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Mid-level health providers (MLHPs) in delivering and improving access to primary health care services – a narrative review

Vishal Chauhan [a], Neha Dumka [b], Erin Hannah [b,*], Tarannum Ahmed [b], Atul Kotwal [b]

[a] National Health Mission, Ministry of Health and Family Welfare, India
[b] National Health Systems Resource Centre, Ministry of Health and Family Welfare, India

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ABSTRACT

Background: For primary healthcare systems to bring care closer to the communities, the availability of appropriate human resources is crucial. The primary care workforce in the world is expanding to include non-physician health workers (NPHWs) to increase its capacity. Also, NPHWs as mid-level health providers (MLHPs) are currently being employed in high- and low-income countries to assist doctors and specialists to make up for the scarcity of health professionals. Given the wide prevalence in the deployment of NPHWs as mid-level health providers, this article collates recent evidence on the role of MLHPs in improving access to primary healthcare services, and their enablers and barriers in integrating them in primary care teams. The article also presents gaps in evidence and recommendations for the way forward.

Methods: A systematic search of contemporary literature published from January 2012 to September 2022 was undertaken using two bibliographic databases (PubMed and Cochrane) and hand searching the reference list of retrieved papers. Duplicates, papers older than ten years, and whose focus was not on primary healthcare were excluded. The papers finalised for appraisal were scrutinised for key themes and their summaries were collated for analysis. The papers comprised of twenty-four quantitative, twenty-three qualitative, and nine mixed approach study designs ($n = 56$) due to which a narrative approach was conducted as per guidelines.

Results: The review identified and presents the following themes - task shifting and its effectiveness in service delivery, quality of care, enablers and barriers of NPHWs in primary health care in both HIC and LMIC settings.

Conclusion: Task-shifting interventions need effective engagement and constant coordination with relevant stakeholders. For this, policymakers, public health researchers, healthcare professionals of all cadres and community members need to be involved across all stages of introduction and absorption of the cadre into the primary healthcare delivery system.

1. Introduction

There is a palpable global determination to ensure universal access to healthcare services for the people while navigating through dynamic health system demands. Access to necessary care through the provision of affordable, acceptable and high-quality health services is an important step to achieve universal health coverage [1]. Better access to care is linked to improved population health, particularly for vulnerable individuals and communities who often experience significant health disparities [2]. Therefore, to facilitate access and mitigate health inequities, health systems need adequate and competent health workforce. Given the role of primary healthcare systems in bringing care closer to the communities [3], the availability of appropriate human resources at the primary level is all the more crucial.

The demands faced by the primary healthcare systems across the world, though variable, often burden the existing health workforce. In high income countries (HIC), the number of medical graduates entering primary care specialties (e.g., family medicine, geriatrics, or general internal medicine) are declining while the number of patients and care demands are increasing substantially. This has led to relative shortfall of health workforce with respect to their healthcare demands [4]. Changes in health systems of countries also increase demands. This is especially evident in low and middle income countries (LMICs) who are undergoing an epidemiological transition from predominantly infectious

* Corresponding author.
E-mail addresses: js.policy-mohfw@gov.in (V. Chauhan), drnehadumka@gmail.com (N. Dumka), dr.erinhannah@gmail.com (E. Hannah), Tarannum.Ahmed@nhsrcindia.org (T. Ahmed), atul.kotwal@nhsrcindia.org (A. Kotwal).

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diseases, maternal and child health conditions, and nutritional disorders to chronic non-communicable diseases [5]. Responding to these challenges, the primary care workforce in the world is expanding to include non-physician health workers (NPHWs) such as nurse practitioners, registered nurses, physician associates/assistants and other clinical staff members to increase its capacity [4]. This is achieved through strategic capacity building to shift or to share tasks from physicians to other healthcare providers.

Though task shifting from doctors to NPHWs has raised concerns on patient safety/ quality of care and decreasing continuity of care, evidence supporting these concerns is lacking. Rather studies have shown that quality of care delivered by NPHWs like nurse practitioners for required functions are comparable to physicians after appropriate capacity building. Based on empirical evidence, NPHWs as mid-level health providers (MLHPs) are currently being employed in HIC & LMICs to assist doctors and specialists to make up for the scarcity of health professionals [6].

