

Awareness and knowledge of diabetes mellitus in rural population visiting a tertiary care hospital of Central India

Farheen Naz¹, Shubhada Gade^{2*}

¹MBBS Student, ²Associate Professor, Dept. of Physiology, NKP Salve Institute of Medical Sciences and Research Centre and Lata Mangeshkar Hospital, Nagpur, Maharashtra, India

***Corresponding Author: Shubhada Gade**

Email: shubhagade@gmail.com

Abstract

The worldwide prevalence of Diabetes mellitus (DM) has risen dramatically in developing countries over the past 2 decades reaching level of almost 70% of all cases. The ICMR-INDIAN Diabetes study showed that by 2030 projected No. of people with DM will be around 101.2million. This study focuses on the level of awareness and knowledge about DM in the general rural population of central India by using a pre-validated questionnaire. A cross-sectional study was conducted in the rural population of central India in a tertiary care hospital of central India. The duration of study was of 2 months. A total of 200 individuals whose aged above 20 years were screened by using a pre-validated questionnaire regarding awareness and knowledge of DM, associated risk factors, complications and it's relation to pregnancy (Gestational Diabetes mellitus-GDM). 84% of the population reported that they knew about diabetes, 58.5% population knew that it could causes complications while 65.5% of the populations were aware of the fact that it is preventable and also its preventive factors. The questions related to DM and pregnancy revealed that 50% of the population was not aware of its complications in pregnancy, its effect on later life and on the children born to diabetic mother. This study reveals that knowledge about the basic understanding of DM (like its incidence, symptoms and its prevention) is quite satisfactory: but there is lack of awareness about the complications of diabetes and its effect on pregnancy and children born to diabetic mother. This emphasizes the need for carrying out awareness programs down to masses in rural area.

Keywords: Diabetes mellitus, Gestational diabetes mellitus (GDM), Awareness, Rural population, Complication.

Introduction

Demographic transition combined with urbanization and industrialization has resulted in drastic changes in lifestyles globally but the impact is felt more in developing countries because of their more rapid pace of growth. One of the consequences of this transition is a change in disease pattern with communicable disease being replaced by non-communicable or life style related disease like diabetes, obesity, cardiovascular disease and cancer. Until a decade ago, diabetes was not considered a major public health problem in developing countries like India but the situation has now dramatically changed.¹ The worldwide prevalence of diabetes mellitus has risen dramatically in the developing countries over the past two decades.² The World Health Organization (WHO) predicts that developing countries will bear the brunt of this epidemic in the 21st century. Currently, more than 70% of people with diabetes live in low income and middle-income countries.³

The Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011.⁴ These numbers are projected to increase to 101.2 million by 2030 (5). Education is one of the key components in ensuring better treatment and control of diabetes. There is also evidence to show that increasing knowledge regarding diabetes and its complications has significant benefits including increase in compliance to treatment, thereby decreasing the complications associated with diabetes.^{6,7}

There are limited studies on diabetes awareness, attitude, and prevalence in rural population of Central India. This study focuses on the level of awareness and knowledge

of diabetes in the general rural population of Central India visiting to a tertiary care hospital (Lata Mangeshkar Hospital, Nagpur) by using a validated structured questionnaire based on basic knowledge about diabetes.

Aims

To study the knowledge and awareness of diabetes mellitus in rural population attending a tertiary care Hospital of Central India.

Objectives

1. To study understanding of the term called diabetes its incidence, symptoms, associated risk factors, complications and the preventive aspects.
2. To assess the awareness about diabetes in pregnancy and its complication/risk factor in later life.

Materials and Methods

A cross-sectional study was conducted after obtaining an approval from The Institutional Ethics Committee (IEC). The study subjects were drawn from a representative sample of rural population of Central India who visited a tertiary care Hospital (Lata Mangeshkar Hospital, Digdoh Hills Hingna Nagpur) for a period of 2 months (1 Aug 2017 to 30 September 2017). A total of 200 individuals aged above 20 years were screened by using a pre-validated questionnaire regarding awareness and knowledge of diabetes mellitus, associated risk factors, complications and its relation to pregnancy.

Tool

A detailed pre-validated questionnaire having 12 questions was used to obtain data which included details on demography, behavioral aspects, physical activity, dietary patterns and medical information. It included questions about knowledge and awareness of different aspects of diabetes. Specific questions were also used to assess the subject's knowledge regarding risk/causative factors as well as complications and prevention of complications. Knowledge on causative factors and complications of diabetes were assessed using open ended questions.⁸ There were 3 questions (No. 10-12) regarding awareness about GDM (Gestational Diabetes mellitus). The questionnaire was translated into the local language (Marathi /Hindi).

