

# Comparison of Quality of Life in Women with Gestational Diabetes and Non-Gestational Diabetes

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**Abstract:** *Pregnancy is a transformative phase in a woman's life, accompanied by significant physical, psychological, and social changes that influence her quality of life (QoL). This study aims to compare the QoL of women with gestational diabetes mellitus (GDM) and non-diabetic pregnant women during the third trimester using the WHO QOL-BREF questionnaire. Conducted over ten months at a tertiary care center, this prospective cohort study involved 80 participants, equally divided into GDM and non-diabetic groups. Results indicated that women with GDM reported a mean QoL score of  $83.38 \pm 9.45$ , with 92.5% perceiving their QoL as good or very good, though only 2.5% achieved the "very good" category. In contrast, non-diabetic women demonstrated a significantly higher mean QoL score of  $105.5 \pm 10.4$ , with 57.5% achieving a "very good" QoL. These findings underscore the negative impact of GDM on maternal well-being and highlight the need for targeted prenatal interventions to enhance QoL and maternal-fetal outcomes.*

**Keywords:** Quality of Life (QoL), Gestational Diabetes Mellitus (GDM), Pregnancy, WHO QOL-BREF Questionnaire.

## 1. Introduction

One of the most significant and natural phases of a woman's life is pregnancy, during which her body gradually changes anatomically and physiologically as the fetus develops. Pregnant women's physical, mental, social, and general health aspects vary due to hormonal, emotional, psychological, and physical variables unique to pregnancy, which can also negatively affect their quality of life. Therefore, enhancing pregnant women's quality of life is a crucial component of prenatal care. Aiming to enhance pregnant women's quality of life while fostering an environment that supports healthy fetal development is regarded as a priority of both prenatal care and reproductive health [1]. Unplanned pregnancies have been linked to lower antenatal care, poor self-care behaviour, and a lower quality of life [2]. Additionally, unintended pregnancy was associated with limited social support and poor partner relationships [4]. Therefore, prioritizing interventions that address social support, emotional well-being, and comprehensive.

The assessment of quality of life (QOL) in pregnant women has become a critical area of focus in healthcare research and practice, emphasizing its role in promoting maternal health and preventing complications. Quality Of Life is described by the World Health Organization as "a person's perception of their physical health, psychological state, degree of independence, social relationships, personal beliefs, and their relationships to silent features of their environment" [3]. Women in late pregnancy may have some physical (e.g., back pain and insomnia) and psychological discomforts (e.g., fear of birth and worries about the baby's health), which indicate poor QOL. The lowest QOL scores were reported in the third trimester of pregnancy, and the highest scores were reported in the second trimester [9].

Prenatal care is essential to improving the quality of life for pregnant women and ensuring positive maternal and fetal

outcomes. Diabetes is one of the most common metabolic complications of pregnancy [5]. Pregnancy-related gestational diabetes is the most prevalent medical disease and may increase the risk of developing type II diabetes later on. The term "gestational diabetes" refers to different levels of glucose intolerance that initially appear or are identified during pregnancy [6]. Globally, the prevalence of gestational diabetes has been steadily rising. The most likely explanations for the increased incidence of most types of diabetes are environmental factors, such as the modern lifestyle with its higher prevalence of obesity, less physical activity, and smoking, even while genetic predisposition establishes risk [7].

Gestational diabetes is defined as varying degrees of carbohydrate intolerance, first begun or diagnosed during pregnancy [6]. The major risk factors that were associated with the gestational diabetes mellitus (GDM) diagnosis were maternal age, obesity, family history of diabetes, previous history of GDM, and previous history of macrosomia [8]. Gestational diabetes is the most common medical condition in pregnancy and can be a predisposing factor in incidence of type II diabetes in future [6]. A gradual increase in the prevalence of gestational diabetes has been observed worldwide. Although genetic predisposition establishes susceptibility, environmental factors like the modern lifestyle with increased prevalence of obesity, reduced physical activity, and smoking are the most probable explanations for the increased prevalence of most diabetes types [7]. Undiagnosed and untreated antenatal depressive and anxiety symptoms among women with GDM could lead to postpartum depression (PPD) and anxiety [10]. A diagnosis of GDM increases vulnerability to emotional distress, such as depression, anxiety or stress among pregnant women as well as having an adverse impact on their self-perception towards health and quality of life [10].

This study aims to compare the quality of life (QoL) between

women with gestational diabetes mellitus (GDM) and non-diabetic pregnant women during the third trimester of pregnancy. Given the significant physical, psychological, and social changes associated with pregnancy, understanding the disparities in QoL among these groups is crucial for tailoring prenatal care. By employing the WHO QOL-BREF questionnaire<sup>[3]</sup> to assess various domains of QoL, this research seeks to provide valuable insights into how GDM impacts maternal well-being. The findings are expected to inform strategies for enhancing prenatal care, addressing the unique challenges faced by women with GDM, and promoting optimal maternal and fetal outcomes.

