

**Deanship of graduate studies**

**Al- Quds University**



**Quality of Life among Women with Gestational  
Diabetes in Governmental Antenatal Care Clinics in  
West Bank/ Palestine**

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**M.Sc. Thesis**

**Jerusalem- Palestine**

**1444 / 2023**

# **Quality of Life among Women with Gestational Diabetes in Antenatal Care Clinics in West Bank/ Palestine**

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**A thesis submitted in partial fulfilment of the requirements for the  
degree of Master of Science in Maternal and Child Health Nursing at  
Faculty of Health Profession, Nursing Department, AL-Quds University.**

**1444 / 2023**

**Al-Quds University**

**Deanship of Graduate Studies**

**Maternal and Child Health Nursing**



**Thesis Approval**

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Antenatal Care Clinics in West Bank/ Palestine**

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**Jerusalem – Palestine**

**1444 / 2023**

## **Dedication**

*To whom came with me towards the dream .. Step by step*

*To my father's soul, who has had the first footprint in my life.*

*To the spring of tenderness, who was always praying to see me in this  
place. To my beloved mother.*

*To my dear husband with my love*

*To my son and daughters who endured a lot and supported me.*

*To my brothers and sister and their families.*

*To all who helped me to complete this research and gave me help and  
extended a hand to help and provided me with the information necessary  
to complete this research.*

**Rania Yousef Jameel Khaleel**

**Declaration**

I certify that this thesis submitted for the degree of Master, is the result of my own research, except where otherwise acknowledged, and this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

**Signed:**  .....

Rania Yousef Jameel Khaleel

21/3/2023....

## **Acknowledgment**

*I would like to express my great thanks and gratitude to all people who contributed to the success of this endeavor toward the master's degree. Without their support, this work would not have been possible.*

*My high appreciation and recognition to Dr. Kefah Zaben, my academic supervisor for his insightful supervision and patience.*

*Also, I would like to extend my warm gratitude for all doctors in Faculty of Health Profession for their guidance and kind support.*

*Finally, my deep thanks must also go to the Ministry of health and to my colleagues for their co-operation.*

## **Quality of Life among Women with Gestational Diabetes in Governmental Antenatal Care Clinics in West Bank/ Palestine**

### **Abstract**

**Overview:** Gestational diabetes (GDM) is a condition that affects women during pregnancy and can have a significant impact on the quality of life of the woman and her family. GDM can lead to health complications for the mother and the baby, including a higher risk of pre-term birth and cesarean delivery. It can also affect the mental and emotional well-being of the woman. Therefore, it is important to address the potential risks of GDM and to assess the quality of life of women with GDM in antenatal care clinics. The study aimed to assess the quality of life among women with gestational diabetes in governmental antenatal care clinics in West Bank/ Palestine.

**Methodology:** This study is a cross-sectional design, and the study sample includes the pregnant women with gestational diabetes who receive medical care from the high-risk antenatal care clinics in the main cities of West Bank districts. The sample type was a convenience sample that was previously screened and diagnosed according to the current diagnostic criteria for gestational diabetes. Self-administered questionnaire was used to collect the data, and researcher was able to collect 170 questionnaires within pilot study. Statistical Package of Social Science (SPSS- version 25) program for data entry and analysis and the researcher received approval letters from Research Ethics Committee.

**Results:** Results of this study showed that, the average age among the participants was 31.3 years and about half of them had completed secondary school. However, most of them live in rural areas (62.4%), while most of the participants are housewives (80.1%). The participants' overall QoL in the current study was 18.0 out of 30. Of the remaining domains, the highest scores were obtained in the family domain ( $23.5 \pm 4.9$ ), followed by the psychological/spiritual domain ( $20.8 \pm 6.2$ ) and the social and economic domain ( $18.3 \pm 4.2$ ). The score in the Health and Functioning domain was the lowest ( $14.5 \pm 5.1$ ). The statistical test showed that there are statistically significant differences between the mean quality of life scores and both education and job levels ( $P < 0.05$ ). The high average of working women was higher than that of unemployed women. However, there was no significant difference between the mean of the quality of life and the resident area ( $P > 0.05$ ). The Pearson Correlation illustrated that there was a negative relationship between the quality-of-life score of the pregnant women and both age and number of children ( $P < 0.05$ ). The results detected that there was a negative relationship between the quality-of-life score of the pregnant women and the number of pregnancies, OGTT, and FBS ( $P < 0.05$ ).

**Conclusion:** Quality of life among women with gestational diabetes in governmental antenatal care clinics in West Bank/ Palestine was moderate. The results showed that there is an association between QoL among women with GDM and education and job levels. Also, a negative association between the quality-of-life score of pregnant women and both age and number of children.

**Recommendation:** Develop awareness-raising programs to enhance women's knowledge regarding the promotion of their health concerning gestational diabetes and design

guidelines and future research to evaluate the effectiveness of lifestyle interventions for GDM management.

**Keywords:** quality of life, women with gestational diabetes, governmental antenatal care clinics, West Bank/ Palestine.



## جودة الحياة بين النساء المصابات بسكري الحمل في العيادات الحكومية لرعاية ما قبل الولادة في الضفة الغربية / فلسطين

إعداد: رانيا يوسف جميل خليل

إشراف: د. كفاح الزين

### الملخص

**مقدمة:** سكري الحمل هو حالة تؤثر على المرأة أثناء الحمل، ويمكن أن يكون لها تأثير كبير على نوعية حياة المرأة وعائلتها. يمكن أن يؤدي سكري الحمل إلى مضاعفات صحية للأم والطفل، بما في ذلك زيادة خطر الولادة المبكرة والولادة القيصرية، ويمكن أن يؤثر أيضاً على الصحة العقلية والعاطفية للمرأة. لذلك من المهم معالجة المخاطر المحتملة لمرض سكري الحمل وتقييم نوعية حياة النساء المصابات بمرض سكري الحمل في عيادات رعاية ما قبل الولادة. هدفت الدراسة إلى تقييم نوعية الحياة بين النساء المصابات بسكري الحمل في عيادات الرعاية السابقة للولادة الحكومية في الضفة الغربية / فلسطين.

**المنهجية:** هذه الدراسة عبارة عن تصميم مقطعي، وعينة الدراسة تشمل النساء الحوامل المصابات بسكري الحمل اللاتي يتلقين رعاية طبية من عيادات الرعاية السابقة للولادة عالية الخطورة في المدن الرئيسية في مناطق الضفة الغربية. كان نوع العينة عبارة عن عينة ملائمة تم فحصها وتشخيصها مسبقاً وفقاً لمعايير التشخيص الحالية لسكري الحمل. تم استخدام الاستبيان الذاتي لجمع البيانات، وتمكن الباحث من جمع 170 استبانة ومتضمنه العينة الاستطلاعية. كان نوع العينة عبارة عن عينة تعداد سبق فحصها وتشخيصها وفقاً لمعايير التشخيص الحالية لسكري الحمل. وتم استخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS) الإصدار 25 لإدخال البيانات وتحليلها وتلقى الباحث خطابات موافقة من لجنة أخلاقيات البحث.

**النتائج:** أظهرت نتائج الدراسة أن متوسط عمر المشاركين 31.3 سنة وحوالي نصفهم أنهى المرحلة الثانوية. ويعيش معظمهم في المناطق الريفية (62.4%)، بينما معظم المشاركات ربات بيوت (80.1%). كان معدل جودة الحياة الإجمالي للمشاركين في الدراسة الحالية 18.0 من أصل 30. ومن بين المجالات المتبقية، تم الحصول على أعلى الدرجات في مجال الأسرة ( $23.5 \pm 4.9$ )، يليه المجال النفسي / الروحي ( $20.8 \pm 6.2$ ) والمجال الاجتماعي والمجال الاقتصادي ( $18.3 \pm 4.2$ ). كانت النتيجة في مجال الصحة والعمل هي الأدنى ( $14.5 \pm 5.1$ ). أظهر الاختبار الإحصائي وجود فروق ذات دلالة إحصائية بين متوسط درجات جودة الحياة ومستوى التعليم والوظيفة (عند مستوى دلالة أقل من 0.05) كان المعدل المرتفع للنساء العاملات أعلى من متوسط النساء العاطلات عن العمل. ومع ذلك، لم يكن هناك فرق كبير بين متوسط نوعية الحياة والمنطقة المقيمة (عند مستوى دلالة أقل من 0.05). أوضح ارتباط بيرسون أن هناك علاقة سلبية بين درجة جودة الحياة للنساء الحوامل والعمر وعدد الأطفال (عند مستوى دلالة أقل من 0.05) كشفت النتائج أن هناك علاقة

سلبية بين درجة جودة الحياة للنساء الحوامل وعدد حالات الحمل، ومستوى السكر صائم بالدم (عند مستوى دلالة أقل من 0.05).

**الخلاصة:** كانت نوعية الحياة بين النساء المصابات بسكري الحمل في عيادات الرعاية السابقة للولادة الحكومية في الضفة الغربية / فلسطين معتدلة. أظهرت النتائج أن هناك علاقة بين جودة الحياة بين النساء المصابات مرض سكر الحمل المستويات التعليمية والوظيفية. أيضاً، ارتباط سلبي بين درجة جودة حياة المرأة الحامل والعمر وعدد الأطفال.

**التوصيات:** تطوير برامج توعية لتعزيز معرفة النساء فيما يتعلق بتعزيز صحتهم فيما يتعلق بسكري الحمل وتصميم إرشادات وأبحاث مستقبلية لتقييم فعالية تدخلات نمط الحياة لإدارة عند مرضى سكر الحمل.

**الكلمات المفتاحية:** نوعية الحياة، النساء المصابات بسكري الحمل، العيادات الحكومية للرعاية السابقة للولادة، الضفة الغربية/فلسطين.

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### List of Abbreviations

ADA	American Diabetes Association
ANOVA	Analysis of Variance
BMI	Body mass index
BRFSS	Behavioral Risk Factor Surveillance System.
CINAHL	Cumulative Index to Nursing Allied Health Literature
CS	Caesarean Section
FBS	Fasting blood sugar
GDM	Gestational diabetes mellitus
GH	General health
HbA1c	Hemoglobin A1C
HRQOL	Health Related Quality of Life
IDF	International Diabetes Federation
LGA	Large for Gestational Age
M	Mean
MOH	Ministry of Health
N	Number
OGTT	Oral glucose tolerance test
PHC	Primary health care
QLI	Quality of Life Index
QOL	Quality of life
SD	Standard deviation
STDS	Sexually transmitted diseases
WHOQOL	World Health Organization quality of life



# **Chapter 1**

## **Introduction**

# **Chapter 1**

## **Introduction**

### **1.1 Introduction**

Diabetes is one of the most common metabolic issues during pregnancy (McIntyre, 2018). Gestational diabetes mellitus (GDM) refers to varying degrees of glucose intolerance that either start or are first detected during pregnancy (American Diabetes Association (ADA), 2020). Gestational diabetes is the most widespread metabolic issue that arises throughout pregnancy with prevalence increasing at epidemic proportions (Nazarpour et al., 2023). Around 16.8% of the 20 million live births that happen annually worldwide are delivered by women who have some form of hyperglycemia; 16% of them associated with diabetes during pregnancy (either previously existing or detected during the present pregnancy), while the remaining 84% are linked to GDM (International Diabetes Federation (IDF), 2020).

Gestational diabetes can impact the quality of life of women in various ways, including psychological, physical, and social dimensions. In addition, Gestational diabetes can have a number of potential impacts on the health of the baby. These include an increased risk of macrosomia (larger than normal birth weight), jaundice, low blood sugar (hypoglycemia), and respiratory distress. Additionally, children born to women who have gestational diabetes are more likely to develop obesity and type 2 diabetes at a later stage in life (Harrison et al., 2022). Providing women who have diabetes with adequate education can help decrease their anxiety, fear, and depression regarding gestational diabetes. However, the most serious adverse consequence of gestational diabetes is the potential for complications in the baby. These can include an increased risk of preterm birth and a greater possibility of developing type 2 diabetes at a later stage in life. Additional possible complications involve macrosomia (a condition in which the baby is large for gestational age) and birth injuries. The pregnant women are also at risk for gestational hypertension and preeclampsia, which can both cause serious health issues. Additionally, gestational diabetes can lead to an increased risk of cesarean delivery and a greater possibility of developing type 2 diabetes at a later stage of life (Mokhlesi, Simbar,

Tehrani, Kariman & Majd, 2019). Additionally, gestational diabetes may also lead to higher rates of macrosomia “large for gestational age babies” and an increased risk of birth defects (Gillespie et al., 2022; Samuel et al., 2022). GDM affects more than 21 million births worldwide (Egan, Dow, & Vella, 2020).

The combination of GDM and being of advanced maternal age can negatively impact overall health. The presence of advanced maternal age significantly increases the effect of GDM on overall health (Liu, Wang, Leng, Li, Huo, Han, et al., 2020). Gestational diabetes usually does not cause any long-term health problems for the affected women (Garg et al., 2022). However, if it is not well managed during pregnancy, it can increase the risk of certain health problems for the mother, like a greater likelihood of developing type 2 diabetes, preeclampsia, and an elevated blood pressure. It is crucial to closely monitor women who have gestational diabetes throughout pregnancy to ensure their health and that of their baby (Muxiddinovna and Sobirovna et al., 2022). GDM is linked to an increased chance of experiencing a combination of negative maternal outcomes, such as antepartum and postpartum hemorrhage, pregnancy-induced hypertension, premature rupture of membranes, and caesarean delivery (Muche, Olayemi, & Gete, 2020).

Although, the quality of life (QOL) for the diabetes patients is affected by numerous factors including occupation and duration of the disease (Abedini, Bijari, Miri, Emampour, & Abbasi, 2020). Social support had the greatest impact on the QOL (Ansarzadeh, Salehi, Mahmoodi, & Mohammadbeigi, 2020). So, It is important for healthcare providers to consider the impact of GDM on the QoL of pregnant women and provide appropriate support to help manage the disease and improve their overall well-being. Social support has been shown to have a significant impact on the QoL of diabetes patients (Ansarzadeh et al., 2020), highlighting the potential benefits of interventions that focus on improving social support for pregnant women with GDM. Further research in this area could help identify additional factors that affect the QoL of pregnant women with GDM and inform the development of interventions to improve their overall well-being.

In Palestine, antenatal clinics offer various services for pregnant women, such as diagnosis, treatment, follow-up care, evaluating patients for potential complications based on established clinical guidelines, and gathering & documenting patient data in medical records. Antenatal clinics provide a range of services to pregnant women, including pre-conception advice, antenatal care and screening, ultrasound scans, blood tests, fetal monitoring, advice on nutrition and lifestyle, postnatal care and support, mental health support, vaccinations, help with breastfeeding and infant feeding and parenting advice and support (Vasilevski et al., 2022 and Wilkinson, 2022).

Quality of life and its associated factors among women with gestational diabetes mellitus in Palestine" (2019): This study aimed to assess the quality of life among women with gestational diabetes mellitus (GDM) in Palestine and identify factors associated with it. The study found that women with GDM had significantly lower quality of life scores compared to women without GDM. Factors such as age, education level, and family support were found to be associated with quality of life among women with GDM.

The relationship between glycemic control and quality of life among pregnant women with gestational diabetes mellitus in Palestine" (2020): This study aimed to assess the relationship between glycemic control and quality of life among pregnant women with GDM in Palestine. The study found that women with better glycemic control had significantly higher quality of life scores compared to women with poor glycemic control.

## **1.2 Problem statement**

Women who have pregnancies that are considered high-risk may encounter difficulties in their personal, familial, and social lives that could have a negative impact on their quality of life (Saadati et al., 2018). GDM is a serious medical condition that can result in harmful outcomes for both the pregnant mother and the fetus/neonate (Minooee et al., 2017). Moreover, it has a negative impact on the mental health and overall well-being of expectant mothers, which could result in a decrease in their QoL (Mirzaei et al., 2021).

As reported by the Palestinian Health Information Center under the Ministry of Health, 10% of the overall population were identified as having diabetes (Ministry of Health 2021), and the percentage among female patients was 55% and it was 45% among Male patients, which was higher among females (Rowley et al., 2017). In the Palestinian territory., the percentage of a female with diabetes is higher at 55% than males 45% of the total diabetes patients in Palestine (Shahwan et al., 2019). The percentage of pregnant women with diabetes is 0.4% of the total a number of diabetes in Palestine, adding that the rates of diabetes in Palestine exceeded international indicators. So, the prevalence of pregnant women with gestational diabetes varies depending on the population being studied, but generally ranges from 2-10% (Chepulis et al., 2022; Wang et al., 2022; Begum et al., 2022). The prevalence of diabetes is considerable among the Palestinian population living in the West Bank, Gaza, and East Jerusalem, with a prevalence ranging around 15%, which is higher compared to the global prevalence of 6%. Nevertheless, some anecdotal information from multiple sources indicates that the actual rate could be even higher, ranging from 18% to 21% (Sharif et al., 2021).

According to reports from the diabetic clinics of PHC/MoH in the West Bank, there were 4,700 individuals who were diagnosed with diabetes mellitus in 2021. This resulted in an incidence rate of 166.9 cases per 100,000 people. Out of the total number of these cases, 2,079 were male individuals, which resulted in an incidence rate of 144.8 per 100,000 male population. Additionally, 2,621 cases were reported in females, resulting in an incidence rate of 189.9 per 100,000 female population. The Gaza Strip reported an incidence rate of 149.4 cases of diabetes mellitus per 100,000 population. In 2021, the visits to the Ministry of Health (MOH)/Primary health care (PHC) diabetic clinics in the West Bank, Palestine, which were categorized by the type of diabetes, treatment, and gender, amounted to 0.2% of the total reported visits.

Based on the literature there are several studies had been recently examined QOL in Palestine toward hypertensive, cancer, diabetic and dialysis patients and despite these variables were studied, there is a lack of studies related to the QOL among women with gestational diabetes in Palestine (Ahmad et al., 2020; Menawi et al., 2020 & Al-Jabi et al., 2021). Therefore, studying the QOL of the pregnant women with gestational diabetes is

crucial, particularly among women who visited the governmental antenatal care clinics in Palestine.

### **1.3 Significant of the study**

Women's health at the reproductive stage and during pregnancy is focused on providing the best care for the mother and her developing baby. This includes regular care and monitoring of the mother's health, nutrition, and lifestyle; management of any medical conditions that may arise; and early identification of any potential risks. During pregnancy, women should receive regular check-ups to monitor their health and the health of the baby. It is also important to follow a healthy diet and exercise program to ensure both mother and baby are in optimal health (Wingo et al., 2018). Issues related to women's health at the reproductive stage and during pregnancy such as unwanted pregnancies, sexually transmitted diseases (STDs), infertility, endometriosis, polycystic ovarian syndrome (PCOS), uterine fibroids, cervical cancer, gestational diabetes, preeclampsia, preterm labor and birth are important to study according to MOH report (MOH, 2021). The QoL is very significant as it serves as a potent indicator of an individual's ability to manage a disease and sustain long-term health and wellness. Directing attention towards this issue could help in designing interventions aimed at enhancing the QoL for future generations. The findings of this study may serve as a foundation for developing suitable interventions aimed at enhancing the quality of life of expectant mothers and their offspring.

