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Correspondence

Dr. Smriti Shrestha
District Hospital, Jiri, Dolakha,
Nepal

Email:

shrestha.smriti2020@outlook.
com

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Assessment of knowledge of diabetes mellitus among female community health volunteers (FCHV) of Jiri, Nepal

Smriti Shrestha¹ , Dipesh Mangal Joshi² 

¹Clinical Coordinator MDGP, District Hospital, Jiri, Dolakha; ²Lecturer, Dept. of General Practice & Emergency Medicine, Patan Hospital, Patan Academy of Health Sciences, Lalitpur, Nepal

Abstract

Introduction: Introduction: Type 2 diabetes mellitus (DM) has become a global epidemic with significant disability and premature death. Identification of the level of knowledge related to diabetes among the health workers is important in strategies for prevention of diabetes mellitus.

Method: This study was conducted as a community based study in Jiri Hospital in Dolakha district. All the FCHV working in the Dolakha district were selected for this study. Data was collected using Diabetes Knowledge Questionnaire (DKQ). Data was analysed using SPSS programme version 16.0.

Result: A total of 90 participants were included in the study. Average score obtained was 15 out of 24. There was not significant association found between educational background and score (p-value=0.8835) No significant difference between the age groups and scores was found (p-value=0.5485). No FCHV's had received training on diabetes mellitus. Having a family member with diabetes did not impact the obtained score (p-value= 0.9511).

Conclusion: This study did not show any relation on knowledge with age, educational background or having a family member with diabetes.

Keywords: diabetes knowledge questionnaires, diabetes mellitus, female community health volunteers

Introduction

Female community health volunteers (FCHV) which started in Nepal in 1988 are an integral part of many community-based health programmes.¹ Diabetes has become a global epidemic.² The incidence of diabetes is projected to double between 2000 and 2030, mainly in Asia.³ Asians have a strong predisposition for diabetes than other ethnic groups.⁴ They have higher degree of insulin resistance than European⁵. Our health care system is not well prepared to meet the demands that arise with rise in diabetes.

There are many factors that puts Asian communities at risk for diabetes. Urbanisation itself is a factor that contributes to increase in diabetes mellitus.⁶ A typical south Asian diet which is high in saturated fats, carbohydrates and trans fatty acids is associated with insulin resistance.⁷ Regular exercise control insulin resistance and delays complications.⁸ Physical activity is found to be less in south Asian population.⁹ Macrovascular and microvascular complications of diabetes is also more prevalent in Asian.¹⁰ Such complications can be minimized by achieving optimal glycaemic control.¹¹

Awareness on diet and regular exercise is important in controlling diabetes and preventing its complications. FCHV are potentially effective personnel, who could influence the attitude and behaviour of patients.¹² Their knowledge could make a difference in prevention and control of diabetes as they can educate communities on lifestyle modification.

This study assesses the FCHV's knowledge of the cause, clinical presentation, management and complications of diabetes and finds out relation of knowledge with age, educational background, training on the subject and having a family member with diabetes.

Method

This was cross-sectional analytical study conducted among female community health

volunteers (FCHV) at Jiri Hospital, which is a district hospital situated in Dolakha district, Nepal. This study was conducted during Jan to Feb 2020.

Data were collected using a Diabetes Knowledge Questionnaire (DKQ) which is a good tool for assessing diabetes knowledge.¹³ DKQ is a questionnaire which was originally developed as 60 questions for native English speakers. Its reduced version which was used in our study contains 24 questions. It was translated to Nepali language. The first part of the questionnaire covered the respondent's demographic information which included: age, sex, level of education, family member with diabetes and participation in any training about diabetes. Second part of the questionnaire covered 24 DKQ questions. This DKQ assesses the cause, clinical presentation, management and complications of diabetes. Responses to questions were assessed with categorical responses "True" or "False", one score was given for correct response and a zero score was given for the incorrect response. No negative points were given. A total of 24 points could be achieved and more than 12 correct answers defined satisfactory knowledge. Individual scores for each participant were calculated.

