

Leveraging role of non-physician health workers in prevention and control of non-communicable diseases in India: Enablers and challenges

Mamta Nebhinani¹, Sushma K. Saini²

¹College of Nursing, All India Institute of Medical Sciences Jodhpur, Rajasthan, ²National Institute of Nursing Education, PGIMER, Chandigarh, India

ABSTRACT

Due to upsurge of non-communicable disease (NCD) burden, there is accentuated emphasis on task sharing and shifting NCDs-related health care delivery to non-physician healthcare workers especially nursing personnel and grass root level health professionals. This narrative review summates role of non-physician health workers, highlights various enablers and challenges while engaging them in delivery of NCD services so as to prevent and control various NCDs in India. Pubmed, Google scholar databases were searched using various keywords and Mesh terminologies. In addition, reference lists of selected articles were also screened. It is concluded that with regular update of knowledge, training, and supervision, these workers can efficiently deliver promotive, preventive, curative, and rehabilitative NCD-related healthcare services to needy. While engagement of this workforce in NCDs mitigation is a transforming concept, it also has its own challenges and issues which need to be explored and addressed in order to utilize this human resource to their maximum potential.

Keywords: Challenges, enablers, multipurpose health workers, noncommunicable diseases, non-physician health care worker, nursing personnel, task shifting

Introduction

Non-communicable diseases (NCDs) are at surge in every part of the world. According to the World Health Organization cardiovascular diseases (CVDs), diabetes and cancers are the leading and forefront cause of mortality contributing to 70% of deaths worldwide. No longer diseases of the “predominantly affluent strata of society,” NCD prevalence and mortality have

increased in every socioeconomic stratum and in most parts of WHO South-East Asia Region. Cardiovascular diseases alone accounted for nearly half of all NCD deaths followed by cancers and diabetes. Apart from these major NCDs, mental health disorders are also attributing to overall load of NCDs.^[1-4]

In India more than 20% population has at least one chronic disease and NCDs contribute to around 60% of all deaths. These alarming statistics places a double burden on health system in country which is already strained by infectious diseases and malnutrition. Halting and reducing the burden of NCDs require significant investment across all health system components, particularly at the primary health care level. More resources are needed to be trained and utilized to lower down the burden of

Address for correspondence: Mamta Nebhinani, College of Nursing, AIIMS, Basni Phase II, Jodhpur - 342 005, Rajasthan, India.
E-mail: mamta_rajput45@yahoo.co.in

Received: 24-07-2020

Revised: 17-09-2020

Accepted: 12-10-2020

Published: 27-02-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1516_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Nebhinani M, Saini SK. Leveraging role of non-physician health workers in prevention and control of non-communicable diseases in India: Enablers and challenges. J Family Med Prim Care 2021;10:595-600.

NCDs. The current crunch of health professionals at every level makes this task extremely challenging. World Health Organization is predicting a potential shortage of 18 million health workers by 2030, as the global burden of NCDs is being estimated to increase by 17% in next 5 years. There is urgent need to find cost-effective ways to get health care to every single individual. The best possible solution to current scenario is the engagement of non-physician health personnel to deliver basic NCD-related health care services.^[1,2,5,6]

The increasing toll of cases due to chronic ailments jeopardize the already overloaded public healthcare system, which require reorientation. Considering an important public health concern, the researchers undertook this review with an aim to highlight the various enablers and challenges while engaging non physician health workers (NPHWs) in delivery of NCD services.

Methods

This narrative review summarizes role of NPHWs in prevention and control of various NCDs in India. We browsed Pubmed, Google scholar databases using keyword “Female health worker,” “Community Health Worker,” “Non-physician health worker,” “Nurses,” “Non-communicable diseases,” “India,” “Task sharing,” “Task shifting,” “Challenges,” and “Enablers.” Reference lists of all the selected articles were screened to find other relevant researches. Research studies with quantitative/qualitative research approach, evidence-based, full text, written in English language, published during last 06 years and focused on India were included. A total of 66 relevant articles were retrieved from databases. Out of these 66 articles, 27 duplicate articles were excluded and rest 39 articles were screened. After further review, 10 more articles were excluded because of non-availability of full text and few of them were conference proceedings. 29 articles were included in the final results of the review. All these articles were thoroughly read and evaluated. The narrative review is being arranged under broad themes of engaging NPHWs in NCDs prevention and control, reasons to involve NPHWs in NCD prevention and control (enablers), roles and responsibilities and challenges being faced in the whole process.

