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Gestational diabetes mellitus: Beliefs, emotions and treatment compliance: A Pakistani Cohort.

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ABSTRACT… Objective: To find out the factors regarding patient's beliefs and concerns about Gestational Diabetes and its treatment. **Study Design:** Purposive Sampling. **Setting:** Diabetes Clinic & Antenatal Clinic of Lahore General Hospital/ Post Graduate Medical Institute/ Ameer ud Din Medical College, Lahore. **Period:** July 2019 to December 2019. **Material & Methods:** 46 females who were 24-38 weeks pregnant and having gestational diabetes mellitus, type1 diabetes mellitus or having type 2 diabetes mellitus first diagnosed during pregnancy were enrolled. Data was collected by an interview based questionnaire, analyzed using SPSS version 23, and 95% confidence interval was used as test of significance. **Results:** The mean age was 27±9 years. 20% of the participants were Illiterate 80% were literate. GDM in the all three trimesters was 45.6%, 39% and15% respectively. 30.5% were hypertensive and 100% adopted lifestyle modifications, 89% were using insulin and 10.8% were taking metformin. 33% had history of instruments delivery and 36% had adverse pregnancy or perinatal outcomes. Regarding patients belief's, 10% believed in diet control, 26% were not comfortable with lab and physician's counselling, 38% were in state of denial, 26% were unaware of screening, 70% were frightened of unexpected diagnosis and consequences. 18% were concerned of target organs damage, 16% were concerned of mode of delivery, 25% regarding subsequent pregnancy, 53% were concerned about insulin treatment and its duration and 33% were keen to know about adverse pregnancy outcomes. **Conclusions:** Educational status is not known to influence gestational diabetes mellitus, Major concern of patient with GDM was her health and surroundings, treatment options, adverse effect on baby and subsequent pregnancies outcomes.

Key words: Belief, Diabetes Mellitus, Emotions, Gestational.

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INTRODUCTION

Diabetes mellitus has affected 143 million people in the world and its global prevalence is expected to increase by two fold in 2030.[1] Initial recognition of the degree of glucose intolerance during pregnancy is termed as gestational diabetes mellitus. The incidence of gestational diabetes mellitus is increasing day by day and its prevalence is reported to be equivalent to type 2 diabetes mellitus.[2] Multiple risk factors are thought to be involved in the development of gestational diabetes mellitus including positive family history of diabetes, ethnic origin, obesity and presence of degree of hypertension.[3]

Among all the populations, gestational diabetes mellitus is the main cause of congenital anomalies, malformations, respiratory distress syndrome, shoulder dystocia, birth trauma, still births, neonatal hypoglycemia, jaundice and perinatal death.[4,5] It can further contribute to an increased risk of hypertension, pre-eclampsia, premature birth, macrosomia, and an increased incidence of instrumental delivery, and C-sections.[6,7] According to literature women who developed gestational diabetes mellitus once are at an increased risk of developing type 2 diabetes mellitus, gestational diabetes mellitus and pre diabetes.[7]

The important factors affecting GDM management are patient's beliefs about her problem, emotions about her condition, future & baby and treatment

compliance as prescribed by her treating physician. Regardless of this, little is known about these factors; exploring these could help physicians to offer enhanced medical care and added appropriate patient education, thus significantly improving the lives of the affected women and their children. The aim of this study was to explore factors that affect GDM treatment.

MATERIAL & METHODS

The study was conducted at Diabetes, Endocrine and Metabolic center in collaboration with antenatal clinic of Lahore General Hospital/ Post graduate medical institute/ Ameer ud din medical college, Lahore. Purposive sampling was used to collect the data, who at the time of data collection were 24-38 weeks pregnant. The criteria for participation in the study was having gestational diabetes mellitus, type1 diabetes mellitus or having type 2 diabetes mellitus first diagnosed during pregnancy according to the criteria mentioned by the American Heart Association.[3] Data was collected through in-depth face to face interview comprising semi structured questions. In total, 46 interviews were conducted with pregnant women, each interview comprising of 20-30 minutes. The data was analyzed using SPSS version 23, and 95% confidence interval was used as test of significance. The contents of the interview were reviewed to facilitate understanding of the participants in relation with the objectives of the study.

RESULTS

The mean age of women with gestational diabetes mellitus was 27±9 years. The majority of participants in our study were literate enough to read and write as shown in Table-I. A large number of patients had no history of hypertension, they had no family history of diabetes mellitus and they were in the first trimester of their pregnancy. All the participants included in our study agreed to adopt lifestyle modifications in future.

