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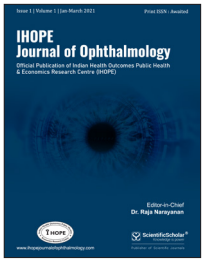

Original Article

Piloting a training program for community health workers for type 2 diabetes mellitus in Telangana, India

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ABSTRACT

Objectives: The burden of type 2 diabetes mellitus in India is increasing to epic proportions with 74.2 million living with diabetes. More individuals from lower socio-economic backgrounds and from rural/semi-urban backgrounds are presenting with the condition. Healthcare affordability and accessibility is often a challenge for such individuals. Hence, Accredited Social Health Activists and Auxiliary Nurse Midwives/Multipurpose Health Worker cadres of health workers in India have been entrusted with Non-Communicable Diseases portfolio. A randomized controlled trial was designed to train these health workers. The aim of the study is to pilot the training module developed for the RCT trial and revise the same according to the feedback received.

Materials and Methods: Ethical clearance and trial registration were obtained from IIPHH and CTRI respectively. The pilot was conducted at a neutral venue with ASHA and ANM/MPHA cadres using a tool for feedback for each of the training sections.

Results: All the participants found the module useful. Certain modifications were suggested and the same were incorporated into the final training module.

Conclusion: The training module was successfully validated.

Keywords: Diabetes training, Community health worker, Pilot, LMIC's, Health worker training

INTRODUCTION

The Indian burden of diabetes mellitus (DM) is a growing one, akin to the global trend. As per the report from the International Diabetes Federation 2021, the number of people living with diabetes across the globe is 536.6 million, with 74.2 million of them being Indians.[1] This trend is even more worrying as literature showcases that this increasing number reflects the increase in people with diabetes from the lower socioeconomic strata and the rural and semi-urban geographies.[2] Such areas often have poor health-care indicators such as accessibility, affordability, and awareness.[3-5] To overcome these critical barriers to healthcare, the Government of India had developed specific cadres of health workers, namely, the accredited social health activists (ASHA) and the auxiliary nurse midwives (ANMs)/multi-purpose health workers (MPHWs or MPHAs). These specific cadres were initially introduced to cater to the growing need of mitigating the maternal and infant mortality rate. The ASHAs are field-level workers and are monitored by the ANMs and/or the MPHA/MPHWs.

With time, India has witnessed a shift in the patterns of the epidemiology of its disease/disorders affecting its population.[6] More and more people are now suffering from non-communicable diseases (NCDs) as opposed to infectious diseases, which were mainly responsible for the ill health of the Indian population. Hence, the tasks of the ASHAs and the ANMs/MPHAs have expanded and the NCDs portfolio has also come under their ambit.[7,8]

These health workers are an important interface in executing an efficient health-care system for the disadvantaged population of our country. Their training should be standardized to ensure uniform systems that are followed for the best utilization of services from these health workers.[9]

A cluster-randomized controlled study was designed by Gudlavalleti *et al*. and was subsequently implemented in Telangana.[10] As per the study, a training module for the health workers was compiled using the best existing resources to complement all their assigned tasks in type 2 DM diagnosis and management. In the present study, this module was pilot tested at a neutral venue with the same target cadre of health workers to improve its practicality and to validate it in the study settings. This study aims to share the findings of the pilot study and finalize the training module for training of ASHAs and ANMs at the primary health centers in T2DM.

MATERIALS AND METHODS

The entire study initially obtained ethical clearance from the Institute Ethics Committee approval from the Indian Institute of Public Health Hyderabad (IIPHH) – IIPHH/TRCIEC/218/2020 and was then subsequently registered with the Clinical Trials Registry of India (CTRI) – CTRI/2020/07/026828. Then, the pilot was designed as a cross-sectional study at one primary health center in the Rangareddy district of Telangana in July 2021. This center was not a part of the main study sites. All the ASHA and ANM workers at the center participated in the pilot, that is, a total of ten health workers participated in the pilot.

Intervention: The module was compiled using the existing resources of ASHA and ANM training from the Ministry of Health and Family Welfare, and the Public Health Foundation of India. The topics covered in the module are presented in [Table 1]. These draft modules consisted of the following topics:

For the pilot, the day of the ASHA meeting was chosen for logistical support, while the primary health center was the venue of the pilot. All the ten health workers signed the informed consent and a participant information sheet with the details of the intervention was distributed to all of them. The same was explained to them in detail in their vernacular language, which was Telugu.

