JOURNAL OF HEALTHCARE SCIENCES
Volume 5 Issue 4 2025, Article ID: JOHS2024000938
http://dx.doi.org/10.52533/JOHS.2025.50402
e-ISSN: 1658-8967

Original Article

Attitudes and Behaviors of Saudi Pregnant Women Towards Gestational Weight Gain and Exercise during Pregnancy: A Cross-Sectional Study

Omniyyah A. Hawsawi[1*], Batool A. Kabli[1], Reem F. Bahakeem[1], Jumanah M. Zaqzouq[1], Yara S. Qadah[1], Bayader K. Alotaibi[1], Anas A. Sindy[1], Razan S. Kalantan[2], Fadwah Tahir[3]

[1] *Department of Medicine and Surgery, College of Medicine, Umm Al-Qura University, Mecca, Saudi Arabia*
[2] *Department of Medicine and Surgery, College of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia*
[3] *Associate Professor, Department of Obstetrics & Gynecology and Maternal Fetal Medicine, Faculty of Medicine, Umm Al-Qura University, Mecca, Saudi Arabia*

Correspondence should be addressed to **Dr. Omniyyah A. Hawasawi**, Department of Medicine, College of Medicine, Umm Al-Qura University, Mecca, KSA. Email: omniat16@hotmail.com

Received: 07 December 2024, Revised: 21 April 2025, Accepted: 28 April 2025, Published: 29 April 2025.

Abstract

Background: Women having higher gestational weight gain (GWG) have been associated with a delivery of a neonate having low 5-minute Apgar score, seizures, hypoglycemia, polycythemia, meconium aspiration syndrome, and large for gestational age (LGA) compared with pregnant women who adhered to weight gain guidelines, as shown in multivariable analyses. Therefore, our study aims to determine the factors associated with inappropriate GWG, including physical, lifestyle, knowledge, and primarily psychological factors among pregnant women.

Methods: We conducted a self-administered cross-sectional survey among pregnant women in Saudi Arabia between May 2023 and December 2023. Data were collected via a self-administered online questionnaire using Google Forms distributed through social media. The collected data were analyzed using the SPSS program version 25.

Results: Five hundred women completed the survey, yielding a response rate of 95.7%. Regarding weight change during pregnancy, 81.6% reported gaining weight. Approximately 40% of participants reported gaining about 5-9 kg. Surprisingly, 58.6% of participants said they were uncomfortable with their current weight. When assessing attitudes towards weight gain during pregnancy, 60.8% strongly agreed that reading about the importance of healthy nutrition can help prevent excessive weight gain. More than 40% strongly agreed that healthy nutrition practices, attending groups focused on healthy eating, and advice from their doctors about excess weight can help manage weight during pregnancy.

Conclusion: Improving knowledge, attitude, and other factors linked to weight gain is important for better nutritional and psychological health in pregnant women, which can lead to better pregnancy outcomes. Supporting psychological well-being, promoting physical activity, and encouraging healthier lifestyle habits and knowledge can help reduce the risk of excessive weight gain during pregnancy.

Keywords: *Attitude, Knowledge, Weight Gain, Pregnancy*

Introduction

Excessive gestational weight is the most frequent risk factor for high-risk pregnancy outcomes worldwide. Healthcare professionals have focused on the impact of high gestational weight on health outcomes, as it can affect the well-being of both the mother and the fetus (1).

The incidence of gestational weight gain (GWG) varies widely depending on whether it is classified as excessive, inadequate, or appropriate. Excessive GWG is the most common, occurring in 41–61.8% of pregnancies, particularly among overweight and obese women. Inadequate GWG affects 20.4–35.1% of pregnancies and is more prevalent among underweight women. Only 29.6–32.1% of pregnant women achieve appropriate GWG within the recommended guidelines. These findings emphasize the importance of managing GWG based on prepregnancy BMI to improve maternal and fetal health outcomes (2-5).