Furthermore, the study may highlight the significance of providing comprehensive care for both the mother and infant as a means of enhancing the quality of life and postpartum care for women who have experienced GDM.

Additionally, the results of the study may encourage policymakers and health administrators to provide health care services that assist women who have previously experienced GDM in adopting sustainable long-term lifestyle changes. These interventions are crucial in preventing a high prevalence of type 2 diabetes progression.

The study's outcomes could serve as a valuable source of information for Palestinian and other Arab students. Health leaders and educators could utilize this data to develop strategies aimed at enhancing the QoL for expectant mothers.

#### **1.4 Aim of the study**

To assess quality of life among women with gestational diabetes at the antenatal Governmental clinics in the West Bank.

#### **1.5 Specific Objectives**

1. To assess the total QoL among pregnant women with GDM in the antenatal health care clinics in the West Bank.
  - a) To assess mean score of health and functioning domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - b) To assess the mean score of social and economic domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - c) To assess the mean score of psychological/spiritual domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - d) To assess the mean score of the family domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
2. To assess the Physiologic status that affects the QoL among pregnant women with GDM in the antenatal health care clinics in the West Bank.
3. To compare the differences between the QoL among pregnant women with GDM and the socio-demographic data in the antenatal health care clinics in the West Bank.

#### **1.6 Research questions**

The research questions were formulated to attain the objectives of the study. These questions were:

- 1- What is the mean score of the total quality of life domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?

- a) What is the mean score of health and functioning domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - b) What is the mean score of social and economic domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - c) What is the mean score of psychological/spiritual domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - d) What is the mean score of the family domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
- 2- Are there significance differences between the QoL among women with GDM and Physiologic measures in the antenatal health care clinics in the West Bank?
  - 3- 3- Are there significance differences between the QoL among pregnant women with GDM health and socio-demographic data in the antenatal health care clinics in the West Bank?

### **1.7 Variables of the study**

- Dependent variable: Quality of life domains (health and functioning, social and economic, psychological/spiritual domain & family domains)
- Independent variables: socio-demographic variables such as age, residence, number of children, the level of education, and monthly income.
- Medical history such as hypertension, obesity, family history of type 2 diabetes, and GDM in the previous pregnancy.

### **1.8. Definition**

#### **1.8.1 Theoretical definition**

**Quality of life:** “The degree to which a person is healthy, comfortable, and capable of participating in or enjoying life events” (Mc Bride et al., 2021).

**A pregnant woman** “is a female who is carrying a fetus or embryo in her uterus. Pregnancy usually lasts around 40 weeks, and a woman is typically considered pregnant



after the first missed period and a positive pregnancy test. During pregnancy, a woman's body undergoes many changes to accommodate the growing fetus” (Daniels, 2021)

**Gestational diabetes mellitus (GDM):** “a disorder in which a hormone produced by the placenta inhibits the body from adequately utilizing insulin. Instead of being absorbed by the cells, glucose accumulates in the circulation” (Gray et al., 2021).

**Antenatal health care** “is a type of medical care that focuses on the health of an expectant mother and her unborn baby during pregnancy. It typically consists of pre-pregnancy counseling, prenatal care, postpartum care, and education about nutrition, exercise, and childbirth. Antenatal health care helps to ensure that mothers and babies stay healthy throughout their pregnancy and after delivery” (Barbosa-Leiker et al., 2021).

**Antenatal health care clinics** “are facilities that provide care to pregnant women and their unborn babies. These clinics usually provide a variety of services including prenatal care, nutrition counseling, childbirth education, and postnatal care for both mother and child. The clinics are staffed by physicians, nurses, midwives, and other healthcare professionals who specialize in pregnancy and childbirth-related issues” (Kassa al., 2021).

**The West Bank:** “a landlocked territory near the coast of the Mediterranean in Western Asia that forms the main bulk of the Palestinian territories. It is bordered by Jordan and the Dead Sea to the east and by Israel to the south, west, and north” (Zighan, 2022).

**Functional health** “involves the assessment of the client's physical and mental capacity to participate in day-to-day activities” (Metzelthin et al., 2022).

**The economic domain** “is the production, distribution, and consumption of goods and services. It studies how individuals, businesses, governments, and societies make decisions about how to allocate resources to maximize their welfare. The economic domain encompasses microeconomics, which studies the behavior of individual consumers and firms, and macroeconomics, which studies the behavior of the economy as a whole” (Mofijur et al., 2021).

**The social domain** “focuses on the ability to interact with others about movement. It includes the development of social skills such as collaboration, fair play, leadership, and communication, that help us enjoy participating and interacting effectively with others” (Chatzipanteli, & Adamakis 2022).

**The psychological domain** “is used to examine psychological health and quality of life, such as affective moods (feeling joyful, optimistic, contented, and interested in life, as opposed to feeling negative, anxious, or sad), memory, and attention span” (Ntoumanis et al., 2021).

**The family domain** “is considering the resources available to the family, as well as the level of satisfaction and happiness the family has experienced in its current circumstances” (Koekemoer et al., 2020).

### **1.8.2 Operational definition**

**Quality of life** “is a subjective measure of an individual’s overall well-being and satisfaction with their life. Quality of life is determined by domains such as health and functioning, social and economic, Psychological/spiritual, and family domains”. There are several ways to measure quality of life, and the specific method used may depend on the context and purpose of the measurement. but most tools and methods for measuring quality of life is QLI.

**Pregnant women** A pregnant woman is operationally defined as a female who has a positive pregnancy test and is confirmed to be pregnant by a healthcare provider. Pregnancy is typically confirmed by measuring levels of the hormone human chorionic gonadotropin (hCG) in the woman's blood or urine. Healthcare providers may also use ultrasound imaging to confirm the presence of a fetus in the uterus and to estimate gestational age.

**The social domain of economics in quality of life** refers to “the various aspects of life-related to the social, political, and cultural environment of an individual or a community.

This includes factors such as access to education and health care, job opportunities, access to public services, safety and security, and the quality of interpersonal relationships. Economic quality of life is concerned with the economic resources and opportunities that are available to individuals and communities. This includes items Friends, Emotional support from people other than your family, Neighborhood Home, Job/not having a job, Education, Financial needs such as income, wealth, economic security, access to financial services, and employment opportunities”.

**Health and functioning** refer to “the overall wellness of the body, including its physical, mental, and emotional state. It relates to the ability of the body to perform everyday activities and to cope with the demands of life. Factors that influence health and functioning include diet, exercise, sleep, stress, and genetics. This includes items included health, health care, energy (fatigue), ability to take care of yourself without help, ability to control blood sugar, changes made in life because of diabetes, control over life, chances for living as long as you would like, sex life, ability to take care of family responsibilities, usefulness to others, worries, things for fun and chances for a happy future”.

**Gestational diabetes** operationally as having one or more of the following abnormal glucose values during pregnancy: fasting plasma glucose level of 92 mg/dL or higher, 1-hour glucose level of 180 mg/dL or higher after a glucose load of 50 grams, or 2-hour glucose level of 153 mg/dL or higher after a glucose load of 100 grams. A diagnosis of gestational diabetes is typically made based on the results of a glucose tolerance test conducted between the 24th and 28th weeks of pregnancy.

**Antenatal health care** “is the provision of comprehensive health care to pregnant women throughout their pregnancy to reduce maternal mortality and morbidity and to ensure the best possible outcome for the mother and baby. This includes regular check-ups, tests, and interventions that are tailored to the needs of the mother and her unborn child”.

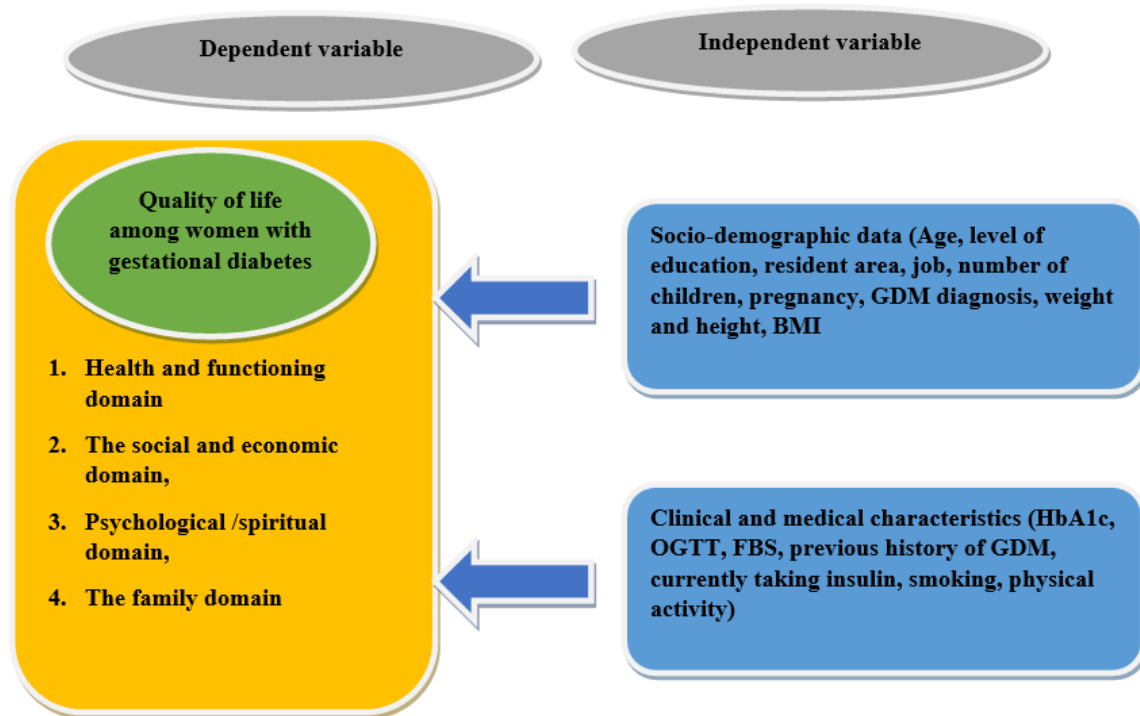
**Antenatal health care clinics** “are health care facilities that specialize in providing prenatal and postnatal care to pregnant women and new mothers. These facilities

typically include prenatal education classes, nutrition counseling, and comprehensive assessments of physical, mental, and emotional health. They also provide resources for family planning, prenatal and postnatal tests, and referrals to specialized care providers. Antenatal health care clinics in west bank/ Palestine are designed to help ensure the health of the mother and fetus throughout the pregnancy and beyond”.

**The psychological and spiritual domain of quality of life** involves “managing stress, having meaningful relationships, developing emotional intelligence, and finding one's purpose in life. These areas are linked to overall satisfaction with life, mindfulness, and a sense of personal well-being. By recognizing the importance of the psychological and spiritual elements of QOL, individuals can make informed decisions about their lifestyles and take action to improve their well- This includes items included being. Peace of mind, Faith in God, Achievement of personal goals, Happiness in general, Life satisfaction in general, personal appearance, and self-esteem”.

**The family domain in QOL** “includes topics such as communication, relationships, parenting, and social support. It also includes family dynamics, roles, and responsibilities. This domain is often used to assess the overall well-being of individuals in a family setting. This includes items including family health, Children, Family happiness, Spouse, lover, or partner, and emotional support from family”.

## 1.9 Conceptual framework



**Figure 1:** *Conceptual framework of quality of life among women with gestational diabetes.*

### 1.10. Summary:

The prevalence of GDM is increasing at epidemic proportions, affecting one in six live births globally. GDM has the potential to impact the psychological, physical, and social aspects of a woman's QoL. It can also have potential impacts on the health of the baby, such as increased risk of macrosomia, hypoglycemia, and respiratory distress. Women with GDM should receive adequate education and close monitoring throughout pregnancy to decrease the likelihood of complications for themselves and their babies. Complications of GDM for the mother include cesarean delivery, preeclampsia, hypertension, and an escalated likelihood of developing type 2 diabetes at a later stage in life.

Also, GDM is correlated with an elevated probability of composite negative maternal outcomes, premature rupture of membranes, and postpartum hemorrhage. GDM and advanced maternal age were found to diminish overall health. The impact of GDM on

general health was significantly increased by advanced maternal age. Social support had the greatest impact on the QoL of diabetes patients. Antenatal clinics provide various services for pregnant women, including diagnosis, treatment, and follow-up care, as well as evaluating for complications based on established clinical guidelines and recording patient information in medical records. The current study was to evaluate the QoL amongst women who have been diagnosed with GDM. at the antenatal Governmental clinics in the West Bank.

# **Chapter 2**

## **Literature Review**

## **Chapter 2**

### **Literature review**

#### **2.1 Literature review**

This chapter discussed the literature about assessing the quality of life of women who have been diagnosed with gestational diabetes in governmental antenatal care clinics in order to identify the knowledge gaps in the literature, identify the keys variables measured in previous studies, and provide conceptual foundations for this study.

This chapter is segmented into three parts. The first section discussed the search strategy utilized in this study. The second section focused on briefly pathophysiology and risk factors of women who have been diagnosed with gestational diabetes disease. The third section discussed the QoL of women who have been diagnosed with gestational diabetes.

#### **2.2 Search strategy**

The researcher conducted a literature review of various studies focusing on the QoL of women diagnosed with gestational diabetes. These studies were conducted at local, regional, and global levels. The process of reviewing literature involves examining and evaluating information from different sources, including the Palestinian Ministry of Health, annual reports and publications from different organizations, multiple interviews with health education specialists, prior research topics, published articles, theses, and other relevant materials.

The search for relevant literature on QoL was conducted in a thorough and systematic manner amongst women who have been diagnosed with gestational diabetes and populations with similar characteristics. The search procedure located articles that were published in peer-reviewed journals, written in English, and released between 2017 and 2023 on words that are relevant to the QoL amongst the women who have been diagnosed with gestational diabetes and other similar populations. Those articles focusing on populations not similar to the QoL of women who have been diagnosed with



gestational diabetes and not published in the English language were excluded. The search was completed on 30th February 2023 and was updated if required.

The search was carried out by utilizing several online bibliographic databases, including CINAHL, Science Direct, Wiley online Library, SAGE Journals, Google Scholar, MEDLINE, and Pro Quest.

The search of the database was performed using the subsequent keywords (quality of life, QoL, gestational diabetes, women with gestational diabetes, antenatal care clinics), the search method was implemented by utilizing keywords individually as well as in combination with one another to broaden, merge, or exclude dissimilar outcomes.

The search process identified 2,100 studies from 2017-to 2022. The significant portion of the articles were excluded due to their titles or abstracts not being relevant to the search topic. After the application of the inclusion criteria and removal of duplicates, there were 54 articles remaining for analysis. An assessment was carried out to determine the validity of the study and the usefulness of its results. The analysis focused on the following inquiries: Was the study conducted in a sound and rigorous manner? What were the findings of the study? Do the outcomes have practical value? Each article was evaluated to identify its weaknesses and strengths, with the aim of minimizing any potential threats to validity.

### **2.3. Risk factors, pathophysiology and complications for gestational diabetes in women.**

GDM “gestational diabetes mellitus” is a widespread illness that affects an increasing number of pregnant women around the world (Li-zhen et al., 2019). GDM is the most frequently occurring metabolic issue throughout pregnancy (Anastasiou et al., 2020). However, reported prevalence worldwide varies between 1 and 45% of pregnancies The incidence of GDM is increasing worldwide, with a notable rise occurring among certain ethnic groups (Choudhury, & Rajeswari, 2021 & Plows et al., 2018). Gestational diabetes mellitus (GDM) can lead to various complications for both the mother and the baby. Some of the common complications of GDM include:

Macrosomia: This refers to the condition where the baby grows too large, typically weighing more than 8 pounds 13 ounces. This can lead to difficulties during delivery, and increase the risk of injury to both the mother and the baby.

- Pre-eclampsia: GDM increases the risk of developing pre-eclampsia, a condition that is characterized by high blood pressure and damage to organs such as the liver and kidneys.
- Hypoglycemia: In some cases, GDM can lead to low blood sugar levels in the baby after birth, especially if the mother's blood sugar levels are not well controlled during pregnancy.
- Polyhydramnios: This refers to the condition where there is too much amniotic fluid surrounding the baby, which can lead to premature labor or delivery.
- Increased risk of developing type 2 diabetes: Women who develop GDM are at a higher risk of developing type 2 diabetes later in life.

Gestational diabetes mellitus (GDM) is defined as “glucose intolerance with onset or first recognition during pregnancy and generally reverts to normal in the postpartum period” (Alejandro et al., 2020). Gestational diabetes is characterized by insulin resistance, which is the same physiological process observed in type 2 diabetes. In the second and third trimesters of pregnancy, insulin resistance develops due to the insulin desensitizing effects of placental hormones and maternal adipose tissues meeting elevated glucose requirement for the growth and development of the fetus (Nair et al., 2021). Placental hormones and maternal adipose tissue are believed to impede the function of insulin that aids in the transfer of glucose from the blood to the cells. As a result, there is an accumulation of high levels of glucose in the bloodstream (Nguyen-Ngo, 2020). During normal pregnancy, the beta cells of the pancreas compensate for insulin resistance by producing more insulin. But, in abnormal cases, the beta cells of the pancreas cannot adequately compensate for insulin resistance. This leads to a state of hyperglycemia, also known as elevated blood glucose levels, which is diagnosed as gestational diabetes (Olmos-Ortiz et al., 2021).

Pregnant women have an increased likelihood of developing gestational diabetes due to risk factors that can either be modified or non-modifiable (Ho et al., 2020). The most frequently reported non-modifiable risk factors associated with GDM are having a family history of diabetes mellitus and an advanced maternal age (over 25 years old) (Getaneh et al., 2021). Additional non-modifiable risk factors involve polycystic ovarian syndrome, being of non-white ethnicity, and increased parity. Risk factors that can be modified include having a previous history of GDM, having a history of delivering a macrosomic baby (weighing more than 4,000 g), and being obese (with a BMI of 30 kg/m<sup>2</sup> or higher) (Alejandro et al., 2020). Several studies have reported that obesity is the most frequently occurring modifiable risk factor for GDM (Siddiqui et al., 2020). With this information in mind, it is crucial to acknowledge that the rising prevalence of maternal obesity around the world is associated with the growing incidence of GDM and its associated complications (Hill et al., 2020). Several studies have shown that adherence to healthy lifestyle behaviors such as following a healthy diet, engaging in physical exercises, and weight loss have been effective in managing obesity (Wilson et al., 2022). Thus, it is recommended to focus on maternal obesity and take measures to mitigate it.