Two trainers were identified by the principal investigator within the study team, and a consensus was developed for the training method and participant evaluation. These trainers then administered the training to the participants at the venue. The medium of training was English as all health workers present shared a preference toward the English module and for English as the medium of instruction. Feedback was also obtained for the Telugu modules by sharing its draft with all of them.

Table 1: Topics included in the draft module for pilot testing.

S No	Topic name
1	What is diabetes
2	Pathophysiology of diabetes
3	Types of diabetes
4	Prevalence of diabetes (Global and Indian)
5	Risk factors for type 2 diabetes
6	Signs and symptoms of type 2 diabetes
7	Prevention and control of diabetes
8	Blood glucose estimation
9	Management of diabetes
10	Patient education for diabetes and diet information for diabetes
11	Continuity of care in diabetes
12	Diabetes complications and management
13	Role of health workers in diabetes diagnosis and management
14	Economic impact of diabetes
15	Annexure: Community based assessment checklist (CBAC)

After the training, the trainers requested any queries from the participants, there were two queries which were raised and the same were explained by the trainers with a live demonstration. The training also undertook live demonstrations of blood glucose measurement using a glucometer and correctly using the community-based assessment checklist (CBAC). After the training was completed, the feedback forms (questionnaires) were administered to the participants. Each questionnaire consisted of 20 questions and these questionnaires broadly looked at three things:

- Content validation
- Trainer validation
- Training validation.

All questions focused on these three broad sections and all participants had to answer them. Most of the questions were multiple-choice questions (MCQs) with a few open-ended ones. The MCQs were quantitatively analyzed using Microsoft Excel and STATA SE 14 (STATA), while the open-ended answers were analyzed qualitatively using the same software.

Data analysis

For the descriptive analysis, STATA was used. The initial data obtained were entered into Microsoft Excel. Further, data

cleaning was undertaken and a review of all questionnaires against the data entered was carried out. Subsequently, the cleaned excel worksheet was imported into the STATA software and further analysis of each of the variables and the questionnaire responses were carried out. Each question had a Yes or No as the answer option. The appropriate responses were analyzed based on their frequency. For the qualitative analysis, all responses to open-ended questions were recorded in Microsoft Excel and were explored for themes. Subsequently, common themes were identified and were assigned a weight based on their frequency. These themes were, further, classified under various module topics. With this exhaustive list, the feedback related to each of the module topics was used to appropriately modify the topics to improve the content and flow for the health workers.

Hence, overall the changes to the module were undertaken based on the results which are elucidated in the results section.

RESULTS

The demographic profile of the participants can be inferred in detail from [Table 1]:

Therefore, from [Table 2], we can infer that all the ten participants were female, with a mean age of 37.1 (+5.82) years and a mean work experience of 11.2 (+6.59) years. All of them received some education and 60% of them have passed class 12th. Of the participants, 70% were ASHAs, and 20% were ANMs. Overall, the participant group was heterogeneous in terms of work experience, and hence, the responses would be useful for finalizing the training module to best benefit the same cadre of health workers across the sites, where the intervention would be carried out.

We can infer the detailed feedback analysis and the overall course rating from [Table 3] below.

The feedback for the English and Telugu modules was the same for the content. The Telugu modules had a few spelling errors which were presented by the health workers and the same were modified for the final module. From the first four questions' responses in [Table 3], it is evident that all the participants (n = 10, 100%) were completely satisfied with the training session and its logistics in terms of conduction of the session. These covered the session venue, the duration of the session, the time at which the session was held and the usefulness of the session. Next, questions five to 14 helped us analyze the content of the modules and the modifications required for them. These modifications would help in improving the understanding of the module while ensuring that unnecessary topics are removed and any topics of importance which might have been left out are added. In addition, these questions also helped us understand if there were any topics which required greater detail.