Results

Engaging Non-physician health worker in NCDs prevention and control: Task sharing and shifting

NCDs have become the major contributor of loss of life and disability across the globe. The staggering health effects of number of NCDs put detrimental burden on the health system. The continual crunch of human resource for healthcare delivery especially at the grass root level further worsens the situation. India faces shortage of nearly 600,000 physicians and 2 million trained nurses. As per National Health Profile 2019 report, there is substantial disparity in workforce distribution at rural and remote regions.^[7] In this context, there is a need to develop an alternative human resource that is structured around the current NCD-related health care needs of the community. Due

to upsurge of cases of NCDs, there is deliberated international interest in mobilization of NPHWs toward control of NCDs. Boosting the role of nurses, female health workers, ASHA workers, community health workers, etc., could save 2.5 million lives or more per year.^[8] A systematic review conducted by Joshi R and researchers on task-shifting responsibilities related NCD management in developing countries reported that the tasks performed by NPHW evidently lead to better health outcomes.^[9] NCD-related primary health care services can be effectively delivered by this workforce especially in understaffed and resource strained regions. Various health concerns such as hypertension, diabetes, various cancers, mental health issues can be effectively mitigated at the level of these worker.^[10-13] Sankaran S, *et al.* implemented a community health worker long-term care intervention to hypertensive people in one of the remote region of South India. Results revealed that one of an excellent opportunity to bring system wide change in hypertension-related burden of disease is the involvement and training of CHWs in the area of screening and management of chronic hypertension. It also led to increased referrals of people with raised blood pressure to higher health care facilities for secondary and tertiary prevention.^[14]

A quasi-experimental study conducted by Kavita *et al.* with a view to assess effect of CVD risk assessment and communication by nurses showed that nurse led intervention is an excellent tool in risk modification and improving compliance among general population for primary and secondary prevention of CVDs respectively.^[15] Jeet G, *et al.* summated existing evidence on involvement of NPHWs in NCD management which established that NCD related primary prevention interventions particularly for hypertension, diabetes control and associated risk factors can be potentially delivered by community health workers and lead to positive long-term health outcomes.^[16]

Results of one of the multi-centric qualitative study investigating acceptability and feasibility of task-sharing mental health care services in LMICs support involvement of primary care service providers in delivery of appropriate and acceptable mental health care in LMICs.^[17]

Why to involve NPHWs in NCD prevention and control: The enablers

Task sharing is a very well-known concept being utilized for delivery of healthcare since long. It is an important policy action that could meaningfully transform and fill the void in primary care healthcare provision. Various health conditions such as malaria, HIV, tuberculosis (TB), maternal and child health problems have been managed through task sharing. The involvement of NPHWs in these programs at national level is well evident and documented. On the same lines, WHO and other International and national health agencies have advocated involvement of these workers in management of various NCDs so as to ensure access to essential health services.^[18,9] In response to the NCD burden, National Programme for Prevention and Control of Cancer,

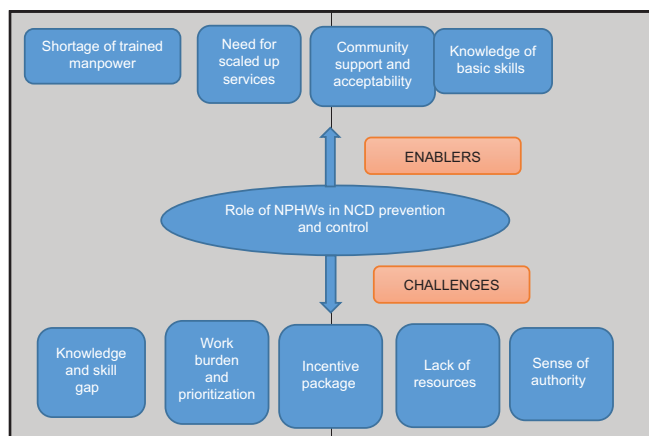


Figure 1: Enablers and challenges in leveraging role of Non physician health worker in prevention and control of Non communicable diseases in India