All the FCHV working in the Dolakha district were selected for this study. Participants were explained about the study objectives and were invited to participate. They participated voluntarily in the study. Printed form of the questionnaire was distributed among all the FCHVs. The approximate time to fill the questionnaire was 35-40 minutes. Participants were informed of their rights to withdraw from the study at any stage. Categorisation of age was done into four groups. Ages between 18 to 25 in the first group, 25 to 35 in second group, 35 to 45 in third group and ages above 45 in fourth group. Categorisation of education level was done into two groups as 10th standard passed and less than 10th standard. The data in this study were kept anonymous to respect privacy.

The approval for study was taken from Jiri municipality office, Jiri, Dolakha. Data was analysed using SPSS programme version 16.0. Test for chi-square was done and a p value of less than 0.05 was considered significant. Relation of score with age, educational background, training and presence of a family member with diabetes was presented in figures.

Result

There was a total of 96 participants. Participants age ranged from 19 years to 50 years. Mean age was 32 years. All participants (100%) agreed that kidneys are damaged by diabetes and food preparation technique is as important as food itself. Majority i.e., 86(95.9%) believed that diabetes can be cured. A huge number of participants, 82(91.67%) believed that eating sugar causes diabetes. More than 90% of participants were aware that lack of insulin caused diabetes, it is hereditary, it affects circulation, cuts heal slowly in diabetic patients, tight shoes and socks are bad for diabetic patients and that patients should be careful while cutting toe nails. 72(80%) knew there are two major types of diabetes. Majority were aware that untreated diabetes cause increase in blood sugar levels and 87(97%) FCHVs considered 210 mg/dl to be high fasting blood sugar level. But, signs of hyperglycaemia and hypoglycaemia were missed by 55(61%) participants. Significant number of participants i.e., 86(95.9%) believed diabetes is caused by failure of kidneys. Among the participants, 38(42%) were not aware of the role of diet and exercise in the management and control of diabetes.

The average score obtained by the FCHV's was 15. Participants minimum score was 13 and maximum score was 20, Figure 1. Among the FCHVs 28(31.1 %) were 10th grade passed and remaining 62(68.9 %) were not educated up to 10th standard. Level of education did not impact score (p=0.8853), Figure 3. First three the FCHV's of Jiri none had obtained a training in diabetes. Participants having family age groups had identical scores and showed no

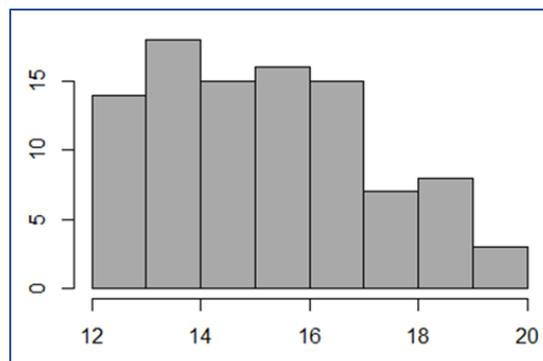


Figure 1. Diabetes knowledge score of participants (y-axis) based on age (x-axis)

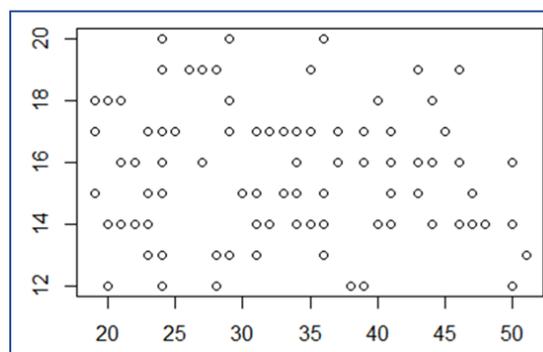


Figure 2. Variation of Diabetes knowledge score (y-axis) with age (x-axis)

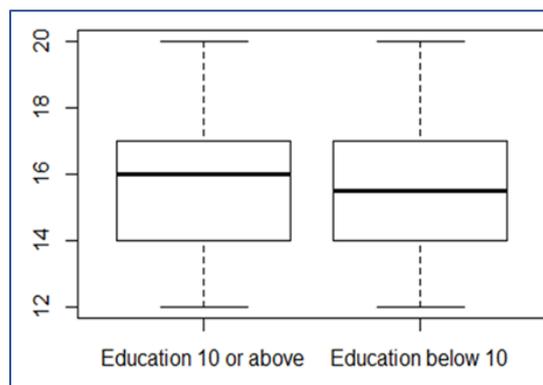


Figure 3. Diabetes knowledge score (y-axis) based on education level (x-axis)

