Original Research Article

Assessment of quality of life among antenatal women with gestational diabetes mellitus

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ABSTRACT

Background: Pregnancy is challenging for every woman and if it is complicated with conditions like gestational diabetes mellitus (GDM), it may reduce her quality of life (QoL) significantly which increases the potential risks related to the physical and psychological health aspects related to the mother as well as for the baby thus causing a negative impact on her overall health and wellbeing. Hence, it should be given more importance by healthcare professionals.
Methods: The study design adopted to assess the QoL of antenatal women with GDM was a cross-sectional research design.110 antenatal women with GDM attending antenatal OPD at selected hospitals in Bengaluru were chosen using a Non-probability convenient sampling technique. A standardized GDM questionnaire (GDMQ-36) was used to assess QoL and the data analysis was done using descriptive and inferential statistics techniques. The study was conducted from July 2022 to August 2023.
Results: The study results were as follows, 74.5% of antenatal women with GDM had a moderate level of QoL, 25.5% had a high level of QoL and no antenatal women was found to have low level of QoL. 60% of antenatal women had high level of QoL in support domain and 25.5% of the antenatal women had low level of QoL in complications of GDM domains. A significant association was found between QoL and selected socio-demographic variables.
Conclusions: The present Study concluded that the majority of the antenatal women (74.5%), had moderate levels of QoL and a significant association was found between QoL and socio-demographic variables.

Keywords: QoL, GDM, Antenatal women

INTRODUCTION

Pregnancy is a unique process for every women in which a baby grows inside a mother's womb over 9 months which prepares her for motherhood physically, emotionally as well as psychologically. Some women have health issues before pregnancy which if not addressed could lead to complications during her pregnancy while, others develop it during pregnancy which impacts the health and well-being of the mother and the baby.[1]

According to WHO (2019) increased blood sugar levels are one of the complications that account for two-thirds of all maternal deaths.[2] GDM is glucose intolerance i.e. blood sugar values ≥140 mg/dL with onset or first recognition during the present pregnancy which presents late in second or during third trimester.[3] According to IDF (International diabetes federation, 2019), 1 in 6 births worldwide are affected by GDM among which the majority of cases are in low and middle-income countries like India.[4] A narrative review on awareness of GDM and compliance with management among pregnant women showed GDM rate in India is 26.3 percentages which is the highest in the world.[5]

According to a study, the prevalence of GDM ranges from 3.8% in Kashmir to 6.3% in Mysore up to 17.9% in Tamil Nadu and it is estimated that about 4 million women are affected by GDM in India at a given time.[6] According to a

newspaper report published on September 25, 2016, the national average of GDM is 15% of all cases and urban Karnataka has an average of 15.8% of cases which makes it an issue of concern.[7]

Most of antenatal mothers develop concerns related to the well-being of their growing fetus during their pregnancy. However, the changes that the antenatal mother undergoes during her pregnancy make her vulnerable both physically and mentally which are beyond their control. Even if it is a normal pregnancy these changes can impair the antenatal mother's ability to carry out her usual responsibilities which directly affects her QoL.[8]

QoL as per WHO (1993) is defined as the perception of an individual about his place in life, in context of his culture, related to the value system in which he lives and about his goals, expectations, and standards.[9] QoL is affected significantly to a great extent when a woman tries to cope with pregnancy complicated by GDM as she has to restrict her diet and modify her lifestyle along with the fear of fetal wellbeing which creates a difference between her actual way of life and expectations.[10] According to a systematic review of QoL in women with GDM (2017), GDM is the most common metabolic disorder affecting 7% of all pregnancies not only causing negative medical outcomes but also affecting QoL.[11]

Another systematic review showed that 87.3% of the total sample reported a negative impact of GDM on their social life in terms of QoL and stated that, in women suffering from GDM, their QoL is significantly worse in both the long term and short term (Italy, October 2016). Which indicated a strong need for further studies in future to examine the impact of QoL in GDM mothers by promoting their illness acceptance related to GDM and healthy lifestyle behavior modifications.[10]

Least attention is given to non-clinical measures such as changes in mental health, self-esteem, confidence, and also QoL.[12] So, it is strongly believed that along with standard pharmaceutical care, assessing the non-clinical measures among pregnant women can provide a strong foundation for promoting maternal health. The relationship between the physiologic processes in women during pregnancy concerning the women's QoL is least discussed and reported in the literature in developing countries like India, which became a major reason to conduct this study.