## 2. Materials and Methods

This prospective cohort study was conducted to assess and compare the quality of life (QoL) in women with gestational diabetes mellitus (GDM) and non-diabetic pregnant women. The study was carried out over a 10-month period at Little Flower Hospital and Research Centre, Angamaly, in the Department of Obstetrics and Gynaecology. Women aged 18 years and above, in their third trimester, were included based on specific inclusion and exclusion criteria. Participants were selected using purposive sampling, with a calculated sample size of minimum 36 for each group (GDM and non-diabetic groups).

Eligibility criteria included pregnant women with normal HbA1c levels during the first trimester and those classified into case and control groups based on their second-trimester Glucose Tolerance Test (GTT) results. Women with a history of diabetes, chronic illnesses, or family history of depression, as well as those taking sleeping pills, were excluded. Data collection involved obtaining written informed consent, followed by gathering demographic and clinical details such as HbA1c and GTT values. Quality of life was assessed during the third trimester using the WHO QOL-BREF questionnaire<sup>[3]</sup>, which evaluates four domains: physical health, psychological health, social relationships, and environmental factors.

Scores from the questionnaires were recorded and analyzed using statistical software. Comparative analyses of QoL between the two groups were conducted using independent t-tests or Mann-Whitney U tests, depending on the data distribution, with a p-value of <0.05 considered statistically significant. Ethical approval was obtained from the Institutional Ethics Committee, and participants' confidentiality was maintained throughout the study. By focusing on QoL, this research aims to provide insights into the well-being of women with GDM compared to non-diabetic pregnant women.

## 3. Data Collection

The data collection process was meticulously structured to ensure precision and comprehensiveness. After receiving ethical committee approval, participants meeting the inclusion criteria were identified, and written informed consent was obtained. A proforma was used to gather data, which included clinical and demographic factors including HbA1c and findings from the Glucose Tolerance Test (GTT),

as well as demographic variables like age, blood type, education, occupation, and reproductive history. The participants were divided into two groups: the control group, which included pregnant women without diabetes, and the case group, which included women with gestational diabetes.

The WHO QOL-BREF questionnaire, which assesses social interactions, environmental factors, psychological health, and physical health, was used to measure quality of life (QoL) during the third trimester. An overview of the individuals' primary demographic and reproductive traits is given in Table 1.

**Table 1: Demographic Profile**

	Variables	Frequency	Percentage
Age in yrs	18 - 25 yrs	9	11.2%
	26 - 32 yrs	55	68.8%
	33 - 38 yrs	16	20.0%
	39 - 45 yrs	0	0.0%
Blood group	A +ve	19	23.8%
	B +ve	31	38.8%
	O +ve	17	21.2%
	AB +ve	11	13.8%
	A -ve	1	1.2%
	O -ve	1	1.2%
Education	Upto 10th	0	0.0%
	Upto +2	7	8.8%
	Degree/Diploma	55	68.8%
	PG/Professional	18	22.5%
Occupation	Daily wages	1	1.2%
	Private	57	71.2%
	Government	5	6.2%
	Nil	17	21.2%
PCOD	No	80	100.0%
	Yes	0	0.0%
Planned pregnancy	No	21	26.2%
	Yes	59	73.8%
Conception	Spontaneous	80	100.0%
	With assisted reproductive technology	0	0.0%
Gravida	Primi	26	32.5%
	Multi	54	67.5%

In addition to these demographic and reproductive details, clinical data such as HbA1c levels during the first trimester and GTT values during the second trimester were recorded. Participants with HbA1c levels exceeding 6.5% were excluded from the study. GTT results were used to classify participants into the case and control groups. QoL scores collected using the WHO QOL-BREF questionnaire were entered into Excel for statistical analysis. This detailed and systematic data collection process provided a robust foundation for comparing quality of life between women with GDM and non-diabetic pregnant women.

## 4. Results

### 4.1 Quality of life in women with gestational diabetes

The descriptive statistics of the quality of life among women with gestational diabetes are presented in Table 2. The mean quality of life score was 83.38 with a standard deviation of 9.45, indicating a relatively high level of quality of life. The scores ranged from a minimum of 70 to a maximum of 110. Since higher scores correspond to a better quality of life, these

findings suggest that, on average, women with gestational diabetes experience a fairly good quality of life.