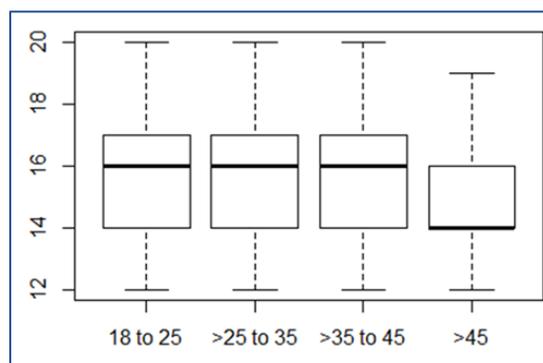


Figure 4. Diabetes knowledge score (y-axis) based on various age groups (x-axis)

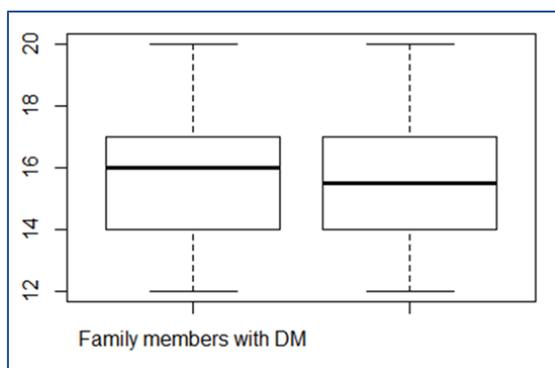


Figure 5. Diabetes knowledge score (y-axis) based on having family member with diabetes (x-axis)

significant difference, Figure 2,4. Among members with diabetes mellitus was 34(37.7%) and 56(62.3 %) had no family members with diabetes and having a family member did not impact in obtained score. ($p=0.9511$), Figure 5.

Discussion

Our study did not show any relation on knowledge about diabetes mellitus with age, educational background or having a family member with diabetes. This was in contrast to a study that was carried out among the public and indicated that there is a difference in knowledge on diabetes among different age groups.¹⁴ In this study age group 12 -24 had most and age group had least knowledge on diabetes. Another study showed that patients of younger age had high DKQ score than older patients.¹⁵

Educational background or having a family member with diabetes did not influence score obtained in our study. A large percentage of FCHV's were not 10th grade passed but more education did not mean higher score. Although the median score was lower for education below 10th grade, difference was not statistically significant. A study done among diabetic patients in Nepalese adults showed a significantly associated knowledge on diabetes with age and having a family member with diabetes.¹⁵ This study showed better diabetes knowledge with higher level of education.

Our study showed lack of knowledge regarding cause of diabetes, signs of hypoglycaemia and hyperglycaemia and diabetic diet. In a similar study that was done to identify the specific areas of knowledge about diabetes among community healthcare workers in Kenya, that took a pre-test and a post-test before and after an education session, showed an average percentage grade of 52%. A pre-test mean percentage score of 37%, 68% and 53% for general pathology, risk factors/complications of diabetes and treatment/management, respectively. This clearly demonstrated lack of knowledge and a need to educate community health workers about all aspects of diabetes.¹⁶

In our study none of the FCHVs had taken any form of training on diabetes mellitus. Only experience without proper training does not ensure knowledge on the subject as shown in a study done in South Africa, which showed that home based carers for people with diabetes in a rural village, lack knowledge on diabetes mellitus even after working for 5 to 10 years.¹⁷