The objectives of the study are to assess QoL among antenatal women with GDM and also to find the association between QoL and selected socio-demographic variables among antenatal women with GDM.

METHODS

Descriptive cross-sectional research design was used in this study.

Study was conducted at antenatal OPDs of 3 selected hospitals from July 2022 to August 2023 in Bangalore. The setting for the study was selected based on geographical proximity, researcher's familiarity with setting, feasibility of conducting study, and availability of samples.

Sample

Antenatal women with GDM visiting antenatal OPDs of selected hospitals in Bangalore.

Sample size

The 110 antenatal women with GDM visiting antenatal OPDs of selected hospitals were chosen for the study.

Sampling technique

Non-probability convenient sampling technique was used.

Inclusion criteria

Antenatal women who are diagnosed with GDM and are willing to participate in study and can read as well as understand either English or Kannada.

Exclusion criteria

Antenatal women with any obstetrical complication like chronic hypertension, pre-eclampsia, eclampsia, severe anemia, cardiac diseases, renal diseases, depression, and living with HIV.

Description of the tool

After discussion with the experts and a detailed review of the literature, the standardized tool GDM questionnaire (GDMQ-36) was chosen to assess the QoL of antenatal women with GDM.

The tool consisted of the following sections:

Section-A

Socio-demographic profile: It includes age, educational status, occupation, marital status, type of family, family income, place of residence, weeks of gestation, number of pregnancies, number of living children, history of GDM in previous pregnancies, treatment received for GDM (diet and lifestyle, oral hypoglycemic drugs and insulin), history of obstetrical complications, lifestyle modifications to cope up with GDM and medications received for GDM.

Section-B

GDM questionnaire (GDMQ-36: This standardized questionnaire consists of 36 questions developed by S. Mokhlesi, and M. Simbar. professor, midwifery and reproductive health research center, Shahid Behesti

university of medical sciences, Tehran, Iran in 2020 which covers the following aspects of QoL i.e. Concerns about high risk pregnancy (11 items), perceived constraints (8 items), complications of GDM (6 items), medication and treatment (5 items), support (6items).

Content validity

It was obtained from 9 experts (8 nurse experts and 1 obstetrician). Modifications were done as per suggestions given by them in the socio-demographic profile.

Reliability

Internal consistency reliability of the standardized QoL questionnaire (GDMQ-36) was calculated by obtaining Cronbach's alpha value which was 0.81 for the English version and 0.79 for the Kannada version.

Pilot study

The pilot study was conducted and found to be practical and feasible.

Data collection

The 110 subjects were selected after obtaining a formal permission from higher authorities of selected hospitals in Bangalore. A self-introduction was given and study purpose was explained along with a written consent obtained from the subjects to participate in the study. Socio-demographic data, standardized QoL questionnaire (GDMQ-36) was administered to the Subjects. The data collection period was of 4 weeks.

Statistical analysis

Data analysis was done using statistical package software for social sciences (SPSS) version 21. Socio-demographic data and level of QoL among antenatal women with GDM were described using frequency and percentage distributions and the association between QoL with selected socio-demographic variables of antenatal women with GDM was determined using a chi-square test. The set confidence interval was at 95% and $p < 0.05$ was considered to be statistically significant.

RESULTS

Table 1 shows that the majority of the subjects, 74.5% had moderate level of QoL, 25.5% of the subjects had high level of QoL and no subject were found to be having low level of QoL.

Table 2 depicts that the mean sum scale score of GDMQ-36 for QoL among subjects was 62.78 with standard deviation (SD) ±9.286.