Gestational weight gain is typically diagnosed by tracking a woman's weight throughout pregnancy relative to her pre-pregnancy BMI. Methods include calculating total weight gain as the difference between pre-pregnancy weight and weight at delivery or using tools like the area under the weight gain curve (AUC), which accounts for both the amount and timing of weight gain. Monitoring patterns of weight gain in each trimester is crucial, as excessive or insufficient gain may indicate risks such as gestational diabetes or poor fetal outcomes (6-11). The Institute of Medicine has constantly updated the guidelines for gestational weight gain from 1970 until 2009, demonstrating the difficulty in balancing the risks that are associated with inadequate weight gain against those that are associated with excessive gain. The guidelines suggest an optimal weight gain range that is specific to pre-pregnancy BMIs, and this has been validated in various studies. The Institute Of Medicine recommends a gestational weight gain of 12.5–18.0 kg for underweight women, 11.5–16.0 kg for normal-weight women and 7.0–11.5 kg for overweight women and 5.0–9.0 kg for obese women (12).

Gestational weight gain significantly impacts maternal and infant health outcomes leading to both immediate and long-term health issues. Regarding the baby, Inadequate GWG is associated with neonatal complications such as preterm birth, low birth weight, and small-for-gestational-age infants, while excessive GWG increases the likelihood of complications like macrosomia, prolonged hospital stays for the newborn, and childhood obesity. Moreover, gestational weight gain above the recommended guidelines has been associated with a baby with lower 5-minute Apgar score, seizures, hypoglycemia, polycythemia, meconium aspiration syndrome, and large for gestational age (LGA) infants, compared to women who stayed within the weight gain guidelines, according to multivariable analyses (13). For pregnant mothers, it is associated with gestational diabetes, pregnancy-induced hypertension, cesarean delivery, postpartum weight retention. Consequently, the mother's postpartum weight gain is closely associated with excessive GWG (14). While minimal GWG may reduce maternal risks but could elevate infant risks, necessitating individualized recommendations. Optimizing GWG through balanced nutrition and physical activity is crucial to minimize adverse outcomes for both mother and baby (15-20).

Lifestyle interventions encouraging healthy eating and physical activity seem to reduce pregnancy weight gain. Exercise is a physiological activity that enhances or maintains physical health. A healthy lifestyle should be maintained or adopted during pregnancy. Weight control, mood enhancement, the alleviation of discomfort, and maintaining energy levels are all benefits of prenatal physical activity for both the mother and fetus. Additionally, there may be a link between prenatal activity and a lower incidence of High-risk pregnancy (21).

Exercise during pregnancy enhances or maintains cardiovascular health, and improves mental health, and muscular strength, diminishing back pain, preventing excessive rapid weight gain, increasing muscle strength, reducing lower limb edema, and preventing urine incontinence (22). Therefore ,a few possible benefits to fetal health are promoting fetal growth, boosting fetal cardiac autonomic regulation,

http://dx.doi.org/10.52533/JOHS.2025.50402

and enhancing neurological and mental development. Regular exercise during pregnancy may reduce the need for medical interventions during birth, such as cesarean sections, and can help manage pain, discomfort, and improve overall comfort (23).

Additionally, physical activity helps moms prepare for labor and delivery challenges. Babies whose mothers regularly engage in prenatal exercise have lower body fat, more advanced brain function, and healthier hearts (24).

According to the American Congress of Obstetricians and Gynecologists, pregnant women should engage in moderate activity for 150 minutes or more per week. Regardless of physical fitness level, it is recommended that pregnant women engage in regular, easy-going exercise of mild to moderate intensity (25). Mothers strive to make decisions in the best interests of their unborn children and receive much advice and information. However, there is limited research on maternal knowledge of prenatal exercise (25).

More data about knowledge levels, knowledge-influencing factors, knowledge types, and attitudes are needed. The overwhelming data suggests that poor education is the main factor determining the lack of information about prenatal exercise (26).