Diabetes, Cardiovascular Disease and Stroke (NPCDCS) was launched by Indian Government which directs at integration of NCD interventions at primary level through active involvement of NPHWs such as nurses, auxiliary nurse midwife, male health worker, ASHA workers, and community health workers.^[5] These workers are the frontline healthcare providers who are primarily responsible for providing healthcare services to needy. Being in the proximity of general population, these health workers are hearty welcomed and accepted by the people and are uniquely qualified as connectors to community which is an excellent advantage. These workers are recruited from the community served, are accustomed to local traditions, language and have cultural relevancy.^[9] Charanthimath U, *et al.* conducted a study to assess task sharing responsibilities related to hypertension care in pregnancy to community health workers in Karnataka. Results revealed that these workers had strong community support and acceptability by community people. These workers have potential to facilitate early diagnosis and also assist in emergency care.^[18] Basu P, *et al.* in their pilot project on home-based screening for the common NCDs by a designated community health worker in a rural area in India showed that provision of home based NCD screening services by skilled CHWs is very much feasible and is well-accepted by local population.^[19]

As health providers, these professionals have community connectedness and are well positioned. They have will, knowledge, and skills to support health promotion and prevention efforts which can be utilized to combat NCDs risk [Figure 1]. A pilot study on assessment of knowledge, skills of female health workers regarding NCDs risk reduction in an Indian community setting of western Rajasthan revealed that FHWs working at different health centres had average to good knowledge regarding HTN/diabetes and mental health problems. These workers were adequately skilled to measure BP and RBS.^[20]

With proper training, guidance, and logistic support, these workers can actively participate in the screening, detection, and treatment of hypertension, diabetes, and other priority chronic ailments. The potential benefits of such integration

are significant: It can allow for more efficient client driven care through improved coordination and better use of resources. Additionally, the repeated visits and interactions made by these workers builds trust and confidence among people which ensures more effective health services and enables a wider range of conditions to be addressed, bring behavior change through IEC activities. A cluster randomized controlled trial being conducted by Gamage *et al.* among hypertensive people in three rural regions of Southern India revealed that trained CHWs led group-based health education and monitoring interventions significantly improve control of blood pressure. Continuous monitoring, health education, and awareness activities by these workers helped individuals to control their BP.^[21] One of the cluster-randomized controlled study conducted by Shastri SS *et al.* evaluated effectiveness of visual inspection with acetic acid (VIA) carried by primary care personnel in Mumbai, India which revealed that primary health workers involvement in VIA significantly lowered down cervical cancer morbidity and mortality through health education and information dissemination.^[22] Sharma K.K. and researchers also reported effectiveness of enhanced awareness and dissemination of knowledge by NPHWs among coronary patients on improvement of lifestyle parameters, drug adherence, and compliance behavior.^[13] Apart from all these, the rational redistribution of NCD tasks to these workers lower down the existing work strain on physicians especially at primary care level. Expansion and redefining roles of NPHWs free physicians to use their time and expertise for people with more complicated diseases.^[9,12]

Role and responsibilities of NPHWs in prevention and management of NCDs

With view to mitigate non-communicable health problems, these health workers perform wide range of functions. Point of care delivery may vary from home to tertiary care centre [Figure 2].^[23] These workers play multidimensional roles in the care of various NCDs ranging from screening, health awareness, advisors, guidance, and rehabilitation workers to group facilitators.^[24-26] National health policy, 12th Five year Plan (2012–2017) and National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke also laid out roles of non-physician health workers in health promotion, opportunistic screening, follow-up, identification of common cancers, referral and follow-up in the context of prevention and control of NCDs.^[27-28] One of the community-based stroke mortality reduction trial being conducted by Kalkonde Y, *et al.* in North India have highlighted role of community health workers in the effective management of stroke through community-based preventive intervention. Proper training and guidance further helped these workers to assume their role as a “health facilitators,” “health advertising agent,” or “health role model.”^[29]