The Figure 1 depicts that majority of the subjects, 89.9% had moderate level of QoL in the medication and treatment

domain and the majority of the subjects, 60% had a high level of QoL in the support domain.

Table 1: Frequency and percentage distribution of subjects in terms of overall QoL, n=110.

Level of QoL	GDMQ-36 score	F	Percentage (%)
Low	0-33	0	0
Moderate	34-66	82	74.5
High	67-100	28	25.5

Table 2: Mean and standard deviation of overall QoL, n=110.

GDMQ-36	Minimum	Maximum	Mean	SD
	49.0	99.0	62.78	9.286
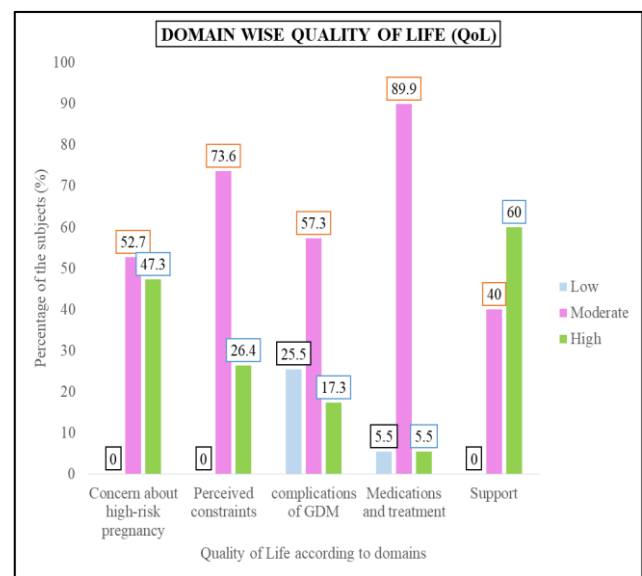
Figure 1: Percentage of the subjects with regards to domain wise QoL.

Table 3: Mean percentage and standard deviation of sub-scale score of subjects in terms of QoL, n=110.

Domain score	Mean percentage (%)	SD
Concern about high-risk pregnancy	65.07	±6.6
Perceived constraints	58.62	±5.6
Complications of GDM	55.8	±5.04
Medications and treatment	53.8	±3.27
Support	79	±2.59

Table 3 reveals that mean domain score related to concerns about high risk pregnancy was 35.79 with standard deviation (SD)±6.6 and a mean percentage of 65.07%, while, perceived constraints were 23.45 with a standard

deviation (SD)±5.6 and mean percentage of 58.62%, complications of GDM was 16.74 with standard deviation (SD) of±5.04 and mean percentage of 55.8%, medication and treatment was 13.45 with standard deviation (SD)±3.27 and mean percentage of 53.8% and for support domain was 23.70 with standard deviation (SD)±2.59 and mean percentage of 79%.

Table 4 shows that there was a significant association between the level of QoL and age (χ^2=4.322, df (1)=3.84) at (p=0.039).

Table 5 shows that there was a significant association between the level of QoL and type of family (χ^2=3.96, df (1)=3.84) at (p=0.049).

The above Table 6 shows that there was a significant association between QoL and treatment received for GDM (χ^2= 6.192, df (2)=5.99) at (p=0.037) and history of abortion and intrauterine death (χ^2=3.921, df (1)=3.84) at (p=0.05).

Table 4: Association between QoL with age.

Age (In years)	Level of QoL		Chi square (χ^2)	P value
	High	**Moderate**		
Below 30	11	33	4.322, df=1	0.039 *S
30 and above	17	49		

df (1)=3.84, df (2)=5.99, df (3)=7.82, df (4)=9.488 (p<0.05), S*=Significant, NS=Not significant at p<0.05, df=degree of freedom.

Table 5: Association between QoL with type of family.

Type of family	Level of QoL		Chi square (χ^2)	P value
	High	**Moderate**		
Nuclear	13	55	3.96, df=1	0.049 *S
Joint	15	27		

df (1)=3.84, df (2)=5.99, df (3)=7.82, df (4)=9.488 (p<0.05), S*=Significant, NS=Not significant at p<0.05, df=degree of freedom.