In 2015, Saudi women had a fertility rate of 2.58, reflecting a decline but still aligning with average global rates. Despite early preferences for large families, cultural and socio-economic factors have influenced fertility trends. Physical activity among Saudi women remains low, with the majority leading sedentary lifestyles. Moreover, exercise during pregnancy is uncommon due to societal undervaluation of physical fitness (27). To our knowledge, studies on pregnant women's attitudes toward GWG and exercise during pregnancy haven't been done in Saudi Arabia (28, 29). Our aim is to gain a deeper insight into the needs and desires of pregnant Saudi women for improving maternal health and fetal well-being, this study aims to assess pregnant Saudi women's attitudes towards GWG and exercise during pregnancy as opposed to their pre-pregnancy goals and activity level and to investigate the association between socio-demographic features, obstetric factors and GWG.

Methods

Study design and population

A piloted, self-administered cross-sectional survey was conducted between May 2023 and December 2023. The study population included pregnant women in Saudi Arabia .

Women were eligible to participate if they had had at least one prenatal visit and had a live singleton pregnancy. An online structured questionnaire was distributed to the women and consent was obtained from the participants first. After that, answering an online questionnaire was requested (30, 31).

Sample size

Sample size was calculated using OpenEpi software (32), based on the percent of positive attitude towards exercise during pregnancy (55.3%) derived from a previous study (33). The calculated sample size was 380 participants with a confidence level of 95% and an absolute precision of 5%. Adding 20% to compensate for attrition resulted in a total sample size of 456 participants. A convenience sampling approach was employed to recruit participants.

Study tools

The objective was to understand factors associated with excessive and inadequate GWG, especially physical, lifestyle, and knowledge factors. Scales of Eysenck’s Personality Questionnaire (34), self-efficacy (perception of the control over diet and exercise, and returning to pre-pregnancy condition) (35, 36), self-esteem (overall positive vs. negative feelings about oneself) (37), locus of control (belief of having control or little control over body weight) (36-38), and pregnancy weight attitudes (attitude towards weight gain during pregnancy) (36-39) were reviewed and modified by a panel of experts to assess content validity. Then, a pilot study was conducted to assess face validity.

Statistical analysis

Data was analyzed using SPSS 25. Descriptive statistics were calculated. The association between

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each variable and average weight gain was examined using the Student T test and one way ANOVA test. The association between each variable and weight gain categories was examined using the Chi-square test. The paired T test was used to compare prepregnancy weight to labor weight. The significance level at $P \leq 0.05$ was considered.

We determined if GWG was above, within, or below that recommended in The Institute of Medicine guidelines (12). According to the following: during the second and third trimesters, weight gain per week was considered within guidelines if it was between 0.44 and 0.58 kg/week for underweight women (BMI < 18.5 kg/m2), between 0.35 and 0.50 kg/week for women of normal weight (BMI 18.5 to 24.9 kg/m2), between 0.23 and 0.33 kg/week for overweight women (BMI 25 to 29.9 kg/m2), and between 0.17 and 0.27 kg/week for obese women (BMI > 30 kg/m2) (14, 21). If the woman was in the second or third trimester, GWG per week was calculated by subtracting 2 kg (the guidelines' upper limit in the first trimester regardless of BMI and a gain commonly reported) (12, 30) from the weight gained by the time of survey completion and dividing the remaining weight by the number of weeks after the first trimester. Those who reported that their health care provider did not give them GWG recommendations or could not recall the amount were categorized as having no recommendation. Some multicategorical variables were re-categorized as binary based on biological plausibility to avoid excessive dummy variables .

