

To Study the Awareness about Gestational Diabetes Mellitus in Females among General Population

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Abstract

Introduction: *Amidst increase in incidence of gestational diabetes mellitus (GDM) in India, there appears to be a gap in perceptions and awareness regarding GDM among general population. It is a well-known fact that patient knowledge and awareness of any health problem play important roles in prevention, increasing treatment compliance and prevention of complications. For primary prevention of type 2 diabetes mellitus (T2DM), preventive measures should start during intrauterine period and continue throughout life from early childhood.*

Aims and Objectives: *To study the awareness about GDM in females among general population.*

Materials and Methods: *After obtaining informed consent, a pre-tested questionnaire was administered by the investigator for collection of data. The questionnaire was designed to collect information on age, education and region (rural/urban) parity followed by 12 questions focusing on what is GDM, its diagnosis, risk factors, treatment, and consequences of GDM. Data was analysed on percentage scale.*

Results: *We studied 1258 females and only 25.5% females were able to answer correctly about what is GDM. Results show that awareness about GDM was more in young (<40 years), urban and literate females as compared to old (>40 years), rural and illiterate females.*

Conclusion: *We concluded that female's knowledge and awareness about GDM, its diagnosis, risk factors, treatment and complications affecting the child and mother is very low and urban female's awareness and knowledge profile is better than rural female population.*

Keywords: *Gestational diabetes mellitus, Awareness, Female population*

Introduction

Socio-economic development and rapid epidemiological transition over the last 40 years in India have resulted in gaining dubious distinction of being called, "the diabetic capital of the world" with estimated over 30 million

diabetics, where the predicted increase in prevalence is highest. In the presence of paucity of data on gestational diabetes mellitus (GDM) it is reasonable to conclude increased prevalence of GDM in the Indian population. GDM is the most common medical complication of

pregnancy increasing perinatal morbidity and adverse long-term outcomes for the mothers and their children posing significant risk of developing diabetes later in life.

Over the next two decades there will be 20 million reproductive age women with diabetes in India alone creating a potential for extremely high rates of maternal and infant morbidity.¹ With this huge population in reproductive age in India, a significant segment of them developing impaired glucose tolerance (IGT) in all probability during pregnancy are likely to beget children who are at the risk of developing glucose intolerance “hyper glycaemia begets hyper glycaemia”.²

Development of any disease has mainly three factors: genetic, intrauterine and extra uterine factors. The genetic factors are not modifiable, whereas intrauterine and extrauterine environment are modifiable factors. The best preventive measure is primary prevention. For primary prevention of type 2 diabetes mellitus (T2DM), preventive measures should start during intrauterine period and continue throughout life from early childhood.³ Exposure to a diabetic environment in utero is associated with increased occurrence of IGT and a defective insulin secretory response in adult offspring, independent of genetic pre-disposition to T2DM. Hence, diagnosing and taking care of women with GDM gives an excellent opportunity in the primary prevention of DM.⁴

Amidst increase in incidence of GDM in India, there appears to be a gap in perceptions and awareness regarding GDM among general population as there is almost no data regarding awareness of GDM among common people especially females. It is a well-known fact that patient knowledge and awareness of any health problem play important roles in prevention of diseases, increasing treatment compliance and prevention of complications. Only a few studies have looked at knowledge, awareness, perceptions and attitudes of persons with DM and diabetes care providers.

Aims and Objectives

To study the awareness about GDM in females among general population.

Materials and Methods

After obtaining informed consent, a pre-tested questionnaire was administered by the investigator for collection of data. The questionnaire was designed to collect information on age, education and region (rural/urban) parity followed by 12 questions focusing on what is GDM, its diagnosis, risk factors, treatment and consequences of GDM. Questions

are shown in Table 1. Background and purpose of the survey were explained to the investigators who were briefed about GDM and were trained in such a way that the interview with females was more of a conversation, and relevant information was obtained after thorough probing. Those females who were able to reply correctly to the question of what is GDM that is onset of diabetes during pregnancy were asked further questions and those who did not know about what is GDM were not asked further questions. For diagnosis, females were asked whether diagnosis of GDM is made by urine test, blood sugar test in fasting state or fasting blood sugar (FBS), or blood test following glucose load or oral glucose tolerance test (OGTT). If the woman responded as blood test following glucose load, it was considered as the right answer. Question regarding risk factors included obesity, older age, family history of diabetes, previous history of diabetes during previous pregnancy and sedentary lifestyle. The knowledge on treatment of GDM was assessed by the questions with options as diet and exercise, oral antidiabetic drugs and insulin injections. If the woman responded as diet and exercises or insulin injections, it was considered as the correct answer. Their knowledge on complications of GDM was assessed by questions on whether GDM adversely affects child, mother or both. Possible answers were given against each question for the