Patient's thoughts about the disease were self centered; like socio-personal disbeliefs, denial, fear and treatment centered; like blood sugar monitoring, lab follow-ups and consultation by some doctors for GDM perspectives. All these factors are listed in Figure-1.

Patient's concerns about the health were also self centered; like effects on her vital organs due to disease, duration of this issue, delivery consequences and harm to the baby & treatment centered; like inclination towards oral medication, fear of needles both for monitoring and insulin purpose and duration of treatment. All these factors are listed in Figure-2.

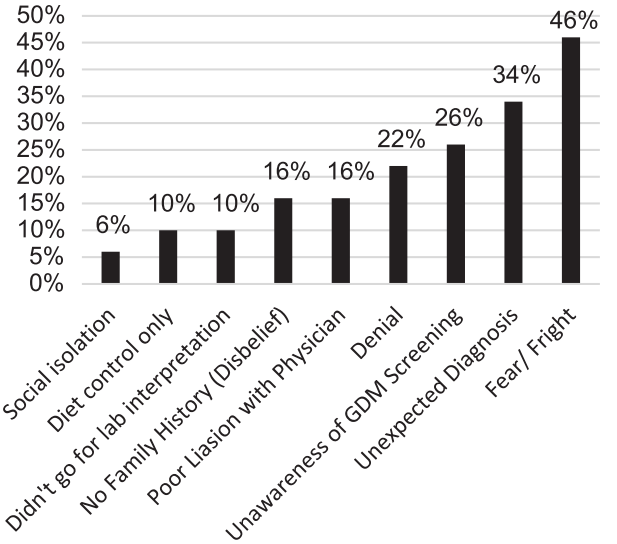

Figure-1. Patient beliefs

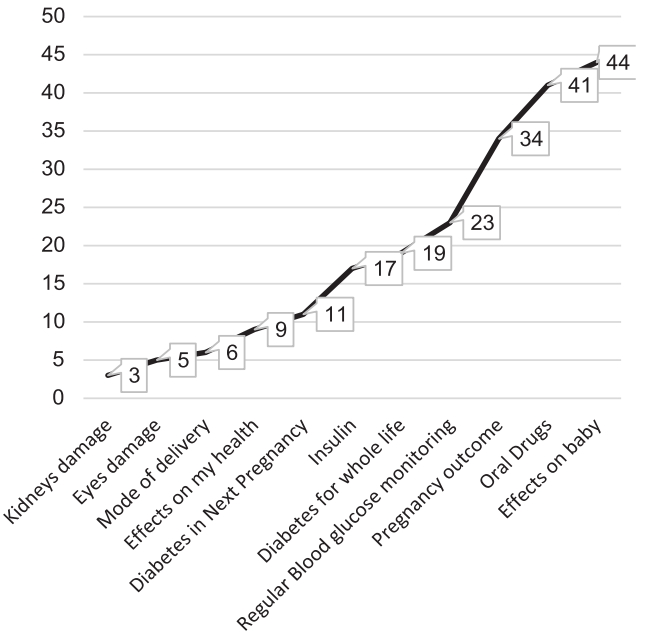

Figure-2. Patient concerns

Characteristics	No. of Participants	Frequency	95% Confidence Interval	
			LOWER	UPPER
Educational status				
Illiterate	09	19.5%	1.7348	1.9452
Primary	15	32.6%	1.5911	1.8489
Secondary	06	13.0%	1.7867	1.9733
Intermediate	10	21.7%	1.6852	1.9148
Bachelors	03	6.5%	1.8718	2.0082
Masters	03	6.5%	1.8718	2.0082
Family history of DM				
Yes	07	15.2%	1.7604	1.9596
No	39	84.7%	1.5208	1.9192
Pregnancy				
1st	17	36.9%	1.5911	1.8489
2nd	18	39.2%	1.0021	1.1579
3rd	11	23.9%	1.0697	1.2903
Hypertension				
Yes	14	30.4%	1.5911	1.8489
No	32	69.6%	1.5911	1.8489
Treatment taking				
Lifestyle modification	46	100%	1.0021	1.1579
Insulin	41	89.2%	1.0697	1.2903
Metformin	05	10.8%	1.7604	1.9596
Previous Obstetrics History				
LSCS	11	28.2%	1.7348	1.9452
Forceps/ Vacuum	02	4.3%	1.5911	1.8489
Congenital malformation	01	2.1%	1.7867	1.9733
IUD	06	15.2%	1.6852	1.9148
Miscarriage	09	19.5%	1.8718	2.0082
Trimester in which GDM was diagnosed/labeled				
First Trimester	21	45.6%	1.7182	1.9125
Second Trimester	18	39.2%	1.6221	1.8793
Third Trimester	07	15.2%	1.7933	1.8691