Clearly, these health workers can help overcome barriers to control chronic diseases. Through literature and available evidence, varied core roles have been identified. Nurses, multipurpose health workers, FHWs, ASHA workers, etc., engage actively and perform

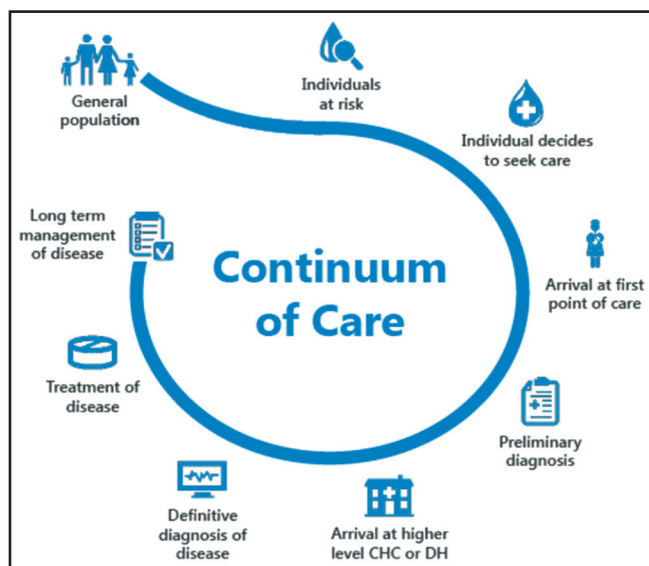


Figure 2: Scope and point of NCD care delivery by different cadre of Non physician health worker (Source Intra health International 2016)

wide range of promotive, preventive, curative, and rehabilitative functions especially in rural and remote areas to make up for the gaps in the health care delivery. They bridge communities to healthcare system, bring behavior change in the community through provision of cultural congruent and accessible health education and information, carry individual and mass awareness campaigns, carry out screening programs, provide lifestyle counselling, referring those at risk and suspected cases to higher health facilities and providing outreach to individuals in the community setting. These health workers also provide follow-up monitoring and care so as to maintain continuity of care especially at home. Building individual and community capacity in the field of NCDs is also one of the major roles being played by these health workforces.^[9,30-31]

Challenges

The whole concept of mobilization of human health resource represents a radical shift from traditional delivery models. Task sharing and task shifting delivery of NCD care to NPHWs is not an easy process. Although effective and useful in combating increasing burden of various NCDs across the country, the phenomenal concept has its own challenges to overcome. The NPHWs cadre in India consist of varied health care workers such as nursing personnel, FHW, MPH, ASHA, community health workers, etc. All these workers had different assigned responsibilities and priorities. These workers in the routine day to day health care provision are already physically and psychologically burdened with delivery of number of national health programs and schemes. The varying training, capacity, and skill sets put a challenge to bring all of them under one umbrella. The gap between theory and practice is wide enough and hamper the performance of these workers.^[5] Chauhan G and Thakur JS determined to assess capacity of health workers' in NCDs prevention and control at Haroli health block of

Una, Himachal Pradesh, India. The study observed a huge gap between knowledge and skills. Health workers were evidently lacking in the capacities for the NCDs mitigation.^[32] One of the survey conducted among 15 secondary care hospitals in Delhi highlighted major gap in knowledge and self-rated competencies of nurses relevant to cancer and stroke management.^[33] Various other studies conducted by Patel S, *et al.* and Gupta A across different regions of country revealed evident gap between NCD related knowledge and skills among ASHA and FHWs.^[34,35]