**Table 2:** Quality of life (women with gestational diabetes) – Descriptive Statistics

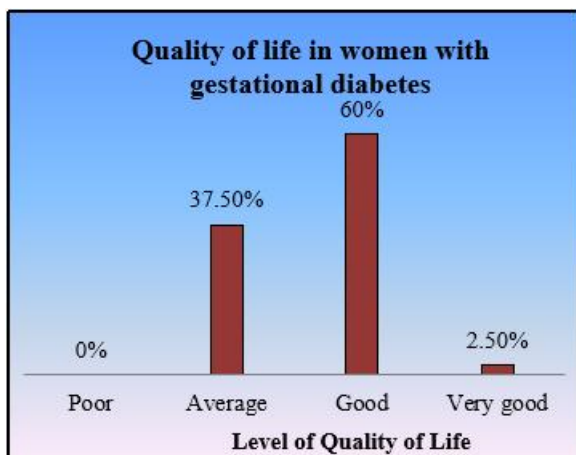
Mean	SD	Minimum	Maximum
83.38	9.45	70	110

There were a total population of 40 which exhibits gestational diabetes, Table 3 and Figure 1 illustrate the distribution of quality of life levels among the participants. The majority of participants (92.5%) reported either a good or very good quality of life, with no participants falling into the poor category. This demonstrates that most women with gestational diabetes perceive their quality of life positively, though only a small proportion (2.5%) achieve a "very good" quality of life level.

Overall, the results indicate that women with gestational diabetes generally maintain a good quality of life, with the mean score suggesting consistency in these perceptions across the sample. However, there is room for improvement to help more individuals achieve a very good quality of life, highlighting potential areas for intervention or support.

**Table 3:** Level of quality of life among women with gestational diabetes

Quality of life	Frequency	Percentage
Poor	0	0%
Average	15	37.5%
Good	24	60%
Very good	1	2.5%
Total	40	100%



**Figure 1:** Level of Quality of life among women with gestational diabetes

#### 4.2 Quality of life in non – diabetic pregnant women

The descriptive statistics of quality of life among non-diabetic pregnant women reveal a mean score of 105.5 with a standard deviation of 10.4. The scores ranged from a minimum of 83 to a maximum of 119, indicating a relatively high quality of life overall as shown in Table 4. As higher scores signify better quality of life, these findings suggest that non-diabetic pregnant women generally experience excellent well-being during pregnancy. The standard deviation suggests a moderate level of variability in the scores, with most participants reporting scores near the mean.

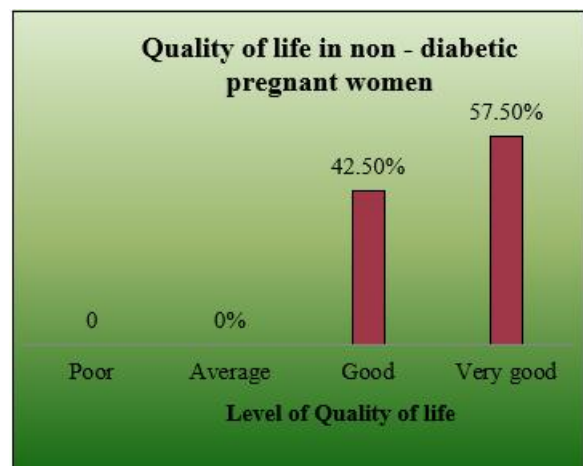
**Table 4:** Quality of life (non – diabetic pregnant women) – Descriptive Statistics

Mean	SD	Minimum	Maximum
105.5	10.4	83	119

From the table 5 and figure 2 it can be seen, the distribution of quality of life levels shows that 57.5% of participants reported a very good quality of life, while the remaining 42.5% reported a good quality of life. Notably, no participants fell into the poor or average quality of life categories, reflecting a universally positive experience among the participants. This distribution highlights that non-diabetic pregnant women predominantly perceive their quality of life as either good or very good, with a majority achieving the highest quality of life level.

**Table 5:** Level of quality of life among non – diabetic pregnant women

Quality of life	Frequency	Percentage
Poor	0	0%
Average	0	0%
Good	17	42.5%
Very good	23	57.5%
Total	40	100%



**Figure 2:** Level of Quality of life among non – diabetic pregnant women

Overall, these results suggest that non-diabetic pregnant women tend to maintain a high quality of life, with no participants reporting poor or average well-being. This indicates that physiological and psychological factors associated with a healthy pregnancy likely contribute positively to their overall quality of life. These findings underscore the importance of continued support and care to sustain such positive outcomes throughout pregnancy.

#### 5. Discussion

This study aimed to assess and compare the quality of life (QoL) between women with gestational diabetes mellitus (GDM) and non-diabetic pregnant women during the third trimester using the WHO QOL-BREF questionnaire [3]. The findings highlight significant differences in QoL across both groups, providing valuable insights into the impact of GDM on maternal well-being.