Over time, the notion of delegating tasks 'downward' to NPHWs has increasingly been replaced by efforts to form 'care teams' in primary care settings [6]. For instance, in Switzerland nearly 50% of group practices have included NPHWs, while in India, the mid-level health provider (MLHP), also known as the Community Health Officer (CHO) heads the primary care team at sub-health center level and serves as the key focal point for service organization and delivery [7,6].

Given the wide prevalence in deployment of NPHWs as MLHPs in healthcare as a Human Resources for Health (HRH) strategy, this article collates recent evidence on the role of their addition in improving access to primary healthcare services. The aim of this article is to understand the roles played by the NPHWs as MLHPs in delivering primary healthcare services, and their enablers and barriers in integrating them in primary care teams. The article will also present gaps in evidence and recommendations for the way forward.

2. Methods

The objective of the review was to understand the roles played by mid-level health providers, essentially non-physician cadres in improving access to primary healthcare services across the world. A systematic search of contemporary literature published from January 2012 to September 2022 was undertaken using two bibliographic databases (PubMed and Cochrane) and hand searching the reference list of retrieved papers. The keywords employed for the full text search strategy were "non physician", "mid-level", "NPHW", "MLHP", and "primary health" or "primary care." From the total results ($n = 327$), the short-listed literature ($n = 86$) was first screened as per the research objective by one author. By definition, MLHP is "a health provider who is trained, authorized and regulated to work autonomously, receives pre-service training at a higher education institution for at least 2-3 years and whose scope of practice includes (but is not restricted to) being able to diagnose, manage and treat illness, disease, and impairments (including performing surgery, where appropriately trained), prescribe medicines, as well as engage in preventive and promotive care." [8] Given the wide use of alternate or less-specific definitions, the review excluded papers on non-physician health workers who were not explicitly recognized or referred to as mid-level health providers, or did not align with the definition of MLHP (e.g., community health workers). In addition, the scope of the review was limited to contemporary evidence on the *MLHPs*' role in improving access to primary healthcare. Papers older than ten years, duplicates, and those that did not focus on primary healthcare were excluded. An updated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline by Page MJ et al. [9] was used to report the review process (Fig. 1). The authors were assigned articles to read the full text to reach consensus on the papers suitable for appraisal. The papers finalised for appraisal were scrutinised for key themes and their summaries were collated for analysis.