Table 1 | Awareness about GDM in Females among General Population [% (n)]

Age.....	Urban/Rural	Literate/Iliterate	
		Right	Wrong
Questions			
What is GDM?	Urine test		
	FBS		
Diagnosis of GDM	OGTT		
	Obesity		
Risk factors of GDM	Prior history of GDM		
	Older age		
	Family history of DM		
	Sedentary life style		
	Diet and exercise		
Treatment options	Oral drugs		
	Insulin injections		
Complications of GDM	Child		
	Mother		
	Both		

investigators were to make a tick (✓) sign, thus avoiding recording time. Data was analysed on percentage scale.

Results

We studied 1258 females including 67% <40 years old, 33% >40 years old, 41.3% belonged to urban and 58.7% to rural areas and 47.8% were literate and 52.3% were illiterate. Only 25.5% females were able to answer correctly about what is GDM. Further questions were asked from only those females who answered correctly about GDM. Results are tabulated in Table 2 which show that awareness about GDM was more in young (<40 years), urban and literate females as compared to old (>40 years), rural and illiterate females. Diagnosis of GDM on the basis of urine sugar examination was answered by 28.9%, FBS by 53.3% and OGTT only by 9.3%. More number of females felt that FBS is the method to diagnose GDM as compared to diagnosis by OGTT. When asked about risk factors, 6.5% females listed obesity as a risk factor for GDM, 14.3% considered prior history of GDM, 4.9% old age, 23.9% family history of diabetes and 4.7% felt that sedentary lifestyle is a risk factor for GDM. About 83.5% females picked diet and exercise, 63.5% oral medications and 22.1% insulin injections as treatment of GDM. And 11.8% respondents felt that only child is affected by

GDM, 15.3% felt only mother is at risk and 19.6% felt that both mother and child can have adverse effects of GDM. Analysis of the results showed that young (<40 years), urban and literate females were more aware about GDM as compared to old (>40 years), rural and illiterate female population.

Discussion

The effort to prevent the epidemic of diabetes is to detect diabetes during pregnancy and for this, awareness and knowledge among the public about the possibility of diabetes occurring during pregnancy and its consequences are necessary. There is emerging evidence that diabetes education, awareness and improving motivation for self care improves diabetes care, reduces complications but still there is paucity of such studies regarding GDM. Our study showed that only 25.5% (321/1258) females were able to answer correctly as what is GDM and rest of the females did not have any knowledge about it. The outcome of a study “Awareness of diabetes mellitus in an urban and a rural area with particular reference to GDM” was discouraging as majority of the population living in the areas do not have adequate knowledge about diabetes and GDM. The study concluded that knowledge related to diabetes and, in particular, to GDM among the

Table 2 | Awareness about GDM in Females among General Population [% (n)]

