (n=15) and South (n=3) America (table 1) (online supplemental figure S1). We followed the World Bank's 2022 classification to group countries by income level.[61] Nineteen studies were conducted in HICs[26–35 38–46] and 16 studies were conducted in LMICs.[36 37 47–60]

Study settings included rural (n=10), urban (n=11), both rural and urban (n=3), periurban/semiurban (n=3) and eight studies did not specify the setting. The sample size of the target population ranged from 55 to 75 842. In general, the target populations were women who were never or underscreened across all screening methods (HPV or Papanicolaou (Pap) test or visual inspection of the cervix with acetic acid (VIA)). Some studies, particularly conducted in HICs, targeted underscreened women from specific communities, including Indigenous,[38] culturally and linguistically diverse,[39] ethnic minority (eg, Māori and Pacific women, Hispanic, black, Haitian, African American, Asian, Somali),[29 32 35 42] low socioeconomic[55 57] or medically underserved populations[45] or specific religious groups (eg, Muslim).[33] Most studies targeted women aged 30–65 years,[27 29 30 36 41 48 55–58] but several studies included younger (≥18 years)[34 35 37 51 53 54 60] or older women (≤75 years)[33 35 42] in their target population (table 2) (online supplemental table S4).

Twelve studies were RCTs (10 in HICs[26–35] and 2 in LMICs[36 37]) and the remaining 23 were non-RCTs (9 in HICs[38–46] and 14 in LMICs[47–60]). The RCTs examined several NMP-facilitated cervical screening interventions that varied mainly in terms of NMP types, screening methods and follow-up period. Comparison groups varied greatly but were standard care in most cases. The RCT intervention and comparison groups are summarised in online supplemental table S5.

Characteristics of the NMPs

The included studies reported on several types of NMPs including CHWs (n=27: 15 in HICs,[26 28–35 38 39 43–46] 12 in LMICs[36 37 47–50 53–57 59]), nurses (n=8: 2 in HICs,[38 42] 6 in LMICs[49 51 52 56 58 60]) and midwives (n=5: 3 in HICs,[27 40 41] 2 in LMICs[50 55]). Various terms were used for CHWs including

Table 1 : Summary characteristics of studies (n=35) included in the scoping review

Study characteristics	N=35 n (%)*	Study references
Year of publication		
2017	3 (8.6)	28 47 58
2018	2 (5.7)	29 30
2019	4 (11.4)	40 49 51 53
2020	5 (14.3)	27 38 43 54 55
2021	5 (14.3)	26 31 32 48 57
2022	10 (28.6)	33 36 37 39 42 44 50 52 59 60
2023	5 (14.3)	34 35 41 45 46
2024	1 (2.9)	56
Geographical region		
Australia and New Zealand	3 (8.6)	38 39 42
Africa	7 (20.0)	37 49–52 58 60
Asia	4 (11.4)	26 36 55 56
Europe	3 (8.6)	27 40 41
North America	15 (42.9)	28–35 43–46 53 54 57
South America	3 (8.6)	47 48 59
Study design		
RCT	12 (34.3)	26–37
Cross-sectional study†	6 (17.1)	40 51–53 55 60
Pilot/feasibility study	5 (14.3)	38 39 42 48 49
Cohort study	1 (2.9)	54
Mixed methods study	2 (5.7)	43 56
Multicomponent single-arm intervention study	2 (5.7)	45 46
Before-and-after assessment	2 (5.7)	57 58
Cost-effectiveness study	2 (5.7)	50 59
Other non-RCT‡	3 (8.6)	41 44 47
Setting		
Urban	11 (31.4)	26 28 31 33 37 39 41 42 44 48 51
Rural	10 (28.6)	32 38 40 43 45 49 53 54 58 60
Both urban and rural	3 (8.6)	50 52 56
Peri-urban/semi-urban	3 (8.6)	36 55 59
Not specified	8 (22.9)	27 29 30 34 35 46 47 57
Types of NMP		
Community Health Workers§	27 (77.1)	26 28–39 43–50 53–57 59

Continued

Table 1 Continued

Study characteristics	N=35 n (%)*	Study references
Midwives¶	5 (14.3)	27 40 41 50 55
Nurses	8 (22.9)	38 42 49 51 52 56 58 60
Primary screening methods used**		
HPV test (self-sampling)	19 (54.3)	30 38 40–44 47–51 53–57 59 60
Pap test	6 (17.1)	26 28 31 33–35
Choice between Pap and HPV self-sampling tests	3 (8.6)	27 29 32
Pap and/or HPV test	2 (5.7)	45 46
VIA	3 (8.6)	36 37 58
Mobile colposcopy with/without Pap/HPV/VIA	1 (2.9)	52
Role of NMP		
Identifying and recruiting participants for screening	22 (62.9)	28–35 38–41 43 45 46 48 50 53–55 57 60
Delivering health education and awareness raising	26 (74.3)	26 28–37 39 43–50 55–60
Facilitating self-sampling	22 (62.9)	27 29 30 32 38 40–44 47–51 53–57 59 60
Navigation assistance and follow-up	23 (65.7)	26–29 31–33 36–38 41 44–49 52–56 59

*Total categorical percentages do not always sum to 100.0% due to rounding or multiple responses.
†One study involved a cross-sectional study design nested in a cohort.[60]
‡Other non-RCTs include clinical study under an opt-in system (n=1),[41] efficacy study (n=1)[44] and evaluation study (n=1).[47]
§'Community health workers' term includes community health workers, community engagement workers, community health educators, community leaders, community outreach workers, community lay navigators, lay health workers, field workers, patient navigators and 'Hope Ladies' (community volunteers).
¶There was one study in India[55] that involved auxiliary nurse midwife that we have included in the 'midwives' category.
**One study conducted in Australia did not involve any cervical screening method although they involved educational delivery about cervical screening.[39]
HPV, human papillomavirus; NMP, non-medical provider; PaP, Papanicolaou; RCT, randomised controlled trial; VIA, visual inspection of the cervix with acetic acid.

community engagement workers, community health educators, community outreach workers, 'Promotora' (lay health workers), 'Hope Ladies' (trained community volunteers), patient navigators, field workers and community leaders.

