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HEALTH RELATED QUALITY OF LIFE (HRQOL) IN GESTATIONAL DIABETES MELLITUS: A CROSS-SECTIONAL STUDY IN TERTIARY HEALTHCARE CENTRE

Diabetology

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ABSTRACT

Background: Gestational Diabetes Mellitus (GDM) is a common health problem among pregnant women and may be associated with distress. There is no consensus on the effect of gestational diabetes mellitus (GDM) on health-related quality of life (HRQoL) for the mother in short or long term. The purpose of this study was to describe changes in patient-reported outcomes in women with GDM and to identify factors associated with increased distress.

Methods: We have done a prospective observational study at Tertiary health care centre over a period of 1 year from June 2016 to May 2017. A total of 150 pregnant women were included in the study and were screened by using OGTT (carpenter and coustans criteria). 28 Pregnant women with positive OGTT (GDM group) 118 with negative OGTT (control group) were surveyed using the Short Form 36 Item Health Survey, demographic data, family history and modality of treatment.

Results: GDM women scored significantly lower for physical component score and mental component score than controls with a significant p value ($P < 0.001$). Among GDM population better quality of life was reported by women with a very good financial standing, and also by those only treated with diet and OHAs.

Conclusion- In women with GDM, intensified treatment and lack of informational and social support are associated with distress. Acknowledgment of women's concerns and precise information may improve treatment compliance and outcome. These aspects of GDM care appear to be appropriate targets for future research and interventions aimed at reducing the level of distress in these patients.

KEYWORDS

Gestational diabetes mellitus, Quality of life, Pregnancy.

INTRODUCTION

Gestational Diabetes Mellitus (GDM) is defined as "diabetes diagnosed in the second or third trimester of pregnancy that was not clearly overt diabetes prior to gestation" (1). GDM is one of the most frequent metabolic diseases during pregnancy and approximately affects 7% of all pregnancies (2). This clinical condition potentially affects not only negative medical outcomes but also the mental health status with additional adverse consequences on psychological well-being and QualityofLife (QoL) (3, 4).

Health-related QoL was extensively accepted as a highly relevant outcome in different clinical trials (5). It may act by a core mechanism of subjective appraisal of own health status resulting in specific diagnostic and therapeutic implications (6, 7). That is, QoL dimension can explain the different individual response to a standard medical treatment (8). This emphasises the clinical relevance to promote the health status by not only treating physical symptoms but also instilling a positive mental state (9).

Diabetes per se has been related to anxiety and depression, but scarce and conflicting data have been reported in the literature on the quality of life of pregnant women with diabetes. Langer et al. (10) found no differences between the psychological profiles of GDM and normal pregnant women, and their findings were confirmed by Spirito et al. (11) who suggested that most pregnant women are able to cope with an unexpected diagnosis of diabetes during pregnancy. More recently, several studies analysed the psychological profile GDM women, finding a different mood profile in the GDM with normal pregnant controls (12-14). There is no consensus on the effect of gestational diabetes mellitus (GDM) on health-related quality of life (HRQOL) for the mother in the short or long term. The purpose of this study was to describe changes in patient-reported outcomes in women with GDM and to identify the factors associated with increased distress.

MATERIALS &METHODS

We have done a prospective observational study at Tertiary health care centre over a period of 1 year from June 2016 to may 2017 at DR.PSIMS &RF. A total of 150 pregnant women were included in the study and Screened by using OGTT (carpenter and coustans criteria). 28 pregnant women with positive OGTT were taken as GDM group, 118 pregnant women with negative OGTT were enrolled as healthy controls (control group). Any patients with pre- eclampsia and cases of foetal malformations or foetal mortality or any other concomitant diseases were excluded from the study. Both the groups were surveyed using the Short Form 36 Item Health Survey, demographic data, family history, past history and modality of treatment.

SF-36 health survey

The SF-36 Health Survey is one of the most widely used measures of health-related Quality of life (QoL). It consists of 36 items covering eight domains: physical functioning (PF), role limitations caused by physical health problems (RP), bodily pain (BP), perception of general health (GH), vitality (VT), social functioning (SF), role limitations due to emotional health problems (RE) and mental health (MH). Scores on all subscales are linearly transformed to obtain a possible range of 0–100; higher scores indicate a more favourable physical functioning and psychological well-being. The eight domains may be further grouped into two summary measures of the physical component summary (PCS) and the mental component summary (MCS). These aggregated scores are converted into norm-based scores (mean, 50; SD, 10), and higher scores indicate a more favourable physical functioning and psychological well-being.