All the participants (n = 10, 100%) shared that the content was relevant to their work settings and the flow of the module was easy to follow for them. Eighty percentages of the participants (n = 8) had undergone diabetes-related training but only 20% (n = 2) were able to recall if any of the topics taught had been taught in the earlier training programs. This does point toward the importance of regular refresher training for all programs that these health workers are involved in. Twenty percentages of the participants (n = 2) shared that the theoretical aspect of glucometer testing for diabetes was repeated from their earlier training programs but given that this was an important topic, and that 80% were not cognizant of this we retained the same in our final module. All participants (n = 10, 100%) also shared that they learned new topics in the module and that they enjoyed learning certain topics. These topics were majorly related to diet in diabetes, the eye complications of diabetes (diabetic retinopathy), chronic diseases and diabetes, foot

Table 2: Participant demographics profile (n=10).

	Mean	Standard Deviation	Minimum	Maximum
Age	37.1	5.82	30	48
Work Experience	11.2	6.59	5	25
Designation	Frequency	Percentage		
ASHA	6	60		
ANM	3	30		
PHN	1	10		
Educational Qualification				
10th	1	10		
12th	6	60		
Undergraduate	1	10		
Postgraduate	1	10		
No Response	1	10		
Sex				
Female	10	100		

Table 3: Detailed Feedback Analysis & Overall Course Rating.

Question Number	Question	Yes	Percentage (%)	No	Percentage (%)	Qualitative Information based on responses	Module Modifications
Training Session & Logistics Feedback							
Q1	Did you find the session useful	10	100	0	0	NA	NA
Q2	Was the session duration adequate for your understanding	10	100	0	0	NA	NA
Q3	Was the timing of the session suitable for you	10	100	0	0	NA	NA
Q4	Was the venue of the session comfortable for you	10	100	0	0	NA	NA
Module Content Feedback							
Q5	Was the content relevant to your work settings	10	100	0	0		
Q6	Was the content flow easy to understand	10	100	0	0		
Q7	Have you undergone any previous diabetes training before	8	80	2	20	The participants shared that they had undergone a diabetes related training as a part of their NC training when they joined their respective health cadre (N=2)	NA as the training was at the time of joining and no refreshers were taken, hence we decided not to modify the module based on this input
Q8	Was there any repetition from any of the modules before	2	20	8	80	The participants shared that the topic on testing using glucometer for DM was a repetition (N=2)	NA as only 2 of the health workers could recall that this was a repetition, we decided to keep this topic for the module
Q9	Were you comfortable with the medium of instruction	10	100	0	0	NA	NA
Q10	Did you learn anything new from the module today	10	100	0	0	The participants shared that they learnt the following new topics: 1. About Diet and diabetes (N=8) 2.About Diabetes and its effect on the eye (N=4) 3. About Chronic diseases and diabetes (N=2)	We took this as positive feedback and added few illustrations and details on diet and eye for the benefit of the health workers

(Contd...)

Table 3: *(Continued).*

Question Number	Question	Yes	Percentage (%)	No	Percentage (%)	Qualitative Information based on responses	Module Modifications
Q11	Were there any topics you enjoyed learning	10	100	0	0	The participants shared that they enjoyed learning about the following steps the most: 1. Food and diet in diabetes (N=8) 2.Eye complications due to Diabetes (N=4) 3. Foot care in diabetes (N=2) 4. Hypoglycaemia management(N=2)	We took this as positive feedback and designed our future knowledge assessment questionnaires as case based learning questionnaires using real world patient complaints with a keen focus on these topics
Q12	Were there any topics which were not required for you	7	70	3	30	The participants shared that the following topics were not required for them: 1. Exercise and associated details (N=5) 2. Global diabetes prevalence (N=2) 3. Rate of diabetes growth (N=3)	Based on the participants feedback, we removed these topics from the modules
Q13	Were there any topics you wanted to know more about	5	55.56	4	44.44	The participants shared that they wanted the module to include more information on the following topics: 1. Nerve complications due to diabetes (N=3) 2. Weight management (N=2) 3. Diabetes in Pregnancy (N=2)	Based on the participants feedback, we added more details of these three topics in the module
Q14	Were there any topics which you wanted to know but were not covered in the module	4	44.44	5	55.56	Few participants wanted the following topics to also be included in the module: 1. What food and how to take it (N=2) 2. Measurements for waist circumference (N=1)	Based on the participants feedback, these two topics were added in the form of appendices to the module
Trainer Feedback							
Q15	Were the trainers audible	10	100	0	0	NA	NA
Q16	Were the trainers understandable	10	100	0	0	NA	NA
Q17	Were the trainers able to explain the content effectively	10	100	0	0	NA	NA
Q18	Did you have any queries/doubts	0	0	10	100	NA	NA

(Contd...)

