

Risk Factors among Women with Gestational Diabetes at UNRWA Clinics in Gaza Strip

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Abstract: This study aimed to identify the risk factors of gestational diabetes. The sample consisted of 60 pregnant women with history of gestational diabetes selected by using non probability convenient sample. Questionnaire was developed by researchers and filled by the pregnant women during interview. Data was analyzed by using descriptive, frequency distribution and chi-square test to identify the risk factors of gestational diabetes. The results showed that there is a significant relationship between body mass index (BMI) before and during pregnancy and development of gestational diabetes as evidenced by (X^2 78.9 and p value .05). In addition, there is a significant relationship between BMI and frequency of abortion in the presence of gestational diabetes. On the other hand there is no significant relationship between baby weight in previous deliveries and development of gestational diabetes. The results showed that obese pregnant women are at high risk for development of gestational diabetes. This study highlighted the importance of teaching the pregnant women about controlling their weight before pregnancy to avoid the complications for both pregnant woman and baby.

Key words: Gestational Diabetes , Risk factors , Obesity , Gaza.

عوامل الخطر التي تؤثر على حدوث داء سكر الحمل لدى السيدات الحوامل في عيادات وكالة الغوث في محافظات غزة

ملخص: هدفت هذه الدراسة إلى التعرف على عوامل الخطر التي تؤثر على حدوث داء سكر الحمل لدى السيدات الحوامل في عيادات وكالة الغوث في محافظات غزة. اشتملت العينة على ستين سيدة حامل لديها تاريخ سابق بداء سكر الحمل. تم اختيار أدوات الدراسة باستخدام طريقة العينة المتاحة غير العشوائية. ولتحقيق أهداف الدراسة استخدم الباحثون النسبة المئوية، التكرارات و (Chi square test). أظهرت النتائج وجود علاقة دالة إحصائية بين السمنة (مؤشر كتلة الجسم) قبل وخلال الحمل وحدث داء سكر الحمل بقيمة (X^2 78.9 and p value .05). إضافة إلى ذلك أظهرت النتائج وجود علاقة بين السمنة ووجود داء سكر الحمل من جهة وزيادة عدد مرات الإجهاض من جهة أخرى. كما بينت الدراسة أنه لا توجد علاقة دالة إحصائية بين وزن المولود في الولادات السابقة للأم وحدث داء سكر الحمل. ومن خلال ما أظهرته النتائج نستطيع أن نقول أن البدانة بشكل عام تعتبر أحد عوامل الخطر لحدث داء سكر الحمل. في ضوء النتائج يوصى الباحثون بالاهتمام بتبني برنامج صحي إرشادي لمساعدة الأم الحامل على كيفية السيطرة

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على زيادة الوزن قبل الشروع في الحمل لتفادي مخاطر سكر الحمل وما يترتب عليه من مضاعفات على الأم الحامل وعلى الجنين.
الكلمات المفتاحية: داء سكر الحمل، عوامل الخطر، البدانة، غزوة.

Introduction

Gestational diabetes mellitus is defined as glucose intolerance with the onset or first detection during pregnancy [1, 2]. No specific causes for gestational diabetes have been identified, but it is believed that the hormones produced during pregnancy increase a woman's resistance to insulin, resulting in impaired glucose tolerance. Gestational diabetes is estimated to occur in 1% to 5% of pregnancies, which is associated with an increased risk of prenatal and maternal morbidity [3, 4]. There are many risk factors for Gestational diabetes which include higher maternal age, family history of diabetes and increased body mass index (BMI) [5]. Pregnant women with pre-gestational diabetes are at higher risk for multiple complications which affect both mother and fetus in comparison to those women without diabetes [6].

Gestational diabetes affects fetus outcomes such as neonatal hyperglycemia, macrosomia which result in brachial plexus injury and clavicle fracture [7]. Some studies suggested that gestational diabetes may increase risk factors for impaired glucose intolerance, childhood obesity and neuropsychological disturbances [8, 9]. Other studies showed that mothers who have gestational diabetes also have higher risk for developing type 2 diabetes in the years after deliveries but the degree of glucose abnormality they develop are uncertain (10). The purpose of this study was to identify risk factors of gestational diabetes among pregnant women in Gaza Strip.