#### **2.4. Quality of life among women with gestational diabetes disease.**

Bień et al. (2016) conducted a survey to evaluate the factors that impact the QoL and acceptance of illness among pregnant women with diabetes. The study was carried out on a group of 114 pregnant women who had diabetes and were admitted to high-risk pregnancy departments in multiple hospitals located in Lublin, Poland. According to the findings, the overall quality of life of the women was slightly better than their own perception of their general health. Additionally, the study revealed that women who had moderate self-reported knowledge of diabetes, very good perceived health, very good financial status, were only treated with diet, and reported that the illness did not affect their lives had a higher QoL ( $p < 0.05$ ). The study showed that women who had a very good financial status ( $p < 0.009$ ), reported having good health ( $p < 0.002$ ), and were treated through dietary measures ( $p < 0.04$ ) exhibited greater acceptance of their illness.

Also, Pantartzis et al. (2019) conducted a case-control study to examine the impact of a certain factor on the QoL of pregnant women in the third trimester of their pregnancy. A

group of 62 pregnant women was examined in the study during the third trimester of pregnancy, consisting of 31 women with GDM and 31 women with uncomplicated pregnancies. In the study, the QoL and Health-Related Quality of Life (HRQOL) questionnaires were utilized, and the findings indicated that pregnant women with GDM had a lower QoL than those with uncomplicated pregnancies, with a statistically significant difference ( $p < 0.05$ ) observed in both the social life and health scales. Conversely, there was no variation in the QoL between pregnant women who have GDM who received different treatment modalities, such as insulin or diet.

In addition, Marchetti et al. (2017) carried out a systematic review study to gain further insight into the clinical association between GDM and QoL and contribute to the advancement of knowledge in this area. The findings showed that the QoL of women with GDM was significantly poorer in both the short and long term. The researcher demonstrated that the detection of GDM could notably increase the probability of health complications related to potential hazards for the mother, fetus, and the child's growth, as well as adverse impacts on the mental health of the mother. Nonetheless, enhancing positive diabetes-related self-management behaviors through various intervention programs can result in QoL improvements.

Moreover, Mokhlesi et al. (2019) carried out a study with the aim of examining the impact of gestational diabetes on the QoL of pregnant women. The findings indicated that the majority of the reviewed articles did not report any significant alteration in the physical aspect of QoL among women who have gestational diabetes. The psychological impacts of gestational diabetes were varied and not fully comprehensible, hence, studies have reported conflicting results on this matter. Seventy-five percent (three out of four) of the studies that investigated the social aspect of QoL among women with gestational diabetes revealed that their QoL could be negatively affected by the social dimension.

Furthermore, a study was carried out by wanowicz-Palus, Zarajczyk, Pieta, and Bień (2019) with the objective of assessing the levels of QoL, illness acceptance, social support, and self-efficacy in pregnant women with hyperglycemia. The participants of the study gave a higher rating to their overall QoL (3.64 points) compared to their perceived

health (3.43 points). Regarding social support, participants reported the highest mean score of support in terms of support they had actually received (3.53 points) and their perception of instrumental support being available (3.52 points), while the lowest mean score were reported for seeking support (2.99 points) and the need for support (2.95 points). The mean score for acceptance of illness amongst the pregnant women with hyperglycaemia who participated in the study was 31.37, and the mean score for generalized self-efficacy was 31.58. The participants in the study indicated that their QoL in different domains of the WHOQOL-BREF questionnaire was linked to particular measures of social support, acceptance of illness, and generalized self-efficacy.

In addition, Morin et al. (2019) conducted a prospective cohort study to assess the QoL of pregnant women who had a full-term delivery from the first trimester of pregnancy until the ninth month. The research involved the observation of 500 expectant mothers aged 18 years and above from 2015 to 2017 at Toulouse University Hospital in France. Monthly online reports were used to collect data in the study. The findings indicated that the QoL was lower ( $P < 0.001$ ) for women with pathological pregnancies compared to those with physiological pregnancies, and it declined over time for both types of pregnancies. Specifically, the QoL scores decreased at a rate of -0.08 points per month ( $P < 0.001$ ) for physiological pregnancies, while for simple pathological and complex pathological pregnancies, the scores decreased at a rate of -0.12 points per month ( $P < 0.001$ ) and -0.11 points per month ( $P < 0.001$ ), respectively. Notably, the participants' perceived health status showed a decline from the third month to the ninth month of pregnancy, as observed for physiological pregnancies (mean difference = -10.5 points,  $P < 0.001$ ), pathological pregnancies (mean difference = -10.0 points,  $P < 0.002$ ), and complex pathological pregnancies (mean difference = -7.8 points,  $P = 0.058$ ).

As well as a study was conducted with the objective of comparing the effects of GDM on various QoL aspects in pregnant women from China. A survey was carried out on a total of 13,358 expectant mothers located in Tianjin, China. The findings indicated that of all the QoL domains and summary scores examined, only the general health (GH) score was comparatively lower in the group of individuals with GDM as compared to the group without GDM. Multivariate analyses demonstrated a negative correlation between GDM

and advanced maternal age (i.e.,  $\geq 30$  years vs  $< 30$  years) with regard to general health (GH) (Liu, et al., 2020).

Ansarzadeh, et al., (2020) carried out a cross-sectional study with the aim of establishing a model to identify the factors that contribute to the QoL of individuals diagnosed with GDM. A total of 329 women with GDM who had been referred to healthcare centres in Qom, Iran, were included in this investigation. The findings indicated that only the age variable had a significant influence on the QoL of individuals, based on both the direct and indirect paths ( $B = 0.51$ ). Of the variables that had a direct impact on the QoL, social support was found to have the greatest influence ( $B = 1.02$ ), while self-efficacy had the least significant impact ( $B = 0.01$ ). Regarding the indirect path, it was found that the only variable that had a noteworthy effect on the QoL was knowledge, which influenced self-efficacy ( $B = 0.0045$ ).

The QoL of women who have been diagnosed with gestational diabetes varies depending on the woman's individual situation. Generally, women who have been diagnosed with gestational diabetes are advised to engage in physical exercise regularly and to eat a healthy diet in order to manage their condition. They may also need to take insulin or oral medications to help manage their blood sugar mean score. Women who have been diagnosed with gestational diabetes must also monitor their mean score of blood sugar and attend regular check-ups with their healthcare provider. With proper management, women who have been diagnosed with gestational diabetes can have a good quality of life (Singla, 2022 & Chiou et al., 2022).

The study was to evaluate the quality of life of diabetic pregnant women. The QoL of all diabetic pregnant women in Kermanshah, Iran was above average and the mothers with greater income and employment status tended to have stronger social and environmental relationships. The mean age of those participating in the study was  $33.06 \pm 05.05$  years, and the average age of mothers with gestational diabetes was less than 6 months. The research findings established that gestational diabetes is one of the major risks factors. Policymakers have been urged to offer expectant mothers additional training sessions on

proper nutrition and increased physical activity, in order to enhance their QoL (Abolfathi et al., 2022).

A cross-sectional study was performed by Walker et al., (2022) to investigate the effects of socioeconomic risk factors, such as food insecurity and unstable housing, on the HRQOL of women who have already been diagnosed with GDM. The study focused on examining how depressive symptoms in women with GDM influence their pregnancy outcomes as well as their QoL after giving birth. For the purposes of this study, GDM was determined solely based on the self-reported diagnosis of diabetes during pregnancy. Information collected from the Behavioral Risk Factor Surveillance System (BRFSS) during the years 2014, 2015, 2016, and 2017, was examined in regard to women aged 18 years and older. The linear regression analysis was utilized to assess the connections between social risks and HRQOL, considering sociodemographic confounding factors. The results showed that 14.8% and 12.6% of the adult women in the research sample overall (weighted N=3,080,442) who had previously been diagnosed with GDM experienced recent housing instability and food insecurity, respectively. In women who had previously experienced GDM, housing instability was associated with poorer self-reported general health status (with a coefficient of -0.36 and a 95% confidence interval of -0.53 to -0.19) and a higher number of days with poor mental health (with a coefficient of 4.81 and a 95% confidence interval of 1.23 to 8.39). Food insecurity was associated with a decrease in self-rated overall health status (-0.43, 95%CI -0.59, -0.27) and a higher number of days with poor mental health (5.29). Research indicates that women who have previously been diagnosed with GDM have a negative correlation between food insecurity & housing instability, and their overall health status and mental health functioning. No connection was different based on race or ethnicity. These results underline the significance of treatments that target social hazards in order to enhance QoL for women who have previously been diagnosed with GDM.

### **2.5 Role of family and Psychological support in Palestine quality of life among women with gestational diabetes in governmental antenatal care clinics**

Gestational diabetes mellitus (GDM) can have a significant impact on the quality of life (QoL) of pregnant women. In Palestine, where family and social support are highly

valued, the role of family and psychological support in managing GDM and improving QoL is crucial. Studies have shown that providing psychological support to women with GDM can improve their QoL and reduce the risk of developing postpartum depression (Karami et al., 2017). Furthermore, involving family members in GDM management can improve treatment adherence and overall maternal and fetal outcomes (Awad et al., 2017).

In Palestine, traditional gender roles and cultural practices often dictate the involvement of family members in health-related decisions, including those related to pregnancy and childbirth (Abu-Mourad et al., 2020). Therefore, it is important for healthcare providers to involve family members in GDM management and educate them about the condition and its management to ensure better support for pregnant women with GDM. In addition, healthcare providers can refer pregnant women with GDM to psychological support services, including counseling and cognitive-behavioral therapy, to address any mental health concerns that may arise during the pregnancy and postpartum periods (Al-Amer et al., 2020).

## **2.6. Gaps of the literature.**

The literature review has shown still have controversial findings in the empirical literature. To date this study. There is a lack of literature about the quality of life of women with gestational diabetes in governmental antenatal care clinics in Palestine. Several studies were included in this literature review with Limitations, such as those that emphasized the need for further investigations. More researches need to conduct in order to assess the QoL of women who have been diagnosed with gestational diabetes in governmental antenatal care clinics in Palestine.

## **2.7. Summary:**

The literature validated that quality of life is apparent the QoL of women who have been diagnosed with gestational diabetes risk factors is an area of interest between researchers,



whereas other predictors still have controversial results in the literature. To date this study, there is a lack of literature on assessing the QoL of women who have been diagnosed with gestational diabetes in governmental antenatal care clinics in Palestine.

The potential findings from the current study are expected to help in filling the gap in the QoL of women who have been diagnosed with gestational diabetes in governmental antenatal care clinics in Palestine.

# **Chapter 3**

## **Methodology**

## **Chapter 3**

### **Methodology**

#### **3.1 Introduction**

The purpose of this study was to assess the quality of life among women with gestational diabetes in governmental antenatal care clinics in Palestine. This chapter defines a detailed description of the research methodology: study design, setting, population, participant's eligibility criteria, study population, sampling, research tool, data collection, data analysis plan, and ethical considerations.

#### **3.2 Study design**

A descriptive a cross-sectional design was used to assess the quality of life among women with gestational diabetes in the governmental antenatal care of the high-risk group of women clinics in Palestine.

#### **3.3 Setting**

The study included pregnant women with gestational diabetes who were attending governmental antenatal care clinics in Palestine. Those women with gestational diabetes were recruited from eleven governmental antenatal high risk clinics in the main cities of West Bank districts of Palestine (Jenin, Tubas, Nablus, Tulkarem, Salfeet, Qalqilya, Jericho, Ramallah, Bethlehem, Hebron, Jerusalem). These clinics provide services for the pregnant women of the at-risk groups including gestational diabetes. Unfortunately, there was no clear data about the total number of these women. The researcher reviewed all the reported data but no document information was found. However, the researcher contacted the in-charge nurses in all the selected clinics, and asked about the number of women with gestational diabetes at each clinic. The period of the study was from July 2022 to December 2022.

The total number of women who were diagnosed with Gestational diabetes during the period of the study was 170 women in all of the contacted clinics. The following table showed the distribution of the women with gestational diabetes in each clinic.

**Table (3.1):** The total number of women who were diagnosed with Gestational diabetes

Clinic name	Number	%
Jenin	29	17 %
Tubas	3	1.8 %
Nablus	20	11.8 %
Tulkarem	20	11.8 %
Salfeet	3	1.8 %
Qalqilya	13	7.6 %
Jericho	11	6.5 %
Ramallah	28	16.4 %
Bethlehem	4	2.4 %
Hebron	23	13.5 %
Jerusalem	16	9.4 %
<b>Total</b>	<b>170</b>	<b>100%</b>

### 3.4 Population and Sample

The target population are all the pregnant women who were diagnosed with gestational diabetes at the period of the study, and who were visiting the selected antenatal high-risk clinics. Which was 170 cases of women with GDM, including 150 women and 20 pilot study participants. The data about GDM and collection from clinics reports in west bank.

### 3.5 Criteria for sampling

In order to sample for quality of life and gestational diabetes mellitus, the following inclusion and exclusion criteria could be considered:

#### 3.5.1 Inclusion criteria

The researcher was included in the participation in the study of pregnant women with gestational diabetes during the specific study period from July 2022 to December 2022.

- Participants included gestational diabetes diagnosis confirmed by a medical doctor, being between 18-45 years of age, and having a pregnancy with a gestational age of 24- 40 weeks.

### **3.5.2 Exclusion criteria**

The researcher was excluded

- The pregnant women with co morbidities.
- The pregnant women with pre-existing diabetes.
- The pregnant women without gestational diabetes.
- The pregnant women who are younger than 18 years old or older than 45 years old, as age is a significant risk factor for GDM, and an increased age is linked to a greater likelihood of developing GDM. For this reason, research studies often exclude individuals who are over 45 years of age. Excluding individuals over 45 helps to ensure that the results of the research study are more accurate and to minimize the risk of bias. Additionally, individuals over 45 may have other medical conditions that can affect the results of the research study.

### **3.6 The sampling**

- Based on the reports received from the nurses in charge of the selected high-risk clinics, there were an estimated total of 170 cases of women with GDM, including 150 women and 20 pilot study participants. However, after comparing the inclusion criteria, it was found that 9 cases did not meet the criteria and all 20 pilot study participants were excluded from the final analysis. This resulted in a final total of 141 women included in the study. The participation of these women was convenient, and the researcher was able to approach all reported cases with the help of nurses in the antenatal clinics. The women were interested in participating and willingly signed up for the study.

### **3.6 Pilot study**

A pilot study is a small-scale version of a research study that is conducted before the main study to assess its feasibility and identify any potential issues with the research methods or study design. In this particular study, the pilot study was conducted among pregnant women with gestational diabetes from eleven high-risk antenatal care clinics in the West Bank of Palestine.

The women who participated in the pilot study were selected based on the same inclusion and exclusion criteria as the women who would later participate in the main study. However, the 20 participants who took part in the pilot study were excluded from the final data analysis.

This exclusion is a standard practice in research studies, as the pilot study is designed to refine the research methods and assess the feasibility of the study, rather than to produce final results. The main study was conducted with a larger sample size of 150 participants, which allowed for more robust data analysis and generalization of the findings to a larger population.

### **3.7 Validity and reliability**

Construct validity of the QLI was established via factor analysis confirming the subscales and explaining 91 percent of the variance (Ferrans & Powers, 1992). The QLI has demonstrated sensitivity to change (DeSouza & Nairy, 2003; Hathaway et al., 1994a; Hathaway et al., 1994b) and test-retest reliability ( $r=0.87$ ) for 2-week interval (Ferrans & Powers, 1985). Both total and sub-scales have demonstrated excellent internal consistency, with a Cronbach's alpha ranging from 0.85 to 0.97 (DeSouza & Nairy, 2003; Ozer & Efe, 2006). The QLI-Diabetes version has been used in four studies of patients with T2DM (Arun et al., 2008; DeSouza & Nairy, 2003; Hu, Wallace & Tesh, 2010; Quinn, 1996) and one study of patients with either T1 or T2DM (Lewko, et al., 2013). Also, the QLI-generic version was used in a study of patients with T1DM undergoing transplantation (Hathaway et al., 1994a; Hathaway et al., 1994b). Although the QLI-

Diabetes version has not been used with patients using intensive insulin management for their DM1, it has well-established reliability and validity and is a promising multidimensional tool for QOL assessment in this population.

For the present study, Cronbach's alpha was 0.919 for overall QoL and for the subscales was 0.857 for health and functioning, 0.817 for psychological and spiritual, 0.676 for social and economic, and 0.680 for family.

### **3.8 Ethical consideration**

The Ethics Committee for Research at Al-Quds University permitted this study (Annex 1). Moreover, a permission letters were received from the Palestine Ministry of Health (Annex 2), Helsinki approval (number PHRC/HC/1288/23), informed consent (Annex 3) was signed by participants for those who voluntarily agreed, and the participants was given the opportunity to ask questions regarding this study.

Participant's confidentiality was assured during the study, Privacy during data collection was maintained; no recording of the participants' names on response sheets, and the researcher took measures to protect the electronic files by storing them on a personal computer that required a password for access, while the hardcopy was kept in a locked cabinet located in a secure office. The data was demolished after five years when finished the research, finally, authorization to utilize the research tools was acquired from the primary authors.

### **3.9 Research Instruments**

Data collection was accomplished through the Quality of Life Index (QLI) which was developed originally in 1984 as a measure of multidimensional QOL (Ferrans & Powers, 1985). Participants answered their satisfaction with (1=very dissatisfied to 6=very satisfied) and the importance of (1=very unimportant to 6=very important) QOL-related items using a Likert scale. Satisfaction ratings are weighted by importance to calculate an overall score and subscores for four domains: health and functioning, psychological and spiritual, social and economic, and family. Possible total scores range from zero to 30.

The diabetes version has 34 items and is available in five languages including English (Annex 4) and Arabic (Annex 5).

Items for Subscales for the Quality of Life Index (QLI) – Diabetes III Version Five scores are calculated for the Ferrans and Powers Quality of Life Index: (1) Total Quality of Life Score (2) Health and functioning subscale score, (3) Social and economic subscale score, (4) Psychological/spiritual subscale score, and (5) Family subscale score. The items listed below are from both Part 1 (Satisfaction) and Part 2 (Importance).

For example, A1. Health refers to question #1 in Part 1 and question #1 in Part 2. Total Quality of Life Score All of the items are used to calculate the total score, which reflects the overall quality of life. The table 3.2 showed the scale of QoL

**Health and Functioning Subscale:** health, health care, energy (fatigue), ability to take care of yourself without help, ability to control blood sugar, changes made in life because of diabetes, control over life, chances for living as long as you would like, sex life, ability to take care of family responsibilities, usefulness to others, worries, things for fun,

**Social and Economic Subscale:** friends, emotional support from people other than your family, neighborhood, home, job/not having a job, education, financial needs.

**Psychological/Spiritual Subscale:** peace of mind, faith in God, achievement of personal goals, happiness in general, life satisfaction in general personal appearance, self-esteem.

