Original Article

Task shifting of cardiovascular disease risk assessment to Anganwadi Worker in Northern India

Unnas[1], Kavita[2], Jarnail S. Thakur[3], Sandhya Ghai[2], Sushma K. Saini[2]

[1]Nursing Officer, All India Institute of Medical Sciences, Raipur, [2]National Institute of Nursing Education, Post Graduate Institute of Medical Education and Research (PGIMER), [3]Department of Community Medicine and School of Public Health, PGIMER, Chandigarh, India

Abstract

Background: Cardiovascular diseases (CVDs) cause significant morbidity and mortality worldwide. Task shifting in various forms has been adopted extensively around the world in an effort to increase access to CVD risk assessment for early identification of high-risk individuals. Present study explored the feasibility of task shifting of CVD risk assessment by anganwadi workers (AWWs). **Method:** An operational study was carried out with the objective to develop the knowledge and skill of AWWs in CVD risk assessment. The study was carried out in the anganwadi centres of Northern India. A total of 40 AWWs were enrolled by using purposive sampling technique. They were trained in CVD risk assessment till they fully developed the skill. These trained AWW carried out CVD risk assessment among subjects aged ≥40 years. Cohen Kappa was used to determine the reliability of risk assessment by AWWs. Communication skills of AWWs were measured by using a standardized communication checklist. **Result:** Result revealed high interrater reliability of risk scores generated by AWWs and researcher (k = 0.91). Majority of the AWWs (87%) demonstrated good communication skills. **Conclusion:** Study concludes that AWWs can be trained in CVD risk assessment using WHO/ISH risk prediction charts. With proper training and supervision, the task of the CVD risk assessment can be shifted to AWWs.

Keywords: Anganwari worker (AWW), cardiovascular diseases (CVDs), noncommunicable diseases (NCD), task shifting, WHO/ISH risk prediction charts

Introduction

Cardiovascular diseases (CVDs) are the major cause of disability and premature death globally. As per the Global burden of disease study 2017, noncommunicable diseases accounted for 73.4% of total deaths globally. The largest number of deaths estimated were due to cardiovascular diseases (17.8 million) followed by neoplasms (9·56 million), chronic respiratory diseases (3·91 million) and diabetes mellitus (1·37 million). The deaths from NCDs increased globally by 22.7%—from 33·5 million in 2007 to 41·1 million in 2017.[1] In India, 63% of the total deaths were due to NCDs in 2016. Nearly one-fourth (27%) of the total deaths were due to CVDs.[2]

Majority of the CVDs are preventable. Early identification of individuals at high risk and lifestyle modification can help reduce risk factors of CVDs. Assessment of CV risk is the first step for primary prevention of CVDs.[3] World Health Organization/International Society of Hypertension (WHO/ISH) CVD risk prediction charts are widely used to assess the risk. These are 14 set of charts each for WHO epidemiological subregion and can be used by both physician and nonphysician health worker. National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) recommends the use of WHO/ISH charts for CVD risk assessment.[4]

Address for correspondence: Dr. Kavita, National Institute of Nursing Education Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India.
E-mail: gaurikavita@rediffmail.com

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Lack of skilled health manpower is a major constraint especially in low and middle income countries to implement prevention programmes.[5-7] Task shifting is a way to address this shortage and improving delivery of quality healthcare. The WHO defines task shifting as "the rational redistribution of tasks among health workforce teams".[8] Evidence suggests that it is an effective method to utilise existing workforce in the prevention and management of CVDs.[9-12] However, majority of the studies on successful task shifting are either from professional nurses or auxiliaries health workers (e.g., ANM). None of the studies had utilized Anganwadi workers (AWWs). Task shifting will also help primary care physician and other professionals to focus on higher order tasks.

AWWs are the grassroot workers. Each AWW covers a population of 1000. Under Integrated child development scheme (ICDS), the Anganwadi centre is mostly managed by the AWW along with a helper. In India, ICDS is the world's largest integrated early childhood programme.[13] They are one of the important human resources who work in the community setting.[14] AWWs have been successfully working in many health programmes like pulse polio immunization programme (PPI), house to house survey, motivation of patients for tubal ligation (TL) in family planning programme, etc.[15-17] Involvement of AWWs in CVD risk assessment may result in improving access to these services. However, the authors could not find any evidence related to their role in CVD risk assessement and communication. Hence, the study was planned to assess the feasibility of CVD risk assessment by AWWs.

Materials and Methods

An operational study design was adopted for the study to train AWWs in the task of cardiovascular risk assessment and communication of risk. The study was done in the anganwadi centres of Northern India. All the AWWs (n = 40) working in the selected anganwadi centres of Dhanas, UT, Chandigarh were enrolled in the present study. Baseline knowledge of the study subjects about CVD risk assessment and communication was assessed using a self-developed questionnaire. It included sociodemographic profile and 20 multiple choice questions related to CVDs, its risk factors, prevention and CVD risk assessment. Maximum score on the questionnaire was 20. It was developed in English and translated to Hindi by language experts. Back translation was also done to establish the reliability of the translated tool. Validation of questionnaire was done by giving it to experts in the field of public health, nursing and cardiology. After assessing knowledge AWWs were trained to assess and communicate CVD risk. WHO/ISH risk prediction charts for SEAR-D were used in the study to assess CVD risk. These trained AWWs then enrolled subjects from the community to assess the CVD risk and to demonstrate their skill in CVD risk assessment and communication.