Methodology of the study

Study design

For the purpose of the present research, non-experimental retrospective study design was used in which some present phenomena that occur were linked to other phenomena which occurred in the past. This design is a common and important method to study etiology and risk factors.

Setting

The study was conducted at the biggest non-governmental United Nation Relief and Work Agency (UNRWA) clinics in Gaza strip).

Sample and sampling method

A non-probability purposive sample was used to select the subjects for the study. The sample size was determined by the number of pregnant women fulfilling the inclusion criteria. The total number of sample was 70

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subjects and 10 subjects were excluded from the study (3; age less than 18 years; 3 were aborted; 2 were delivered; and 2 refused).

Data collection

Face to face structured interviews were used to collect data from pregnant women.

Inclusion criteria

All pregnant women with history of gestational diabetes and without history of other diseases between the ages 18-40 years in the year of 2006 were included in the study

Exclusion criteria

We excluded from the study any woman with history of medical disease during pregnancy or post delivery and who had history of diabetes before pregnancy. In addition, women age less than 18 or more than 40 years were excluded from the study. Furthermore we excluded any woman who refused to sign a consent form.

Ethical considerations

Women were asked to give informed consent, which permitted the researchers to do the interview. Prior to the interview, the researcher emphasized the confidentiality of the study, and all subjects had the opportunity to accept or refuse to participate in the study.

Instrument of the study

A structured interview was used in this study to provide opportunity to the respondents to seek clarification and to understand the questions well. All of the questions were asked in the same way during data collection to prevent bias. The instrument in this study includes three parts. Questions of the first part dealt with personal and socio-demographic characteristics, the second part was about health information and the last one emphasized on risk factors of gestational diabetes.

Validity of the instrument

To enhance the validity of the instrument, face and content validity were carried out and the questionnaire was submitted to expert persons to judge if items represent the topic under investigation.

Reliability of the instrument

Pilot study was done by using a small sample which consisted of 5 subjects to give us a fair idea about the length of the questionnaire, and whether the respondents understand it by the same way.

Period of the study

The study started in March 2007 and ended in April 2008 including administrative preparation

Data analysis of the study

Data and calculations were assessed by using SPSS system. Descriptive statistics and frequency distributions were done. In addition, Chi-square test and cross tabulation test were used to investigate the relationship between variables.

Results

This part is the core of study presenting the results of the work carried out at UNRWA Clinics. Our study sample composed of 60 pregnant women.

Table (1): Distribution of the study population by residency

Place of living	Frequency	Percent
North Gaza	26	43.3
Gaza	20	33.3
Middle of Gaza	3	5.0
South of Gaza	11	18.3
Total	60	100.0

Table (1) showed that the majority of subjects (43.3%) lived in north Gaza and the second one followed by those living in Gaza city. Only (5%) lived in middle of Gaza and the rest of subjects (18.3%) lived in south of Gaza.

Table (2): Distribution of the study population by age

Age	Frequency	Percent
less than 20 years	2	3.3
From 20-30 years	12	20.0
From 31-40 years	33	55.0
More than 40 years	13	21.7
Total	60	100.0

As shown in table (2) more than half of our subjects (55%) between the ages of 31-40 and less than one third (21%) over the age of 40. In addition, one third of the subjects are between ages 20-30 years.

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Table (3): Distribution of the study population by BMI

BMI during Pregnancy / BMI before Pregnancy	25-29.9 Overweight	30-34.9 Obese	35-39.9 Obese	40 or greater Extremely Obese	Total	X ²	Sig.	Sig. level
18.5 - 24.9 Normal	1				1	78.93	0.000	sig. at 0.01
25-29.9 Overweight	8	11			19			
30-34.9 Obese		13	6	1	20			
35-39.9 Obese			10	4	14			
40 or greater Extremely Obese				6	6			
Total	9	24	16	11	60			

As shown in table (3) there is a significant relationship between BMI before and after pregnancy and development of Gestational Diabetes (GD) as evidenced by χ^2 (78.93) and p value (0.01). This indicates that BMI is independent risk factors for GD.

Table (4): Distribution of the study population by family history of other diseases

Disease	Frequency	Percent
No	15	25.0
Yes	45	75.0
Total	60	100.0

Table (4) showed that more than 75% of the subjects had family history of diabetes mellitus and only 25% of study population did not have family history of Diabetes Mellitus.