**Family Subscale:** family health, children, family happiness, spouse, lover, or partner emotional support from family.

### **3.10 Data collection and analysis**

The research project was introduced by the researcher to the in charged nurses who work in the selected antenatal clinics. the researcher explained the purpose of the study and asked for the nurses help in identifying the eligible pregnant women with gestational diabetes to be included in the study. These nurses helped the researcher in selecting women with gestational diabetes. The potential participants were identified by the nurses in charged through reviewing the women characteristic and comparing it to the exclusion



and inclusion criteria. The researcher then was notified about the number and the daily appointment lists of the pregnant women with gestational diabetes at the antenatal clinics that were included in the study.

The researcher was given participants (pregnant women with gestational diabetes) full disclosure of the study. If they are willing to proceed, written consent was obtained. The researcher collected the data at eleven antenatal care clinics on west Bank in Palestine via self-reported questionnaires. The questionnaire consists of two sections: section one information about demographic data, section two a survey for quality of life. After completing all questionnaires, statistical analysis was performed to achieve study objectives; the collection of information was by distributing 150 questionnaires face-to-face to the study participants according to the number is notified by the nurses in charge, and fulfilling the questionnaire at the presence of the researcher with the participants.

All data was entered into a database and statistical data analysis was conducted by using the Statistical Package for Social Science (SPSS, 25) software. A p-value of 0.05 was considered statistically significant. Descriptive statistics, including frequencies, percentages, means, and standard deviations was used. Also, an independent t-test and ANOVA was used to determine the differences between the quality-of-life scores and their demographic characteristics.

### **3.11 Summary**

The study design was a quantitative, descriptive, cross-sectional design that aimed to assess the quality of life among women with gestational diabetes in governmental antenatal care clinics in Palestine. The study included women with GDM who were attending governmental antenatal care clinics in Palestine. The target population was a convenience sample of all pregnant women with gestational diabetes who receive medical care from the antenatal care clinics in the main cities of West Bank districts. The sample size was 170 cases of women with GDM, including 150 women and 20 pilot study participants. Data was collected using self-reported questionnaires distributed and fulfilled at the presence of the researcher. and the questionnaire consisted of two sections: demographic data and a survey for quality of life. A pilot study was conducted among

pregnant women with gestational diabetes in the same characteristics as the inclusion and exclusion criteria, and the validity and reliability of the QLI were recognized via factor analysis and internal consistency analysis.

# **Chapter 4**

## **Results**

## **Chapter 4**

### **Results**

#### **4.1 Introduction**

This chapter deals with the data collected for analysis. The statistical method allowed the investigator to deduce, analyze, coordinate, measure, evaluate and convey the numerical information. The aim of data analysis is to provide answers to questions about the study. The data analysis strategy comes directly from the question, the design and the data collection process and the level of measurement of the data. This chapter edits, tabulates, analyzes and interprets the data collected.

This chapter expresses the findings concerning the assessment of the QoL among pregnant women with gestational diabetes in the antenatal health care clinics in the West Bank. Statistical analyses were directed to explore three research questions:

1. What is the mean score of the total quality of life domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - a) What is the mean score of health and functioning domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - b) What is the mean score of social and economic domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - c) What is the mean score of psychological/spiritual domain differ among pregnant women with GDM in the antenatal health care clinics in the West Bank?
  - d) What is the mean score of the family domain among pregnant women with GDM in the antenatal health care clinics in the West Bank?
2. Are there significant differences between the QOL among pregnant women with GDM health and the socio-demographic data in the antenatal health care clinics in the West Bank?
3. Are there significant differences between the QOL among women with GDM and the clinical and biological measures in the antenatal health care clinics in the West Bank?

## 4.2 Data preparation

Before analysis, the data have been checked for accuracy through visual inspection and manual checking. Screening was conducted for each variable to identify missing data, pattern of missing data, and outlier scores. No missing or outlier scores. The distribution of QoL variable was approximately normally distributed.

## 4.3 Response rate

The participants in the current study composed of all pregnant women with gestational diabetes in the antenatal health care clinics in the West Bank. One hundred and forty one out of 150 questionnaires (94.0% response rate) were completed and returned by the participants. From an organizational point of view the response rate obtained for this research was very good as such the findings should include more reflective details about the pregnant women population.

## 4.4 Participants' Characteristics

One hundred and forty-one participants participated in the current study. The findings revealed that the mean age of the participants was 31.3 (SD=5.8) years. Approximately half of them 49 % had completed secondary school. Also, the majority of them 88(62.4%) live in rural areas, and most of them 113 (80.1%) are housewives. Furthermore, the mean number of the participants' children was 2.6 (SD=1.9), as seen in Table 1.

**Table 1**

*Demographic characteristics of the participants (N=141).*

Characteristics		M (SD)	N (%)
Age		31.3(5.8)	
Level of education	Elementary school and below		23(16.3)
	Secondary		69(48.9)
	Diploma and above		49 (34.8)
Resident area	Urban		48 (34.0)

	Rural	88 (62.4)
	Camp	5 (3.5)
Job	Yes	28 (19.9)
	No	113 (80.1)
Number of children		2.6 (1.9)

*M= Mean, SD= standard deviation.*

### **Clinical and biological measures**

The analysis revealed that mean of the pregnancies was 4.2(SD=2.4), Cesarean section 0.5 (SD=1.1), Gestational age (weeks) 31.2 (SD=4.2), Gestational DM diagnosis/ weeks age 26.2 (SD=2.3), HbA1c 7.9 (SD= 1.8), OGTT 195.3 (SD=61.2), FBS 143.7 (SD=35.9), Weight /kg 84.2 (SD=15.4), and Height/m 1.6 (SD=0.1), as seen in Table 2.

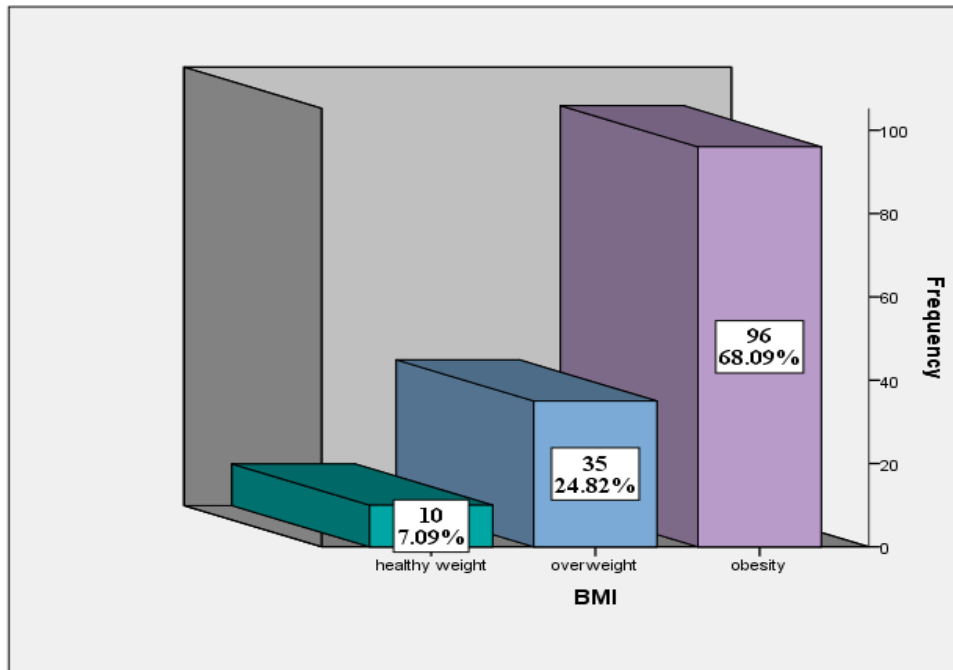
**Table 2**

*Clinical and biological measures of the participants (N=141).*

<b>Item</b>	<b>M (SD)</b>	<b>N (%)</b>
<b>Pregnancy</b>		
Less than 4		58 (48.8)
More than 4		83 (59.2)
<b>Cesarean section</b>		
Yes		70 (49.6)
No		71 (50.4)
Gestational age (weeks)	31.2 (4.2)	
Gestational DM diagnosis/ weeks age	26.2 (2.3)	
HbA1c (N=56)	7.9 (1.8)	
OGTT (N= 48)	195.3 (61.2)	
FBS (N=121)	143.7 (35.9)	
Weight /kg	84.2 (15.4)	
Height/m	1.6 (0.1)	

*M= Mean, SD= standard deviation.*

The analysis also revealed that the majority of the participants 96 (68.09%) were obese as seen in Figure 2.



**Figure 2:** *Body Mass Index of mother with gestational diabetes mellitus (N=141).*

### Medical conditions

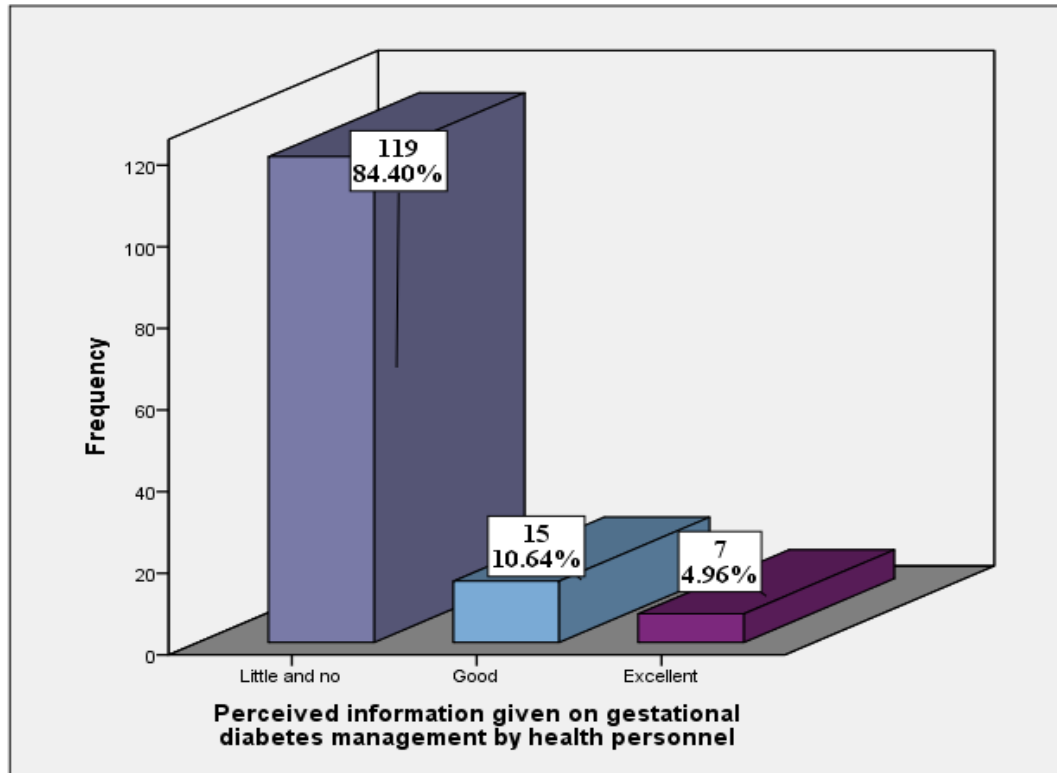
The analysis revealed that 81 (57.4%) of the participants had no previous history of GDM. 33 (55.0%) of those with a history of GDM had control of their diabetes. Also, 71 (50.4%) of the participants are currently taking insulin, and 21 (14.9%) are smokers. Only 17 (12.1%) do physical exercise, as seen in Table 3.

**Table 3***Past medical conditions of the participants (N=141).*

<b>Characteristics</b>		<b>N (%)</b>
Previous History of GDM	Yes	60 (42.6)
	No	81 (57.4)
If yes, was diabetes controlled?	Yes	33 (55.0)
	No	27 (45.0)
Currently taking insulin	Yes	71 (50.4)
	No	70 (49.6)
Smoking	Yes	21 (14.9)
	No	120 (85.1)
Physical activity	Yes	17 (12.1)
	No	124 (87.9)

Most of the participants 119 (84.4) reported that the perceived information given on gestational diabetes management by health personnel was little or none, as seen in Figure 3.





**Figure 3:** *Perceived information given on gestational diabetes management by health personnel (N=141).*

#### 4.5 Testing Research Questions

**Research question 1: What is the mean score of the QOL among pregnant women with GDM in the antenatal health care clinics in the West Bank?**

The possible mean scores range of the QoL from zero to 30. The participants' overall QoL in the current study was moderate 18.0 (SD = 4.2). Of the remaining domains, the highest scores were obtained in the family domain (23.5±4.9), followed by the psychological/spiritual domain 20.8±6.2) and social and economic domain (18.3±4.2). The score in the Health and Functioning domain was the lowest (14.5±5.1), as seen in Table 4.

**Table 4***Quality of life of the participants (N=141).*

<b>QOL and subscales</b>	<b>M(SD) <sup>£</sup></b>
Total QOL	18.0 (4.2)
Health and functioning domain	14.5 (5.1)
The social and economic domain	18.3 (4.2)
Psychological/spiritual domain	20.8(6.2)
The family domain	23.5(4.9)

M: Mean; SD: standard deviation; <sup>£</sup>Maximum score of mean = **30 points**.

**Research question 2: Are there significant differences between the QOL among pregnant women with GDM health and the socio-demographic data in the antenatal health care clinics in the West Bank?**

The ANOVA test was performed to assess significant differences between the mean QoL score of the pregnant women and the sociodemographic characteristics. The analysis revealed statistically significant differences between the mean QoL scores and both education and job levels (P 0.05). The high mean of working women was higher than that of unemployed women. This shows that pregnant women who work have a higher QoL than those who do not. Also, the Scheffe post hoc test showed that the bachelor's degree has better QoL statistically significantly more than other levels of education (p = 0.002). However, there was no significant difference between mean of the QoL and the resident area (P > 0.05), as seen in Table 5.

**Table 5**

*The differences between the QoL of the pregnant women and sociodemographic characteristics (N=141).*

Variable		N	M	SD	F	P-value
Resident area	Urban	48	18.4231	4.75282		
	Rural	88	17.9534	3.96817	1.536	.219
	Camp	5	14.9647	2.82655		
Level of education	Elementary school	23	15.9386	4.56045	6.634	.002**
	secondary	69	17.6221	4.08918		
	Bachelor	49	19.5207	3.82680		
Job	yes	28	20.0972	4.24175	8.965	.003**
	No	113	17.4895	4.09709		

*\*Correlation is significant at the 0.01 level (2-tailed); \*\*Correlation is significant at the 0.05 level (2-tailed).*

Also, an analysis of the Pearson Correlation Test was performed to assess the relationship between the mean QoL score of the pregnant women and both age and number of children. The analysis revealed that there was a small negative relationship between the QoL score of the pregnant women and both age and number of children ( $P < 0.05$ ), as seen in Table 6.

**Table 6**

*The relationship the QoL of the pregnant women and socio-demographic characteristics (N=141).*

Variable	QoL	
	Pearson Correlation	P. Value
Age	-.180*	.033
Number of Children	-.285**	.001

*\*Correlation is significant at the 0.01 level (2-tailed); \*\*Correlation is significant at the 0.05 level (2-tailed).*

**Research question 3: Are there significant differences between the QOL among women with GDM and the clinical and biological measures in the antenatal health care clinics in the West Bank?**

The ANOVA test was performed to assess significant differences between the mean QoL score of the pregnant women and the clinical and biological measures. The analysis revealed that there were no statistically significant differences between the mean QoL score and either the time of the gestational diabetes mellitus diagnosis or the BMI ( $P > 0.05$ , as seen in Table 7).

**Table 7**

*The differences between the QoL of the pregnant women and Clinical and biological measures (N=141).*

Variable		N	M	SD	F	P-value
Diagnosis of GDM/	Second trimester	40	18.0930	3.92186	.023	.881
Pregnancy trimester	Third trimester	101	17.9734	4.37969		
BMI	Healthy weight	10	18.8118	3.19283	2.682	.072
	Overweight	35	19.2975	3.69837		
	Obesity	96	17.4531	4.43363		

*\*Correlation is significant at the 0.01 level (2-tailed); \*\*Correlation is significant at the 0.05 level (2-tailed).*

In addition, the Pearson correlation test was used to assess the relationship between the pregnant women's mean QoL score and the Clinical and biological measures. The analysis revealed that there was a small negative relationship between the QoL score of the pregnant women and the number of pregnancies, OGTT, and FBS ( $P < 0.05$ ), as seen in Table 8.

**Table 8**

*The relationship between the QoL of the pregnant women and clinical and biological measures (N=141).*

Variable	QoL	
	Pearson Correlation	P-Value
Pregnancies	-.302**	.001
CS	-.157	.062
Gestational age	-.032	.703
HbAC1	-.122	.370
OGTT	-.302*	.037
FBS	-.320**	.001

*\*Correlation is significant at the 0.01 level (2-tailed); \*\*Correlation is significant at the 0.05 level (2-tailed).*

# **Chapter 5**

## **Discussion**

## **Chapter 5**

### **Discussion**

This chapter summarizes the study and conclusions drawn from the data analysis in chapter four. Gestational diabetes is a type of diabetes that develops in the second and third trimester of pregnancy and can affect the health of both the mother and baby. Governmental antenatal care clinics can promote QoL for pregnant women with gestational diabetes by providing access to education, nutrition counseling, and medical advice. Pregnant women can benefit from these services by gaining knowledge about their condition and how to manage it, learning how to maintain a healthy diet and lifestyle, and receiving help in monitoring their blood sugar levels. These services can help to reduce the risk of complications and ensure the best possible outcome for both the mother and baby.

QOL is a broad concept that can be used to refer to the general well-being of individuals and societies. It is an important measure of the success of interventions and policies, as well as of the overall health and prosperity of a population. QOL is often used to describe health and functioning, social and economic, psychological/spiritual, and family domains. These domains can be used to compare the well-being of different people or groups. So, the researcher has selected all Gestational diabetes centers.

The study included women with gestational diabetes who are attending governmental antenatal care clinics in Palestine (Jenin, Tubas, Nablus, Tulkarem, Salfeet, Qalqilya, Jericho, Ramallah, Bethlehem, Hebron, Jerusalem). The majority of participants completed the questionnaire which was likely easy and written in simple language that encouraged the participants to understand and complete all the included items. The feedback that was given from the stakeholders in the participated organizations was positive, and they expect a reflective findings that would help in promoting the quality of life of the women with gestational diabetes.

The study of Piraux et al., (2022), was congruent with the current study and showed a satisfactory response rate despite the relatively large sample size which indicates a representative sample. The findings provided accurate and detailed understanding of the needs and experiences of the pregnant women with GDM.

Concerning the characteristics of the 141 participants of the pregnant women with GDM, in the current study the average age was  $31.3 \pm 5.8$  years, which was similar to the study of Dennison et al., (2021), that showed that showed an average age of  $31.3 \pm 5.0$  years for the women with GDM. .