Insufficient authority of NPHWs to assume NCD curative services, inability to prescribe evidence-based medications, prescribing test, etc., are roadblock in the success of task shifting model.^[36,37] Charanthimath U, *et al.* observed that the most important challenge in the process for relocating hypertensive care services in pregnancy to community health workers were apprehension regarding insufficient training, poor availability of medications, and ability of community health workers to correctly diagnose and intervene.^[18] Moola S and researchers synthesised evidence on involvement of midlevel health providers for primary care in India which revealed that major hurdles in the process of involvement of these primary care workers in NCD and mental health services are inequitable distribution of health workforce, lack of incentives, and poor career progression opportunities.^[38] A qualitative analysis to explore barriers in involvement of nurses in CVD risk assessment revealed poor infrastructural support, lack of appraisal system, and shortage of time as major concerns.^[39] Many other research studies highlighted role conflict, staff turnover, and poor motivation as major challenges. All these issues are further aggravated by the poor remuneration, appreciation for NPHWs for task assigned related to newer NCDs [Figure 1].^[12]

Through investing in involvement of NPHWs in provision of NCD health care delivery, the ever rising burden of major NCDs can be reduced to major extent. A promising solution to address scarcity of human resource, incorporating these health professionals help to improve lives of population across the nation.

Summary and Conclusion

- This narrative review draws up a holistic picture of role of non-physician health workers in prevention and control of various NCDs in India. The alarming statistics of different NCDs at state and national level ask for cost-effective solutions. Active participation of nurses, auxiliary nurse midwife/Female health workers, ASHA workers, Community Health workers, etc., in the NCD care delivery is the best viable solution to address the current situation. Community connectedness, acceptance by the local people and knowledge of community health practices enable roles of these professionals in NCD mitigation at various health care delivery levels.
- While these workers have detrimental role to play in health promotion, prevention, reduction of morbidity and mortality

caused by NCDs, ensuring that there is an adequate number of skilled health workforce who is well-trained, motivated, and actively involved is a biggest challenge. It is vital to address these factors by policy makers and other stakeholders so as to develop comprehensive and integrated public health strategies for effectively using these health workers in the grass-root NCD prevention and control program implementations.

