

Maternal Weight Status and its Relationship with Pregnancy Complications

**Presenter name : Aseel Melhem, M.S of Public Health
Supervised by my Master's Thesis: Prof. Reema Safadi**

BACKGROUND

- Gestational weight status increases the incidence of maternal complications during pregnancy.
- In Jordan and until 2009, the prevalence of obesity was 38.8% among Jordanian women aged 15–49 years (Al Nsour, et al., 2013), and this has increased up to 48.2% in 2020 (Ajlouni, et al., 2020).
- In pregnancy, high Body Mass Index (BMI) is associated with increased likelihood of complications during the third trimester of pregnancy (Patro, et al., 2018).
- Excessive gestational weight gain (GWG) has significant public health implications due to the increased risk of birth complications and cesarean births (Kraschnewski & Chuang, 2015).

THE AIM OF THE STUDY

This study aimed at examining the association of pre-pregnancy **body mass index** and **gestational weight gain** with **pregnancy complications** (anemia, gestational diabetes mellitus, gestational hypertension, and preeclampsia) during the third trimester.

RESEARCH METHODS

- ❑ **Design:** A descriptive cross-sectional and correlational design was used
- ❑ **Sample and setting:** A non-probability quota sampling technique was used.
- ❑ **Inclusion criteria:** (a) GA > 26 weeks (b) age between 18-35 years old, (c) did not suffer from any chronic disease before pregnancy, (d) BMI more than 18.5 (no underweight) (e) documentation of body weight before or at 12 weeks, (f) singleton pregnancy, and (g) did not have more than 5 live births before this pregnancy.
- ❑ **Sample size:** 152 pregnant women in the third trimester at two teaching hospitals in Jordan.

RESEARCH METHODS

□ Data collection methods:

- ✓ (1) Face-to-face interview with recruited participants.
- ✓ (2) Medical record questionnaire.

•The participants were classified into three categories based on their pre-pregnancy BMI (normal weight, overweight, and obese, and accordingly were categorized as inadequate, adequate, and excessive weight gain.

Pre-pregnancy BMI	Total Weight Gain	
	Range in kg	Range in lbs.
Normal weight (18.5–24.9 kg/m ²)	11.5–16.0	25.0–35.0
Overweight (25.0–29.9 kg/m ²)	7.0–11.5	15.0–25.0
Obese (≥ 30.0 kg/m ²)	5.0–9.0	11.0–20.0

Institution of Medicine (US). Weight Gain During Pregnancy: Reexamining the Guidelines, K.M. Rasmussen and A.L. Yaktine, Editors. 2009

FINDINGS

- **Socio demographic characteristic (n=152)**
- **Complications included:**
 - Anemia (n=29, 19.1%)
 - Gestational DM (n=28, 18.1%)
 - Gestational HT (n=15, 9.9%)
 - Preeclampsia (n=4, 4.6%)

		Pregnancy stage n (%)
Education	< high school	14 (9.2%)
	high school	13 (8.6%)
	Diploma	25 (16.4%)
	Undergraduate	85 (55.9%)
	Postgraduate	15 (9.9%)
Employment	No	93 (61.2)
	Yes	59 (38.8%)
Smoking	No	138 (90.8%)
	Yes	14 (9.2%)
Prenatal care began	1st trimester	140 (92.1%)
	2nd trimester	12 (7.9%)
Parity	Nulliparous	25 (16.4%)
	Parous	127 (83.6%)
CB history number	0	81 (53.3%)
	1 or more	71 (46.7%)
GWG Status	Inadequate	18 (11.8%)
	Adequate	51 (33.6%)
	Excessive	83 (54.6%)

FINDINGS

Complication	<i>r</i>	<i>p</i>
Anemia	-0.006	0.940
Gestational DM	0.292	<.001
Gestational HT	0.215	0.008
Preeclampsia	0.007	0.934

- *Spearman correlation analysis of pre-pregnancy BMI and pregnancy complications*

r: correlation coefficient

p: Two-tai P-value

FINDINGS

- *Relationship between GWG status and pregnancy complications*

		GWG Status								<i>p-value</i>	
		Inadequate		<i>p-value</i>	Adequate		<i>p-value</i>	Excessive			<i>p-value</i>
		No	Yes		No	Yes		No	Yes		
Anemia	No	109 (81.3%)	14 (77.8%)	^b 0.751	56 (85.1%)	37 (72.5%)	^a 0.062	51 (73.9%)	72 (86.7%)	^a 0.045	
	Yes	25 (18.7%)	4 (22.2%)		15 (14.9%)	14 (27.5%)		18 (26.1%)	11 (13.3%)		
GDM	No	106 (79.1%)	18 (100%)	^b 0.045	85 (84.2%)	39 (76.5%)	^a 0.250	57 (82.6%)	67 (80.7%)	^a 0.770	
	Yes	28 (20.9%)	0 (0%)		16 (15.8%)	12 (23.5%)		12 (17.4%)	16 (19.3%)		
GHT	No	120 (89.6%)	17 (94.4%)	^b 1.000	91 (90.1%)	46 (90.2%)	^a 0.980	63 (91.3%)	74 (89.2%)	^a 0.660	
	Yes	14 (10.4%)	1 (5.6%)		10 (9.9%)	5 (9.8%)		6 (8.7%)	9 (10.8%)		
Preeclampsia	No	127 (94.8%)	18 (100%)	^b 1.000	96 (95%)	49 (96.1%)	^b 1.000	67 (97.1%)	78 (94%)	^b 0.456	
	Yes	7 (5.2%)	0 (0%)		5 (5%)	2 (3.9%)		2 (2.9%)	5 (6%)		

- ^a Chi-square test ^b Fisher exact test ^c Negative phi value

FINDINGS

- *Associations between complications during pregnancy and the mother's characteristics*

	Anemia		GDM		GHT		Preeclampsia	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Age	-0.101	0.217	0.086	0.294	0.018	0.826	0.028	0.731
Education	-0.016	0.845	-.234	0.004	-.204	0.012	-0.043	0.598
Employment	-0.146	0.072	-0.030	0.711	-0.082	0.312	0.083	0.312
Smoking	.193	0.017	-0.034	0.678	0.047	0.564	0.039	0.637
Prenatal care began	0.079	0.336	0.146	0.074	0.033	0.685	0.066	0.420
Parity number	0.018	0.830	0.075	0.360	0.029	0.719	-0.027	0.743
CB number	0.063	0.441	0.141	0.084	.175	0.031	-0.026	0.753

r: correlation coefficient

p: Two-tai P-value

CONCLUSIONS

- Health during pregnancy is affected by several factors; two of these factors are the pre-pregnancy BMI and the amount of weight gain during pregnancy.
- Increased pre-pregnancy BMI is associated with increased rate of GDM and GHT during pregnancy.
- There is a significant increase in rates of anemia and GDM during pregnancy in women with BMI over 25.
- Maternal education, smoking history, and previous cesarean births are associated with pregnancy complications.
- One preventable measure is a close observation of maternal weight to maintain the recommended pre-pregnancy weight (BMI) and weight gain during pregnancy.