Regarding education, the current study showed that about half of the participated women had completed secondary school. These results agree with Imen et al., (2018) Which showed that 47% of GDM among pregnant women had finished their secondary education. Also, Li et al., (2018) reported that about half of GDM among pregnant women had finished their secondary education. These results could be explained by the fact that the majority of women got married early and did not continue their education at the university. Women who marry early, especially before the age of 20, are more likely to have GDM due to a lack of information about nutrition and health, as well as a lack of access to health care. Research has also shown that early marriage increases the risk of GDM due to the increased stress associated with early marriage. In addition, women who marry early are more likely to become pregnant at a younger age, which increases the risk of GDM due to hormonal changes in the body that occur during pregnancy. Finally, women who marry early are more likely to have multiple pregnancies, which further increases the risk of GDM.

The majority of participants in the current study were living in rural areas. According to Wang et al., (2021), the rate of women with GDM in rural areas is higher than those in urban areas due to a combination of factors, including nutrition, lifestyle, and access to healthcare services. In rural areas, women are more likely to have lower incomes, less gain access to healthy foods, and reduced chances to participate in physical exercise. Additionally, they may have fewer resources to access medical care, which can lead to a delay in the diagnosis and treatment of GDM (Wang et al., 2021). However, in the



current study the higher rate of women with GDM in rural areas might be explained by the lack of approach to medical care facilities and resources in these areas. Rural areas in Palestine often have fewer medical professionals and fewer resources, such as access to healthy foods, which can make it difficult for the women to manage their diabetes. Additionally, rural populations tend to have higher rates of obesity and physical inactivity, both of which are major risk factors for GDM and limited opportunities for exercise despite increasing economic growth.

According to a study conducted by Sirdah et al. (2018), rural populations in Palestine tend to have higher rates of obesity and physical inactivity, which are both major risk factors for gestational diabetes mellitus (GDM). Limited opportunities for exercise may also contribute to this increased risk, despite increasing economic growth. This finding is consistent with previous research indicating that rural populations in many countries tend to have higher rates of obesity and physical inactivity than urban populations (e.g., Liese et al., 2007; Zhang et al., 2016).

Therefore, it is important to develop interventions to improve physical activity levels and promote healthy eating habits in rural areas, particularly among pregnant women at risk for GDM. One such intervention could be the use of mobile health technologies to provide personalized support and guidance to women living in remote areas (Perez-Ferre et al., 2017).

The results majority of participants were living in rural areas and these results disagree with another study by Khalil et al., (2017) that found GDM was slightly higher in an urban area than that in rural. In contrast,

The results showed that most of participants are housewives. These results agree with other studies that showed that the majority of participants were housewives (Alnaim, 2020 & Kragelund et al., 2020). The majority of housewives are at higher risk of developing gestational diabetes due to their lifestyle, which often involves little physical activity and unhealthy eating habits. These factors can lead to an increased risk of developing insulin resistance, which is a major cause of gestational diabetes (Bruno et al., 2017; Changizi et al., 2022).

The average number of the participants' children were 3 children. These results agree with another study by Moazzeni et al., (2021). The fertility rate for women with gestational diabetes is not significantly different from the general population (Thaller et al., 2022). In brief, earlier research showed that grand multiparas had worse socio-economic conditions mainly due to lower education level, inadequate prenatal care, higher smoking rates, and specifically in the context of Reunion, a high tendency to develop alcohol addiction during pregnancy (Ahinkorah et al., 2022). Furthermore, as reported by Khan et al. (2022), grand multiparas had a higher incidence of obesity prior to pregnancy when compared to women of the same age group.

The analysis revealed that mean of the pregnancies was 4.2, Cesarean section 0.5, Gestational age (weeks) 31.2. Gestational DM diagnosis/ weeks age 26.2. These results agree with other studies by Barnes et al., (2022) and Usami et al., (2020). Regarding biological measures the results showed that HbA1c, Weight /kg 84.2, and Height/m 1.6, and these results agree with Kouhkan et al., (2022) and Barnes et al., (2022). They showed that there are poor controls, high blood glucose, and high obesity. Mostly as a result of reduced levels of physical activity and overconsumption of food, especially those high in fat and sugar like processed or fast food, resulting in an excess of energy intake from fat. Being overweight or obese before pregnancy increases the chances of developing gestational diabetes, but even women of normal weight can develop it.

The results showed that more than half of the participants had no previous history of GDM. a history of GDM had control of their diabetes. These results agree with other studied by Kubihal at al., (2021) and Agarwal et al., (2022) that showed that more than half of the participants had no previous history of GDM.

Many participants may not have had the opportunity to be tested for GDM or may not have been aware of their risk factors. It is possible that more than half of the participants had no previous history of GDM because many of them may not have been tested for GDM in the past or may not have been diagnosed with the condition. Also, about half (of the participants are currently taking insulin, McIntyre et al., (2019) and Kintiraki and Goulis (2018) showed that more than half of the participants are always taking insulin.

Insulin is the first line antihyperglycemic drug used to treat GDM. None of the existing insulin formulations have been shown to cross the placenta. If glycemic control does not improve after 1-2 weeks of lifestyle changes, insulin therapy should be started. Insulin is still the gold standard therapy for GDM women who do not achieve glycemic goals through lifestyle changes, as indicated by various recommendations. The use of insulin decreases fetal and maternal morbidity and is safe to use for pregnancy and baby (Vijayam et al., 2022 and Karinaningrum et al., 2022)

About low physical exercise in GDM can be caused by a combination of factors, including lack of motivation, and lack of knowledge about how to exercise safely during pregnancy. Also, lack of knowledge about the importance of physical exercise. Individuals with GDM may also be at risk for developing musculoskeletal issues, such as muscle pain and joint stiffness, which can further reduce the desire to exercise.

Results of this study showed that most of the participants (84.4%) perceived information given on the management of their gestational diabetes by health personnel to be little or none. These results are congruent with several studies which related the low level of information to the poor knowledge of the health personnel, as they may not feel equipped to give information on gestational diabetes consequences and management ( Eades et al., 2022, Skar et al., 2018,& Mensah et al., 2019). These studies indicated the health personnel may not have the time , experience ,or resources to provide comprehensive information on the management of GDM, or they might not have access to the latest updates of GDM. Another reason could be that health personnel may not have enough time to provide comprehensive information to patients. Finally, health personnel may be limited by the health care system's policies regarding gestational diabetes management, which could limit the amount of information they can provide and no specialist or diabetic educator.

Also, there are a variety of reasons why perceived information given on gestational diabetes management by health personnel may be little or none. As the study suggests that women generally expect to receive information about GDM from their GPs and diabetic nurses, healthcare providers should be mindful of the needs and expectations of women who have been diagnosed with GDM. The results suggest that there is potential for enhancing the provision of information, diagnostic communication, and physicians' style.

The researcher scores range the QoL from zero to 30. The participants' overall QoL in the current study was moderate. The family domain has a moderate score, which was the highest among the remaining domains followed by the psychological/spiritual domain moderate and social and economic domain 18.3/30 (61.0). The score in the Health and Functioning domain was the lowest low. Scores range of the QoL from zero to 30 was studied by Pantzartzis et al., (2019). The researchers studied GDM and QoL throughout the third trimester of pregnancy and the results showed that the participants' overall QoL was 75.5%, the scores obtained in the social environment domain.

The systematic review studied by Ansarzadeh et al., (2020) with the aim of establishing a model to identify the factors that contribute to the QoL of women diagnosed with GDM. The study's outcomes revealed that 15 research studies were identified and analyzed using qualitative methods. The results were then categorized into two topics: GDM and QoL, as well as interventions on QoL in women with GDM. The studies have demonstrated that both short-term and long-term quality of life (QoL) were notably low. Nevertheless, it is possible to enhance QoL by implementing various intervention programs aimed at promoting positive self-management behaviors related to diabetes.

Iwanowicz-Palus et al.'s (2019), study aimed to assess the levels of QoL, social support, illness acceptance, and self-efficacy in pregnant women with hyperglycemia. According to the authors, the participants reported higher ratings for their overall QoL than their overall perceived health. Regarding social support, the study found that the highest scores were obtained in terms of received support and perceived availability of instrumental support. However, the lowest scores were observed in terms of seeking support and the

perceived need for support. The study indicated that the average score for illness acceptance among the pregnant women with hyperglycemia was 31.37, while the average score for generalized self-efficacy was 31.58.

Another study aimed to investigate the QoL in women diagnosed with gestational diabetes. It indicated that the QoL is highest in the social/economic, psychological/spiritual, and family domains, while it is slightly lower in the health and functioning domain. The results of the study showed that women were satisfied with psychological/spiritual, social/economic, and family domains. Also, 66% of them were un-satisfied with the health/functioning domain. Over than two-thirds of the mothers tested were happier with social/economic and psychological/spiritual areas, and GDM influences the health and functional domains of the mothers analyzed. (SH et al., 2018).

Shama et al., (2020) conducted a study on 200 mothers in Egypt who were diagnosed with GDM. The purpose of the study was to investigate the relationship between GDM and QoL in women with the mean age is  $29.7 \pm 5.8$  years, with 53% of them having gestational diabetes. The study found that participants had the highest quality of life scores in the social/economic (66.0%), psychological/spiritual (64.0%), and family domains, but lower scores in the health (48.0%) and functioning domains (32.0%). Over two-thirds of the surveyed mothers expressed satisfaction in both the social/economic and psychological/spiritual aspects of their lives. The majority of the moms surveyed have an adequate understanding of hypoglycemia treatment. More than a third of the participants in the study were unaware of the signs of GDM.

The QoL among those with GDM in Palestine is moderate for a variety of reasons. The lack of access to adequate healthcare, particularly in rural areas, makes it difficult for those with GDM to receive the necessary medical treatment to manage their condition. Additionally, poverty is widespread in Palestine, making it difficult for many to afford the cost of the medications and supplies that they need. Poor nutrition and food insecurity are also contributing factors to the moderate QoL among those with GDM in Palestine. Finally, the ongoing conflict and instability in the region make it difficult for those with GDM to access the resources they need to manage their condition and improve their QoL.

Many factors could contribute to the low health and functioning domain among people with GDM in Palestine such as limited financial resources, and limited resources for physical activity. In addition, high levels of stress, poor mental health, low of education and awareness, and most of them housewives may all be factors contributing to poor health and functioning among those with GDM in Palestine.

Families have long been the bedrock of Palestinian culture, serving as the first place for children to acquire respect, self-esteem, responsibility, community, and, most importantly, love. When these ideals are magnified throughout society as a whole, they shape a nation.

On the other hand, the Family domain is moderate among GDM in Palestine due to the traditional and cultural values that often prioritize family ties. This means that many decisions are made with the input of family members and that the family often takes precedence over individual needs. Additionally, the collective culture in Palestine often means that families are large, making it easier for different members of the family to support each other. Furthermore, the economic and social difficulties in Palestine make it difficult for individuals to access resources, so family support is essential for GDM patients.

The statistical test revealed there is an association between the mean QoL scores and both education and job levels ( $P < 0.05$ ). The average of QoL among working women was higher than that of unemployed women. This shows that pregnant women who work have a higher QoL than those who do not. Also, the Scheffe post hoc test showed that a bachelor's degree has a better QoL statistically significantly more than other levels of education ( $p = 0.002$ ). However, there was no relation between the QoL and the resident area ( $P > 0.05$ ). These results agree with other studies showing that there is an association between QOL and both job status and educational levels (Shama et al., 2020 & Ansarzadeh et al., 2020).

The job increases the QoL among gestational diabetes by providing financial stability and access to healthcare. Having a steady income can help decrease stress levels associated with not having enough money to provide for basic needs. Access to healthcare can help

ensure that gestational diabetes is managed appropriately and can help to prevent any long-term health complications associated with the condition. Financial stability and access to healthcare can help to improve the overall QoL for those with gestational diabetes (Muhwava et al., 2020).

Regarding education, educational levels increase the QoL among gestational diabetes because they provide access to more knowledge and resources. This can lead to better self-management of the condition, improved nutrition and exercise habits, and better access to medical care. Education can also increase awareness and reduce the stigma associated with gestational diabetes, leading to improved QoL. Education can also empower women to make better decisions about their health, which can ultimately lead to better outcomes (Siahkal et al., 2021). The current study suggested that job and education levels can improve the QoL among gestational diabetes patients by giving them the financial and educational resources to understand their condition and manage it properly.

Pearson correlation test was performed to assess the relationship between the quality-of-life score of the pregnant women and both age and number of children. The analysis revealed that there was a small negative relationship between the QoL score of the pregnant women and both age and number of children ( $P < 0.05$ ). These results agree with another study that showed there is a negative relation between QoL and both age and the number of children (Riechmann et al., 2019 & Long et al., 2021).

The current study suggested that gestational diabetes can be a physically and mentally challenging condition that can reduce the overall QoL. As the age and number of children increase, it is possible that the physical and mental strain of managing gestational diabetes can be more difficult to manage, resulting in a decreased QoL. Additionally, older women with more children may not have access to the same resources or support as younger women with fewer children, leading to further strain and reduced QoL.

The results revealed that there was no association between the QoL score and either the time of the gestational diabetes mellitus diagnosis or the BMI. These results disagree with other studies that showed the relation between the quality-of-life score and either the time of the gestational diabetes mellitus diagnosis or the BMI. The difference in the current

results and another study is because of differences in sample size, research design, and data collection.

There is limited research that examines the relationship between quality-of-life scores and BMI among gestational diabetes patients. However, a few studies suggest that there may be a correlation between quality-of-life scores and BMI. For example, a study of pregnant women with gestational diabetes found that higher BMI scores were associated with lower scores on quality-of-life measures (Zhang et al., 2022 & Wu et al., 2021). The other study also found that women with higher BMI scores were more likely to experience symptoms of depression and anxiety (Fulton et al., 2022). Another study found that pregnant women with gestational diabetes who had higher BMI scores were more likely to report lower quality-of-life scores (Minschart et al., 2021). Additionally, the study found that women with higher BMI scores were more likely to experience greater physical limitations and lower levels of satisfaction with their lives (Kolotkin et al., 2021). Taken together, these studies suggest that there may be a correlation between BMI and quality-of-life scores among pregnant women with gestational diabetes (Engberg et al., 2018 & Sahrakorpi et al., 2022).

In addition, the analysis revealed that there was a small negative relationship between the QoL score of the pregnant women and the number of pregnancies, OGTT, and FBS. These results agree with studies by (Kalok et al., 2020) & Jahromi et al., (2022), who showed that the QoL score of pregnant women may be negatively correlated with the number of pregnancies, OGTT, and FBS because women who have experienced multiple pregnancies, high OGTT, and high FBS are at an increased risk for health complications during pregnancy, which can affect their overall QoL. The current study suggested that the women who are pregnant with multiple babies or who have high levels of glucose in their blood may require more intensive medical care and lifestyle modifications, which can be draining and disruptive to their QoL.



# **Chapter 6**

## **Conclusion and Recommendations**

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### **Conclusion and Recommendations**

#### **5.1 Conclusion:**

The result of the current study showed that the average age among the participants was 31.3 years and about half of them had completed secondary school. However, most of them live in rural areas, while most of the participants are housewives. Furthermore, the Gestational age was 31.2 weeks, and the gestational DM diagnosis/ weeks age was 26.2 most of the participants were poor controls (HbA1c 7.9%, OGTT 195.3 mg/dl, FBS 143.7 mg/dl).

The participants' overall QoL in the current study was 18.0 out of 30; the highest scores were obtained in the family domain, followed by the psychological/spiritual domain, followed by social and finally, economic domain. Furthermore, the score in the Health and Functioning domain was the lowest with significant differences between the mean QoL scores and both education and job levels ( $P < 0.05$ ). The Pearson Correlation illustrated that there was a small negative relationship between the QoL score of the pregnant women and both age and number of children ( $P < 0.05$ ), finally, there was a negative relationship between the QoL score of the pregnant women and the number of pregnancies, OGTT, and FBS ( $P < 0.05$ ).

#### **5.2 Recommendations:**

Women with GDM

1. Adopting a healthy life style that includes regular physical activity and a balanced diet is an effective strategy for improving blood glucose control and achieving better health outcomes.
2. Seeking education and counseling about GDM can help in getting better management as well as improving the quality of life of these women.

3. Seeking education and counseling about GDM can help in getting better management as well as improving the quality of life of these women.

### **Health worker**

1. Improve the management of gestational diabetes is to design guidelines and booklets to be distributed among women attending antenatal clinics, to promote self-care and encourage a healthy lifestyle. These guidelines can include recommendations to engage in regular physical activity, eat a healthy diet, and maintain a healthy body weight. Pregnant women should also be educated about gestational diabetes, the risks associated with it, and the importance of managing it. Providing education and resources to pregnant women with gestational diabetes can improve their health outcomes and the health of their unborn baby.
2. Provide emotional and practical support to the pregnant woman and her family to promote the quality of life of these women.

### **Policy maker in MOH**

1. Improving women's understanding of gestational diabetes and promote their health, it is recommended to create an awareness-raising program and distribute guidelines and brochures to women attending antenatal clinics about self-care related to gestational diabetes.
2. Improving the availability of specialized diabetes care and education services across the country, particularly in rural and underserved areas.
3. Increasing access to affordable diabetes medications and devices to help people manage their diabetes.

4. Improve access to screening and early detection: increase access to screening and early detection for people at risk for diabetes.
5. Developing strategies to reduce the burden of GDM on women, families, and healthcare providers.

#### **Recommendations for future research:**

1. Conducting intervention studies to evaluate the effectiveness of different interventions on improving the quality of life among women with gestational diabetes. Examples of such interventions may include physical activity programs, dietary interventions, and psycho-social support programs.
2. Conducting comparative studies to compare the quality of life of women with gestational diabetes to that of women without gestational diabetes. This would help to identify the unique challenges faced by women with gestational diabetes and provide insight into how to improve their quality of life.
3. Conducting multicentre studies (private sector and UNRWA) to investigate the quality of life among women with gestational diabetes in different regions and countries would provide a more comprehensive understanding of the impact of gestational diabetes on the quality of life across different populations.

#### **5.3 Limitations of the study**

There are several limitations to the study

- Cross-sectional design: The study used a cross-sectional design, which limits the ability to establish causality between the variables studied.
- Self-reporting bias: The study relied on self-reported data from the participants, which may be subject to social desirability bias or recall bias.

- Limited data on socioeconomic status: The study did not collect comprehensive data on the participants' socioeconomic status, which may be an important factor influencing their quality of life.
- Limited data on dietary and physical activity habits: The study did not collect detailed data on the participants' dietary and physical activity habits, which may have an impact on their quality of life and management of GDM.
- Limited data on psychological and emotional factors: The study did not assess psychological and emotional factors, such as stress and anxiety, which may also have an impact on the quality of life of women with GDM.