Gestational weight gain was also categorized as above, within, or below what is recommended in guidelines. Gestational weight gain was considered within guidelines if the additional weight women planned to gain by the end of pregnancy was between 12.5 and 18 kg for underweight women, 11.5 and 16 kg for women of normal weight, 7 and 11.5 kg for overweight women, and 5 and 9 kg for obese women. All women were asked about GWG and if they had received weight gain advice from their health care providers and could recall the amount advised, had received recommendations and did not recall the amount advised, or had not received any recommendations from health care providers.

Ethical approval

This study was approved by the Research Ethics Board Faculty of Umm Al-Qura University with IRB Approval No. (HAPO-012-2023-11-1845) .

Results

Five hundred thirty women completed the survey between May and December 2023, with a response rate of 95%. Out of 500 participants, 50.8% were 39 or older, about 90% were Saudi, 70.6% had a university education, 46.2% were housewives, and 47.8% had a total family income of more than 10000 Saudi Riyal per month **(Table 1)**. Eighty-four percent of participants had a previous pregnancy. About 39% had a gravidity of 3 to 4, while 58.4% had no previous abortion. About 52% had a parity of 3 to 5, while 55.6% had 1 to 3 children **(Table 2)**.

Table 1. Sociodemographic characteristics of the participants (n=500)

	N	%
Age (years)		
Less than 39	246	49.2%
39 or more	254	50.8%
Nationality		
Saudi	446	89.2%
Other	54	10.8%
Educational level		
Post-graduate	54	10.8%
University education	353	70.6%
School education	92	18.4%
Uneducated	1	0.2%
Occupation		
Healthcare Worker (HCW)	37	7.4%
Administrative worker	52	10.4%
Housewife	231	46.2%
Student	32	6.4%
Teacher	127	25.4%
Other	21	4.2%
Total Family Income		
Less than 5000	78	15.6%
5000-10000	183	36.6%
More than 10000	239	47.8%

Variables were presented as numbers (N) and percentages.

http://dx.doi.org/10.52533/JOHS.2025.50402

Table 2. Obstetric history of the participants (n=500)		
	N	%
Previous pregnancy?		
No	80	16.0%
Yes	420	84.0%
Gravidity		
Zero	64	12.8%
1-2	154	30.8%
3-4	194	38.8%
5 and above	88	17.6%
Abortions		
Zero	292	58.4%
1-2	182	36.4%
3-5	21	4.2%
More than 5	5	1.0%
Parity		
Zero	33	6.6%
1-2	159	31.8%
3-5	259	51.8%
More than 5	49	9.8%
Number of children		
Zero	37	7.4%
1-3	278	55.6%
4 and more	185	37.0%

Variables were presented as numbers (N) and percentages.

After recording weight gain, less than normal weight gain was prevalent among 49.6% of participants, while normal and more than normal weight gain was prevalent among around the fourth of participants **(Table 3)**.

Table 3. Prevalence of the weight gain among the participants (n=500)		
	N	%
Weight gain		
Less than normal	248	49.6%
Normal	134	26.8%
More than normal	118	23.6%

Variables were presented as numbers (N) and percentage.

When asking participants about their weight change during pregnancy, 81.6% reported gaining weight. Around 32% of participants reported gaining about 5-9 kg. Surprisingly, 58.6% of participants said they were uncomfortable with their current weight. Moreover, 43.2% expected some weight gain but did not want it to be too much. Only a fourth of participants were deeply concerned about too much weight gain **(Table 4)**. When assessing attitudes toward weight gain during pregnancy among the participants, 60.8% totally agreed that reading about the importance of healthy nutrition can help avoid gaining weight during pregnancy. More than 40% totally agreed that healthy nutrition practices, attending with groups interested in healthy eating, the advice given to them by their doctors about excess weight, and attending exercise classes and physical activity can help avoid gaining weight during pregnancy. Regarding barriers to doing exercise, 33.8% totally agreed that they had other responsibilities or children to take care of, which prevented them from doing exercise **(Table 5)**.