Table-I. Characteristics of participants

DISCUSSION

The educational status is known to play a well-defined role in the health status of patients. Many of the researchers have found that those people who have higher literacy rate are more compliant to the advice of their treating physician. According to our results, Almost 20% of the participants were Illiterate or just could even write their names only, those who had primary education were 33%, with secondary education were 13%, Intermediate 21%, 6.5% had done their Bachelors and 6.5% had higher educational status. Our results were consistent with Nancy et al. who reported no significant association between literacy rate and glycemic control.[8] According to our results having a family history of diabetes mellitus was not a risk factor for the development of gestational diabetes mellitus. Our results were contradictory to Mehmood et al. who stated that having a family history of diabetes mellitus is recognized as strong risk factor for the development of gestational diabetes mellitus.[9] This might be explained because of the fact that our sample size was small so we were not able to collect data from a large population.

In our study it was also revealed that incidence of gestational diabetes mellitus in the first trimester was 45.6%, in the second trimester was 39% and in the third trimester was 15%, so as the pregnancy progressed the risk of gestational diabetes mellitus decreased. These were not so similar but

almost consistent with the data published by the cdc.org, according to which pregnant females are more prone to gestational diabetes mellitus in the second trimester[10], the reason being that our study was conducted in Pakistani population and the guidelines of CDC are based on a different population.

Renata et al. stated that hypertension or pre-eclampsia in the current pregnancy is supposed to be a strong risk factor for the development of gestational diabetes mellitus in Brazillian population, but our results were not similar to that as they showed 30.5% of our participants were hypertensive and 69.5% were normotensive, again this can be explained by the fact that this study was conducted in a different population.[11]

Our study showed that 100% of our participants adopted lifestyle modifications to an extent, 89% were using insulin and 10.8% were taking metformin who developed gestational diabetes mellitus, so taking metformin was considered to be a safe alternative of insulin in treating gestational diabetes mellitus. Similarly Sara et al. also stated that metformin is considered a viable treatment option of gestational diabetes mellitus with neutral or even improved outcomes.[12] In our participants those who developed gestational diabetes mellitus, 28% had history of lower segment cesarean section, 4.3% had history of forceps/ vacuum delivery, 2% had previous birth with congenital malformation, 15% had intrauterine death and 19% had miscarriage, The literature has reported these as risk factors for the development of gestational diabetes mellitus.[11]

We also assessed patients belief's regarding disease, 6% of the patients said that they fear that they will be socially isolated, 10% were of the view that their condition can be cured by diet control only and they don't need any medication for the treatment of the condition, 10% were of the view that lab interpretations were not authentic, 16% said that they could not have this condition because they do not have any family history of such condition, 16% had poor liaison with their physician, 22% were in a state of denial, 26% were unaware of gestational diabetes mellitus screening, 34% were of the view that they have an unexpected diagnosis and 46% were frightened of the consequences of the disease. Fear of disease is a common finding in patients with chronic diseases, similar is the case with gestational diabetes mellitus. Our results were consistent with those of Peter et al. who formulated a fear of progression questionnaire to measure level of fright in patients with chronic diseases and found that majority of patients with chronic diseases were afraid of the outcomes of the disease.[13]

With respect to patients concerns regarding disease our study found that 3 participants were afraid of kidney damage either due to disease or due to the medications, 5 were concerned of their eyes damage. 6 were afraid regarding their mode of delivery, 9 were of the view that this disease would adversely affect their health, 11 were of the view that this disease would lead to diabetes in next pregnancy. 17 had concerns regarding insulin administration, 19 participants believed that now they will have to live with diabetes for their whole life, 23 participants had concerns regarding regular glucose monitoring as this would be inconvenient for them. 34 were afraid of adverse outcomes of pregnancy, 41 participants were afraid of the side effects of the oral drugs and 44 participants believed that their baby would be adversely affected by this condition. It was documented by Kopec et al. who reported a similar fear of insulin treatment among patients with gestational diabetes mellitus.[14]

There were a few limitations of our study; firstly our study was conducted in a small population. We required a large sample size to verify the findings of our study. Secondly, our study was a single centered study, a similar study conducted with a multi-center approach would help to verify the results of our study. Lastly, the data collection was in an interview based format which had its own drawbacks.