Ethical clearance

Being a review this research did not require ethical approval. This narrative review did not need informed consent as human subjects were not involved. Review is based upon library research. References and quotations were written as per the journal guidelines.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- World Health Organization [Internet]. Geneva. Global status report on Noncommunicable diseases; 2014 [cited 2019 May 22]. Available from: <http://www.who.int/nmh/publications/ncd-status-report-2014/en/>.
- World Health Organization [Internet]. Geneva 2018. World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2018. [Cited 2020 Jun 24]. Available from: <https://www.who.int/nmh/publications/ncd-profiles-2018/en/>.
- World Health Organization, Non-communicable Diseases Progress Monitor 2015. [Cited 2020 Feb 02]. Available from: http://apps.who.int/iris/bitstream/10665/184688/1/9789241509459_eng.pdf?ua=1.
- Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur (India): Banarasidas Bhanot Publishers; 2015.
- Ministry of Health and Family welfare, Government of India [Internet]. NPCDCS: Operational guidelines, Directorate General of Health Services Ministry of Health and Family welfare Government of India [cited 2020 Feb 15]. Available from: <http://health.bih.nic.in/Docs/Guidelines/Guidelines-NPCDCS.pdf>.
- Joshi R, Thrift AG, Smith C, Praveen D, Vedanthan R, Gyamfi J, *et al*. Task-shifting for cardiovascular risk factor management: Lessons from the Global alliance for chronic diseases. *BMJ Glob Health* 2018;3:e001092.
- Decoding the shortage of doctors in India [internet]. [cited 2020 Sep 19]. Available from: <https://www.ha-asia.com/decoding-the-shortage-of-doctors-in-india/>.
- Gupta K, Malik M, Baig VN. Need of a new frontline health functionary dedicated to non-communicable diseases in India. *Int J HealthCare Edu Med Inform* 2017;4:20-3.
- Joshi R, Alim M, Kengne AP, Jan S, Maulik PK, Peiris D, *et al*. Task shifting for non-communicable disease management in low and middle income countries--A systematic review. *PLoS One* 2014;9:e103754.
- Leena KC, Shakuntala BS. Non communicable disease (NCDs) control activities by Female health workers (FHWs) and availability of related facilities at selected sub centres of DK District, Karnataka, India. *Int. J. Health Sci Res* 2014; 4:167-73.
- Jain M, Pandian J, Samuel C, Singh S, Kamra D, Kate M, te M. Multicomponent short-term training of ASHAs for stroke risk factor management in Rural India. *J Neurosci Rural Pract* 2019;10:592-8.
- Mishra SR, Neupane D, Preen D, Kallestrup P, Perry HB. Mitigation of non-communicable diseases in developing countries with community health workers. *Global Health* 2015;11:43.
- Sharma KK, Gupta R, Mathur M, Natani V, Lodha S, Roy S, *et al*. Non-physician health workers for improving adherence to medications and healthy lifestyle following acute coronary syndrome: 24-month follow-up study. *Indian Heart J* 2016;68:832-40.
- Sankaran S, Ravi PS, Wu YE, Shanabogue S, Ashok S, Agnew K, *et al*. An NGO-implemented community-clinic health worker approach to providing long-term care for hypertension in a remote region of southern India. *Glob Health Sci Pract* 2017;5:668-77.
- Kavita, Thakur JS, Vijayvergiya R, Ghai S. Task shifting of cardiovascular risk assessment and communication by nurses for primary and secondary prevention of cardiovascular diseases in a tertiary health care setting of Northern India. *BMC Health Serv Res* 2020;20:10.
- Jeet G, Thakur JS, Prinja S, Singh M. Community health workers for non-communicable diseases prevention and control in developing countries: Evidence and implications. *PLoS One* 2017;12:e0180640.
- Mendenhall E, Silva MJD, Hanlon C, Petersen I, Shidhaye R, Jordans M, *et al*. Acceptability and feasibility of using non-specialist health workers to deliver mental health care: Stakeholder perceptions from the PRIME district sites in Ethiopia, India, Nepal, South Africa, and Uganda. *Soc Sci Med* 2014;118:33-42.
- Charanthimath U, Vidler U, Katageri G, Ramadurg U, Karadiguddi C, Kavi A. The feasibility of task-sharing the identification, emergency treatment, and referral for women with pre-eclampsia by community health workers in India. *Reprod Health* 2018;15(Suppl 1):101.
- Basu P, Mahajan M, Patira N, Prasad S, Mogri S, Muwonge R, *et al*. A pilot study to evaluate home-based screening for the common non-communicable diseases by a dedicated cadre of community health workers in a rural setting in India. *BMC Public Health* 2019;19:14.
- Nebhinani M, Saini SK. Knowledge, skills of female health workers regarding selected non communicable diseases risk reduction and client satisfaction: A pilot study from western part of Rajasthan, India. *Int J Res Med Sci* 2020;8:2802-8.
- Gamage DG, Riddell MA, Joshi R, Thankappan KR, Chow CK, Oldenburg B, *et al*. Effectiveness of a scalable group-based education and monitoring program, delivered by health workers, to improve control of hypertension in rural India: A cluster randomised controlled trial. *PLoS Med* 2020;17:e1002997.
- Shastri SS, Mittra I, Mishra GA, Gupta S, Dikshit R, Singh S, *et al*. Effect of VIA screening by primary health workers: Randomized controlled study in Mumbai, India. *J Natl*