Table 6: Association between QoL with history of GDM in previous pregnancy, treatment received and past history of abortion and intrauterine death, n=110.

Sociodemographic variables	Level of QoL		Chi square value (χ^2)	P value
	High	**Moderate**		
History of GDM in previous pregnancy				
Yes	14	42	0.012, df=1	0.911, NS
No	14	40		
If yes, treatment received				
None	0	6	9.192, df=3	0.037 *S
Diet and lifestyle modifications	2	9		
Oral hypoglycemic drugs	0	7		
Insulin	12	20		
Past history of obstetrical complications				
Abortion	4	19	6.921, df=2	0.041 *S
Intra uterine death	3	18		
Neonatal death	1	3		

df (1)=3.84, df (2)=5.99, df (3)=7.82, df (4)=9.488 (p<0.05). S*=Significant, NS=Not significant at p<0.05, df=degree of freedom.

Thus, a significant association was found between QoL and selected socio-demographic variables such as age in years, type of family, treatment received for GDM, past history of obstetrical complications and no association was found for the variables such as educational status, occupation, family income, place of residence, weeks of gestation, total number of pregnancies, number of living children, history of GDM in previous pregnancy, family history of GDM, lifestyle modifications to cope with GDM and medications for GDM.

DISCUSSION

The present study shows that among 110 antenatal women with GDM, the majority of subjects, and the 74.5% had a

moderate level of QoL 25.5% of the subjects had a high level of QoL and no subject was found to have having low level of QoL. These findings are contradicted by a descriptive study conducted in selected districts of Tamil Nadu, India in 2020 to assess the QoL among antenatal mothers with GDM and its association with selected sociodemographic variables. Data collected from 60 pregnant women using the modified QoL scale (WHOQOL-BREF) revealed that 40% had a moderate level of QoL, 36.6% had an adequate level of QoL and 23.3% had an inadequate level of QoL.[13]

The findings of the present study also showed that QoL domains: support had a maximum level of high QoL (60%) compared to concern regarding high-risk pregnancy, perceived constraints, complications of GDM, medications, and treatment domains. These findings are supported by another study conducted at the outpatient clinic of Suez Canal university hospital, Egypt to explore the clinical association between gestational diabetes mellitus and QoL (QoL index diabetes version-111) which found a similar score of (64%) in the psychological and

spiritual domain.[11] The present results are confirmed and supported by other studies to assess the QoL among pregnant women with gestational diabetes mellitus in which the pregnant women reported highest level of QoL in environment and the social domains.[14]

The study finding shows that age was found to be significantly associated with the level of QoL (p=0.039), type of family (p=0.049), treatment received (p=0.037), and past history of obstetrical complications (p=0.05). The present study showed no association between family income, education, occupation, weeks of gestation, and the level of QoL. The study findings are similar to a descriptive study conducted in selected districts of Tamil Nadu, India in 2020 assessing the QoL among antenatal mothers with GDM and its association with selected sociodemographic variables which revealed no association between family income, education, occupation, weeks of gestation and QoL.[13] Interestingly another study conducted in Lublin, Poland between January and April 2013 revealed age is the only socio-demographic variable that directly affects the QoL.[14] On the contrary, a case-control study conducted at Rohani hospital, Iran from September 2013-February 2015 revealed, educational status, weeks of gestation, family history and medication insulin is significantly associated with the level of QoL.[15] The limitations of the study are authenticity of the information regarding socio-demographic variables is based on the response of the subjects and the limited sample size has restricted the generalization of the findings.

CONCLUSION

QoL is generally given less importance by the health care team while treating the antenatal women with GDM which can affect the women's and fetal health and wellbeing. Hence, adequate measures should be taken such as patient and family education, guidance, and counseling by the obstetricians and midwives in the OPD's for the antenatal women with GDM along with treatment which will result in the improvement of their QoL. The antenatal women should also be made aware of the importance of timely follow-up to improve their knowledge thus improving their QoL.

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