

RESEARCH ARTICLE

Study of relation between family history of diabetes mellitus and awareness of diabetes mellitus in Pune urban population

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ABSTRACT

Background: Worldwide, diabetes mellitus (DM) is major non-communicable disease. Information of the disease to patients can prevent morbidities of DM and hence will improve quality of life. For the development of type 2 DM, family history is non-modifiable risk factor. Awareness of people about risk of diabetes will help them in early and proper treatment. It will also enable them to tackle disease in long run of life. **Aims and Objectives:** This study was planned to find out relation between family history of DM and awareness of DM. **Materials and Methods:** A cross-sectional study was conducted in 500 participants. The study was conducted in Pune city and participants were randomly selected from various health camps in Pune urban area. The validated diabetes awareness questionnaire was administered to the study participants. Participants having a family history of diabetes and those not having a family history of diabetes were separated, and statistical analysis was done using Chi-square test. **Results:** It was observed that there was more awareness about DM in subjects having a family history of diabetes than those who do not have a family history of DM. Subjects with a family history of diabetes were having statistically significant awareness about symptoms of diabetes, organs affected due to diabetes and organ damage ($P < 0.05$). There was equal awareness regarding prevention and test to detect DM ($P > 0.05$). Subjects having a family history are more aware about the disease as compared those who did not have a family history. **Conclusion:** Mass awareness programs should be conducted to increase awareness in whole population for early diagnosis and prevention of disease.

KEY WORDS: Family History of Diabetes Mellitus; Diabetes Awareness; Urban Population


INTRODUCTION

Type 2 diabetes has become disease of concern in developing countries due to their large population size and increasing incidence of the disease. It is predicted that in the next

decade India will become diabetic capital of the world due to increasing magnitude of diabetes mellitus (DM) in developing countries.^[1]

There were over 65 million cases of type 2 diabetes mellitus in India.^[2] Diabetes burden in India is expected to reach 109 million by 2035. Many factors are responsible for high prevalence of DM2 in India. Asian Indians have a particular phenotype that makes them susceptible to DM.^[3]

Obesity, insulin intolerance, and hypertension all of these contribute to diabetes individually.^[4-7] Physical inactivity, changes in eating habits like preference to highly processed

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food, and urbanization are also associated with increasing prevalence of diabetes.

Family history is known risk factor with high statistical correlation with disease along with age and overweight.^[7] Family history represents both genetic and environmental factor that mostly remain same in terms of cultural and behavioral aspects such as diet and physical activity.^[8]

Family history of diabetes is considered as the most important risk factor as per the World Health Organization and the American Diabetes Association.^[9,10] Due to inheritance of genetic and lifestyle, it is found that the first degree relative with disease is most important risk factor.^[11] It is observed that there is 2–6-fold more risk of diabetes to persons with a family history of diabetes as compared to persons who do not have a family history.^[7,12] Family history can help to target-specific population for increased awareness and promotion of health. It can be used as tool for risk assessment.^[13]

Hence, to delay onset of disease and better health-care family history of diabetes may play a key role in detecting persons with more risk of disease. Individuals having a family history of DM may have more awareness and knowledge about different aspects of the disease.

Therefore, this study was planned to find out relation between family history of DM and awareness of DM.

MATERIALS AND METHODS

A cross-sectional study was conducted in 500 participants. The ethical committee permission was taken from the institutional ethical committee. The consent was taken from each participant and the procedure was explained. The study was conducted in Pune city and participants were randomly selected from various health camps in Pune urban area. Nature of the study was explained to all the subjects and written consent was taken. The validated diabetes awareness questionnaire was administered to the study participants. The questionnaire was constructed in English and local language. The questionnaire contained series of questions on awareness of DM including general knowledge of DM, causes, complications, management, and prevention. It was ensured that questionnaire was duly filled and data entry was done. Participants having a family history of diabetes and those not having a family history of diabetes were separated, and statistical analysis was done using Chi-square test. Of 500 subjects, 236 were having a family history of diabetes and 264 were not having a family history of diabetes.^[5]

RESULTS

It was observed that there was more awareness about DM in subjects having a family history of diabetes than those who do not have a family history of DM. Statistically significant more

number of subjects having a family history of diabetes were suffering from diabetes ($P < 0.0001$). There was statistically significant difference in knowledge about symptoms of diabetes between subjects having a family history of diabetes and those who do not have a family history. Subjects with a family history of diabetes know that more number of people are suffering from diabetes ($P < 0.05$). Subjects with a family history of diabetes were having statistically significant more awareness about organs affected due to diabetes and organ damage ($P < 0.05$). There was equal awareness regarding prevention and test to detect DM ($P > 0.05$) [Table 1].