## References

- Abedini, M. R., Bijari, B., Miri, Z., Emampour, F. S., & Abbasi, A. (2020). The quality of life of the patients with diabetes type 2 using EQ-5D-5 L in Birjand. *Health and quality of life outcomes*, 18(1), 18.
- Abolfathi, M., Ashtarian, H., Eskandari, S., Irandoost, S. F., NeJhaddadgar, N., & Mirzaei, N. (2022). Evaluation of quality of life in diabetic pregnant women. *Primary Care Diabetes*, 16(1), 84-88.
- Abu-Mourad, T., Naser, G., & Alshraideh, H. (2020). Palestinian Women's Perceptions of Empowerment During Pregnancy and Childbirth. *Journal of Transcultural Nursing*, 31(6), 533-542.
- Agarwal, M. M., Lal, M., & Vyas, C. D. (2022). Gestational Diabetes Mellitus in a Multi-Ethnic, High-Risk Population: Adequacy of Screening for Diabetes Mellitus 6 Weeks after Delivery. *International Journal of Environmental Research and Public Health*, 19(21), 13946.
- Ahinkorah, B. O., Aboagye, R. G., Seidu, A. A., Okyere, J., Mohammed, A., Chattu, V. K., ... & Yaya, S. (2022). Rural–urban disparities in caesarean deliveries in sub-Saharan Africa: a multivariate non-linear decomposition modelling of Demographic and Health Survey data. *BMC Pregnancy and Childbirth*, 22(1), 1-16.
- Ahmad, Q. T., Saffarini, J. H., Samara, A. M., Jabri, D. S., Safarini, Z. H., Banijaber, Y. M., ... & Zyoud, S. E. H. (2020). The impact of lower urinary tract symptoms on the quality of life during pregnancy: a cross-sectional study from Palestine. *BMC urology*, 20(1), 1-10.
- Al-Amer, R., Ramjan, L., & Glew, P. (2020). Psychosocial interventions to support psychological well-being in women with gestational diabetes mellitus: An integrative review. *Midwifery*, 87, 102739.
- Alejandro, E. U., Mamerto, T. P., Chung, G., Villavieja, A., Gaus, N. L., Morgan, E., & Pineda-Cortel, M. R. B. (2020). Gestational diabetes mellitus: a harbinger of the vicious cycle of diabetes. *International journal of molecular sciences*, 21(14), 5003.
- Al-Jabi, S. W., Seleit, D. I., Badran, A., Koni, A., & Zyoud, S. E. H. (2021). Impact of socio-demographic and clinical characteristics on functional disability and health-related quality of life in patients with rheumatoid arthritis: a cross-sectional study from Palestine. *Health and quality of life outcomes*, 19(1), 1-12.
- Ransohoff, J. I., Sujin Kumar, P., Flynn, D., & Rubenstein, E. (2022). Reproductive and pregnancy health care for women with intellectual and developmental disabilities: A scoping review. *Journal of Applied Research in Intellectual Disabilities*, 35(3), 655-674.

- Alnaim, A. (2020). Knowledge of Gestational Diabetes Mellitus among Prenatal Women Attending a Public Health Center in Al-Khobar, Saudi Arabia. *The Egyptian Journal of Hospital Medicine*, 80(1), 560-569.
- American Diabetes Association. (2020). Classification and diagnosis of diabetes: Standards of Medical Care in Diabetes—2020. *Diabetes care*, 43(Supplement 1), S14-S31.
- Anastasiou, E., Farmakidis, G., Gerede, A., Goulis, D. G., Koukkou, E., Kourtis, A., ... & Stefos, T. (2020). Clinical practice guidelines on diabetes mellitus and pregnancy: II. Gestational diabetes mellitus. *Hormones*, 19(4), 601-607.
- Ansarzadeh, M., Salehi, A., Mahmoodi, H., & Mohammadbeigi, A. (2020). The relationship between social support and quality of life in patients with type 2 diabetes. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, 14(1), 83-87. doi: 10.1016/j.dsx.2019.10.025
- Ansarzadeh, S., Salehi, L., Mahmoodi, Z., & Mohammadbeigi, A. (2020). Factors affecting the quality of life in women with gestational diabetes mellitus: a path analysis model. *Health and Quality of Life Outcomes*, 18(1), 1-9.
- Arun, K., Murugan, R., Kanna, M., Rajalakshmi, S., Kalaiselvi, R. & Komathi, V. (2008). The impact of pharmaceutical care on the clinical outcome of diabetes mellitus among a rural patient population. *International Journal of Diabetes in Developing Countries*, 28, 15-18.
- Awad, S. H., Al-Najar, B. A., & Ismail, N. A. (2017). Family support and glycemic control among Palestinian women with type 2 diabetes. *BMC public health*, 17(1), 236.
- Barbosa-Leiker, C., Smith, C. L., Crespi, E. J., Brooks, O., Burduli, E., Ranjo, S., ... & Gartstein, M. A. (2021). Stressors, coping, and resources needed during the COVID-19 pandemic in a sample of perinatal women. *BMC pregnancy and childbirth*, 21(1), 1-13.
- Barnes, R. A., Flack, J. R., Wong, T., Ross, G. P., Griffiths, M. M., Stephens, M., ... & MacDonald-Wicks, L. (2022). Does weight management after gestational diabetes mellitus diagnosis improve pregnancy outcomes? A multi-ethnic cohort study. *Diabetic Medicine*, 39(1), e14692.
- Beck, M., & Krueger, T. (2016). The epistemic, ethical, and political dimensions of uncertainty in integrated assessment modeling. *Wiley Interdisciplinary Reviews: Climate Change*, 7(5), 627-645.
- Begum, R., Roy, S., & Banik, S. (2022). The prevalence of gestational diabetes mellitus in Bangladesh: a systematic review and meta-analysis. *International Journal of Diabetes in Developing Countries*, 42(4), 606-613.

- Bień, A., Rzońca, E., Kańczugowska, A., & Iwanowicz-Palus, G. (2016). Factors affecting the quality of life and the illness acceptance of pregnant women with diabetes. *International journal of environmental research and public health*, 13(1), 68.
- Bruno, R., Petrella, E., Bertarini, V., Pedrielli, G., Neri, I., & Facchinetti, F. (2017). Adherence to a lifestyle programme in overweight/obese pregnant women and effect on gestational diabetes mellitus: a randomized controlled trial. *Maternal & child nutrition*, 13(3), e12333.
- Changizi, M., Mohamadian, H., & Shojaezadeh, D. (2022). Explaining the Nutritional Behavior of Iranian Pregnant Women with Diabetes: application of Health Action Process Approach model: Across sectional study.
- Chatzipanteli, A., & Adamakis, M. (2022). Social Interaction Through Structured Play Activities and Games in Early Childhood. In *Handbook of Research on Using Motor Games in Teaching and Learning Strategy* (pp. 80-99). IGI Global.
- Chepulis, L., Morison, B., Lawrenson, R., & Paul, R. (2022). Prevalence of gestational diabetes in the Waikato region of New Zealand. *Internal Medicine Journal*, 52(6), 1075-1078.
- Chiou, Y. L., Hung, C. H., Yu, C. Y., Chan, T. F., & Liu, M. G. (2022). Risk factors for women with gestational diabetes mellitus developing type 2 diabetes and the impact on children's health. *Journal of Clinical Nursing*, 31(7-8), 1005-1015.
- Choudhury, A. A., & Rajeswari, V. D. (2021). Gestational diabetes mellitus-a metabolic and reproductive disorder. *Biomedicine & Pharmacotherapy*, 143, 112183.
- Craig, L., Sims, R., Glasziou, P., & Thomas, R. (2020). Women's experiences of a diagnosis of gestational diabetes mellitus: a systematic review. *BMC pregnancy and childbirth*, 20(1), 1-15.
- Daniells S, Grenyer BF, Davis WS, Coleman KJ, Burgess JA, Moses RG. Gestational diabetes mellitus: is a diagnosis associated with an increase in maternal anxiety and stress in the short and intermediate term? *Diabetes Care*. 2003;26(2):385-389. doi:10.2337/diacare.26.2.385
- Daniels, C. R. (2021). *At women's expense*. In *At Women's Expense*. Harvard University Press.
- Dennison, R. A., Chen, E. S., Green, M. E., Legard, C., Kotecha, D., Farmer, G., ... & Griffin, S. J. (2021). The absolute and relative risk of type 2 diabetes after gestational diabetes: a systematic review and meta-analysis of 129 studies. *Diabetes research and clinical practice*, 171, 108625.
- DeSouza, M. S., & Nairy, K. S. (2003). Nursing intervention for the quality of life of diabetic adults. *Clinical Effectiveness in Nursing*, 7(2), 63-72.



- Eades, C. E., France, E. F., & Evans, J. M. (2018). Postnatal experiences, knowledge and perceptions of women with gestational diabetes. *Diabetic Medicine*, 35(4), 519-529.
- Egan, A. M., Dow, M. L., & Vella, A. (2020). A Review of the Pathophysiology and Management of Diabetes in Pregnancy. In *Mayo Clinic Proceedings*. Elsevier.
- Engberg, E., Tikkanen, H. O., Koponen, A., Häggglund, H., Kukkonen-Harjula, K., Tiitinen, A., ... & Pöyhönen-Alho, M. (2018). Cardiorespiratory fitness and health-related quality of life in women at risk for gestational diabetes. *Scandinavian journal of medicine & science in sports*, 28(1), 203-211.
- Fulton, S., Décarie-Spain, L., Fioramonti, X., Guiard, B., & Nakajima, S. (2022). The menace of obesity to depression and anxiety prevalence. *Trends in Endocrinology & Metabolism*, 33(1), 18-35.
- Garg, N., Arunan, S. K., Arora, S., & Kaur, K. (2022). Application of mobile technology for disease and treatment monitoring of gestational diabetes mellitus among pregnant women: a systematic review. *Journal of Diabetes Science and Technology*, 16(2), 491-497.
- Getaneh, T., Asres, A., Hiyaru, T., & Lake, S. (2021). Adverse perinatal outcomes and its associated factors among adult and advanced maternal age pregnancy in Northwest Ethiopia. *Scientific Reports*, 11(1), 1-12.
- Gilleie, M., Jassal, B., Stephan, R., Milacic, M., Rothfels, K., Senff-Ribeiro, A., ... & D'Eustachio, P. (2022). The reactome pathway knowledgebase 2022. *Nucleic acids research*, 50(D1), D687-D692.
- Gray, S. G., McGuire, T. M., Cohen, N., & Little, P. J. (2017). The emerging role of metformin in gestational diabetes mellitus. *Diabetes, Obesity and Metabolism*, 19(6), 765-772.
- Harrison, R. K., Saravanan, V., Davitt, C., Cruz, M., & Palatnik, A. (2022). Antenatal maternal hypoglycemia in women with gestational diabetes mellitus and neonatal outcomes. *Journal of Perinatology*, 42(8), 1091-1096.
- Hill, B., Skouteris, H., Boyle, J. A., Bailey, C., Walker, R., Thangaratinam, S., ... & Teede, H. J. (2020). Health in preconception, pregnancy and postpartum global alliance: international network pregnancy priorities for the prevention of maternal obesity and related pregnancy and long-term complications. *Journal of Clinical Medicine*, 9(3), 822.
- Ho, F. K., Celis-Morales, C. A., Gray, S. R., Katikireddi, S. V., Niedzwiedz, C. L., Hastie, C., ... & Welsh, P. (2020). Modifiable and non-modifiable risk factors for COVID-19, and comparison to risk factors for influenza and pneumonia: results from a UK Biobank prospective cohort study. *BMJ open*, 10(11), e040402.

- Hosseini, E., Janghorbani, M., & Shahshahan, Z. (2018). Comparison of risk factors and pregnancy outcomes of gestational diabetes mellitus diagnosed during early and late pregnancy. *Midwifery*, 66, 64-69.
- Imen, S., Haifa, A., Islem, S., Kamilia, O., Asma, B. B., Rym, Y., & Chiraz, A. (2018, May). Awareness of gestational diabetes, its risk factors and its consequences among tunisian pregnant women. In *Endocrine Abstracts* (Vol. 56). Bioscientifica.
- International Diabetes Federation IDF Diabetes Atlas 7th Edition. <http://www.diabetesatlas.org/>. Accessed May 9, 2021.
- Iwanowicz-Palus, G., Zarajczyk, M., Pięta, B., & Bień, A. (2019). Quality of life, social support, acceptance of illness, and self-efficacy among pregnant women with hyperglycemia. *International journal of environmental research and public health*, 16(20), 3941.
- Jahromi, A. S., & Rahmanian, K. (2020). Relation of health-related quality of life with abnormal weight: A cross-sectional study prior to the weight reduction intervention. *Journal of Family Medicine and Primary Care*, 9(9), 4662.
- Kalok, A., Ong, M. Y., Hasrori, A., Chiang, K. S., Yazim, F., Baharuddin, S., ... & Ismail, N. A. M. (2020). Correlation between oral glucose tolerance test abnormalities and adverse pregnancy outcomes in gestational diabetes: a cross-sectional study. *International journal of environmental research and public health*, 17(19), 6990.
- Karami, M., & Molenaar, I. W. (2017). The effectiveness of psychological interventions on quality of life among women with gestational diabetes: A systematic review and meta-analysis. *Journal of psychosomatic research*, 102, 44-52.
- Karinaningrum, A. D., Luthfiananda, B., Aniq, L., Evelina, L. S., & Fauzi, R. Efficacy and Safety of Anti-diabetic Agents in Gestational Diabetes Mellitus (GDM): a Literature Review. *Indonesian Journal of Pharmacology and Therapy*, 3(1).
- Kassa, G. M., Arowojolu, A. O., Odukogbe, A. T. A., & Yalew, A. W. (2021). Adverse maternal outcomes of adolescent pregnancy in Northwest Ethiopia: A prospective cohort study. *Plos one*, 16(9), e0257485.
- Khalil, N. A., Fathy, W. M., & Mahmoud, N. S. (2017). Screening for gestational diabetes among pregnant women attending a rural family health center-Menoufia governorate-Egypt. *J Fam Med Health Care*, 3(1), 6-11.
- Khan, Farida Habib, Hend Mohammed Alkwai, Reem Falah Alshammari, Fahaad Alenazi, Khalid Farhan Alshammari, Ehab Kamal Ahmed Sogeir, Asma Batool, and Ayesha Akbar Khalid. "Comparison of Fetomaternal Complications in Women of High Parity with Women of Low Parity among Saudi Women." In *Healthcare*, vol. 10, no. 11, p. 2198. MDPI, 2022.

- Kintiraki, E., & Goulis, D. G. (2018). Gestational diabetes mellitus: multi-disciplinary treatment approaches. *Metabolism*, 86, 91-101.
- Koekemoer, E., Olckers, C., & Nel, C. (2020). Work–family enrichment, job satisfaction, and work engagement: The mediating role of subjective career success. *Australian Journal of Psychology*, 72(4), 347-358.
- Kolotkin, R. L., Williams, V. S., von Huth Smith, L., Meincke, H. H., Qin, S., Williams, N., & Fehnel, S. E. (2021). Confirmatory psychometric evaluations of the Impact of Weight on Quality of Life–Lite Clinical Trials Version (IWQOL-Lite-CT). *Clinical Obesity*, 11(5), e12477
- Kouhkan, A., Hosseini, R., Baradaran, H. R., Arabipoor, A., Cheraghi, R., Malekzadeh, F., & Khamseh, M. (2022). Early post-partum glucose intolerance, metabolic syndrome and gestational diabetes mellitus determinants after assisted conception: A prospective cohort study. *International Journal of Fertility and Sterility*, (Articles in Press).
- Kragelund Nielsen, K., Vildekilde, T., Kapur, A., Damm, P., Seshiah, V., & Bygbjerg, I. C. (2020). “If I Don’t Eat Enough, I Won’t Be Healthy”. Women’s Experiences with Gestational Diabetes Mellitus Treatment in Rural and Urban South India. *International Journal of Environmental Research and Public Health*, 17(9), 3062.
- Kubihal, S., Gupta, Y., Kandasamy, D., Goyal, A., Kalaivani, M., Goyal, A., ... & Tandon, N. (2021). Prevalence of non-alcoholic fatty liver disease and factors associated with it in Indian women with a history of gestational diabetes mellitus. *Journal of diabetes investigation*, 12(5), 877-885.
- Lewko, J., Politynska, B., Kochanowicz, J., Zarzycki, W., Mariak, Z., Goraska, M. & Krajewska-Kulak, E. (2013). Median nerve conduction impairment in patients with diabetes and its impact on patients’ perception of health condition: a quantitative study. *Diabetology and Metabolic Syndrome*, 5 (16). Retrieved from <http://www.dmsjournal.com/content/5/1/16>.
- Liese, A. D., Weis, K. E., Pluto, D., & Smith, E. (2007). Food store types, availability, and cost of foods in a rural environment. *Journal of the American Dietetic Association*, 107(11), 1916-1923. doi: 10.1016/j.jada.2007.08.012
- Liu, J., Wang, S., Leng, J., Li, J., Huo, X., Han, L., ... & Yang, X. (2020). Impacts of gestational diabetes on quality of life in Chinese pregnant women in urban Tianjin, China. *Primary care diabetes*, 14(5), 425-430.
- Li-Zhen, L., Yun, X., Xiao-Dong, Z., Shu-Bin, H., Zi-Lian, W., Sandra, D. A., & Bin, L. (2019). Evaluation of guidelines on the screening and diagnosis of gestational diabetes mellitus: systematic review. *BMJ open*, 9(5), e023014.
- Long, Q., Guo, J., Zhong, Q., Jiang, S., Wiley, J., & Chen, J. L. (2021). General self-efficacy and social support as mediators of the association between perceived

- stress and quality of life among rural women with previous gestational diabetes mellitus. *Journal of clinical nursing*, 30(7-8), 1026-1036.
- Lu, L., He, L., Hu, J., & Li, J. (2023). Association between very advanced maternal age women with gestational diabetes mellitus and the risks of adverse infant outcomes: a cohort study from the NVSS 2014–2019. *BMC Pregnancy and Childbirth*, 23(1), 1-14.
- Marchetti, D., Carrozzino, D., Fraticelli, F., Fulcheri, M., & Vitacolonna, E. (2017). Quality of Life in Women with Gestational Diabetes Mellitus: A Systematic Review. *Journal of diabetes research*, 2017, 7058082. <https://doi.org/10.1155/2017/7058082>.
- Mc Bride, M., Crespo, I., Webb, S. M., & Valassi, E. (2021). Quality of life in Cushing's syndrome. *Best Practice & Research Clinical Endocrinology & Metabolism*, 35(1), 101505.
- McIntyre, H. D., Catalano, P., Zhang, C., Desoye, G., Mathiesen, E. R., & Damm, P. (2019). Gestational diabetes mellitus. *Nature reviews Disease primers*, 5(1), 1-19.
- Mdoe, M. B., Kibusi, S. M., Munyogwa, M. J., & Ernest, A. I. (2021). Prevalence and predictors of gestational diabetes mellitus among pregnant women attending antenatal clinic in Dodoma region, Tanzania: an analytical cross-sectional study. *BMJ Nutrition, Prevention & Health*, 4(1), 69.
- Menawi, W., Najem, T., Khalil, A., Suleiman, J., Dabas, A., Abdullah, R. A., ... & Khraiweh, T. (2020). Self-rated health and psychological health among hypertensive patients in Palestine. *Health Psychology Open*, 7(2), 2055102920973258.
- Mensah, G. P., van Rooyen, D. R., & ten Ham-Baloyi, W. (2019). Nursing management of gestational diabetes mellitus in Ghana: perspectives of nurse-midwives and women. *Midwifery*, 71, 19-26.
- Metzelthin, S. F., Rostgaard, T., Parsons, M., & Burton, E. (2022). Development of an internationally accepted definition of reablement: a Delphi study. *Ageing & Society*, 42(3), 703-718.
- Ministry of Health, Palestinian Health Information Center. Health Annual Report Palestine 2021 [cited; Available from: [https://site.moh.ps/Content/Books/Hqgu4D5vfT6bDhDUtI36GHhx9oYICS9JplXYDfOMKrnDt6YoDPkPdl\\_I6mhnD3xb5MaPpX1mx6k6J4WowTnGUcI135KRHMmuMwEi1Zh1QUmFY.pdf](https://site.moh.ps/Content/Books/Hqgu4D5vfT6bDhDUtI36GHhx9oYICS9JplXYDfOMKrnDt6YoDPkPdl_I6mhnD3xb5MaPpX1mx6k6J4WowTnGUcI135KRHMmuMwEi1Zh1QUmFY.pdf)
- Minooee S, Ramezani Tehrani F, Rahmati M, Mansournia MA, Azizi F. Diabetes incidence and influencing factors in women with and without gestational diabetes mellitus: A 15year population-based follow-up cohort study. *Diabetes Res Clin Pract.* 2017;128:24-31. doi:10.1016/j.diabres.2017.04.003