A study conducted on diabetes management training for female community health volunteers in Western Nepal concluded that if FCHV's are appropriately trained they may be instrumental in providing counselling and screening for diabetes management in their communities.¹⁸ In this study FCHV's received training in diabetes management, screening techniques of blood glucose, blood pressure monitoring and also referral if needed to the nearest health facility. Assessment of participants' diabetes knowledge was undertaken 1 week before and 1 week after the training. The overall assessment of knowledge of diabetes addressed by the questionnaire increased from a mean score of 40.4% before training to a mean score of 63.3% after training. By training of these FCHVs in a resource-constrained setting like ours, we can achieve a major public health benefit. In a similar study the scores of the participants increased after obtaining a training in diabetes. The mean knowledge score increased from 14.33 to 17.61, and the

rate of good knowledge increased from 39 (76.5%) before to 51 (100.0%) after completing a continuing education programme ($p < 0.001$).¹⁹ In our study the scores could not be compared with scores after training in diabetes as no one had obtained a training in diabetes.

With rapid urbanization taking place all over Nepal and the shift in the life style brought by modernisation and also being a susceptible population, type 2 diabetes mellitus is bound to rise in Nepalese population. This is highlighted in a meta-analysis from 2000 to 2014 on prevalence of type 2 diabetes in Nepal which found the prevalence of type 2 diabetes in rural population to be 1%. This study took 10 cross-sectional studies that comprised a total of 30,218 subjects. Prevalence of type 2 diabetes ranged from a minimum of 1.4% to a maximum of 19.0% and pooled prevalence of 8.4%. Results showed that type 2 diabetes is currently a high burden disease in Nepal, suggesting a possible area to deliberately expand preventive interventions as well as efforts to control the disease.²⁰

Diabetes patients will have adequate knowledge only when health care workers are able to educate them. Lack of adequate knowledge of diabetes in type 2 diabetes mellitus patients affect the utilisation of healthcare services for diabetes management.²¹ This study recommended innovation in increasing diabetes knowledge and health behaviour change specially for females, those with lower education and less income. When diabetes patients realise that the disease can be controlled by medicine, diet and exercise they are more likely to seek available health care services. In a country like ours where majority of people believe in traditional medicine and seek services that are available in their neighbourhood, FCHVs can play a great role in sharing their knowledge and bringing change in their healthcare seeking behaviour.

Continuing education and trainings have proved time and again to be effective in improving the knowledge of the trainee that

leads to improved patient care. A diabetes continuing education program for primary health care physicians in Saudi Arabia was found to be effective in addressing knowledge gap of physicians and in improving their practices towards quality patient care.¹⁹ In a patient education programme started in USA in 2009, it was found that patients who visited community healthcare workers experienced improvements in HbA1c control such that mean HbA1c decreased from 8.3% to 7.4%. Significant improvement was seen in blood pressure, diabetes knowledge, perceived competence in managing diabetes, and quality of life in these patients.²²

There are some limitations to this study. This is a cross sectional study conducted in a single setting so, the findings cannot be generalized to the whole country. Also, the questionnaire used is translated in Nepali but not validated in our setting.

Awareness on importance of balanced diet and regular exercise can be achieved through the grass root level health care workers. Interventions by community-based health workers (CBHWs) appear to be effective when compared with alternatives and also cost-effective for certain health conditions, particularly when partnering with low-income, underserved, and racial and ethnic minority communities. Future research is warranted to fully incorporate CBHWs into the health care system to promote non-communicable health outcomes among vulnerable populations.²³ Special training in diabetes to FCHVs will not only help patients with diabetes in the rural setting but also help in its prevention.

Awareness programmes and trainings on diabetes targeting the FCHVs will help them have more information and knowledge on the subject and will be able to help in early diagnosis and referral of diabetic patients. Further research is required to assess the knowledge of FCHV's and other health care workers working in the rural areas. Continuous health education programs should include diabetes mellitus. Studies on

assessment of knowledge before and after the training could throw some light on the effectiveness of the training. Proper training and materials could increase the knowledge of health care workers and they could play an important role in screening and managing diabetes patients in their communities.

Conclusion

Factors like age, education and having family members with diabetes did not have influence on knowledge on diabetes among FCHVs.

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Conflict of Interest

None

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None

Author Contribution

Concept design planning: SS; Data collection/analysis: SS, DMJ; Draft manuscript: SS; Revision of draft: SS, DMJ; Final manuscript: SS, DMJ.

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