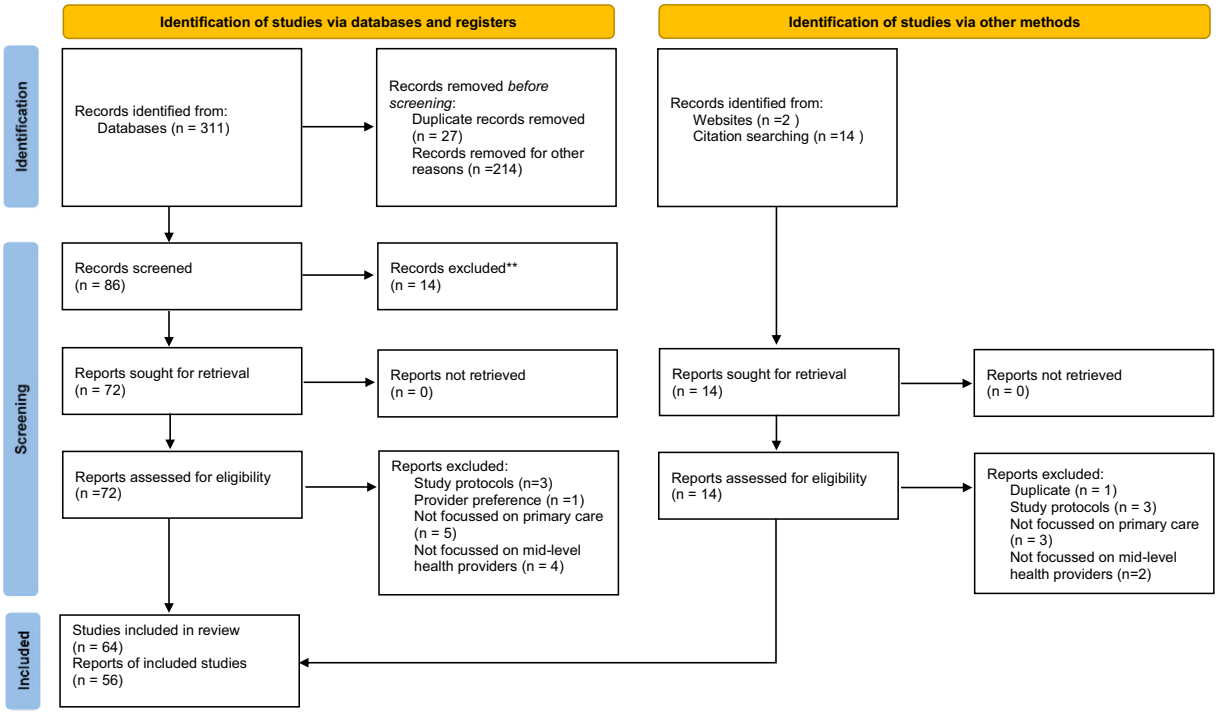

Fig. 1. PRISMA 2020 Flow diagram.
Source: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: https://doi.org/10.1136/bmj.n71. Available at: http://www.prisma-statement.org/

3. Data abstraction and synthesis

The papers comprised of twenty-four quantitative, twenty-three qualitative, and nine mixed approach study designs which challenged pooling of research results. Hence, a narrative approach was conducted as per guidelines [10]. Due to the heterogenous findings of the included articles, a comparative analysis between countries could not be conducted. The authors undertook full text review of the studies finalized for appraisal and identified themes relevant to the research objective. The themes were discussed and were categorized and sub-categorized upon consensus for synthesis and presentation.

4. Findings

Sixty-four studies were included in the review, out of which eight reports were identified as duplicates. After omission of duplicate reports, fifty-six reports were analyzed. Twenty-four reports focus on low- and middle-income countries, twenty-four on high income countries and eight includes both. Five broad themes that emerged from the analysis are discussed below.

4.1. Rationale for non-physician health workers in primary health care team

Globally, primary care systems are facing the issue of decreasing medical workforce in tandem with an increasing disease burden. Specifically, the number of medical graduates with primary care specialties is decreasing in several countries [4]. Epidemiological transitions lead to an increase in care demands which necessitate changes in the health systems. In response to these challenges, the diversity of the primary care workforce is evolving to include NPHWs such as nurse practitioners, registered nurses, and other clinical staff members [4]. In LMICs, where access to and availability of physicians continue to be an issue, utilising the available NPHWs is a logical step for the management of common non-communicable diseases that are increasingly contributing to the global disease burden [4].

4.2. Task shifting and its effectiveness in service delivery

The rational movement of primary care duties from physicians to NPHWs is defined as task shifting [11]. Evidence suggests continuous educational training and feedback; bridging hospital care to home; providing explicit training tools including medication/treatment algorithms; and medical technology as some common task-shifting enablers [12]. On the other hand, some identified barriers include the lack of policy on the ability to prescribe medications; lack of a referral system for complicated cases; lack of an organizational structure; the lack of competence of the NPHWs in their ability to manage certain conditions; and lack of infrastructure for data collection and monitoring [12].

As several LMICs are burdened with chronic diseases which are compounded due to limited resources, task-shifting strategies are applicable and feasible to a great extent [12]. Previous studies that have compared NPHW performance in the delivery of primary care, to that of higher-level healthcare cadres found varied results [13–16]. Two systematic reviews (SR) comparing the effectiveness of care provided by NPHWs for patients with NCDs in primary and secondary healthcare settings showed that care provided by NPHWs was comparable to that provided by physicians for various health outcomes, health-related quality of life, and access to care. Similarly, in Bhutan, Package of Essential Non-communicable diseases interventions implemented through NPHWs showed high proportion of patients who were followed up [14]. Another systematic review on effectiveness of task-sharing interventions for managing blood pressure in LMICs by nurses, dietitians, pharmacists, and community health workers established an overall reduction in blood pressure levels [12]. In terms of communicable and infectious diseases, a study suggested that task-shifting strategies led to improved efficiency in delivery of healthcare services, improved quality of care, enhanced access to care, better team dynamics and health outcomes for patients with HIV/AIDS [12].