Training protocol was developed by the researcher and validated by experts. AWWs were trained using the developed protocol. Researcher developed booklet, flash cards and a pamphlet to train AWWs and to facilitate them in risk assessment of subjects. Initial duration of training was 6–7 hours. However, onsite training was done for all the subjects till they fully developed the skill of CVD risk assessment and communication. All the AWWs were provided with booklet and flash cards. Training methodology included lecture cum discussions and demonstrations. During training, researcher demonstrated blood pressure measurement by using automatic blood pressure machine, measuring weight, height, waist circumference and assessment of CVD risk by using WHO/ISH risk prediction charts. After initial demonstration all the subjects re-demonstrated these skills until they were fully trained. Observational check list was used by researcher to evaluate the skills of AWWs. Training on soft skills was also done so that they can communicate risk to the subjects. Evaluation of the communication skills was done by using a standardised checklist.[18]

After completion of training these AWWs enrolled minimum of ten subjects to demonstrate their skill in CVD risk assessment and communication. They enrolled subjects from their respective areas by using purposive sampling. A total of 414 subjects aged ≥40 years were recruited by 40 trained AWWs. Automatic blood pressure machine was used to measure BP. Blood pressure was measured in right upper arm in supine position or sitting on a chair with back straight and with arm resting on a table at the level of heart with appropriate size of cuff. Two readings of BP were taken 5–6 minutes apart. Mean of the two readings was taken for CVD risk assessment. After the assessment of CVD risk, all the subjects were given health education related to risk-reduction strategies with the help of flash cards. Pamphlet containing all the information about lifestyle modifications was also given to them. Observational check list was used by the researcher to evaluate their skill in CVD risk assessment and communication.

Table 1: Sociodemographic profile of Anganwadi Workers

Variables	*n*=40, *n*%
Age (Years)	
25-35	10 (25.0)
36-45	20 (50.0)
>45	10 (25.0)
Marital status	
Currently Married	34 (85.0)
Never Married	02 (05.0)
Widowed & Divorced	04 (10.0)
Religion	
Hindu	25 (62.5)
Muslim	01 (02.5)
Sikh	14 (35.0)
Educational qualification	
Matric	07 (17.5)
Higher Secondary	08 (20.0)
Graduation	17 (42.5)
Post-graduation	08 (20.0)
Working Experience of AWW (Years)	
≤10	32 (80.0)
>10	08 (20.0)

Researcher reassessed all the risk assessment done by AWWs to establish the reliability of risk assessment by them. Researcher in the study was a professional nurse and was trained by a faculty supervisor. Once all the AWWs completed CVD risk assessment in their respective areas, post-test was taken to assess the effectiveness of the training programme.

Five point likert scale was constructed to determine the feedback of AWWs related to their participation in the study and willingness to undertake the task as a routine practice.

Ethical approval was obtained from institution ethical committee of PGIMER, Chandigarh. Written permission was taken from Director of Social Welfare Department, Sect-17, Chandigarh. Written informed consent was taken from both AWWs and subjects enrolled by them. SPSS version 20.0 was used to analyse the data. Descriptive and inferential statistics were used for data analysis.

Result

Sociodemographic profile of AWWs revealed that their mean age was 41 ± 7.9 years [Table 1]. Majority (85%) of them were married. As per education of qualification, 62.5% were qualified up to graduate and above. Only 17.5% of them had studied upto matric. Their mean work experience in anganwadi centres was 8.2 ± 7.5 years.

Training on CVD risk assessment was effective in increasing the knowledge of AWWs. Mean knowledge score statistically increased from 11.3 ± 3.04 in pre-test to 18.85 ± 2.54 in post-test as evident from the paired t-test. ($p < .01$). The maximum knowledge score was 20. All the AWWs were trained till they developed the skill of CVD risk assessment. Observation checklist with the maximum score of 23 was used to assess their skill in BP measurement and CVD risk assessment. With repeated practice and feed back from researcher, all the subjects accurately learned the required skill within 3 days after initial training. Mean score on checklist increased from 2.2 ± 1.19 before the training to 22.7 ± 0.5 after practice at third day.

These trained workers then enrolled a minimum of 10 subjects from their respective areas. Interrater reliability of CVD risk assessment between AWWs and researcher was established by kappa statistic. Result revealed almost perfect agreement ($k = 0.091$). Researcher was trained by faculty supervisor and 10% of the risk assessment were also evaluated by supervisor to determine the reliability of risk score by researcher ($k = 0.93$). Majority of the AWWs (87%) demonstrated good communication skills as measured by a standardized communication checklist.