Five studies involved multiple NMP types, with nurses or midwives primarily based in health facilities and CHWs working in communities.[38 49 50 55 56] The number of NMPs involved ranged from 2 to 723 (documented in 19 studies). While nurses and midwives were often employed from existing health facilities or national programmes or networks,[38 40 49 51 55 56 58] CHWs were mainly recruited from local communities or community-based institutions.[26 28 31 32 36–39 44 45 53 55 56] Recruitment criteria for CHWs mostly included being female, bilingual, having at least a secondary education level or belonging to a specific ethnic group[26 31 32 37–39 44 53 55] (table 2) (online supplemental table S4).

Roles of NMPs

NMPs performed a variety of roles, which can be clustered into the following broad categories.

Identifying and recruiting eligible women

In 22 studies including 8 RCTs (all in HICs[28–35]) and 14 non-RCTs (7 in HICs,[38–41 43 45 46] 7 in LMICs[48 50 53–55 57 60]), NMPs identified and recruited eligible women for screening. This was mostly through a door-to-door home visit approach[31 36 38 47 48 53–55 57 59] and also occurred at community venues (eg, faith-based locations, community centres, community events, flea markets, recreation centres and health fairs),[28–31 33 34 43 46 49] in the waiting room of hospitals or clinics,[34 45 46] or through their personal or community contacts (eg, neighbours, coworkers, family members).[29 32] Screening eligibility within these studies was mostly determined by the NMP collecting women's self-reported sociodemographic data and cervical screening history.[29 31–33 48 53 57] In 20 studies, CHWs performed this role,[28–35 38–40 43 45 46 48 50 53–55 57] while in two studies, this role was performed by nurses or midwives[41 60] (online supplemental table S4).

Delivering health education and raising awareness

In 26 studies including 11 RCTs (9 in HICs[26 28–35] and 2 in LMICs[36 37]) and 15 non-RCTs (5 in HICs[39 43–46] and 10 in LMICs[47–50 55–60]), NMPs were involved in delivering health education and raising awareness, including behaviour change and culturally tailored health education, to eligible women mostly through education seminars (sometimes in multiple languages) or community campaigns,[26 32 33] small group meetings or workshops,[28 32 35 39 44–46 56] one-on-one phone or in-person conversations.[26 32 33 36 45 46 56 60] This role was predominantly performed by CHWs (n=23 studies), while in three studies, this role was performed by nurses or midwives.[49 50 58] Topics usually included information on cervical cancer prevention, particularly screening and self-sampling, the availability of local cervical cancer prevention services and the implication of getting a high-risk HPV-positive result.[30 32 45 46 49 56 58 60] Furthermore, several studies reported involving NMPs in developing health literacy interventions, including culturally tailored brochures or in translating intervention materials (eg, survey questionnaires, self-sampling

Table 2 Summary of evidence on the impact of NMP-facilitated interventions on cervical screening participation