Considering maternal and child health and other reproductive services, a systematic review compared the effectiveness of delivery of care provided by NPHWs to that provided by mental health specialists in women with perinatal depression [6]. It was found that NPHWs could effectively deliver psychological interventions for perinatal depression in low-resource settings, specially where specialist services are both limited and expensive [6]. However, the review did not examine other relevant outcomes such as access, quality, and mortality.

Studies that compared the effectiveness of care provided by NPHWs (midwives and auxiliary nurse midwives) with doctors identified no significant difference in rates for performing c-section, postpartum haemorrhage, and preterm births [17]. Although there was no significant difference in the likelihood of an incomplete abortion between the groups, the likelihood of a complication during or an adverse event after manual vacuum aspiration was significantly greater with care provided by auxiliary nurse midwives [17].

Regarding screening, a SR suggested that trained NPHWs can successfully screen individuals in the community for various NCDs such as asthma, cancer, cardiovascular disease, diabetes, depression, epilepsy, and hypertension [18]. For effective screening, combining professional with patient-oriented strategies and involving primary health care staff besides physicians led to increased activity [18]. To increase screening behaviour, involving nurses and other mid-level professionals is more effective than focusing only on physicians delivering the screening, which is in line with other studies in PHC [18]. In terms of prescribing, several studies have reported that there is acceptability of NPHWs prescribing [19–22]. Given that prescription is a necessary part of patient-centric care, studies have shown that prescription by non-physicians helped in timeliness of care and cost saving [22].

4.3. Quality of care

Studies that have measured patient satisfaction with the provision of primary care have found that patients who received care from NPHWs were equally or more satisfied than those who received care from physicians [23–26]. In Chhattisgarh India, patients of Medical Officers and NPHWs reported similar levels of satisfaction, trust, and perceived quality, with scores of 84% for Medical Officers, 80% for AYUSH Medical Officers, and 85% for RMAs [27]. While there were no significant differences in these outcomes between these groups, scores for paramedical staff were significantly lower, at 73% [27]. From a patient's perspective, this supports the use and scale up of NPHWs in primary care settings in India [27].

4.4. Enablers for NPHWs in primary health care

Enablers for task-shifting in primary health care include health system factors such as training of NPHWs, provision of algorithms, protocols and guidelines for screening, treatment, and drug titration, and availability of medicines [22]. These were factors that were determined to aid in the success of the task-shifting intervention. Several studies had a task-sharing model where physicians were available for complicated cases, for confirming the diagnosis and initiating treatment for diseases such breast and cervical cancers and cardiovascular diseases, and monitoring the management for conditions such as epilepsy [22]. In India, while earlier attempts to promote NPHWs were stand alone in nature, the Community Health Officers (CHOs) were part of the comprehensively designed mechanism of Health and Wellness Centres. This suggests that system-wide amendments, like introduction of Health and Wellness Centres may be necessary for such cadres to get established. Another factor that seems to have facilitated the fast roll-out of CHO cadre is the availability of adequate nurses. Earlier studies have shown that continuous training is necessary and effective in improving

clinical performance of non-physician cadres in PHC [28].