Statistical analysis

All data are expressed as mean ± standard deviation and/ or frequency (%). The women's characteristics were compared using one-way analysis of variance and the unpaired t test for continuous variables, and the v2 for categorical variables. Quality of life scores were

compared between groups using the Mann–Whitney U-test.

RESULTS

Of the 150 women invited to participate in the study, 146 (97.3%) were consented of which 118 (80.8%) were control group and 28 (19.2%) were GDM group. As concerns the women's clinical characteristics, the mean age was higher in the GDM group than in the controls (24.82± 3.9 vs. 23.31 ± 3.93 respectively). BMI was higher in GDM group than controls (26.34± 3.16 vs. 25.80 ± 4.37 respectively) which is one of the risk factor for the development of diabetes. Also there is a significant family history of diabetes among GDM group 46.4% than in control group 8.5%. Among GDM group DM was diagnosed at Gestational mean age of 24.9 ± 5.6 g.w.

Among GDM group 57.1% of pregnant women needed OHA, 25% insulin and 17.9% needed both OHA & insulin for glycemic control.

Women with GDM had a significantly lower SF-36 Standardised Physical component score (42.6±18 vs. 55.2±19.1) and mental Component score (50±14.7 vs.62.2±14.9) than their healthy counterparts respectively. Looking at the SF-36 subscales, it emerged that GDM pregnant women scored lesser than controls with significant p value (<0.001) for physical functioning, bodily pain, vitality and social functioning.

Coming to the factors influencing the quality of life among GDM group – Women with higher economic status scored better component physical (55.5±3.19 vs. 52.38±24.12 vs.33.41±7.52) and component mental scores (58.40±4.63 vs.58.90±19.91 vs. 42.47±4.86) among socioeconomic class II, III and IV but with no significant p value. To assess the impact of insulin therapy on QoL, the GDM women were divided into two groups: those treated with OHA and those treated with insulin. The component physical (32.43±11.39 vs.50±18.61) and component mental score (42.44±5.51 vs.55.75±16.83) were significantly lower in the insulin group than in women on dietary measures & OHA alone respectively.

Table 1: Baseline Characteristics of the Women.

GROUP	Frequency	Percent
CONTROL	118	80.8
CASE	28	19.2
SOCIOECONOMIC STATUS	**Frequency**	**Percent**
II	3	10.7
III	10	35.7
IV	15	53.6
Total	28	100
DIAGNOSIS AT GA	**Frequency**	**Percent**
1	16	57.1
2	9	32.1
3	3	10.7
Total	28	100
MODE OF TREATMENT	**Frequency**	**Percent**
OHA	16	57.1
INSULIN	7	25
BOTH	5	17.9
TOTAL	28	100
FAMILY HISTORY OF DIABETES	**Frequency**	**Percent**
PRESENT	23	15.8%
ABSENT	123	84.2%

Table 2: Mean Age, BMI, and Gestational age among study group

VARIABLE	CASES		CONTROLS		TOTAL	
	Mean	SD	Mean	SD	Mean	SD
AGE	24.82	3.90	23.31	3.93	23.60	3.95
BMI	26.34	3.16	25.80	4.31	25.90	4.16
GESTATIONAL AGE WEEKS	32.18	5.94	35.25	3.46	334.66	4.21

Table 3: Quality of life scores (SF 36 outcomes) in hyperglycemic (HG) and normoglycemic (NG) pregnant women.

VARIABLE	CASES (HG)		CONTROLS(NG)		P-VALUE
	Mean	SD	Mean	SD	
PHYSICAL FUNCTIONING	33.3	21.7	51.8	21.7	<0.001
ROLE PHYSICAL	48.2	24.5	56.0	25.9	.150
BODILY PAIN	32.8	20.3	52.2	24.9	<0.001
GENERAL HEALTH PERCEPTION	56.3	18.1	61.2	18.9	.211
VITALITY	25.7	18.9	42.5	20.1	<0.001
SOCIAL FUNCTIONING	67.0	13.7	75.9	11.5	<0.001
ROLE EMOTIONAL	59.5	18.9	73.0	21.1	.002
MENTAL HEALTH	51.6	16.7	59.2	20.0	.065
STANDARDISED PHYSICAL	42.6	18.0	55.2	19.1	.002
STANDARDISED MENTAL	50.0	14.7	62.2	14.9	<0.001