Country (year)	Study design and population	NMPs	Key findings
RCTs (n=12)			
HICs (n=10)			
Hong Kong[26] (2021)	Cluster-RCT (prospective, 2-arm, with waitlist control group) in South Asian under-screened women aged ≥25 years	CHWs	At 3 months post CHW-led intervention, cervical screening uptake was significantly higher in the intervention group (97.9%) than in the control group (52.6%) (OR: 42.73, 95% CI: 3.09 to 591.82, p=0.005).
Sweden[27] (2020)	RCT investigating cervical screening participation rates among non-attendee women aged 30–64 years across midwife-facilitated telephone, self-test and control groups	Midwives	In the per-protocol analysis, participation was highest in the midwife-facilitated group (31.7%) compared with the HPV self-test (26.1%) and control (7.0%) groups (p<0.001). Among HPV-positive women in the telephone group (15%), 70.1% attended follow-up.
USA[28] (2017)	Cluster-RCT investigating the impact of a CHW-led health literacy-focused intervention in Korean American women aged 21–65 years	CHWs	Women receiving the CHW-led health literacy intervention were 13.3 times more likely to receive a Pap test (95% CI: 7.9 to 22.3) than the control group.
USA[29] (2018)	RCT (pragmatic) comparing cervical screening uptake among ethnic minority women aged 30–65 years in CHW-led HPV self-swab, CHW-led outreach and CHW-led navigation groups	CHWs	At 6 months, 77% of women in the CHW-led self-swab group were screened, vs 31% in outreach and 43% in navigation. CHW-led self-swab group had higher odds of screening than outreach (OR: 7.47) or navigation (OR: 4.61), p<0.01.
USA[30] (2018)	RCT examining the effectiveness of HPV self-sampling delivered via in-person vs by mail in ethnic minority women aged 30–65 years	CHWs	Self-sampling completion was higher with CHW in-person delivery (81%) than via mail (71.6%), with 1.81 times higher odds (95% CI: 1.22 to 2.69, p<0.01).
USA[31] (2021)	RCT of CHW ('Promotora')-delivered cervical screening intervention in non-adherent women aged 21–65 years	CHWs	Women aged≥50 years in the CHW-led intervention were more likely to complete a Pap test than controls in per-protocol (OR: 3.03) and intention-to-treat (OR: 2.31) analyses (p<0.05).
USA[32] (2021)	RCT evaluating screening adherence in under-screened African American women between 'CHOICE' (CHW-facilitated, with a choice between Pap test and self-sampling at home) and standard of care arms	CHWs	Women in the 'CHOICE' arm were 5.62 times more likely to adhere to screening (p=0.005), with higher rates of self-sampling (76%) and adherence (48%) than standard care (7.5%). Of 9 women referred for colposcopy, 44.4% attended.
USA[33] (2022)	RCT comparing cervical screening uptake in Muslim women aged 40–75 years between Education+Media+Patient navigation (by CHWs); and Education+Media arms	CHWs	Pap test screening increased from 16.9% to 42.3% in the Education+Media+Patient navigation arm (p<0.001). The odds of being up-to-date with a pap test were 1.11 times higher in this group than the Education+Media group (95% CI: 0.72 to 1.71).
USA[34] (2023)	RCT comparing cervical screening rates in women aged 21–65 years across two arms: CHW-facilitated flipchart presentation and narrative video with limited in-person interaction arms	CHWs	Both interventions were acceptable with 74.2% of participants completed screening, with no significant difference between interventions. HPV knowledge increased more in the CHW-facilitated flipchart group (mean change: 0.43).
USA[35] (2023)	RCT of introducing a multi-modal, linguistically and culturally appropriate cervical screening toolkit in Somali women aged 21–70 years	CHWs	CHW-facilitated groups were more likely to have had a Pap test than controls (53.7% vs 3.7%, p<0.0001).
LMICs (n=2)			
Nepal[36] (2022)	Cluster RCTs of CHW-delivered intervention to increase cervical screening uptake in women aged 30–60 years	CHWs	Cervical screening uptake significantly increased in the intervention group (RR: 1.48, 95% CI: 1.32 to 1.66, p<0.01) compared with the control.
Tanzania[37] (2022)	Community-based RCT of a peer-led navigation intervention promoting cervical screening knowledge, intention and practices in urban women aged 21–50 years	CHWs	Peer-led navigation increased cervical screening knowledge, intention and uptake. At 6 months, 72.7% of the intervention group screened, compared with 2.3% in the control group.
Non-RCTs (n=23)			
HICs (n=9)			
Australia[38] (2020)	Pilot of a community-based HPV self-sampling service model in never-screened and under-screened Aboriginal women	CHWs, nurses	This community-based study recruited 81% of the target sample. All 215 participants completed the self-sampling, and 88.9% of HPV-positive women attended colposcopy.
Australia[39] (2022)	Single arm non-randomised feasibility study of codesigned and culturally tailored cervical screening promotion forums for CALD women	CHWs	The codesigned, culturally tailored cervical screening forums were feasible, acceptable and effective, with CALD women showing increased health literacy and screening intentions.