In Canada, integrating care for physical health and behavioural health (mental health and addictions) has been a longstanding challenge, although research supports the clinical and cost effectiveness of integrated care for many clients [29]. In one such model, primary care physicians work with specialist physicians and non-physician providers to provide mental health and addictions care in Primary Care settings in Ontario, Canada demonstrating improved health outcomes. Similarly, in Germany, physicians and physicians' assistants reported the cooperative action to be successful and an advantage for patients [4]. The precondition for successful cooperation is that NPHWs strictly respect the governance of the General Practitioners. Physicians report that the delegation of certain medical tasks reduces their everyday workload. Physician assistants derive professional satisfaction from the confidential relationship they have with the patients. All physician assistants are in favour of medical tasks being delegated to them in regular medical outpatient care [4]. Moreover, involving Healthcare Assistants in primary care in Germany is associated with a reduction in hospital admissions, specialist consultations and medication costs. Broadening qualifications may be a successful strategy not only to share physicians' workload but to improve quality and efficacy in primary care to meet future challenges. Future studies may explore specific tasks to be shared with non-physician workforces and standardisation of the professional role [30].

In the United States, clinics with more non-physician clinicians were associated with better access for Medicaid patients and lower prices for office visits; however, these relationships were only found in states granting full practice autonomy to these providers [4]. The findings suggest that substituting more non-physician labour in primary care settings may facilitate greater appointment availability for Medicaid patients, but this likely rests on a favourable policy environment. Relaxing regulations for non-physicians may be an important initiative as US health reforms continue and are relevant to other countries coping with greater demands for medical care and related financial strain [31].

Previous studies also revealed that better integration with PHC services also improves NPHW competency. Community-based services are most effective when well-integrated through functional referral systems and supportive supervision arrangements and have a reliable supply of medicines. Many studies point to the importance of community engagement in improving service demand [32]. Few studies adopted a 'systems' lens or adequately considered long-term costs or implementation challenges. Five suggestive areas where more practical knowledge and guidance is needed to support PHC systems strengthening are: NPHW workforce development; integrating non-communicable disease prevention and control into the basic package of care; building managerial capacity; institutionalising community engagement; and modernising PHC information systems [32].

In Switzerland, while nearly 50% of group practices have included NPHWs, only 25% of practices integrate these professionals with advanced roles. Compared with other countries, there would appear to be significant scope to extent and broaden the uptake of NPHWs in primary care in Switzerland [7]. Therefore, clear policy direction along with supporting regulation and financing arrangements are required for facilitation [7].

4.5. Barriers for NPHWs in service delivery

Current regulations and reimbursement schemes create challenges in role expansion of NPHWs in many countries [22]. Particularly, fee-for-service policies have the potential to hinder role expansion of NPHWs if reimbursement is limited to services provided by physicians only and not to NPHWs. Capitation-based reimbursement schemes deliver an opportunity to offer non-billable services like health counselling and role expansion of healthcare assistants and other healthcare professionals. In several countries, the number of physicians offering primary care services exceeds the number of NPHWs [22]. Also, as the degree of complexity of medical tasks decreases, so does the remuneration of healthcare workers. The number of highly trained NPHWs like nurse practitioners or physician assistants employed in primary care settings is generally low [27].

Although MLHPs are an essential cadre of health systems, their role is sometimes not clearly defined which leads to potential conflict among other service providers. As such, it is recommended that their roles are refined with utmost clarity which will establish them as professionals adept in providing primary care in the health system [33]. For instance, the permissible scope of practice of the nurse practitioners in the US determines their ability to compensate for shortages in the primary healthcare system.

In Sri Lanka, the use of NPHWs has played an important role in rural healthcare through adequate staffing of public health facilities, plausibly contributing to its improved health outcomes [24]. In 1995, the NPHW on-job training was discontinued due a narrative that the quality of care provided by them, particularly the Assistant Medical Officers was substandard as compared to that of the physicians [24]. Regardless, the cause of their attrition was also contributed to the government's increasing dependence on physicians to provide primary healthcare, including to those in medically underserved and peripheral areas [24].

Another SR on task shifting for cardiovascular risk factor management in 10 countries highlighted the health system related barriers such as unavailability and unaffordability of medications, inability of NPHWs to prescribe evidence-based medications and high workload of the NPHWs [34]. While varying confidence, capacity and skill sets of NPHWs differentially impacted the provision of standardised training, other challenges included vacancies in government sponsored NPHW positions and high staff turnover. Lack of prioritization of deliverables by NPHWs attributed to high workload was further exacerbated by the lack of remuneration for the new tasks allotted and transition of trained nurses to new roles and locations of employment [34].