CONCLUSION

In a nutshell, educational status is not known to influence gestational diabetes mellitus, GDM was found to be more prevalent in the first trimester and metformin was found to be effective in

treatment of GDM as a viable alternative of insulin. The major concern of patients with GDM was her health, treatment options, adverse effect on baby and subsequent pregnancies outcomes. The main focus of physician while treating a patient of GDM should to address her concerns regarding fear of outcome of disease in a structured fashion. **Copyright© 12 Sep, 2020.**

REFERENCES

1. Leng J, Shao P, Zhang C, Tian H, Zhang F, Zhang S, Dong L, Li L, Yu Z, Chan JC, Hu G. **Prevalence of gestational diabetes mellitus and its risk factors in Chinese pregnant women: a prospective population-based study in Tianjin, China.** PloS one. 2015 Mar 23;10(3):e0121029.

2. Metzger BE, Coustan DR. **Summary and recommendations of the fourth international workshop-conference on gestational diabetes mellitus. The organizing committee.** Diabetes Care. 1998; 21Suppl 2:B161–B167.

3. **Association, American Diabetes. "Gestational diabetes mellitus." Diabetes Care** 26, no. suppl 1 (January 1, 2003): s103–5.

4. Cheung, N. Wah. **"The management of gestational diabetes." Vascular health and risk management** 5, no. 1 (2009): 153–64.

5. **"Increasing rate of diabetes in pregnancy among American Indian and white mothers in Montana and North Dakota,** 1989–2000 | SpringerLink." Accessed July 13, 2020.

6. Setji T, Brown A, Feinglos M. **Gestational diabetes mellitus. Clinical Diabetes** 2005; 23:17–24.

7. Kim, Catherine. **"Gestational diabetes: Risks, management, and treatment options."** International Journal of Women's Health 2 (October 7, 2010): 339–51.

8. Morris, Nancy S., Charles D. MacLean, and Benjamin Littenberg**. "Literacy and health outcomes: A cross-sectional study in 1002 adults with diabetes."** BMC Family Practice 7 (August 14, 2006): 49.

9. Moosazadeh, Mahmood, ZatollahAsemi, Kamran B. Lankarani, Reza Tabrizi, NajmehMaharlouei, Ahmad Naghibzadeh-Tahami, GholamrezaYousefzadeh, et al. **"Family history of diabetes and the risk of gestational diabetes mellitus in Iran: A systematic review and meta-analysis."** Diabetes & Metabolic Syndrome 11 Suppl 1 (November 2017): S99–104.

10. **CDC. "Gestational diabetes." Centers for disease control and prevention**, May 30, 2019.

11. Pons, RenataSelbach, Fernanda CamboimRockett, Bibiana de Almeida Rubin, Maria Lúcia Rocha Oppermann, and Vera LúciaBosa. **"Risk factors for gestational diabetes mellitus in a sample of pregnant women diagnosed with the disease."** Diabetology& Metabolic Syndrome 7, no. Suppl 1 (November 11, 2015): A80.

12. **"Metformin in gestational diabetes mellitus."** Accessed July 14, 2020.

13. Herschbach, Peter, Petra Berg, Andrea Dankert, Gabriele Duran, Ursula Engst-Hastreiter, Sabine Waadt, Monika Keller, Robert Ukat, and Gerhard Henrich. **"Fear of progression in chronic diseases: Psychometric properties of the fear of progression questionnaire."** Journal of Psychosomatic Research 58, no. 6 (June 2005): 505–11.

14. Kopec, J. A., J. Ogonowski, Md. M. Rahman, and T. Miazgowski. **"Patient-Reported outcomes in women with gestational diabetes: A longitudinal study."** International Journal of Behavioral Medicine 22, no. 2 (April 1, 2015): 206–13.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Maryam Zulfiqar	Original idea, Review of literature and the manuscript writing, Final review.	
2	M. Imran Hasan Khan	Literature review, Discussion, Final manuscript review and approval.	
3	Salman Shakeel	Data collection, Introduction, Approval from ERC , Final review.	
4	Usama Azhar	Statistical analysis, Final review.