DISCUSSION

It was observed that more number of subjects having a family history of diabetes were suffering from diabetes ($P < 0.0001$). It shows genetic predisposition of DM. There was statistically significant difference in knowledge about symptoms of diabetes between subjects having a family history of diabetes and those who do not have a family history. Subjects with a family history of diabetes know that more number of people are suffering from diabetes ($P < 0.05$). Subjects with a family history of diabetes were having statistically significant more awareness about organs affected due to diabetes and organ damage ($P < 0.05$).

A study conducted by Annis *et al.*, it was found that in the U.S. adult population, family history of diabetes was a significant predictor of self-reported diabetes. It was quoted that adults with a family history of diabetes had 4 times more chance of having diabetes than adults without a family history after adjusting for gender, age, race, and body mass index (BMI).^[14]

Harrison *et al.* conducted study titled family history of diabetes as a potential public health tool and observed that the diseased individuals with family history of 2 diabetes had 2–6 times more risk than individuals without family history.^[7]

Gregg *et al.* demonstrated that the prevalence of diagnosed diabetes has increased and that of undiagnosed diabetes has decreased in severely obese individuals ($BMI \geq 35$). It may be because of better awareness of BMI as a risk factor among health-care providers and ultimately improved screening.^[15] He suggested that more and more undiagnosed individuals can be identified with the use of family history as a screening tool.

Studies have shown that individuals who have close relatives with diabetes are likely to be diagnosed earlier than the individuals without a family history. The reason may be they are more motivated to seek early health screening than others. Early screening can diagnose individuals with a family history at younger age than individuals without a family history. This likelihood is supported by both studies by Molyneaux *et al.* They found that DM was diagnosed earlier

Table 1: Comparison of awareness about type 2 DM according to family history in study group

Question	Response	Family history		Chi-square	P value
		Yes (236)	No (264)		
What is DM	Yes	183	192	1.54	0.21
	No	53	72		
Do you have DM	Yes	76	38	22.45	<0.0001*
	No	160	226		
Symptoms of DM	Yes	134	117	7.74	< 0.005*
	No	102	147		
Test to detect DM	Yes	153	148	4	0.046
	No	83	116		
More people affected with DM	Yes	196	187	10.38	<0.001*
	No	40	77		
Organ damage	Yes	166	143	13.81	<0.0001*
	No	70	121		
Can prevent DM	Yes	153	153	2.48	0.11
	No	83	111		

*Statistically significant, DM: Diabetes mellitus

at the age of 44.5 years in individuals with a family history than 48.5 years for individuals without a family history. An Australian study found that diabetes was diagnosed at younger age with more the number of family members affected.^[16] Furthermore, research has shown that individuals with type 2 diabetes are more likely to get health information from family members.^[17]

However, Annis *et al.* study indicated that a higher proportion of adults who had diabetes did not know their family history of diabetes (2.7%) when compared with adults who did not have diabetes (2.0%), although this difference was not statistically significant.^[14]

Our result matches with the cross sectional study conducted in Kemisse and Kombolcha. They used an interviewer-administered questionnaire among primary or secondary degree DM patients' family members (DMPFMs) and controls. They demonstrated that DM family members had better knowledge and practice about DM. However, the overall awareness of participants with family history was not satisfactory.^[18]

Similar findings were seen in a study by Robert *et al.*, there was more awareness among African Americans with a family history about DM risk factors than those without a family history of the disease.^[19]

This difference in the level of awareness may be because of more chance that family members of diabetic patients are in contact with DM patients at least within their families and so have better awareness about DM occurrence and prevention.

This study shows that there was equal awareness regarding prevention and test to detect DM ($P > 0.05$). This shows that

not only individuals having a family history of diabetes but also those who do not have a family history have knowledge about test to diagnose and that disease is preventable.

Strength and Limitation

Family history of DM is an important irreversible risk factor for the development of type 2 DM. Information can help people to assess risk of diabetes, motivate them to get proper treatment and care. It will also inspire them to take care of their disease for their lifetime.

Sample size should be more and definitive tests like acetylated hemoglobin should be conducted, but due to financial constraints, it was not possible.

CONCLUSION

Subjects having a family history are more aware about the disease as compared those who did not have a family history. Even though subjects with a family history have more knowledge about disease than control, overall level of awareness was poor. Therefore, mass awareness programs should be conducted to increase awareness in whole population for early diagnosis and prevention of disease.

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