- Minschart, C., De Weerd, K., Elegeert, A., Van Crombrugge, P., Moyson, C., Verhaeghe, J., ... & Benhalima, K. (2021). Antenatal depression and risk of gestational diabetes, adverse pregnancy outcomes, and postpartum quality of life. *The Journal of Clinical Endocrinology & Metabolism*, 106(8), e3110-e3124.
- Mirzaei, N., Jahanian Sadatmahalleh, S., Bahri Khomami, M., Moini, A., & Kazemnejad, A. (2021). Sexual function, mental health, and quality of life under strain of COVID-19 pandemic in Iranian pregnant and lactating women: a comparative cross-sectional study. *Health and Quality of Life Outcomes*, 19(1), 1-8.
- Moazzeni, S. S., Hizomi Arani, R., Asgari, S., Azizi, F., & Hadaegh, F. (2021). The association of parity/live birth number with incident type 2 diabetes among women: over 15 years of follow-up in The Tehran Lipid and Glucose Study. *BMC women's health*, 21(1), 1-9.
- Mofijur, M., Fattah, I. R., Alam, M. A., Islam, A. S., Ong, H. C., Rahman, S. A., ... & Mahlia, T. M. I. (2021). Impact of COVID-19 on the social, economic, environmental and energy domains: Lessons learned from a global pandemic. *Sustainable production and consumption*, 26, 343-359.
- Mokhlesi, S., Simbar, M., Ramezani, T. F., Kariman, N., & Alavi, M. H. (2019). Quality of life and gestational diabetes mellitus: A review study. *International Journal of Women's Health and Reproduction Sciences*; Vol. 7(3): 255–262.
- Morin, M., Claris, O., Dussart, C., Frelat, A., de Place, A., Molinier, L., ... & Vayssiere, C. (2019). Health-related quality of life during pregnancy: a repeated measures study of changes from the first trimester to birth. *Acta obstetricia et gynecologica Scandinavica*, 98(10), 1282-1291.
- Muche, A. A., Olayemi, O. O., & Gete, Y. K. (2020). Effects of gestational diabetes mellitus on risk of adverse maternal outcomes: a prospective cohort study in Northwest Ethiopia. *BMC pregnancy and childbirth*, 20(1), 73.
- Muhwava, L. S., Murphy, K., Zarowsky, C., & Levitt, N. (2020). Perspectives on the psychological and emotional burden of having gestational diabetes amongst low-income women in Cape Town, South Africa. *BMC women's health*, 20(1), 1-12.
- Muxiddinovna, I. M., & Sobirovna, A. Z. (2022). Pregnancy with Twins with Preeclampsia. *Central Asian Journal of Literature, Philosophy and Culture*, 3(11), 212-221.
- Nair, S., Ormazabal, V., Lappas, M., McIntyre, H. D., & Salomon, C. (2021). Extracellular vesicles and their potential role inducing changes in maternal insulin sensitivity during gestational diabetes mellitus. *American Journal of Reproductive Immunology*, 85(2), e13361.

- Nazarpour, S., Ramezani Tehrani, F., Valizadeh, R., & Amiri, M. (2023). The relationship between air pollutants and gestational diabetes: an updated systematic review and meta-analysis. *Journal of Endocrinological Investigation*, 1-16.
- Nguyen-Ngo, C., Jayabalan, N., Haghvirdizadeh, P., Salomon, C., & Lappas, M. (2020). Role of adipose tissue in regulating fetal growth in gestational diabetes mellitus. *Placenta*, 102, 39-48.
- Ntoumanis, N., Ng, J. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., ... & Williams, G. C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health psychology review*, 15(2), 214-244.
- Olmos-Ortiz, A., Flores-Espinosa, P., Díaz, L., Velázquez, P., Ramírez-Isarraraz, C., & Zaga-Clavellina, V. (2021). Immunoendocrine dysregulation during gestational diabetes mellitus: the central role of the placenta. *International Journal of Molecular Sciences*, 22(15), 8087.
- Ozer, Z. C., & Efe, E. (2006). Validity and reliability of the Turkish version of the Ferrans and Powers Quality of Life Index: Diabetes version. *Saudi medical journal*, 27(1), 123-125.
- Pantartzis, K. A., Manolopoulos, P. P., Paschou, S. A., Kazakos, K., Kotsa, K., & Goulis, D. G. (2019). Gestational diabetes mellitus and quality of life during the third trimester of pregnancy. *Quality of Life Research*, 28(5), 1349-1354.
- Perez-Ferre, N., Galindo, M., Fernandez, M. D. M., Velasco, V., Calle-Pascual, A. L., & Group, D. S. (2017). The impact of a telemedicine system with voice recognition and picture/video messaging functionality on gestational diabetes mellitus (GDM) management: The TeoGDM study. *Diabetes Research and Clinical Practice*, 126, 1-10. doi: 10.1016/j.diabres.2017.01.013
- Piroux, A., Hammoud, R., Riou, J., Lebdaï, S., & Faure, S. (2022). Assessment of the Compliance of Cystitis Management According to French Recommendations through the Analysis of Prescriptions Collected in Community Pharmacies. *Antibiotics*, 11(7), 976.
- Plows, J. F., Stanley, J. L., Baker, P. N., Reynolds, C. M., & Vickers, M. H. (2018). The pathophysiology of gestational diabetes mellitus. *International journal of molecular sciences*, 19(11), 3342.
- Riechmann, J., Willems, L. M., Boor, R., Kieslich, M., Knake, S., Langner, C., ... & Strzelczyk, A. (2019). Quality of life and correlating factors in children, adolescents with epilepsy, and their caregivers: A cross-sectional multicenter study from Germany. *Seizure*, 69, 92-98.

- Rowley, W. R., Bezold, C., Arikan, Y., Byrne, E., & Krohe, S. (2017). Diabetes 2030: insights from yesterday, today, and future trends. *Population health management*, 20(1), 6-12.
- Saadati F, Sehhatiei Shafaei F, Mirghafourvand M. Sleep quality and its relationship with quality of life among high-risk pregnant women (gestational diabetes and hypertension). *J Matern Fetal Neonatal Med.* 2018;31(2):150-157. doi:10.1080/14767058.2016.1277704
- Sahraikorpi, N., Engberg, E., Stach-Lempinen, B., Tammelin, T. H., Kulmala, J., Roine, R. P., & Koivusalo, S. B. (2022). Physical activity and health-related quality of life among high-risk women for type 2 diabetes in the early years after pregnancy. *BMC Women's Health*, 22(1), 1-13.
- Samuel, D., Hughes, R., & Brown, J. (2022). Tighter or less tight glycaemic targets for women with gestational diabetes mellitus for reducing maternal and perinatal morbidity: A stepped-wedge, cluster-randomised trial. *PLoS Medicine*, 19(9), e1004087.
- Samuel, D., Hughes, R., & Brown, J. (2022). Tighter or less tight glycaemic targets for women with gestational diabetes mellitus for reducing maternal and perinatal morbidity: A stepped-wedge, cluster-randomised trial. *PLoS Medicine*, 19(9), e1004087.
- SH, H., & AB, H. (2018). Knowledge and Satisfaction among Mothers with Gestational Diabetes. *Egyptian Journal of Health Care*, 9(4), 1-9.
- Shahwan, M., Jairoun, A. A., & Khattab, M. H. (2019). Association of serum calcium level with body mass index among type 2 diabetes patients in Palestine. *Obesity Medicine*, 15, 100110.
- Shama, E. E. S., Ibrahiem, N. M., Ahmed, A. R., El-berdan, A., & El-Sherbeny, E. (2020). CLINICAL ASSOCIATION BETWEEN GESTATIONAL DIABETES MELLITUS AND QUALITY OF LIFE AMONG WOMEN. *The Malaysian Journal of Nursing (MJN)*, 12(2), 10-21.
- Sharif, S., Guirguis, A., Fergus, S., & Schifano, F. (2021). The use and impact of cognitive enhancers among university students: a systematic review. *Brain sciences*, 11(3), 355.
- Siahkal, S. F., Javadifar, N., Najafian, M., Iravani, M., Zakerkish, M., & Heshmati, R. (2021). The psychosocial challenges associated with gestational diabetes mellitus: a systematic review of qualitative studies. *Primary Care Diabetes*.
- Siddiqui, S., Zainal, H., Harun, S. N., Ghadzi, S. M. S., & Ghafoor, S. (2020). Gender differences in the modifiable risk factors associated with the presence of prediabetes: A systematic review. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 1243-1252.

- Singla, M., Singla, K. B., Chavda, T., & Chavda, S. Associated Risk Factors and Pregnancy Outcome among Women with Gestational Diabetes Mellitus.
- Sirdah, M. M., Al Laham, N. A., & Al Awaida, W. (2018). Prevalence and risk factors of gestational diabetes mellitus in a single center in Palestine. *Journal of Diabetes Research*, 2018, 5704127. doi: 10.1155/2018
- Skar, J. B., Garnweidner-Holme, L. M., Lukasse, M., & Terragni, L. (2018). Women's experiences with using a smartphone app (the Pregnant+ app) to manage gestational diabetes mellitus in a randomised controlled trial. *Midwifery*, 58, 102-108.
- Thaller, M., Mytton, J., Wakerley, B. R., Mollan, S. P., & Sinclair, A. J. (2022). Idiopathic intracranial hypertension: evaluation of births and fertility through the hospital episode statistic dataset. *BJOG: An International Journal of Obstetrics & Gynaecology*.
- Usami, T., Yokoyama, M., Ueno, M., Iwama, N., Sagawa, N., Kawano, R., ... & Japan Diabetes and Pregnancy Study Group. (2020). Comparison of pregnancy outcomes between women with early-onset and late-onset gestational diabetes in a retrospective multi-institutional study in Japan. *Journal of Diabetes Investigation*, 11(1), 216-222.
- Vasilevski, V., Sweet, L., Bradfield, Z., Wilson, A. N., Hauck, Y., Kuliukas, L., ... & Wynter, K. (2022). Receiving maternity care during the COVID-19 pandemic: Experiences of women's partners and support persons. *Women and Birth*, 35(3), 298-306.
- Vijayam, B., Balaji, T., Balaji, M. S., Veerasamy, S., & Ganesan, V. K. (2022). Clinical Updates on Screening and Diagnosis Criteria for Gestational Diabetes Mellitus Patients, as well as Therapeutic Management. *The Journal of Medical Research*, 8(3), 120-125.
- Wang, H., Li, N., Chivese, T., Werfalli, M., Sun, H., Yuen, L., ... & Yang, X. (2022). IDF diabetes atlas: estimation of global and regional gestational diabetes mellitus prevalence for 2021 by International Association of Diabetes in Pregnancy Study Group's Criteria. *Diabetes research and clinical practice*, 183, 109050.
- Wilkinson, S. A., Palmer, M., Smith, S., Porteous, H., & McCray, S. (2022). Evaluation of the implementation of a best practice gestational diabetes model of care in two Australian metropolitan services. *JBIC evidence implementation*, 20(1), 10-20.
- Wilson, D., Driller, M., Winwood, P., Clissold, T., Johnston, B., & Gill, N. (2022). The Effectiveness of a Combined Healthy Eating, Physical Activity, and Sleep Hygiene Lifestyle Intervention on Health and Fitness of Overweight Airline Pilots: A Controlled Trial. *Nutrients*, 14(9), 1988.



- Wingo, E., Ingraham, N., & Roberts, S. C. (2018). Reproductive health care priorities and barriers to effective care for LGBTQ people assigned female at birth: a qualitative study. *Women's Health Issues*, 28(4), 350-357.
- Wu, H., Sun, W., Chen, H., Wu, Y., Ding, W., Liang, S., ... & Ming, W. K. (2021). Health-related quality of life in different trimesters during pregnancy. *Health and Quality of Life Outcomes*, 19(1), 1-11.
- Zhang, S., Liu, H., Li, N., Dong, W., Li, W., Wang, L., ... & Leng, J. (2022). Relationship between gestational body mass index change and the risk of gestational diabetes mellitus: a community-based retrospective study of 41,845 pregnant women. *BMC Pregnancy and Childbirth*, 22(1), 1-10.
- Zhu, Y., & Zhang, C. (2016). Prevalence of Gestational Diabetes and Risk of Progression to Type 2 Diabetes: a Global Perspective. *Current diabetes reports*, 16(1), 7. <https://doi.org/10.1007/s11892-015-0699-x>.
- Zighan, S. (2022). The Context for Business in Jordan. In *Understanding Contexts of Business in Western Asia: Land of Bazaars and High-Tech Booms* (pp. 385-402).

## Annexes

### Annex 1: Research Ethics Committee at al Quds University.



Research Ethics Subcommittee of Faculty of Health Professions  
Letter of approval

Oct. 25, 2022  
Ref. No.: RESC/2022-19

Dear Applicants, (Dr. Kefah Zaben, Rania Khaleel)

Program: MSc Nursing Department

The Research Ethics subcommittee of the Faculty of Health Professions has recently reviewed your proposal entitled (Quality of Life among pregnant women with Gestational Diabetes in governmental antenatal health care centers at West Bank/ Palestine) submitted by (Dr. Kefah Zaben). Your proposal is deemed to meet the requirements of research ethics at Al-Quds University, but further assessment is required by the Central Research Ethics Committee of Al-Quds University. We wish you all best for the conduct of the project.

Hussein ALMasri  
Research Ethics Subcommittee Chair  
Faculty of Health Professions

*Hussein ALMasri*

CC: File  
CC: Committee members

## Annex 2: Permission letters from the Palestine Ministry of Health.

State of Palestine  
Ministry of Health  
Education in Health and Scientific  
Research Unit



دولة فلسطين  
وزارة الصحة  
وحدة التعليم الصحي  
والبحث العلمي

Ref.: .....  
Date: .....

الرقم: ١٩٥/١٦٤  
التاريخ: ٢٠٢٢/١٢/١٤

عطوفة الوكيل المساعد لشؤون الصحة العامة وصحة الاسرة المحترم،،،  
تحية واحترام،،،

الموضوع: تسهيل مهمة بحث

يرجى تسهيل مهمة الطالبة: رانيا خليل- ماجستير صحة الام والطفل/ كلية المهن  
الصحية/ جامعة القدس، وبإشراف د. كفاح زين، في عمل بحث بعنوان:

" Quality of Life among pregnant women's with Gestational Diabetes in the  
antenatal health care centers at West Bank/ Palestine "

من خلال السماح للطالبة بالحصول على معلومات من خلال تعبئة استبانة من قبل المريضات،  
(بعد اخذ موافقتهم)، وذلك في عيادات رعاية الحوامل في:

- مديريات صحة: جنين- طوباس- طولكرم- أريحا- نابلس- قلقيلية- سلفيت- رام الله -  
بيت لحم - الخليل (شمال، وسط، جنوب)

على ان يتم الالتزام بالاساليب واخلاقيات البحث العلمي.  
على ان يتم الالتزام بجميع تعليمات واجراءات الوقاية والسلامة الصادرة عن وزارة الصحة بخصوص  
جائحة كورونا، وتحت طائلة المسؤولية. وإبراز شهادة التطعيم قبل دخول مرافق وزارة الصحة.  
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة  
الوزارة على نتائج البحث.

مع الاحترام،،،



نسخة: رئيس دائرة التمريض المحترم/ جامعة القدس



Ref.: .....  
Date:.....

الرقم: ٢٤٥٩/ج.٢ / ٢٠٢٢  
التاريخ: ١١/١٠/٢٠٢٢

عطوفة الوكيل المساعد لشؤون الصحة العامة وصحة الاسرة المحترم،،،  
تعبية واحترام،،،

الموضوع: تسهيل مهمة بحث

يرجى تسهيل مهمة الطالبة: رانيا خليل- ماجستير صحة الام والطفل/ كلية المهن  
الصحية/ جامعة القدس، وبإشراف د. كفاح زين، في عمل بحث بعنوان:

**\* Quality of Life among pregnant women's with Gestational Diabetes in the  
antenatal health care centers at West Bank/ Palestine \***

من خلال السماح للطالبة بالحصول على معلومات من خلال تعبئة استيانه من قبل الامهات  
المراجعات لعيادات رعاية الحوامل (بعد اخذ موافقتهم)، وذلك في:

- مديرية صحة محافظة القدس (الغيزرية)

على ان يتم الالتزام بالاساليب واخلاقيات البحث العلمي.  
على ان يتم الالتزام بجميع تعليمات واجراءات الوقاية والسلامة الصادرة عن وزارة الصحة بخصوص  
جائحة كورونا، وتحت طائلة المسؤولية. وابرار شهادة التطعيم قبل دخول مرافق وزارة الصحة.  
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعمد بعدم النشر لحين الحصول على موافقة  
الوزارة على نتائج البحث.

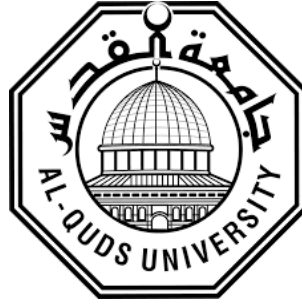
مع الاحترام،،،

د. عبد الله القواسمي  
رئيس وحدة التعليم الصحي والبحث العلمي



نسخة: رئيس دائرة التمريض المحترم/ جامعة القدس

### Annex 3: Consent form.



#### Faculty of graduate studies.

عزيزتي الأم الحامل، تحية طيبة وبعد،،

أنا رانية خليل طالبة ماجستير تمرّض صحة الأم والطفل- جامعة القدس أقوم بإجراء دراسة مقطعية كمطلب للتخرج بعنوان:

**جودة الحياة بين النساء الحوامل المصابات بسكري الحمل في مراكز الرعاية الصحية في الضفة الغربية / فلسطين**

**(Quality of Life among pregnant women with Gestational Diabetes in the antenatal health care clinics at West Bank/ Palestine)**

تستهدف هذه الدراسة النساء الحوامل المصابات بسكري الحمل والغرض منها هو تقييم نوعية الحياة بين النساء الحوامل المصابات بسكري الحمل في مراكز الرعاية الصحية في الضفة الغربية.