- Cancer Inst 2014;106:dju009.
23. The case for frontline health workers in addressing non-communicable diseases globally 2016 [cited 2020 Jun 25]. Available from: <https://www.intrahealth.org/sites/ihweb/files/files/media/the-case-for-frontline-health-workers-in-addressing-non-communicable-diseases-globally/NCDBrief.pdf>.
 24. Menon J, Joseph J, Thachil A, Attacheril TV, Banerjee A. Surveillance of non-communicable diseases by community health workers in Kerala: The epidemiology of non-communicable diseases in rural areas (ENDIRA) study. *Glob Heart* 2014;9:409-17.
 25. Kisokanth G, Prathapan S, Indrakumar J, Joseph J. Does nurse case management improve the health care outcomes of patients with Non-communicable diseases (NCDs)- A narrative review. *Int J Endocr Metab Disord* 2015;1. Doi: <http://dx.doi.org/10.16966/2380-548X.110>.
 26. Sharing and Shifting Tasks to Maintain Essential Healthcare during COVID-19 in Low Resource, non-US settings [Internet]. [cited 2020 Sep 2020]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/global-covid-19/task-sharing.html>.
 27. Twelfth Five Year Plan (2012-2017) Social Sector [Internet] [cited 2020 Feb 15]. Available from: https://niti.gov.in/planningcommission.gov.in/docs/plans/planrel/fiveyr/12th/pdf/12fyp_vol3.pdf.
 28. National Health Policy [Internet] [cited on 2020 Apr 08]. Available from: https://www.nhp.gov.in/nhpfiles/national_health_policy_2017.pdf.
 29. Kalkonde Y, Deshmukh M, Nila S, Jadhao S, Bang A. Effect of a community-based intervention for cardiovascular risk factor control on stroke mortality in rural Gadchiroli, India: Study protocol for a cluster randomised controlled trial. *Trials* 2019;20:764.
 30. Abdel-All M, Thrift AG, Riddell M, Thankappan KRT, Mini GK, Chow CK, *et al*. Evaluation of a training program of hypertension for Accredited social health activists (ASHA) in Rural India. *BMC Health Serv Res* 2018;18:320.
 31. Bansal S, Srinivasan K, Ekstrand ML. Perceptions of Asha workers in the Hope collaborative care mental health intervention in Rural South India: A qualitative analysis. <https://researchsquare.com/article/rs-33628/v1>. DOI: 10.21203/rs.3.rs-33628/v1.
 32. Chauhan G, Thakur JS. Assessing health workers' capacity for the prevention and control of noncommunicable diseases in Haroli health block of district Una in Himachal Pradesh, India: A mixed methods approach. *Int J Non-Commun Dis* 2016;1:26-9.
 33. Bavoria S, Nongkynrih B, Krishnan A. Health workforce availability and competency to manage noncommunicable diseases at secondary care level hospitals of Delhi. *Int J Non-Commun Dis* 2019;4:38-42.
 34. Patel S, Vyas S. Evaluation of training program about awareness of Gestational diabetes mellitus (GDM) among health care workers of Ahmedabad municipal corporation. *Natl J Community Med* 2018;9:114-9.
 35. Gupta A, Phatak A, Patel M, Das N, Vaghela N, Prakash H, *et al*. Effectiveness of a Community health worker (CHW) training in monitoring and care of patients with Chronic obstructive pulmonary disease (COPD) in rural Gujarat, India. *J Family Med Prim Care* 2020;9:1910-4.
 36. Jeemon P, Narayanan G, Kondal D, Kahol K, Bharadwaj A, Purty A, *et al*. Task shifting of frontline community health workers for cardiovascular risk reduction: Design and rationale of a cluster randomised controlled trial (DISHA study) in India. *BMC Public Health* 2016;16:264.
 37. Banerjee B, Khandelwal S, Nambiar L, Saxena M, Peck V, Moniruzzaman M, *et al*. Health system barriers and facilitators to medication adherence for the secondary prevention of cardiovascular disease: A systematic review. *Open Heart* 2016;3:e000438.
 38. Moola S, Bhaumik S, Nambiar D. Mid-level health providers (MLHPs) for primary healthcare. The George Institute for Global Health, India, 2019 [internet]. [Cited 2020 Sep 21]. Available from: https://www.georgeinstitute.org/sites/default/files/2020-02/res1_mlhp_supplement.pdf.
 39. Kavita K, Thakur JS, Vijayvergiya R, Ghai S. Nurses role in cardiovascular risk assessment and communication: Indian nurses perspective. *Int J Non-Commun Dis* 2020;5:4-10.