The QoL scores for women with GDM averaged at  $83.38 \pm 9.45$ , indicating a relatively good quality of life. A substantial proportion of participants (92.5%) reported good or very good QoL, with no reports of poor QoL. These results suggest that while women with GDM generally maintain a positive perception of their QoL, only a small fraction (2.5%) achieved a very good QoL. The moderate variability in scores reflects the challenges women with GDM face, including dietary restrictions, frequent medical check-ups, and heightened anxiety about fetal and maternal outcomes. Previous research corroborates these findings, emphasizing the physical and psychological burden associated with GDM, such as increased vulnerability to emotional distress, including depression, anxiety, and stress. These factors may limit the potential for women with GDM to achieve optimal well-being despite effective management strategies<sup>[11]</sup>. The findings underscore the need for comprehensive prenatal interventions that address not only physical health but also emotional and psychological support for women with GDM.

In contrast, non-diabetic pregnant women reported significantly higher QoL scores, with a mean of  $105.5 \pm 10.4$ . None of the participants reported poor or average QoL, and a majority (57.5%) achieved very good QoL. These findings reflect the generally positive physiological and psychological experiences associated with healthy pregnancies. The absence of GDM-related stressors likely contributes to these higher scores, as these women do not face the dietary and lifestyle restrictions or the psychological distress commonly associated with GDM. These results align with previous literature that associates a healthy pregnancy with enhanced overall well-being.<sup>[1,2]</sup> Factors such as the anticipation of childbirth, a supportive social environment, and stable health likely contribute to the higher QoL reported by non-diabetic pregnant women.

The comparative analysis reveals a substantial gap in QoL scores between the two groups, with non-diabetic pregnant women reporting consistently higher scores across all domains assessed by the WHO QOL-BREF questionnaire<sup>[3]</sup>. This disparity underscores the significant impact of GDM on maternal well-being, affecting physical health, psychological stability, social interactions, and environmental factors.

The substantial difference in mean QoL scores between the two groups underscores the impact of GDM on pregnant women's well-being. Non-diabetic pregnant women demonstrated higher QoL across all domains assessed by the WHO QOL-BREF questionnaire<sup>[3]</sup>, suggesting that the absence of GDM significantly contributes to better physical, psychological, social, and environmental well-being. These findings align with existing literature indicating that GDM introduces additional stressors, including anxiety about fetal outcomes, medical interventions, and lifestyle restrictions, which can adversely impact QoL<sup>[6]</sup>.

Women with GDM face unique challenges that can adversely affect their QoL, including:

- Physical health: Management of blood glucose levels and potential complications such as hypertension and preeclampsia.
- Psychological health: Anxiety and stress related to the risk of adverse maternal and fetal outcomes.

- Social relationships: Increased reliance on support systems to manage the condition.
- Environmental factors: Frequent medical visits and lifestyle modifications.

In summary, this study highlights the significant impact of GDM on the quality of life in pregnant women during the third trimester. While women with GDM report relatively good QoL, they face unique challenges that warrant targeted interventions. Non-diabetic pregnant women demonstrate consistently higher QoL, underscoring the benefits of a healthy pregnancy. These findings reinforce the need for holistic prenatal care approaches to promote optimal maternal well-being and improve outcomes for both mothers and their babies.

## 6. Conclusion

This study provides valuable insights into the quality of life (QoL) among pregnant women with and without gestational diabetes mellitus (GDM). Women with GDM reported relatively good QoL, with a mean score of 83.38, though their scores were significantly lower than those of non-diabetic pregnant women, who had a mean score of 105.5. While the majority of women with GDM perceived their QoL as good, very few reported a very good QoL, reflecting the physical, psychological, and lifestyle challenges posed by GDM. In contrast, non-diabetic pregnant women predominantly experienced excellent QoL, with no reports of poor or average outcomes.

These findings emphasize the critical need for comprehensive prenatal care that addresses the unique challenges faced by women with GDM. Tailored interventions focusing on psychological support, lifestyle management, and enhanced social support can help bridge the QoL gap and enable these women to achieve better well-being. For non-diabetic pregnant women, the results reaffirm the importance of maintaining current prenatal care practices to sustain their positive outcomes.

By highlighting the disparities in QoL between the two groups, this study underscores the importance of integrating holistic care strategies into prenatal health programs. Such efforts can improve maternal experiences and contribute to healthier pregnancies and better long-term outcomes for both mothers and their children. Further research exploring QoL trends across the pregnancy and postpartum period is essential to develop evidence-based approaches to optimize maternal health.

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