Table 4. Perception of the weight change among the participants (n=500)		
	N	%
What happened to your weight during a previous pregnancy?		
Weight gain	408	81.6%
I don't know	41	8.2%
Weight loss	51	10.2%
In case of weight gain, what is the noticeable increase (in kilograms)? #		
5-9 kg	166	32.2%
7-12 kg	138	27.6%
12-16 kg	44	8.8%
12-18 kg	37	7.4%
19-25 kg	23	4.6%
Are you comfortable with your current weight?		
No	293	58.6%
Yes	207	41.4%
Do you have any concerns about gaining a lot of weight during this pregnancy?		
1- I am not worried and expect to gain weight	155	31.0%
2 - I expect some weight gain, but I don't want it to be too much	216	43.2%
3. Deeply concerned about too much weight gain	129	25.8%

Variables were presented as numbers (N) and percentages. # valid percentages are 40.7%, 34.1%, 10.9%, 9.0%, and 5.6%.

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Table 5. Attitude towards weight gain during pregnancy among the participants (n=500)										
	Totally disagree		Disagree		Neutral		Agree		Totally agree	
	N	%	N	%	N	%	N	%	N	%
The following can help avoid gaining weight during pregnancy:										
Reading about the importance of healthy nutrition.	4	0.8%	11	2.2%	45	9.0%	136	27.2%	304	60.8%
Healthy nutrition practice.	6	1.2%	11	2.2%	104	20.8%	171	34.2%	208	41.6%
Attending with groups interested in healthy eating.	5	1.0%	10	2.0%	78	15.6%	204	40.8%	203	40.6%
The advice given to me by my doctor about excess weight.	3	0.6%	13	2.6%	49	9.8%	222	44.4%	213	42.6%
Attending exercise classes and physical activity.	2	0.4%	13	2.6%	67	13.4%	210	42.0%	208	41.6%
Applying a healthy diet through practice or reading.	8	1.6%	52	10.4 %	104	20.8%	196	39.2%	140	28.0%
Barriers to doing exercise										
I have other responsibilities or children to take care of, which prevents me from doing exercise	11	2.2%	60	12.0 %	52	10.4%	208	41.6%	169	33.8%
I attend private exercise classes only when I find a friend joining me to go to the gym	32	6.4%	13 9	27.8 %	103	20.6%	147	29.4%	79	15.8%

Variables were presented as numbers (N) and percentages.

The mean prepregnancy weight was 61.7 ± 13.99 kg, while the mean labor weight was 72.46 ± 14.57 kg, with a mean weight gain of 10.79 ± 8.8 kg. All categories differed significantly when comparing prepregnancy weight to labor weight according to demographic characteristics. The highest weight gain was among the uneducated (30 kg), followed by post-graduate (13.06 kg), then housewives (12.16 kg), and students (11.88 kg). The least weight gain was among those in school education (8.72 kg) (**Table 6**).

Table 6. Weight change follow-up of the participants (n=500)							
	Prepregnancy weight		Labor weight		Weight gain		
	Mean	SD	Mean	SD	Mean	SD	P-value
Total	61.67	13.99	72.46	14.57	10.79	8.80	
Nationality							
Saudi Arabia	60.74	12.14	71.44	14.47	10.69	8.50	<0.001*
Other	61.78	14.21	72.58	14.60	10.80	8.84	<0.001*
Educational level							
University Education	61.27	13.71	72.20	14.09	10.93	8.41	<0.001*
School education	63.51	15.61	72.23	15.98	8.72	9.10	<0.001*
Post-graduate	61.06	12.99	74.12	15.10	13.06	9.85	<0.001*
Uneducated	67.50	.	97.50	.	30.00	.	<0.001*
Occupation							
Healthcare Worker (HCW)	63.04	11.83	75.20	15.42	12.16	8.34	<0.001*
Administrative worker	59.47	16.47	70.00	15.28	10.53	9.50	<0.001*
Housewife	62.36	14.42	72.47	14.47	10.11	8.80	<0.001*
Student	59.38	15.80	71.25	16.00	11.88	7.41	<0.001*
Teacher	61.83	12.82	73.03	14.48	11.20	9.18	<0.001*
Others	59.64	9.69	72.02	10.71	12.38	7.35	<0.001*
Total Family Income							
Less than 5000	63.17	16.31	72.34	16.57	9.17	7.45	<0.001*
5000-10000	61.42	14.18	72.04	14.89	10.61	9.09	<0.001*
More than 10000	61.37	13.04	72.82	13.66	11.45	8.93	<0.001*