Table 3: *(Continued).*

Question Number	Question	Yes	Percentage (%)	No	Percentage (%)	Qualitative Information based on responses	Module Modifications
Overall Feedback							
Question Number	**Question**	**Participant Responses**	**Mean**	**Std Deviation**	**Min**	**Max**	
Q19	How will you rate the training between 1-10, 1 being the lowest and 10 the highest	10	9.1	0.87	8	10	

care in diabetes, and management of acute complications like hypoglycemia. Seventy percentages of the participants opined that the *"Exercise Details, Global diabetes prevalence,* and *The rate of growth of diabetes*" were not needed for their training. Based on this feedback, these topics were removed from the module. In addition, more than 50% of the participants (n = 5, 55.56%) indicated that they wanted to know more about *"Nerve complications in diabetes, Weight Management in Diabetes,* and *Diabetes in pregnancy.*" Due to this feedback, we added these three topics to our module. Another 40% of the participants (n = 4, 44.44%) shared that the topics on what food should diabetics eat and how should they be consumed along with waist circumference measurement for females should be included in the module. Based on this feedback from the participants, we added both these topics as appendices in the module. For the food-related query, we included nutritionist-approved localized diet charts, along with waist circumference measurement procedure as a part of the CBAC. Finally, questions 15 to 18 helped us obtain feedback on the trainers and if their techniques of delivering the training needed modification. All participants (n = 10, 100%) confirmed that the trainers were audible, their teaching was understandable, and they were able to explain the entire content effectively to them. Hence, we were able to understand the feedback according to the various aspects of training for the health workers and modify the same wherever required to improve its suitability to a larger audience of the same cadres. Participants were encouraged to share the rating of the training program on a scale of 1–10, where 1 was the lowest and 10 was the highest. The participants gave the training a mean score of 9.1 with a standard deviation of 0.87, that is, 9.1 + 0.87. Thus, all aforementioned additions and deletions were undertaken for the training module, to be used at the final sites of the study.

Study limitations

As the pilot was conducted at a small center the results that do not have the statistical power to be generalized to the larger population. Although the preferred medium of instruction at the center was English, this might not be a true reflection of the large target audience as this might be due to the educational status of the pilot participants and can vary toward the preference of a vernacular medium of instruction if the educational status is lower. This was later realized during the study, as a majority of the participants preferred Telugu as a medium of instruction, and hence, more resource allocation had to be invested as compared to the original plan. However, as feedback was collected for both modules, the necessary changes were made to the final Telugu module. We will discuss this trainee as a participant issue in detail under the discussion section.

DISCUSSION

The government of India has set forth operational guidelines under the NPCDCS program along with training modules for ASHAs and MPHAs for improved diagnosis and subsequent management of diabetes.[8,11-13] These guidelines rely heavily on ASHAs and MPHAs/ANMs. Our training module aims to complement these guidelines by either building capacity of these health workers for T2DM or by refreshing their knowledge of T2DM to ultimately benefit the objectives of the NPCDCS. Another point of discussion which needs emphasis is the use of trainees for module content revision. Under our current study, we collated existing T2DM modules, prepared by the government and other organizations to best represent the enormous high-quality work which has been undertaken by them all but has not reached the intended target due to the multiplicity of resources. Thus, these resources have already been validated for a larger audience and, therefore, do not require many changes in terms of their content. However, a qualitative interview with the health workers helped us realize that the content was not many times relevant or difficult to follow. This helped us formulate the idea of this pilot with the local health workers to improve its local validation and thus its subsequent adoption and

adherence for better diabetes diagnosis, screening, and management outcomes.

CONCLUSION

Through the pilot intervention, we were able to validate the content, the training, and the trainers to deliver suitable type 2 DM training for ASHAs and ANMs. Overall, the content of the module was useful for the target audience, and it was highly rated by them for its use among a larger population with the suggested modifications. Hence, the pilot was instrumental in improving the usability of the final intervention to be used in the main study.[10] The pilot also provided an insight into the necessity of periodic refresher training or retraining of all concepts as also evidenced by the literature.[14,15]

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Declaration of the patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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