مشاركتك في هذا المشروع البحثي تطوعية تمامًا ويمكنك الانسحاب من الدراسة في أي وقت تختارينه ولن تؤثر مشاركتك بأي شكل من الأشكال على حياتك الشخصية أو المهنية. ستبقى ردودك سرية ومجهولة الهوية؛ لن يطلع أي شخص آخر غير الباحثين على الإجابات الفردية ولن يستطيع أي شخص الربط بين هويتك وإجاباتك الفردية على هذا الاستبانة. سيتم الاحتفاظ بالبيانات الواردة من هذا البحث في مكان مغلق. إذا كنت توافقين على المشاركة في هذا المشروع، فيرجى تقديم إجاباتك على عناصر الاستبانة وقد يستغرق إكمال الاستبانة حوالي 12 دقيقة.

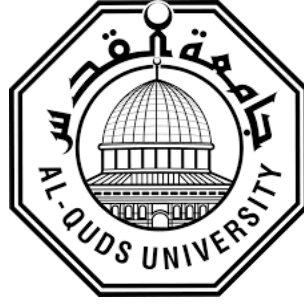
إذا كان لديك أي أسئلة حول هذا الموضوع أو فيما يتعلق بالدراسة أو حول حقوقك كمشاركة في الدراسة فلا تتردد بالسؤال عبر البريد الإلكتروني [raniakhaleel@yahoo.com](mailto:raniakhaleel@yahoo.com) أو من خلال رقم الهاتف 0569353503

الدكتور المشرف: د. كفاح الزبن

**توقيع المشارك:**

**أشكرك على حسن تعاونك**

#### Annex 4: Study tool (A questionnaire) in English.



#### Faculty of graduate studies.

عزيزتي الأم الحامل، تحية طيبة وبعد،،

أنا رانية خليل طالبة ماجستير تمرّض صحة الام والطفل- جامعة القدس أقوم بإجراء دراسة مقطعية كمتطلب للتخرج بعنوان:

**جودة الحياة بين النساء الحوامل المصابات بسكري الحمل في مراكز الرعاية الصحية في الضفة الغربية / فلسطين**

**(Quality of Life among pregnant women with Gestational Diabetes in the antenatal health care centers at West Bank/ Palestine)**

تستهدف هذه الدراسة النساء الحوامل المصابات بسكري الحمل والغرض منها هو تقييم نوعية الحياة بين النساء الحوامل المصابات بسكري الحمل في مراكز الرعاية الصحية في الضفة الغربية.

مشاركتك في هذا المشروع البحثي تطوعية تمامًا ويمكنك الانسحاب من الدراسة في أي وقت تختارينه ولن تؤثر مشاركتك بأي شكل من الأشكال على حياتك الشخصية أو المهنية. ستبقى ردودك سرية ومجهولة الهوية؛ لن يطلع أي شخص آخر غير الباحثين على الإجابات الفردية ولن يستطيع أي شخص الربط بين هويتك وإجاباتك الفردية على هذا الاستبانة. سيتم الاحتفاظ بالبيانات الواردة من هذا البحث في مكان مغلق. إذا كنت توافقين على المشاركة في هذا المشروع، فيرجى تقديم إجاباتك على عناصر الاستبانة وقد يستغرق إكمال الاستبانة حوالي 12 دقيقة.

إذا كان لديك أي أسئلة حول هذا الموضوع أو فيما يتعلق بالدراسة أو حول حقوقك كمشاركة في الدراسة فلا تتردد بالسؤال عبر البريد الإلكتروني [raniakhaleel@yahoo.com](mailto:raniakhaleel@yahoo.com) أو من خلال رقم الهاتف 0569353503

الدكتور المشرف: د. كفاح الزين

**توقيع المشارك:**

**أشكرك على حسن تعاونك**

# Quality of Life in Women with Gestational Diabetes Mellitus

Age: \_\_\_\_\_

Educational Level      No formal education ☐      Elementary school ☐

Employment      Yes ☐      No ☐

- **Clinical and biological measures**

Gestational Age Weeks: \_\_\_\_\_

HbA1c: \_\_\_\_\_

BMI (1<sup>st</sup> visit) : \_\_\_\_\_

Previous History of GDM      yes ☐      no ☐

If yes, controlled \_\_\_\_\_ uncontrolled \_\_\_\_\_

Smoking                      yes ☐                      no ☐

Physical activity                      yes ☐                      no ☐

79

Little and no ☐

Good

Excellent ☐

## Part two: QUALITY OF LIFE INDEX

*For each of the following, please choose the answer that best describes how satisfied you are with that area of your life. Please mark your answer by circling the number. There are no right or wrong answers.*

	<b><i>HOW SATISFIED ARE YOU WITH:</i></b>	<b><i>Very Dissatisfie</i></b>	<b><i>Moderately Dissatisfie</i></b>	<b><i>Slightly Dissatisfie</i></b>	<b><i>Slightly Satisfied</i></b>	<b><i>Moderately Satisfied</i></b>	<b><i>Very Satisfied</i></b>
1.	Your health?	1	2	3	4	5	6
2.	Your health care?	1	2	3	4	5	6
3.	The amount of energy you have for everyday activities.	1	2	3	4	5	6
4.	Your ability to take care of yourself without help?	1	2	3	4	5	6
5.	Your ability to control your blood sugar?	1	2	3	4	5	6
6.	The changes you have had to make in your life because of diabetes (such as diet, exercise, taking insulin or diabetes pill, checking blood sugar)?	1	2	3	4	5	6
7.	The amount of control you have over your life.	1	2	3	4	5	6
8.	Your chances of living as long as you would like?	1	2	3	4	5	6
9.	Your family's health?	1	2	3	4	5	6
10.	Your children?	1	2	3	4	5	6
11.	Your family's happiness?	1	2	3	4	5	6
12.	Your sex life?	1	2	3	4	5	6
13.	Your spouse, lover, or partner?	1	2	3	4	5	6
14.	Your friends?	1	2	3	4	5	6



15.	The emotional support you get from your family.	1	2	3	4	5	6
16.	The emotional support that you get from people other than your family.	1	2	3	4	5	6
17.	. Your ability to take care of family responsibilities?	1	2	3	4	5	6
18.	How useful you are to others?	1	2	3	4	5	6
19.	The amount of worries in your life?	1	2	3	4	5	6
20.	Your neighborhood?	1	2	3	4	5	6
21.	Your home, apartment, or place where you live?	1	2	3	4	5	6
22.	. Your job (if employed)?	1	2	3	4	5	6
23.	Not having a job (if unemployed, retired, or disabled)?	1	2	3	4	5	6
24.	Your education?	1	2	3	4	5	6
25.	How well you take care of your financial needs?	1	2	3	4	5	6
26.	The things that you do for fun.	1	2	3	4	5	6
27.	Your chances for a happy future?	1	2	3	4	5	6
28.	Your peace of mind?	1	2	3	4	5	6
29.	Your faith in God?	1	2	3	4	5	6
30.	Your achievement of personal goals?	1	2	3	4	5	6
31.	Your happiness in general?	1	2	3	4	5	6
32.	Your life in general?	1	2	3	4	5	6
33.	Your personal appearance?	1	2	3	4	5	6
34.	Yourself in general?	1	2	3	4	5	6

**PART three.** For each of the following, please choose the answer that best describes how *important* that area of your life is to you. Please mark your answer by circling the number. There are no right or wrong answers.

	<b><i>HOW IMPORTANT TO YOU IS:</i></b>	<b><i>Very Unimportant</i></b>	<b><i>Moderately Unimportant</i></b>	<b><i>Slightly Unimportant</i></b>	<b><i>Slightly Important</i></b>	<b><i>Moderately Important</i></b>	<b><i>Very Important</i></b>
1.	Your health?	1	2	3	4	5	6
2.	Your health care?	1	2	3	4	5	6
3.	Having enough energy for everyday activities?	1	2	3	4	5	6
4.	Taking care of yourself without help?	1	2	3	4	5	6
5.	Controlling your blood sugar?	1	2	3	4	5	6
6.	The changes you have had to make in your life because of diabetes (such as diet, exercise, taking insulin or diabetes pill, checking blood sugar)?	1	2	3	4	5	6
7.	Having control over your life?	1	2	3	4	5	6
8.	Living as long as you would like?	1	2	3	4	5	6
9.	Your family's health?	1	2	3	4	5	6
10.	Your children?	1	2	3	4	5	6
11.	Your family's happiness?	1	2	3	4	5	6
12.	Your sex life?	1	2	3	4	5	6
13.	Your spouse, lover, or partner?	1	2	3	4	5	6
14.	Your friends?	1	2	3	4	5	6
15.	The emotional support you get from your family.	1	2	3	4	5	6
16.	The emotional support you get from people other than your family.	1	2	3	4	5	6

17.	Taking care of family responsibilities?	1	2	3	4	5	6
18.	Being useful to others?	1	2	3	4	5	6
19.	Having no worries?	1	2	3	4	5	6
20.	Your neighborhood?	1	2	3	4	5	6
21.	Your home, apartment, or place where you live?	1	2	3	4	5	6
22.	Your job (if employed)?	1	2	3	4	5	6
23.	Having a job (if unemployed, retired, or disabled)?	1	2	3	4	5	6
24.	Your education?	1	2	3	4	5	6
25.	Being able to take care of your financial needs?	1	2	3	4	5	6
26.	Doing things for fun?	1	2	3	4	5	6
27.	Having a happy future?	1	2	3	4	5	6
28.	Peace of mind?	1	2	3	4	5	6
29.	Your faith in God?	1	2	3	4	5	6
30.	Achieving your personal goals?	1	2	3	4	5	6
31.	Your happiness in general?	1	2	3	4	5	6
32.	Being satisfied with life?	1	2	3	4	5	6
33.	Your personal appearance?	1	2	3	4	5	6
34.	Are you to yourself?	1	2	3	4	5	6

**Thank you for completing this questionnaire.**

#### Annex 4: Study tool (A questionnaire) in Arabic.

نوعية الحياة بين النساء الحوامل المصابات بسكري الحمل في مراكز الرعاية الصحية في الضفة الغربية / فلسطين

##### A الجزء الاول: المعلومات الديموغرافية

- (A-1) العمر: \_\_\_\_\_
- (A-2) مكان السكن: مدينة ☐ قرية/ بلدة ☐ مخيم ☐
- (A-3) المستوى التعليمي: غير متعلمة ☐ ابتدائي ☐ ثانوي ☐ جامعي ☐
- (A-4) العمل: نعم ☐ لا ☐
- (A-4) عدد الاطفال: \_\_\_\_\_

##### B الجزء الثاني: المعلومات الاكلينيكية والحيوية

- B1 عدد الحملات: \_\_\_\_\_
- B2 الولادات السابقة: قيصرية \_\_\_\_\_ طبيعية \_\_\_\_\_
- B3 عمر الحمل/ بالاسبوع \_\_\_\_\_
- B4 الفحص التراكمي للسكر \_\_\_\_\_ اختبار تحمل الجلوكوز عن طريق الفم \_\_\_\_\_
- فحص السكر أثناء الصيام \_\_\_\_\_
- B5 في اي اسبوع من الحمل تم الكشف عن سكر الحمل \_\_\_\_\_
- B6 الوزن \_\_\_\_\_ الطول \_\_\_\_\_
- مؤشر كتلة الجسم قبل الحمل \_\_\_\_\_

##### C الجزء الثالث: الحالة الصحية

- C1 هل عانيت من سكري الحمل في الاحمال السابقة نعم ☐ لا ☐
- C2 إذا كان الجواب نعم، هل كان مسيطرا عليه ☐ غير مسيطر عليه ☐
- C3 هل تأخذين علاج الانسولين أو منظم السكر ميتفورمين نعم ☐ لا ☐
- C4 هل عانيت في الأحمال السابقة من الضغط نعم ☐ لا ☐

☐ لا

C5 هل أنت مدخنة؟ ☐ نعم

☐ لا

C6 هل تمارسين النشاط البدني أو الرياضة؟ ☐ نعم

C7 هل تلقيت معلومات عن التعامل مع سكر الحمل من الفريق الصحي في العيادة

☐

بشكل ممتاز

☐

بشكل جيد

☐

بشكل قليل أو لا

#### D الجزء الرابع مقياس جودة الحياة

D1 القسم الاول يرجى وضع دائرة حول الاجابة الملائمة لكل مما يلي وفقاً لما تراه مناسباً لوصف مدى رضاك عن

نواحي مختلفة من حياتك. الرجاء وضع دائرة حول الرقم الذي يمثل رأيك علماً بأنه لا توجد أجابه صحيحة أو خاطئة.

	كم انت راضية عن					
	راضية جداً	راضية بشكل متوسط	راضية قليلاً	غير راضية قليلاً	غير راضية بشكل متوسط	غير راضية جداً
1	6	5	4	3	2	1
2	6	5	4	3	2	1
3	6	5	4	3	2	1
4	6	5	4	3	2	1
5	6	5	4	3	2	1
6	6	5	4	3	2	1
7	6	5	4	3	2	1
8	6	5	4	3	2	1

9	صحة عائلتك؟	1	2	3	4	5	6
10	أطفالك؟	1	2	3	4	5	6
11	سعادة عائلتك؟	1	2	3	4	5	6
12	حياتك الجنسية؟	1	2	3	4	5	6
13	زوجك أو شريك حياتك؟	1	2	3	4	5	6
14	أصدقائك؟	1	2	3	4	5	6
15	الدعم المعنوي الذي تتلقيه من عائلتك؟	1	2	3	4	5	6
16	الدعم المعنوي الذي تتلقيه من الآخرين خارج عائلتك؟	1	2	3	4	5	6
17	قدرتك على القيام بالواجبات العائلية؟	1	2	3	4	5	6
18	مدى فائدتك للآخرين؟	1	2	3	4	5	6
19	مقدار الضغط النفسي أو القلق الذي تعانيه في حياتك؟	1	2	3	4	5	6
20	جيرانك؟	1	2	3	4	5	6
21	بيتك أو منزلك أو مسكنك؟	1	2	3	4	5	6
22	عملك (إذا كنت تعمل)؟	1	2	3	4	5	6
23	عدم حصولك على عمل (إذا كنت لا تعمل أو متقاعدة أو غير قادرة على العمل)؟	1	2	3	4	5	6
24	تحصيلك العلمي؟	1	2	3	4	5	6
25	قدرتك على تدبير أمورك المالية؟	1	2	3	4	5	6
26	الأنشطة التي تسلي بها نفسك؟	1	2	3	4	5	6
27	فرصك لتحقيق مستقبل سعيد؟	1	2	3	4	5	6
28	راحة بالك أو استقرارك النفسي؟	1	2	3	4	5	6

29	أيمانك بالله عز وجل؟	1	2	3	4	5	6
30	تحقيقك للأهداف الشخصية؟	1	2	3	4	5	6
31	سعادتك بشكل عام؟	1	2	3	4	5	6
32	حياتك بشكل عام؟	1	2	3	4	5	6
33	مظهرك الشخصي؟	1	2	3	4	5	6
34	نفسك بشكل عام؟	1	2	3	4	5	6

**D2 القسم الثاني** يرجى وضع دائرة حول الاجابة الملائمة لكل مما يلي وفقاً لما تراه مناسباً لوصف مدى أهمية كل

من النواحي التالية في حياتك. الرجاء وضع دائرة حول الرقم الذي يمثل رأيك علماً بأنه لا توجد أجابه صحيحة أو

خاطئة.

	كم هو مهم بالنسبة لك	غير مهم جداً	متوسط	غير مهم بشكل	غير مهم قليلاً	مهم قليلاً	مهم بشكل	مهم جداً
1	صحتك؟	1	2	3	4	5	6	6
2	الرعاية الصحية التي تتلقاها؟	1	2	3	4	5	6	6
3	توفر طاقة كافية لديك للقيام بالنشاطات اليومية؟	1	2	3	4	5	6	6
4	رعاية نفسك بنفسك؟	1	2	3	4	5	6	6
5	ضبط نسبة السكر في الدم؟	1	2	3	4	5	6	6
6	التغيرات التي طرأت على حياتك بسبب السكري (الحمية والرياضة وأخذ الأنسولين أو الحبوب أو فحص مستوى السكر)	1	2	3	4	5	6	6
7	القدرة على ضبط أمور حياتك؟	1	2	3	4	5	6	6
8	العيش الفترة الزمنية التي تتمناها؟	1	2	3	4	5	6	6

9	صحة عائلتك؟	1	2	3	4	5	6
10	أطفالك؟	1	2	3	4	5	6
11	سعادة عائلتك؟	1	2	3	4	5	6
12	حياتك الجنسية؟	1	2	3	4	5	6
13	زوجك أو شريك حياتك؟	1	2	3	4	5	6
14	أصدقائك؟	1	2	3	4	5	6
15	الدعم المعنوي الذي تتلقيه من عائلتك؟	1	2	3	4	5	6
16	الدعم المعنوي الذي تتلقيه من الآخرين خارج عائلتك؟	1	2	3	4	5	6
17	القيام بالواجبات العائلية؟	1	2	3	4	5	6
18	أن تكوني مفيدة للآخرين؟	1	2	3	4	5	6
19	خلو حياتك من الضغط النفسي؟	1	2	3	4	5	6
20	جيرانك؟	1	2	3	4	5	6
21	بيتك أو منزلك أو مسكنك؟	1	2	3	4	5	6
22	عملك (إذا كنت تعمل)؟	1	2	3	4	5	6
23	عدم حصولك على عمل (إذا كنت لا تعمل أو متقاعد أو غير قادر على العمل)؟	1	2	3	4	5	6
24	تحصيلك العلمي؟	1	2	3	4	5	6
25	قدرتك على تدبير أمورك المالية؟	1	2	3	4	5	6
26	القيام بأنشطة ترفيهية؟	1	2	3	4	5	6
27	حصولك على مستقبل سعيد؟	1	2	3	4	5	6
28	راحة بالك أو استقرارك النفسي؟	1	2	3	4	5	6



29	أيمانك بالله عز وجل؟	1	2	3	4	5	6
30	تحقيق أهدافك الشخصية؟	1	2	3	4	5	6
31	سعادتك بشكل عام؟	1	2	3	4	5	6
32	أن تكون راضية عن حياتك؟	1	2	3	4	5	6
33	مظهرك الشخصي؟	1	2	3	4	5	6
34	نفسك بالنسبة إليك؟	1	2	3	4	5	6

شكرا على تعاونكم

## Annex 6: Ethical Approval