Variables were presented as means and standard deviation (SD)
Paired T-test was used to compare prepregnancy weight to labor weight
**Significant at p-value <0.05*

http://dx.doi.org/10.52533/JOHS.2025.50402

After pregnancy, no statistically significant difference was found when comparing the mean weight gain between Saudi and others, as well as different categories of occupation and family income. However, there was a statistically significant difference regarding the educational level **(Table 7)**. Regarding the association between weight gain categories and obstetric data, number of children and number of deliveries were significantly associated with weight gain categories. More than normal weight gain was highest among those having more than 4 children (29.7%) and those with more than 5 deliveries (38.8%) **(Table 8)**.

Table 7. Association between mean weight gain and demographic data of the participants (n=500)

	Weight gain		
	Mean	SD	P-value
Nationality			
Saudi Arabia	10.69	8.50	0.933
Other	10.80	8.84	
Educational level			
University Education	10.93	8.41	0.003*
School education	8.72	9.10	
Post-graduate	13.06	9.85	
Uneducated	30.00	.	
Occupation			
Healthcare Worker (HCW)	12.16	8.34	0.582
Administrative worker	10.53	9.50	
Housewife	10.11	8.80	
Student	11.88	7.41	
Teacher	11.20	9.18	
Others	12.38	7.35	
Total Family Income			
Less than 5000	9.17	7.45	0.129
From 5000-10000	10.61	9.09	
More than 10000	11.45	8.93	

SD= standard deviation
Student T test and one way ANOVA test were used
**Significant at p-value <0.05*

Table 8. Association between weight gain categories and obstetric data of the participants (n=500)

	Weight gain						
	Less than normal		Normal		More than normal		P-value
	N	%	N	%	N	%	
Number of children							
Zero	25	67.6%	9	24.3%	3	8.1%	**0.025***
1-3	142	51.1%	76	27.3%	60	21.6%	
More than or equal to 4	81	43.8%	49	26.5%	55	29.7%	
Number of abortions							
Zero	146	50.0%	84	28.8%	62	21.2%	0.248
1-2	86	47.3%	47	25.8%	49	26.9%	
3-5	12	57.1%	2	9.6%	7	33.3%	
More than 5	4	80.0%	1	20.0%	0	0.0%	
Number of deliveries							
Zero	21	63.6%	9	27.3%	3	9.1%	**0.030***
1-2	75	47.2%	42	26.4%	42	26.4%	
3-5	136	52.6%	69	26.6%	54	20.8%	
More than 5	16	32.7%	14	28.6%	19	38.8%	

Variables were presented as numbers (N) and percentages.
Chi-square test was used.
**Significant at p-value <0.05*

http://dx.doi.org/10.52533/JOHS.2025.50402

Discussion

The current study aimed to assess pregnant women's attitudes about gestational weight gain and exercise during pregnancy in Saudi Arabia. It also aimed to investigate the association between sociodemographic features, obstetric data, and gestational weight gain.