Continued

Table 2 Continued

Country (year)	Study design and population	NMPs	Key findings
Greece[40] (2019)	Nationwide observational cross-sectional study implementing HPV testing with self-sampling in rural women aged 25–60 years	Midwives	~98% of women provided valid questionnaire responses and had valid HPV-DNA results. Colposcopy referral compliance ranged from 68.6% (age: 25–29 years) to 76.3% (age: 40–49 years).
Italy[41] (2023)	Clinical study evaluating the feasibility of self-sampling at home under an opt-in system in women aged 31–66 years during COVID-19	Midwives	Over the 500 swabs sent to the enrolled women, 400 women sent back their swab (400/500=80%)
New Zealand[42] (2022)	Small proof-of-concept feasibility study testing a nurse-led telehealth invitation with mailed kits during COVID-19 lockdown in Māori and Pacific women aged 30–69 years	Nurses	In nurse-led telehealth, 66 women participated with a 34.3% self-sampling uptake. Modified self-sampling during COVID-19 was feasible and acceptable among Māori and Pacific women.
USA[43] (2020)	Mixed-methods study investigating acceptability and feasibility of CHW-facilitated at-home self-collection intervention in women aged 30–64 years	CHWs	CHW-facilitated at-home self-sampling was acceptable and feasible. Of the 77 kits distributed, 76.6% were returned, with 42 valid results. Of 19 participants receiving results via phone, 89.4% had positive feedback, and all found instructions clear.
USA[44] (2022)	Efficacy study of a culturally tailored intervention to promote HPV self-sampling in low-income Asian women aged 30–55 years	CHWs	This culturally tailored self-sampling intervention was highly effective, with 100% of low-income Asian American women completing and returning HPV test kits.
USA[45] (2023)	Multicomponent, comprehensive intervention of cervical cancer prevention in women from medically underserved populations	CHWs	~59% of 75 842 women were screened; 658 were diagnosed with high-grade dysplasia and navigated to follow-up care; 2216 had colposcopy.
USA[46] (2023)	Comprehensive multilevel intervention including education, navigation for women due for cervical screening in the clinic system	CHWs	Of 19 850 women, ~75% (n=14 846) women were screened with cytology±HPV testing. Of them, 13.7% were referred for colposcopy due to abnormal results.
LMICs (n=14)			
Argentina[47] (2017)	Evaluation of scaling up of a project on HPV self-sampling offered by CHWs at home visits to increase screening uptake in under-screened women aged≥30 years	CHWs	Scaling up of CHW-led self-sampling increased screening participation by 45% in post-scaling-up period than in pre-scaling-up period. Of 33 245 women, ~9% were screened, and 77.5% of 414 HPV-positive women had a follow-up procedure.
Brazil[48] (2021)	Pilot (exploratory) study exploring the acceptability of CHW-led HPV self-sampling in never/under-screened women aged≥30 years	CHWs	Of 405 non-adherent women, 380 (93.8%) participated in the self-sampling. Of 35 referred for colposcopy, 28 (80%) completed the procedure.
Cameroon[49] (2019)	Pilot (feasibility) study of a screen-and-treat strategy by nurses in women aged 30–65 years	Nurses, CHWs	After community sensitisation, 1270 women were enrolled and educated in self-sampling. Of them, 15.4% were HPV-positive, and 94.4% underwent follow-ups.
Cameroon[50] (2022)	Assessment of the effectiveness of cervical screening recruitment strategies involving community information channels and CHWs for women aged 30–49 years	CHWs, Midwives	CHWs increased awareness and recruitment rates for cervical screening in rural areas, increasing participation from 12.1% to 61.4%.
Ethiopia[51] (2019)	Cross-sectional study examining the feasibility of cervical nurse-assisted self-sampling in women aged≥20 years	Nurses	All (100%) enrolled women (n=83) were screened using nurse-assisted self-sampling. Most found it easy-to-use (87.9%), easy to insert and collect (79.5%), and user-friendly (91.6%).
Ghana[52] (2022)	Descriptive retrospective cross-sectional review of women screened and followed up by trained nurses using a mobile colposcope	Nurses	Of 904 women, 828 women had primary screening and 76 had follow-up. Of these, 739 (89.3%) were screened at the clinic and 89 (10.7%) at outreach facilities.
Guatemala[53] (2019)	Cross-sectional study assessing acceptability of CHW-facilitated HPV self-sampling in women aged 18–60 years	CHWs	~94% of 438 eligible participants completed CHW-facilitated self-sampling, which was highly accepted.
Guatemala[54] (2020)	Cohort study with data collected at baseline (survey and HPV testing), and follow-ups at 1 and 2 years in women aged 18–60 years	CHWs	The odds of compliance with cervical screening were 1.48 times higher among women offered CHW-facilitated self-sampling vs those not offered (95% CI: 0.64 to 3.40).
India[55] (2020)	Cross-sectional study evaluating feasibility, acceptability, and efficacy of implementing CHW-led HPV self-sampling in never-screened, low-socio-economic women aged 30–65 years	CHWs, midwives	CHW-led self-sampling was feasible, accepted and effective for screening women. CHWs motivated 93% of 4643 women to participate and referred 65% of screen-positive women to colposcopy and treatment.
India[56] (2024)	Mixed-methods, pragmatic, quasi-experimental trial design in women aged 30–60 years from tribal, rural, urban slum settings	CHWs, nurses	CHW and nurse-facilitated self-sampling was feasible and acceptable. Screening rates at 8 months were 31.0% (tribal), 26.7% (urban slum), and 32.9% (rural).

Continued

Table 2 Continued

Country (year)	Study design and population	NMPs	Key findings
Jamaica[57] (2021)	Pre-test–post-test control group design of a community-based, multicomponent intervention in low-socioeconomic, under-screened women aged 30–65 years	CHWs	After the community outreach intervention, 95.7% of participants (n=163) used and returned their self-test kits, finding it easy-to-use and preferable to doctor visits.
Nigeria[58] (2017)	Prospective population-based intervention study, with before-and-after design in women aged ≥30 years	Nurses	Nurse-led house-to-house cervical cancer education significantly increased screening uptake in target women, from 3.2% (n=42) to 67.6% (n=897) (p<0.001).
Peru[59] (2022)	Micro-costing analysis of the 'Hope' Project, which offers HPV self-sampling kits to high-income women at a higher price to subsidise testing for lower-income women	CHWs	The programme trained 62 'Hope Ladies' who screened 4882 women. Of them, 12% tested HPV-positive, and 62.3% were linked to care. The total cost per woman completing the screening was US$55.64.
Tanzania[60] (2022)	Cross-sectional study nested in a cohort investigating the feasibility of HPV self-sampling in women aged 25–60 years	Nurses	All (100%) participants (n=1620) completed self-sampling, with 14.1% (n=229) testing positive.

CALD, culturally and linguistically diverse; CHWs, community health workers; HICs, high-income countries; HPV, human papillomavirus; NMP, non-medical provider; PaP, Papanicolao; RCT, randomised controlled trial.

instructions or test results) to multiple languages[28 29 35 39 44] (online supplemental table S4).