Statistical analysis

Response of the 200 individuals were analyzed by using EPI INFO 7 Software. Results are expressed as frequencies (percentage) for quantitative variables.

Results

The total population surveyed comprising of 200 individuals (aged > 20years), 103 females and 97 males. The findings of this study suggest that:

Knowledge about diabetes: Its prevalence, symptoms and lifelong nature

84% of the population reported that they knew about diabetes mellitus, 58.5% were aware of its increasing incidence. 58.5% of individuals considered that incidence of diabetes is increasing day by day, 28% of individuals were not sure about it but 13.5% were not aware. About its life-long nature, 66% of individuals agreed but 34% of subjects were not aware of. When enquired about the symptoms of diabetes, 71% of people gives frequent urination as a major symptoms of diabetes mellitus followed by polydypsia (63.5%), polyphagia (57%) (Fig. 1).

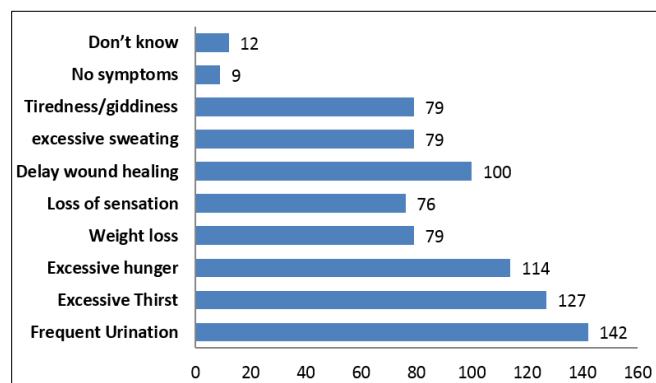


Fig.1: Awareness regarding symptoms

Knowledge about complications of diabetes mellitus, associated risk factors and its preventive aspect

About 59.5% population knew that Diabetes could cause complications, 13.5% of them were unaware of it and 27% of subject were not sure. Amongst the organs affected in

Diabetes mellitus, Eyes are the major organ affected by diabetes as per 61% of the subjects, followed by heart (46%), Kidney (40%), liver (37.5%) (Table 1).

Table 1: Organs affected because of Diabetes Mellitus

Organs affected	Frequency	Percent
Eye	122	61.0%
Heart	92	46.0%
Lung	47	23.5%
Kidney	80	40.0%
Brain	61	30.5%
Liver	77	37.5%
Hands and feet	70	35.0%
Others	1	0.5%
Don't know	30	15.0%

The various risk factors for diabetes reported by the subjects were overweight (68.5%), consumption of more sweets (59.5%), family history (53.5%), high fat diet (48.5%), high blood pressure (44.5%), lack of physical activity (44%) and mental stress (31.5%) (Table 2).

Table 2: Risk factors for diabetes

Risk factors	Frequency	Percent
Overweight	137	68.5%
Family history of diabetes	107	53.5%
High blood pressure	89	44.5%
consuming more sweets	119	59.5%
High fat diet	96	48.0%
Lack of physical activity	88	44.0%
Mental Stress	63	31.5%
Others	16	8.0%
Don't know	15	7.5%

About 65.5% of the population were aware of the fact that Diabetes mellitus is preventable and were also aware about the preventive factors. When enquired about the measures that can be taken to prevent DM, 72% people consider proper diet as a major diabetes preventable factor followed by exercise as per 61.5% of people. 8% of people gives other factors such as taking allopathic and ayurvedic medicines, uses of herbs, consuming less sweets et to prevent diabetes.

Awareness about gestational diabetes mellitus

The questions related to diabetes mellitus and pregnancy revealed that about 50% of the population was not aware of complications of Diabetes mellitus in pregnancy, its effects in later life and on the children born to diabetic mothers. 50.5% of people consider that diabetes in pregnancy affect pregnancy outcomes and 20% of them said that diabetes during pregnancy is not a major problem it doesn't affect pregnancy outcomes. A significant 29.5% of people were still not aware of a condition called GDM and its complication during pregnancy (Table 3).

Table 3: Awareness about effect of diabetes in pregnancy on pregnancy outcomes

Aware	Frequency	Percent
Yes	101	50.5%
No	40	20.0%
Don't know	59	29.5%
Total	200	100.0%

43.5% of people were of the opinion that women with diabetes in pregnancy have a higher risk of developing diabetes later in life, and 24.5% denied but the major area of concern is 32% of people are still unaware of it (Table 4).