All the participants (AWWs) agreed and strongly agreed that the training was effective in increasing their knowledge and skills about CVD risk assessment and communication. Majority (94%) agreed that the information booklet, flash cards and pamphlet were attractive, easy to understand and helped them in CVD risk assessment and communication. Regarding the use of WHO/ISH CVD risk prediction charts, majority (92.5%) of the participants agreed and strongly agreed that these charts are easy to use and are helpful in identifying high-risk individuals from their community. Majority (87.5%) of the AWWs showed their willingness to undertake the task of CVD risk assessment as their routine work.

Prevalence of risk factors of CVDs among adults (age >40 years) enrolled by AWWs for CVDs risk assessment revealed that total prevalence of hypertension was 22.9%, out of which 15.9% were known hypertensive and were on antihypertensive medications. However, 7% subjects were newly diagnosed during the screening by AWWs. Prevalence of Diabetes mellitus was 15.9%. Ten-year absolute risk of CVDs was assessed using WHO/ISH risk prediction charts by AWWs. Result showed that most of the (80.4%) study subjects were in low risk (<10%) category. However, 13.8% were in moderate risk category and 5.7% subjects were in high and very high-risk category.

Discussion

Task shifting is not a new concept in Low Middle Income Countries (LMICs). Many countries have adopted task shifting interventions of various degrees to address human resource for health (HRH) deficit. In the area of NCDs also it has been implemented; however, the studies mainly targeted nurses and community health workers.[19] We could not find any study related to the task shifting of CVD risk assessment to the AWWs. Hence, the study was planned to assess the feasibility of the same. AWWs were chosen for the present study as they are easily accessible to the people and their strength is more than health workers. One AWW covers a population of 1000 as compared to health workers who is for 5000 population.

WHO/ISH risk prediction charts were used to assess 10-year absolute risk of CVD. Although many risk prediction tools are available, no population-specific charts for Indian population exists. So, WHO/ISH charts for SEAR D region were used, which are meant for Indian population also.[20] These charts are easy to use and are easily available for 14 WHO epidemiological subregions. Many researchers in the country have used the same charts to assess CVD risk.[21,22]

Evidence from the literature shows that AWWs can be effectively trained in maternal and child care tasks.[23,24] The present study demonstrated that AWWs can be effectively trained in the task of CVD risk assessment. The risk scores generated by AWWs had a high level of agreement with that of the researcher who is a professional nurse. Several reasons can be attributed to this high level of agreement. First is the intensive training that included both theoretical and practical part. It included demonstration on the skill of measuring BP, taking height, weight, waist circumference and CVD Risk assessment. Return demonstrations of all these procedures was done by all AWWs. Training material was developed in Hindi and the same language

was used for training. Second, after initial training under the intensive supervision of researcher they practised the skill and learned till proficiency before enrolling the subjects from the community.

Best method of assessing any teaching is allowing the trainee to practice. AWWs were asked to assess risk among the adults aged ≥40 years, which was observed by researcher to assess reliability. Many researchers have adopted the similar methodologies where the subjects were asked to practice and their skills were evaluated.[9,18]

Present study demonstrated almost perfect agreement as measured by Cohen Kappa between AWWs and researcher (k = 0.91) and also faculty supervisor (k = 0.93). The results are in consensus with other studies, which have demonstrated that community health workers can be trained to generate reliable risk scores.[25,26]

Ten-year CVD risk of subjects enrolled by AWWs revealed that 80.4%, 13.8% and 5.6% were in low, moderate and high and very high-risk category, respectively. Our findings are consistent with the results of a study from rural population of Tamil Nadu, which showed that 79.9% of population was in low-risk category and 2.5% population was in high-risk category.[27] Another study that was done in the hospital setting revealed that 60.9% of subjects were in low risk (<10%), 21.9% in moderate risk (10-20%) and 17.2% were in high-risk category (>30%). These results are not similar with our results; the difference may be because the study adopted high-risk approach by including only hypertensive individuals. However, our study did no adopt such an approach.

The study also had certain limitations. First limitation is that only a short time period impact of the skill development programme was evaluated. How much knowledge and skill is retained after a long period of time is not evaluated. Second, we did not assess the effect of CVD risk assessment and communication on risk factor modification among subjects enrolled by AWWs. Third, short sample size also limits the generalisability of the study findings.

Conclusions

Our study concludes that AWWs can be trained in CVD risk assessment using WHO/ISH risk prediction charts. The study results imply that with proper training and supervision, AWWs can also be involved in the task CVD risk assessment and communication at the community level. Task shifting to AWWs will also help in the optimal utilisation of existing human resource and may increase the access to CVD risk assessment and risk factor modification.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Ethical approval

Ethical approval has been obtained from Institute Ethics Committee of the PGIMER, Chandigarh.

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Conflicts of interest

There are no conflicts of interest.

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