Component scores between GDM and Control group

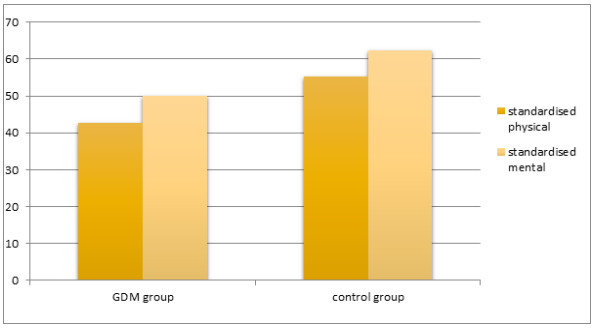

Table 4: Impact of modality of treatment of gestational diabetes on the QoL.

VARIABLE	OHA		INSULIN		P-VALUE
	Mean	SD	Mean	SD	
STANDARDISED PHYSICAL+	50.15	18.61	32.43	11.39	0.007
STANDARDISED MENTAL	55.75	16.83	42.44	5.51	0.014

Table 5: Impact of family history of diabetes on the QoL among GDM group

VARIABLE	FAMILY H/O DIABETES				P-VALUE
	Absent		Present		
	Mean	SD	Mean	SD	
STANDARDISED PHYSICAL	38.85	12.90	46.83	23.37	0.25
STANDARDISED MENTAL	44.45	10.35	56.51	16.55	0.03

Table 6: Impact of socioeconomic status on the QoL among GDM group

VARIABLE	SOCIO –ECONOMIC STATUS						P-VALUE
	11		111		1V		
	Mean	SD	Mean	SD	Mean	SD	
STANDARDISED PHYSICAL	55.58	3.19	52.38	24.12	33.41	7.52	0.01
STANDARDISED MENTAL	58.40	4.63	58.90	19.91	42.47	4.89	0.008

DISSCUSSION

As far as maternal well-being is concerned, any additional health conditions complicating pregnancy can have a negative impact on the woman's quality of life. Our key findings were that healthy pregnant women reported experiencing a better quality of life than GDM pregnant women as concerned their physical functioning. These findings suggest that GDM patients have a perception of poor health and seem unable to adapt to the illness discovered during pregnancy

Kopecetal et al. (15) reported a negative impact of GDM on their social life and showed that higher levels of distress were significantly reported by women who tested glucose levels more frequently and those under treatment with insulin. Another recent study from Danyliv et al. (16) found significantly lower scores on HRQoL dimension for the group of GDM patients. Our data confirm the situation found by Run bold and Crowther (17) in women screening positive for GDM, with an adverse impact on their perception of their own health. Our data partially coincide with the report from Halkoaho et al. (18) who used various tools to measure quality of life and found that only 25% of the GDM women evaluated suffered from depression. Dalfr`a et al. [19] reported GDM respondents scored significantly lower than healthy controls on the SF-36 general health perception subscale ($p <$ 0.05) as evaluated during pregnancy at the third trimester and significantly improved QoL after delivery.

Metformin was also reported to be a more convenient option for women with GDM in comparison to insulin, or Metformin + insulin reflecting its oral administration.

The medical evaluation of GDM should comprise a clinically valid

psychological assessment of QoL in order to attempt monitoring its potential effects on GDM prognosis from first diagnosis, during the treatment, and after delivery. Some studies retrieved clearly indicate the efficacy of different therapeutic programs to improve QoL by enhancing positive diabetes self-management behaviours such as balanced diet, exercise, self-monitoring, and insulin control. The potential underlying psychological factor, operating as core variable to clinically explain the different QoL status among patients with GDM. Subjective appraisal seems to act, above all physical and treatment components of diabetes during pregnancy, as a psychological factor affecting medical outcomes in GDM.

However, GDM per se does not seem to act as unique clinical variable negatively affecting different levels of QoL among women with GDM. That is, the relationship between GDM medical symptoms and QoL domains could be mediated by a complex interaction of several factors whose unifying psychological element can be identified through the concept of the illness experience. Significant improvement in QoL of women with GDM involved in an intervention program aimed at educating about diet, exercise, self monitoring, and insulin treatment.

CONCLUSION

In women with GDM, intensified treatment and lack of informational and social support are associated with distress. Acknowledgment of women's concerns and precise information may improve treatment compliance and outcome. These aspects of GDM care appear to be appropriate targets for future research and interventions aimed at reducing the level of distress in these patients.

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