Variables	Total	<40 years	>40 years	urban	Rural	Literate	Illiterate	
Questions	1258	67 (843)	33 (415)	41.3 (519)	58.7 (739)	47.8 (601)	52.3 (657)	
What is GDM?	25.5 (321)	30.1 (254)	16.1 (67)	39.3 (204)	15.8 (117)	41.4 (249)	10.9 (72)	
	n-321	n-254	n-67	n- 204	n-117	n-249	n-72	
Diagnosis of GDM	Urine test for Sugar	28.9 (93)	25.2 (64)	43.3 (29)	24.1 (49)	37.6 (44)	22.3 (53)	55.6 (40)
	FBS	53.3 (171)	57.8 (147)	36.8 (24)	59.8 (122)	41.8 (49)	61.4 (153)	25.0 (18)
	OGTT	9.3 (30)	10.2 (26)	5.9 (4)	11.8 (24)	5.1 (6)	3.6 (22)	1.2 (8)
Risk factors of GDM	Obesity	6.5 (21)	7.5 (19)	2.9 (2)	8.2 (17)	3.4 (4)	7.6 (19)	2.8 (2)
	Prior history of GDM	14.3 (46)	14.9 (38)	11.9 (8)	19.1 (39)	5.9 (7)	16.1 (40)	8.3 (6)
	Older age	4.9 (16)	5.5 (14)	2.9 (2)	6.4 (13)	2.7 (3)	5.2 (13)	4.2 (3)
	Family history of DM	23.9 (77)	26.7 (68)	13.4 (9)	27.5 (56)	17.9 (21)	28.5 (71)	8.3 (6)
	Sedentary life style	4.7 (15)	5.1 (13)	2.9 (2)	6.4 (13)	1.7 (2)	5.6 (14)	1.4 (1)
Treatment options	Diet & exercise	83.5 (268)	93.7 (238)	44.8 (30)	94.1 (192)	64.9 (76)	91.9 (229)	54.2 (39)
	Oral drugs	63.6 (204)	62.2 (158)	68.7 (46)	58.8 (120)	71.7 (84)	58.2 (145)	81.9 (59)
	Insulin Injections	22.1 (77)	25.2 (64)	19.4 (13)	30.4 (62)	12.8 (15)	26.5 (66)	15.2 (11)
Complications of GDM	Child	11.8 (38)	12.9 (33)	7.4 (5)	16.7 (34)	3.4 (4)	14.1 (35)	4.2 (3)
	Mother	15.3 (49)	16.1 (41)	11.9 (8)	18.6 (38)	9.4 (11)	17.3 (43)	8.3 (6)
	Both mother and child	19.6 (63)	20.5 (52)	16.4 (11)	25.9 (52)	9.4 (11)	23.1 (57)	8.3 (7)

rural population is very poor and much misconception prevails and awareness about diabetes and particularly on gestational diabetes is awfully lacking among the public. Similar results were obtained in our study where 53.3% females thought that diagnosis of GDM is on the basis of FBS, 28.9% by urine sugar estimation and only 9.3% thought that diagnosis of GDM is on the basis of OGTT. More number of females irrespective of age, rural or urban, literate or illiterate felt that FBS is the method to diagnose GDM as compared to diagnosis by OGTT. The knowledge of females about risk factors for GDM was suboptimal as 6.5% females listed obesity as a risk factor for GDM, 14.3% considered prior history of GDM, 4.9% old age, 23.9% family history of diabetes and 4.7% felt that sedentary lifestyle is a risk factor for GDM. When asked about treatment options for GDM, 83.5% females picked diet and exercise, 63.5% oral medications and 22.1% insulin injections as treatment of GDM. Awareness profile of females about adverse effects or complications showed that 11.8% females felt that complications occur to child because of GDM, 15.3% felt mother is at risk and 19.6% felt that both mother and child can have adverse effects of GDM. Analysis of the results showed that young (<40 years), urban and literate females were more aware about GDM as compared to old (>40 years), rural and illiterate female population. In line with results of our study, a study shows that only a small proportion of rural antenatal women (17.5%) had good knowledge about GDM.⁵ There is paucity of studies exploring the awareness profile about GDM, its diagnosis, risk factors and complications in common healthy females. Our study exposes suboptimal knowledge and awareness about GDM among female population.

Conclusion

We conclude that female's knowledge and awareness about GDM, its diagnosis, risk factors, treatment and complications affecting the child and mother is very low and urban female's awareness and knowledge profile is better than rural female population. There is emerging evidence that diabetes education, awareness and improving motivation, improves diabetes care, reduces complications but still there is paucity of such data regarding GDM. The task ahead is cut out for each one of the stake holders involved in providing primary health care: each one must do his or her bit to ensure spread of awareness and proper guidance to the patient as well as general population for prevention, diagnosis, control and treatment of GDM. Need of the hour is a concentrated effort to improve the knowledge and dissemination of information about GDM in the public especially female population which is the cornerstone for the success of prevention and control of GDM, and unfortunately the most neglected part.

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***Science may set limits to knowledge,
but should not set limits to imagination.***

— Bertrand Russell