Facilitating self-sampling

Facilitating self-sampling was a key role of an NMP in 22 studies including 4 RCTs (all in HICs[27 29 30 32]) and 18 non-RCTs (6 in HICs[38 40–44] and 12 in LMICs[47–51 53–57 59 60]). This role usually involved offering an option to receive an HPV self-sampling test, providing a self-sampling kit, which included a self-sampling device (eg, a swab or self-sampling brush), with a detailed explanation of the self-sampling process; assisting women in administering self-sampling test or collecting vaginal specimens from participants. In nine studies, self-sampling was offered by nurses or midwives usually either at clinics or primary healthcare settings[40 49–51 56 60] or via telephone with mail-out self-sampling kits.[27 41 42] In 14 studies, self-sampling was offered by a CHW mostly outside of clinical settings through home visits or community engagements.[29 30 32 38 43 44 47 48 53–57 59] Women who were provided with a self-sampling kit in non-clinical settings usually performed the self-sampling at home or a place of their choice, or at a private community location (eg, community centres, churches) and returned it to the NMP immediately or later.[30 32 38 43 47–49 55 57] In most studies, self-sampling kits were free,[27 32 38 43 47 49 53 54 57 60] while in one microcosting study conducted in Peru, 'Hope Ladies' sold kits door-to-door at a significantly subsidised price (~3 USD) with a profit (~1.50 USD) per kit distributed, as part of a community-based HPV self-sampling social entrepreneurship programme[59] (online supplemental table S4).

Providing navigation and follow-up assistance

In 23 studies including nine RCTs (7 in HICs,[26–29 31–33] 2 in LMICs[36 37]) and 15 non-RCTs (5 in HICs[38 41 44–46] and 9 in LMICs[47–49 52–56 59]), NMPs assisted in patient navigation[26–29 31–33 36 41 44–46 55 56 59] or follow-up,[27 31 32 38 41 45 47–49 53–55 59] either face-to-face or by phone. Navigational assistance usually involved assistance in making appointments for screening or follow-up tests (eg, colposcopy) or treatment, accompanying women to appointments or providing transport information.[26–29 31–33 36 41 44–46 55 56 59] Follow-up by NMPs usually involved reminding women to attend follow-up tests, communicating test results, ensuring they had received and understood screening results, reassuring HPV-negative women, counselling or advising screen-positive women to attend for any required follow-up investigations or linking women with abnormal results to further clinical investigations or treatment by coordinating with clinicians.[27 31 32 36 38 41 45–49 53–56 59] These navigation and follow-up roles were predominantly performed by CHWs (n=19 studies).[26 28 29 31–33 36–38 44–48 53–56 59]

In six studies, nurses or midwives were involved in performing triage or follow-up tests (eg, colposcopy, VIA) or treatment procedures (eg, ablation, thermal coagulation, cryotherapy, loop electrosurgical and excision procedure, biopsies) and ensuring quality assurance of the screening procedure through discussions with specialists (eg, gynaecologists)[27 38 49 52 55 56] (online supplemental table S4).

Effect of NMP-led interventions

Attendance for cervical screening was the most frequently reported outcome across the included studies (n=30).[26–38 40–47 51–54 56–58 60] In most studies, cervical screening uptake was defined as the completion of any form of cervical screening method (Pap or HPV test or VIA) within a specific timeframe (eg, during the intervention, or a specific postintervention period). Other outcome measures used were feasibility and acceptability of NMP-led interventions,[39 42 43 50 51 53 55 56] costs of an NMP-led intervention,[50 59] attendance for a follow-up assessment (eg, colposcopy)[27 32 38 40 47–49 55 56] and changes in women's knowledge about cervical cancer prevention after the NMP-led intervention.[34 36 37]

Eleven out of 12 RCTs showed a significant increase in cervical screening uptake in an NMP-facilitated intervention arm compared with the control, with reported ORs or relative risk ranging from 1.11 to 42.73.[26–33 35–37] In four RCTs where self-sampling was facilitated by an NMP, cervical screening uptake in the intervention arm ranged from approximately 32.0% to 81.0%.[27 29 30 32]

Among non-RCTs, 18 out of 23 studies involved NMPs in facilitating self-sampling, with screening uptake rates ranging from 9.0% to 100.0% (HICs: ~34.0% to 100.0%[38 40–44] and LMICs: 9.0% to 100.0%[47–51 53–57 59 60]). Six non-RCTs conducted in Australia,[39] Ethiopia,[51] Guatemala,[53] India,[56] New Zealand[42] and the USA[43] found that NMP-facilitated cervical screening interventions were largely feasible and acceptable among target populations.

Among both RCTs and non-RCTs, 12 studies (6 in HICs[27 32 38 43 45 46] and 6 in LMICs)[47–49 55 56 59] reported involving NMPs in navigation assistance for screen-positive women, and in these studies, attendance for a follow-up procedure ranged from approximately 44.0% to 95.0% (CHWs: ~44.0% to ~85.0%, nurses or midwives: ~69.0% to ~94.0%) (table 2) (online supplemental table S4).