Table 4: Awareness about high risk of developing diabetes later in life

Aware	Frequency	Percent
Yes	87	43.5%
No	49	24.5%
Don't know	64	32%
Total	200	100.0%

About the children born to diabetic mothers, 42% of people consider that children are also prone to develop diabetes later in life if born to a diabetic mother, 40% of people had no knowledge regarding this and still had confusion regarding this situation and 18% of them denied this (Table 5).

Table 5: Children born to diabetic mother prone to develop diabetes in future

Aware	Frequency	Percent
Yes	84	42.0%
No	36	18.0%
Don't know	80	40.0%
Total	200	100.0%

Discussion

The Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011.⁴ These numbers are projected to increase to 101.2 million by 2030.⁵ India is a country with diverse social, economic, cultural, and educational patterns. A large proportion of the population of India is from the rural sector. A number of these regions are still underdeveloped and people have varied beliefs and misconceptions regarding disease.⁴ Not much is known about the level of awareness and prevalence of diabetes in developing countries like India.

This study is focused on assessing the knowledge and awareness about Diabetes mellitus in rural population of Central India. The major finding of this study is 84% of the rural population reported that they knew about Diabetes mellitus, 58.5% were aware of its increasing incidence. Two more studies in South India reported this incidence to be 50.8%, 75.5% and only 21.4% in a study conducted in North east India. This can be attributed to the proximity of this tertiary center to Nagpur city. A good number of

participants (59%) were aware of the diabetic complications and the organs affected. This is in contrast against 26.8% at Kolar study and 19% in Chennai population.

About 65.5% of the population were aware of the fact that Diabetes mellitus is preventable and were also aware about the preventive factors. But the major area of concern was lack of awareness about Gestational Diabetes mellitus. Only 50% of the population was not aware of complications of Diabetes in pregnancy, its effects in later life and on the children born to diabetic mothers. This could be because of the traditions and beliefs existing in rural population about neglecting the health of females in the family.

This underscores the urgent need of to improve the knowledge and awareness about GDM in the rural areas nearby this tertiary center.

Conclusion

This study reveals that knowledge about the basic understanding of Diabetes mellitus like its incidence, symptoms, and its prevention is quite satisfactory. But it also reflects the poor knowledge about Gestational Diabetes mellitus. This emphasizes the need for carrying out awareness programs down to masses in rural area and extending diabetes education activities into the rural areas particularly females in the society.

Extension of the study

Results of the study were shared with the Community Medicine and OBGY department of Lata Mangeshkar Hospital Nagpur.

Conflict of interest

None.

References

- Mohan D, Raj D, Shanthirani CS, Datta M, Unwin NC, Kapur A, et al. Awareness and knowledge of diabetes in Chennai. The Chennai Urban Rural Epidemiology Study (CURES-9).
- Muninarayana C., Balachandra G., Hiremath SG, Iyengar K, Anil NS. Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar. *Int J Diabetes Dev Ctries* 2010;30(1):18–21.
- Ashita Singh, Pratibha E. Milton, Amrit Nanaiah, Prasanna Samuel, Nihal Thomas. Awareness and attitude toward diabetes in the rural population of Arunachal Pradesh, Northeast India. *Indian J Endocrinol Metab* 2012;16(Suppl1):S83–S86.
- Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, et al. Prevalence of diabetes and prediabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical Research-India Diabetes (ICMR-INDIAB) study. *Diabetologia* 2011;54:3022–7.
- Unwin N, Whiting D, Guariguata L, Ghyoot G, Gan D, editors. Diabetes Atlas. 5th ed. Brussels, Belgium: International Diabetes Federation; 2011. p. 11–74.
- Visser A, Snoek F. Perspectives on education and counseling for diabetes patients. *Patient Educ Couns* 2004;53:251–5.
- Rani PK, Raman R, Subramani S, Perumal G, Kumaramanickavel G, Sharma T. Knowledge of diabetes and diabetic retinopathy among rural populations in India, and the

influence of knowledge of diabetic retinopathy on attitude and practice. *Rural Remote Health* 2008;8:838.

8. Deepa M, Bhansali A, Anjana RM, Pradeepa R, Joshi SR, Joshi PP. Knowledge and awareness of diabetes in urban and rural India: The Indian Council of Medical Research India Diabetes Study (Phase I): Indian Council of Medical Research India Diabetes 4. *Indian J Endocrinol Metab* 2014;18(3):379-85.