The mean pre-pregnancy weight was 61.7 ± 13.99 kg. In contrast, the mean labor weight was 72.4 kg, with a mean weight gain of 10.79 ± 8.8 kg. All cases showed significant differences compared to labor weight according to demographic characteristics. The highest weight gain was among the uneducated (30 kg), followed by post-graduate (13.06 kg), then Healthcare Workers (HCWs) (12.16 kg), and students (11.88 kg). the least weight gain was among school education (8.72 kg)**.** Less than normal weight gain was prevalent among 49.6% of participants, while normal and more than normal weight gain was prevalent among around fourth of the participants. The attitude of participants towards gestational weight gain was moderately good. Regarding barriers to doing exercise, 33.8% totally agreed that they had other responsibilities or children to take care of which prevented them from doing exercise.

Various studies investigate the connection between GWG, obesity, and pregnancy complications. For example, Benvenuti and Birdsall (6, 25) look at obesity and excessive GWG trends and emphasize the need for structured interventions like dietary counseling and physical activity programs. Hanson (1) specifically connects excessive GWG to gestational diabetes mellitus (GDM), emphasizing the need to monitor weight gain to avoid negative pregnancy outcomes. These studies highlight the need for early intervention, appropriate education, and lifestyle changes to effectively manage GWG, resulting in improved health outcomes for both mother and child.

From a wide range of demographic factors, we found that the uneducated (mean weight gain 30kg), the postgraduate, the HCWs were associated with the highest gestational weight gain; respectively, while school education (8.72kg) was associated with the least weight gain. These findings were similar to those found in 2009 by Chu et al. that women with education less than 12 years were more likely to gain gestational weight less than 15 pounds (40). However, in the current study, the uneducated had the highest gestational weight gain. This could be explained by the fact that the uneducated don't have any information about the bad consequences of obesity on their health and on the pregnancy outcome. This can be added to that the uneducated can be ignorant of the importance of antenatal visits where they can follow up their weight status.

Regarding the association between weight gain categories and obstetric data, number of children and number of deliveries were significantly associated with weight gain categories. More than normal weight gain was highest among those having more than 4 children and those with more than 5 deliveries**.** Parity impacts GWG, with multiparous women often exhibiting different weight gain patterns compared to nulliparous women (41). Therefore, parity can be considered a confounder which should be adjusted for future studies.

Adverse outcome is related to increasing maternal weight as reported by Harris et al. (42). Moreover, another study reported that lower BMI was associated with lower induction of labour. Another study by Wells et al. in 2005 reported similar results (43). All of these results agree with earlier reports which have shown an association between increasing BMI and interventions like induced labour.

Less than normal weight gain was prevalent among 49.6% of participants, while normal and more than normal weight gain was prevalent among around fourth of the participants. A previous study reported that 42% of their participants gained gestational weight above the recommendations (44). There was a statistically significant difference between the actual weight gain and the perceived weight gain ($P<0.001$). About 14% and 12% of participants who perceived gestational weight loss had actually normal and more than normal of the recommended gestational weight gain; respectively. However, 74% of those who perceived weight loss had

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actually gained less than recommended weight. This is similar to a previous study which reported that 87% of the participants accurately perceived their weight gain status, while 13% over assessed their weight status (45). The same study showed that misperceived pre-pregnancy weight was associated with excessive weight gain during pregnancy in both normal and overweight\obese pre-pregnancy weight status. However, the likelihood of weight gain increased 7 folds among the overweight\obese group who underassessed their weight status as compared to the normal weight group who accurately assessed their weight status (45).