Strategies used to enhance NMP engagement in improving cervical screening participation

Across the included studies, several strategies were identified to enhance NMP engagement and increase cervical screening participation among target populations. One key strategy was the capacity-building of NMPs through comprehensive training programmes, which covered topics such as cervical cancer prevention, HPV self-sampling and logistical procedures of the study. Training of NMPs was usually conducted by medical doctors (eg, physicians, gynaecologists), nurses (for CHWs) or study investigators, and often involved interactive learning approaches (eg, expert presentations, small group discussions or role-playing to simulate self-sampling scenarios) to enhance NMP learning and competency.[26 28 30 32 33 36 37 39 43 45–47 52 58 59]

A further key strategy was involving CHWs from local communities to leverage their cultural, linguistic and social connections for effectively reaching the target populations.[26 31 32 35 38 39 44 53 55 58] While identifying participants, several studies employed diverse outreach strategies including promoting the project using flyers,[31 35 36 39 57] contacting participants through public announcements,[40 60] visiting door-to-door[31 40 57] and employing convenience or snowball sampling.[31 38 39 53] Additionally, several studies used culturally and linguistically adapted health educational materials (eg, brochures, pictorial charts, videos, posters and booklets) as part of cervical cancer prevention education.[26 29 31–34 36 37 44 56] Offering financial incentives was identified as a strategy both to motivate NMPs[36 43 50 59] and encourage women to participate in cervical screening[29 34 35 43 45 50 53 54 57] (table 3).

Challenges identified with NMP-facilitated models

Included studies reported several challenges associated with implementing or scaling-up NMP-led interventions. A major challenge identified was the lack of retention of CHWs within communities, particularly in rural and remote areas, and this was often attributed to a lack of long-term motivation, due to insufficient formal recognition within health systems and inadequate compensation for their workload.[37 38 47 50 59]

Multiple studies noted that identifying underscreened women in NMP-facilitated interventions was challenging due to a lack of direct access to participants' screening information in medical records, lack of registry infrastructure or outdated census information within the country.[32 33 35 40 54 56 59] Challenges also existed in the process of providing necessary follow-up support for screen-positive women due to the non-existence of a structured process and data platform for following and recalling screen-positive women.[29 38] Funding constraints were another common challenge, with some studies emphasising the difficulty of securing adequate resources to deliver effective and sustainable large-scale NMP-led cervical screening models.[34 39 47]

DISCUSSION

Our scoping review exploring the role of NMPs in cervical screening included 35 studies, encompassing a range of settings, study designs and NMPs, including those with and without formal clinical qualifications. Overall, our scoping review found that involving NMPs in cervical screening interventions was feasible and substantially improved the cervical screening uptake among target populations in both HICs and LMICs, particularly in the context of self-sampling. The roles played by NMPs included identifying and recruiting eligible women, delivering health education and raising awareness, facilitating self-sampling and providing navigation and follow-up assistance. Key strategies identified were capacity-building of NMPs through training, involving bilingual or ethnic-specific CHWs; employing outreach strategies to reach underscreened women; and using culturally and linguistically adapted health educational materials. The lack of retention of CHWs and identifying underscreened groups were reported as key challenges associated with the implementation or scaling-up of NMP-facilitated interventions.

The findings from our scoping review demonstrate that NMP-facilitated interventions are effective in improving the uptake of cervical screening among target populations in both HICs and LMICs. This is consistent with several prior studies focused on other cancer types including breast,[62] colorectal[62] and skin[63] cancer. While most of the non-RCTs identified in our review were from LMICs, there were only 2 (out of 12) RCTs of NMP-facilitated cervical screening interventions in LMICs. Access to cervical screening in LMICs is constrained by multiple barriers including poorly resourced health systems, lack

Table 3 Summary of strategies used across studies to enhance NMP engagement in improving cervical screening participation among target populations

Strategies for NMPs	Strategies for target population
1. Strategies used to involve NMPs 1. Involving bilingual CHWs or CHWs from specific ethnicity or from local health facilities or local communities where they have existing links with the community to identify and engage local women effectively[26 31 32 35 38 39 44 53 55 58] 2. Capacity-building through training/tools 1. Capacity-building of NMPs through intensive and long training workshops, refresher training, monthly training, hands-on field training on cervical cancer, HPV testing, HPV self-sampling, communication skills, logistical procedure or any other topics according to evolving needs[30 32 33 36 37 39 43 45–47 52 58 59] 2. Utilisation of interactive learning approaches, such as expert presentations, small group discussions and role-playing to recreate different scenarios during the offer of self-sampling in order to facilitate learning and validate the competency of the NMP[26 28 37 47] 3. Quality assurance 1. Conducting monthly quality assurance meetings where screening results of all the cases for the previous month are discussed by nurses with a specialist gynaecologist to assure the quality of assessments[52] 4. Financial incentives 1. Providing financial incentives, such as gift cards to NMPs as a means to motivate their contributions[36 43 50 59]	1. Strategies used to recruit target women—Using door-to-door visits or community-based events to recruit women[31 40 57] 1. Employing diverse outreach strategies, including mailed information, flyers, public announcements, radio calls, social media and face-to-face interactions, to inform and encourage women to schedule appointments for cervical screening[31 35 39 40 51 57 60] 2. Employing convenience sampling to recruit women followed by snowballing with the women identifying other family and friends for cervical screening[26 31 38 53] 2. Strategies to educate target women 1. Using culturally and linguistically adapted health education materials (eg, educational brochures, PowerPoint presentations, palm cards, handouts and information booklets) or using culturally relevant graphics in educational materials on cervical cancer prevention or other educational tools such as structured responses to frequently asked questions by the community[26 28 29 32–35 44 56] 2. Using written and illustrated instructions detailing how to perform HPV self-sampling in several languages (eg, Chinese, Korean and Vietnamese)[33 44] 3. Enhancing learning outcomes by providing women with a copy of the DVD and picture guidebook to reinforce lessons and practices from the NMP-led health literacy class[28] 3. Incentives 1. Offering financial incentives (eg, gift cards, vouchers) for attending the cervical screening at local clinics or returning a completed self-sampling kit[29 34 35 43 45 50 53 54 57] 2. Offering non-financial incentives such as exercise sessions or zumba or yoga classes while conducting NMP-led health seminars to provide an additional incentive for women to join[33 39 45 46]

CHWs, community health workers; HPV, human papillomavirus; NMP, non-medical provider.

of clear cervical screening policies or guidelines, limited service points and poor referral systems.[3 6] With cervical screening uptake below 10% (among women aged 30–49 years) in LMICs,[2] there is an urgent need for more robust evidence on NMP-facilitated interventions to expand access to cervical screening tailored to the specific contexts and burdens of these regions.