Evidence has also suggested other significant barriers like power relationships among various healthcare professions due to established hierarchies, rigid boundaries, shortages of drug supply and medical equipment, and restriction on prescribing [28]. These challenges also impose a problem with staff retention [18].

Additionally, violence against healthcare providers, including NPHWs is commonplace worldwide [35,36]. In Iran, healthcare professionals are 16 times more likely to witness workplace violence than other professionals [37]. Similar evidence has also been reported from Australia, UK, and Germany [38–40]. A study conducted in India attributed the community resistance and non-compliance to media misinformation, health budget constraints and low-quality healthcare while establishing that MLHPs are more vulnerable to such violence [41]. To overcome workplace violence, a law has also been passed by the Indian government to prevent it [42]. Furthermore, we need to comprehend community engagement and make systematic changes in varying contexts [43].

5. Conclusions and the way forward

To gain insight into the influences related to the NPHWs, policymakers and researchers need to focus on understanding the perspectives of the supervisors in designing and developing sustainable national level policies and implementation [28]. In addition, supervisors should be allotted with greater managerial responsibilities that will encourage their participation, thus increasing their accountability, which would also attribute towards decision making at the management level [28]. By taking these actions, supervisors may be able to make better decisions and foster better working relationships as well as build their managerial abilities. All these initiatives may have a beneficial effect on supervisor incentives. Their perspectives may help shape policy and programmes to increase NPHW retention as well as the sustainability of NPHW programmes [28]. Regardless, as there are variations throughout the research, it seems crucial to consider local context when creating MLHP

programmes [21].

Moreover, at the health system level, it is crucial to establish clear roles with detailed job descriptions and adequate remuneration for the tasks performed for each NPHW in the health facilities. Additionally, it was suggested in a recent policy brief for India to give nurses more prescription rights [27]. It is, therefore, significant that the National Health Mission in India has recently launched in-service capacity building programmes for the CHOs [27]. Standard treatment protocols are also being developed to help non-physician cadres deliver higher-quality care [27]. The creation of more specific protocols for NCD management in facilities, particularly Health and Wellness Centres, has been specifically advised. Additionally, Chhattisgarh has created standardised treatment procedures for CHOs to adopt, and these serve as a crucial tool for enhancing clinical competence [27].

In some countries NPHWs have increased workload and with additional roles and responsibilities, their productivity may be compromised which may potentially impact the quality of their healthcare services [34]. Having well-structured capacity building initiatives, training curriculum with evaluation, on the job training, refresher trainings, both formal and informal mentorship, supportive supervision and well-defined monitoring and evaluation mechanisms would improve competencies and attribute towards favourable health outcomes worldwide [34]. The evaluation of CHOs (MLHPs) in India underlined the necessity of giving them more training to enable them to effectively manage a wider spectrum of ailments. The study has also shown how the monitoring design needs to be further refined to incorporate a larger variety of illnesses [27]. Attractive incentive packages, both monetary and non-monetary can potentially motivate and retain NPHWs and will need to be redefined based on evidence-based research and implemented successfully, thus also enabling career progression.

In conclusion, task-shifting interventions need effective engagement and constant coordination with relevant stakeholders. For this, policy-makers, public health researchers, healthcare professionals of all cadres and community members need to be involved across all stages of introduction and absorption of the cadre into the primary healthcare delivery system.

Disclaimers

None

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Ethical issues

NA.

Authors' contributions

VC, AK and ND conceptualized, designed and defined the intellectual content of the study. EH and TA contributed in literature search and data acquisition. EH, TA and ND contributed in manuscript preparation, editing and review. VC, AK and ND critically reviewed and finalized the paper. The manuscript has been read and approved by all authors.

Declaration of Competing Interest

There are no conflict of interests. Except the first author, the rest are affiliated with NHSRC, New Delhi which is a technical support unit for the National Health Mission- Ministry of Health and Family Welfare, Government of India. The first author serves as the Joint Secretary (Policy) to the National Health Mission, MoHFW, GoI.

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