When assessing attitude towards weight gain during pregnancy among the participants, 60.8% totally agreed that reading about the importance of healthy nutrition can help avoid gaining weight during pregnancy. More than 40% totally agreed that healthy nutrition practice, attending with groups interested in healthy eating, the advice given to them by their doctors about excess weight, and attending exercise classes and physical activity can help avoid gaining weight during pregnancy. Studies on pregnant women's beliefs regarding GWG and activity have been published worldwide. Roughly only a third of pregnant women acquired the necessary amount of weight. However, the majority of them did not, according to a prior study (CDC) (6-8). Similarly, a previous study reported that seventy seven percent of their participants found information about local fitness resources useful, while only half of the providers found this as helpful (46), thus provider counseling is very important for both medical sciences and pregnant women. Another study reported that women who were overweight or obese had negative attitudes and intentions toward exercise (21). Regarding barriers to doing exercise, 33.8% totally agreed that they had other responsibilities or children to take care of which prevented them from doing exercise. These barriers were discussed in a previous study which reported the most frequent barrier among their participants was not liking to exercise, followed by being afraid of exercise while pregnant, then other causes like lack of time (44). Other studies reported that primiparous women gain more weight and are more likely to experience excessive GWG compared to multiparous women (6-8). Aspects of GWG emphasize the significance of lifestyle changes, especially exercise. Regular exercise has been demonstrated to help avoid excessive weight gain, and Tsakiridis study (23) highlights the need for uniform recommendations by comparing various worldwide standards on exercise during pregnancy**.** A study was done by Heslehurst and Vanstone (7, 8) concentrated on GWG awareness and implementation issues. According to Vanstone (8), a lot of expectant mothers misunderstand GWG guidelines, which causes them to acquire too much or too little weight. Heslehurst study (7). investigate how patient adherence problems and resource constraints affect the efficacy of therapies when healthcare practitioners attempt to execute weight control guidelines.

According to data, Saudi women had a fertility rate of 2.58% in 2015, which is considered average. Early research found that Saudi women wished to have large families. Furthermore, information on Saudi Arabian women suggests that physical activity is not widespread. However, 75% of women lead sedentary lifestyles, and there are no reports of Saudi women exercising while pregnant since exercise is not generally valued in the society (27).

Pregnant women in Ethiopia were found to have both poor awareness and favorable attitudes toward prenatal exercise, according to research on their knowledge, attitudes, and practices. Additionally, it showed that only 39.5% of Ethiopian pregnant moms followed the guidelines for prenatal exercise. A recent Iranian study found a significant relationship between pregnant women's educational attainment and their understanding of the value of prenatal exercise (47).

Targeting planned GWG may help women gain weight appropriately, thereby preventing excess weight gain and the potential sequelae in mothers and their children of overweight and obesity (48-50). The best methods for lowering maternal weight gain are dietary and lifestyle changes, which are also associated with healthier pregnancies (21).

http://dx.doi.org/10.52533/JOHS.2025.50402

Strengths of our study included the high response rate which helps decreased potential selection bias.

Limitations of our study include the fact that we used a cross-sectional design. Other limitations of this study include potential confounding factors, as other influences on weight gain during pregnancy, such as environmental factors and ethnicity, were not considered. Additionally, population bias exists since most participants were Saudi nationals, limiting the generalizability of the findings. Recall bias may also affect data quality, as participants might not accurately remember details about their dietary habits or gestational weight gain.

Conclusion

Uneducated individuals, postgraduates, and healthcare workers had the highest gestational weight gain, while those with school-level education had the least. Most participants agreed that education on healthy nutrition, joining healthy eating groups, receiving doctor advice, and attending exercise classes help prevent excessive weight gain during pregnancy. Pregnancy is strongly associated with weight gain, influenced by reduced physical activity and emotional or psychological challenges. Enhancing psychological well-being, increasing physical activity, and improving lifestyle habits and knowledge can help minimize this risk. Provider counseling is recommended. Improving knowledge, attitude, and perception about factors linked to weight gain is important for better nutritional and psychological health and pregnancy outcomes. Research and public health efforts should focus on preventing obesity before and during pregnancy.

Acknowledgment

The authors gratefully acknowledge Umm Al-Qura ethical committee for allowing them to conduct this study.

Disclosure

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

None.

Consent to participate

Informed consent was obtained from all the participants.

Ethical approval

The Biomedical Research Ethics Committee of Umm Al-Qura University granted approval for this study via Approval No. HAPO-012-2023-11-1845., Dated: 01/11/2023.

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