Studies in HICs were focused on a variety of under-screened populations (eg, those living in rural areas, ethnic or religious minority groups, low socioeconomic groups) in settings with the existing screening infrastructure or programmes. NMP-facilitated cervical screening interventions augmented existing programmes by providing additional support in improving cervical screening uptake in these groups, where the existing infrastructure had evidently failed. Our findings are consistent with and supplement the findings of a 2023 meta-analysis highlighting community mobilisation and outreach efforts as effective strategies for promoting self-sampling participation, when facilitated by NMPs.[64] Prior research across various health services (eg, cancer screening, mental health, maternal and child health nutrition, diabetes and cardiac health) has similarly highlighted the potential of NMP-led interventions in addressing barriers and inequities in the uptake of health services across different settings.[62 65–69] In particular, CHWs, being community-based and culturally aligned, possess a deep understanding of local needs and barriers and can facilitate direct delivery of screening services to target groups.[59] Despite this potential, CHWs are still a largely unrecognised and underutilised workforce within healthcare systems in many HICs.[65 70] The retention of CHWs within communities is challenging due to not being formally recognised within the health system, as identified in our review. Formalising the roles of CHWs within healthcare systems could be an effective strategy to retain their capacity to improve access and equity in cervical screening programmes in both HICs and LMICs.

Our scoping review builds on previous work by considering NMPs with clinical qualifications such as nurses and midwives in various roles to enhance cervical screening services. CHWs cannot provide direct clinical

care but can offer health promotion or support for cervical screening if referral pathways or clinical support is available. However, nurses or midwives can potentially provide a speculum exam for a clinician-collected sample and perform triage of screen positives, particularly in settings where there is a major shortage of workforce. Integrating different types of NMPs including those with or without clinical qualifications in different roles could be an effective strategy to reach more underscreened populations at both the health facility and community levels, as evidenced in our review where nurses or midwives were primarily stationed at health facilities, and CHWs were operating at the community level. Task shifting or sharing, in this context, could be an effective and pragmatic approach to increase cervical screening uptake mainly in resource-poor settings where there is a continuous shortage of staff in cervical screening services within the health system.[71 72] In settings with established VIA infrastructure, the existing workforce performing VIA, often nurses or midwives, could be repurposed, given ongoing discussions in LMICs about transitioning from VIA to HPV-based screening.[73] Future research should evaluate the effectiveness and cost-effectiveness of various task-shifting or sharing models involving NMPs with or without a clinical qualification in cervical screening and also prioritise their abilities, motivation and clarity regarding their tasks.

Furthermore, as found in our review, capacity-building of NMPs through training is essential to improve their knowledge, self-esteem and motivation, ultimately fostering greater trust and better partnerships with underscreened women. It is important that future NMP-led cervical screening interventions incorporate comprehensive capacity-building components focusing on both technical (including clinical, for nurses and midwives) and interpersonal skills (eg, communication and counselling).

Our scoping review highlights that offering self-sampling by an NMP can be an effective strategy to connect and reach underscreened women in both HIC and LMIC settings. Initially, self-sampling in HICs was offered only to underscreened women.[13] More recently, as evidence has built that PCR-based HPV testing works similarly well on self-collected and clinician-collected samples,[8] this has changed in some countries, including Australia,[14] Sweden[16] and the Netherlands.[15] New Zealand has offered self-sampling as an equal choice since the inception of its HPV screening programme in 2023.[17] Delivery models vary; however, some settings use mail-out models while some others involve healthcare providers. For instance, in Australia, cervical screening on a self-sample needs to be ordered by a healthcare professional, but guidelines explicitly allow considerable flexibility in the setting where self-sampling can occur and to develop models of care best-suited for individual communities, potentially involving NMPs.[74] With the aim of improving the accessibility of screening, Australia's national cervical cancer elimination strategy also includes strategic actions to expand who can offer screening and to develop innovative screening models (and scale-up successes).[75] Further research is needed on strategies that sustain NMP engagement in offering self-sampling in both HIC and LMIC settings, including approaches like remuneration and workforce training. Of equal significance is to undertake qualitative studies with consumers to understand their preferences, the acceptability of NMP-driven self-sampling screening, and how to ensure support is available to connect them to follow-up care particularly when HPV testing is offered at home. Additionally, economic evaluations are also required to assess the impact of NMP-driven self-sampling models on healthcare resources including workforce and budgets.