Table (5): Distribution of the study population by BMI and frequency of abortions

Abortion / BMI	No	1 time	two times	Three times	more than 2 times	Total	X ²	Sig.	Sig. level
18.5 - 24.9	1					1	28.822	0.044	Sig. at 0.05
25-29.9	2	5	4	3	5	19			
30-34.9		8	6	4	2	20			
35-39.9		5	5	1	3	14			
40 or greater		1	2	1	2	6			
Total	3	19	17	9	12	60			

As shown in table (5), there is a significant relationship between BMI and frequency of abortions as evidenced by χ^2 (28.8) and p value less than .05. This indicate that BMI is a risk factor for abortion

Table (6): Distribution of the study population by age and frequency of abortions

Present age	No	1 time	two times	three times	more than 2 times	Total	X ²	Sig.	Sig. level
Less than 20 years	1		1			2	19.15	0.085	not sig.
20-30 years	1	4	6	1		12			
31-40 years		12	7	6	8	33			
More than 40 years	1	3	3	2	4	13			
Total count	3	19	17	9	12	60			

Table (6) showed that there is no significant relationship between age of the mother and frequency of abortions as evidence by χ^2 (19.15) and p value more than (.05).

Table (7): Distribution of the study population by baby weight in previous deliveries and development of gestational Diabetes using X²

Present age	Less than 1 kg	1 kg	2 kg	3 kg	4 kg	More than 4 kg	Total	X ²	Sig.	Sig. level
Less than 20 years	1			1			2	19.79677	0.18	not sig.
20-30 years	1		1	6	4		12			
31-40 years		1	5	19	7	1	33			

As shown in table (7) there is no significant relationship between baby weight in previous deliveries and development of gestational diabetes as evidenced by value of X² and p value more than (.05). This indicate that baby weight is not a significant risk factor for development of gestational diabetes

Discussion

The aim of this study was to find out risk factors of gestational diabetes among pregnant women in Gaza strip. The results showed that BMI before and after pregnancy was a significant risk factor for gestational diabetes as evidenced by p value (0.01). This result was similar to other study which involve three groups, first one women with Gestational Diabetes Mellitus (GDM), second group women with normal carbohydrate metabolism during pregnancy and the third group women with a history of GDM at least 10 years ago(11). The result showed recognizable independent risk factors for GDM including BMI before pregnancy and history of diabetes in the family. In addition, there is a study done about the incidence of antenatal and intrapartum complications and neonatal outcomes among pre-pregnant obese women and concluded that incidence of pre-clampsia, chronic and pregnancy induced hypertension and gestational diabetes were increased in obese women group (12).

The results of our study showed that there is no significant relationship between mother's age and development of Gestational Diabetes. This result is consistent with a study reported that there is no correlation between

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mother's age and gestational diabetes (11). Further more, our study indicated that BMI is a risk factor for abortion as evidenced by p value" less than 0.05". This result goes with a study done about "obesity increases the risk of spontaneous abortion during infertility Treatment". This study concluded that there is significant relationship between BMI and spontaneous abortion after adjusting for several independent risk factors at p value ($p < 0.001$). The same study showed that there is neither significant relationship between age of the mother and frequency of abortions nor age of the mother and baby weight in previous deliveries (15). This result is consistent with our study which showed no significant relationship between age of the mother and frequency of abortions and age of the mother and baby weight. On the other hand, our result is inconsistent with another study which showed that high maternal age and low pre-pregnancy body mass index were considered as risk factors for spontaneous abortion (15).

Conclusion

This study concludes that BMI is a significant risk factor for gestational diabetes during pregnancy which requires preventive measures as necessary to decrease weight before pregnancy. In addition, BMI showed a risk factor for abortion in presence of gestational diabetes. On the other hand, our study concludes that baby weight in previous deliveries, age of the mother and frequency of abortions are not risk factors for Gestational Diabetes.

Recommendations

A health education program at secondary and tertiary prevention should be started for all women before pregnancy in order to decrease risk factors for the development of Gestational Diabetic. Another study should be done concerning with the level of stress and its correlation with development of Gestational Diabetes.

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