At the current time, given the mix of HIC and LMIC studies identified in our review, the most frequently reported role of the NMPs was delivering health education or raising awareness about cervical screening. This accords with previous research across breast, cervical and colorectal cancer screening, which demonstrated that NMP-facilitated education was effective in sensitising participants to the importance of screening and improving the uptake of screening services.[65–68] Appropriate and effective awareness-raising initiatives around cervical screening are paramount, particularly in LMICs, as underscored by a recent systematic review highlighting that a lack of knowledge and awareness of cervical screening and cervical cancer was the most frequent individual-level barrier in LMICs.[3] Additionally, a further key role of the NMPs we identified was navigation assistance in obtaining screening or assisting women to connect to follow-up care (eg, making an appointment for a colposcopy for screen-positive women). CHWs possess a great ability to be involved in patient navigation by guiding women through the healthcare system, linking them to resources, and facilitating interactions with other healthcare providers.[62] While developing strategies for engaging NMPs in health education or patient navigation initiatives in cervical screening, accessibility in terms of language, literacy and locations for health education delivery or navigation assistance should be carefully considered for target populations, particularly for underserved populations including those living in rural or remote areas. Our review identified several strategies that could address access barriers among underserved or marginalised populations such as employing outreach strategies, using culturally and linguistically adapted health educational materials, and involving bilingual CHWs.

This area of research is very active, given global investments in cervical cancer elimination, thus it is expected that the literature will continue to grow and evolve, including from several ongoing large-scale initiatives such as the ESTAMPA (EStudio multicéntrico de TAMizaje y triaje de cáncer de cuello uterino con pruebas del virus del PApiloma humano; Spanish acronym) study,[76] SUCCESS (Scale Up Cervical Cancer Elimination with Secondary prevention Strategy) project[77] and EPICC (Elimination Partnership in the Indo-Pacific for Cervical Cancer) initiative,[78] which are expected to yield further insights.

Strengths and limitations

Our scoping review includes a wide range of studies (both RCTs and non-RCTs) published between 2016 and 2024, enabling an extensive investigation of NMP-driven cervical screening activities and services in a recent time period in both HICs and LMICs.

Several limitations of our scoping review should be considered. First, the heterogeneity in the intervention and comparison groups across RCTs included in our review was substantial, with reported effects ranging from little to up to 42 times greater. This underscores the importance of local or contextual factors as the effect may be influenced by delivery models, health system contexts and the effectiveness of standard care. In several studies where the main intervention was self-sampling, the intervention effect likely relates more to self-sampling than to those who offered it. Additionally, given the very different self-collection delivery models (eg, clinic-based collection vs mail-out), it is difficult to disentangle the effect of the delivery model versus the NMP roles. Further studies are needed to understand the distinct role of the NMPs in the context of delivery model variations; however, these studies nevertheless show the strong positive impact of NMP-led interventions.

As is common in scoping reviews, we did not undertake a formal quality assessment of the studies included in our scoping review. We have not included any grey literature; hence, some relevant information may have been overlooked. Additionally, we restricted our scoping review to articles in English, which may have potentially resulted in missing some relevant articles. Finally, we may have missed some articles beyond our scoping review period; although we focused on the recent time period, in order to focus on activities that would be most relevant in the era of self-sampling.

CONCLUSIONS

NMPs play an important role in cervical screening, particularly in the context of self-sampling, and can increase access and equity in cervical screening. Our scoping review highlights various NMP-facilitated approaches to improve cervical screening participation, which could inform future policy, workforce planning and tailored approaches for communities with screening barriers. Careful planning around the management of screen-positive individuals is required to achieve the full health gains from NMP-facilitated approaches, taking into account the distinct roles of NMPs such as nurses or midwives who work clinically and CHWs who are less embedded in the health system.

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Contributors MN, MAS and KC conceptualised and designed the study. MN and MAS performed the scoping review, performed the data extraction and interpretation of the data. MN and MAS drafted the manuscript. MN, MAS, KC, DB, MS, CEN and CB contributed to the critical revision of the manuscript. All the authors read and approved the final manuscript. MN and MAS are responsible for the overall content as guarantor.

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Competing interests DB is the chair and CEN and MS are members of the National Cervical Screening Program Clinical Advisory Group of the Department of Health, Disability and Ageing, Australia. DB and KC are co-PIs on a major implementation program 'Elimination Partnership for Cervical Cancer in the Indo-Pacific' which receives support from the Australian government, the Minderoo Foundation and equipment donations from Cepheid Inc. MS is employed by the Australian Centre for the Prevention of Cervical Cancer (ACPCC), which has received equipment or supplies from Abbott, AusDiagnostics, Cepheid, Copan, Hologic, Microbiologics, MicroBix, NRL, Qiagen, Rovers, Roche, Seegene for research and validation studies. She is also a member of the Global Initiative Against HPV and Cervical Cancer Advisory Board, the Pacific Friends of Global Health Advisory Board, University of Melbourne. MAS, MN and KC receive contract funding through their work institution from the Department of Health, Disability and Ageing, Australia to monitor the safety of the National Cervical Screening Program. KC and MS are co-PIs of an investigator-initiated trial of HPV screening in Australia ('Compass'), which is conducted by the ACPCC, which has previously received equipment and a funding contribution for the Compass trial from the Australian government, Roche Molecular Systems USA and Micobix. KC is a chair or member of a number of government or meetings convened by the World Health Organization (WHO), or philanthropic organisations such as Bill and Melinda Gates Foundation (BMGF). She is also a chair of the Expert Advisory Group to the Elimination Response for Australian Government, and Cancer Screening and Immunization Committee of Cancer Council Australia.

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