Impact of an Educational Session about Gestational Weight Gain on Saudi Pregnant Women's Knowledge and Perception

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Abstract

Background: The immediate and future health of the women and their fetus can be affected by the amount of weight gained during pregnancy. Many pregnant women have poor knowledge about gestational weight gain, their consequences and management strategies. **Aim:** the aim of the current study was to assess impact of designed nursing session on improving pregnant women's knowledge and perception about gestational weight gain. **Methods:** A quasi experimental design was used to conduct the study. **Sample:** A total of 100 Saudi pregnant women who attended Obstetrics & Gynecology outpatient clinic at (KAMC-MNGHA) were recruited. Data was collected by using self-administered close ended questionnaire which consisted of four parts: socio-demographic characteristics, obstetrical history, knowledge assessment, and perception assessment. The educational session lasted for 50-60 minutes. **Result:** There was a significant improvement in the total knowledge score before and after educational session about pregnancy weight gain including (pregnancy weight gain, risk of over gestational weight gain, and risk of less gestational weight gain) (P = 0.000 for each), as (72%) of the subjects had poor knowledge pretest compared to (91%) had good knowledge posttest. Also, there was significant differences in total perception score before and after the session (p=0.000). About two third (64%) had fair perception pretest compared to (69%) had good perception post-test. **Conclusion:** Pregnant women have poor knowledge about proper weight gain and its impact on pregnancy outcome. The educational session has an impact on improving pregnant women's knowledge and perception about proper weight gain during pregnancy.

Key words: pregnancy, gestational weight gain, nursing, perception,knowledge

Introduction

The weight that woman gains during pregnancy, which known as gestational weight gain (GWG), is an important indicator for women and their fetus health (Rasmussen & Yaktine, 2009). The immediate and future health of the woman and her fetus can be affected by the amount of weight gained during pregnancy (Janbi, Sabra, Sebiany, & Hafez, 2013). The risks of inadequate maternal and fetal outcome increase when woman gains either too much or too little gestational weight (Chalmers, Dzakpasu, Heaman, Kaczorowski, 2008). Too much gestational weight gain contributes to increased rates of maternal and perinatal complications, illness and sometimes even death. While, gaining less gestational weight is associated with preterm birth and low birth weight (Davies, Maxwell, McLeod, Gagnon, Basso, Bos, et al., 2010). The combination of over weight gain in pregnancy and poor diet quality, followed by less than recommended postpartum weight loss makes pregnancy a major risk factor for obesity and related chronic diseases (e.g. diabetes, certain cancers) in women in later life (Fraser, Tilling, Macdonald-Wallis, Hughes, Sattar, Nelson, et al., 2011; Rasmussen& Abrams, 2011). The Institute of Medicine (2009), provides gestational weight gain recommendations that promote optimal health by balancing risks associated with too much or too little

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gestational weight gain and are specific to a woman's pre-pregnancy body mass index (BMI; weight [kg]/height m²) (Rasmussen & Yaktine, 2009).

Overweight and obese women are almost twice as likely to experience excessive weight gain in pregnancy as normal weight women (Olson, 2008). El-Gilany and El-Wehady (2009), conducted a study in Saudi Arabia, to assess the prevalence of obesity in a Saudi obstetric population. They found that more than 52% of pregnant women are overweight, obese, and extreme obese. On the other hand, Janbi, et al. (2013), conducted a study in Saudi Arabia to determine gestational weight gain during normal and high risk pregnancy, they found that the rate of women having low maternal weight gain during normal pregnancy was 63.4% as compared to those 80.2% during high risk pregnancy. Moreover, Verma, & Shrimali (2012); and Crane, White, Murphy, Burrage, &Hutchens (2009) have similar results, that the risks of medical and obstetric complication for maternal and fetal outcomes increased with obesity during pregnancy. They indicated that women's with obesity during pregnancy may increase the risk for spontaneous abortion, gestational hypertension, gestational diabetes, preterm delivery, caesarean section that lead to increase anesthesia complication, wound disruption, infection, and deep venous thrombophlebitis. In addition, babies who delivered from obese women's have a significant increased risk such as congenital anomalies, still birth, and macrosomia. Whereas, Verma, &Shrimali (2012), mentioned that the risk of anemia, and growth retardation were more in underweight women.

Nursing education during pregnancy have a crucial role to support women to achieve the recommended gestational weight gain and return to their pre-pregnancy weight postpartum (Asbee, Jenkins, Butler, White, Elliot, Rutledge, 2009; Phelan, Phipps, Abrams, Darroch, Grantham, Schaffner, etal.2014). Despite, most of the health care provider reported counseling the pregnant women about the recommended gestational weight gain, only few women reported that they received health education about gestational weight (McDonald, Pullenayegum, Taylor, Lutsiv, Bracken, Good, et al. (2011). So, many pregnant women may have poor knowledge of GWG recommendations, and the consequences of inappropriate weight gain and of strategies to support appropriate gestational weight gain (Shub, Huning, Campbell, McCarthy, 2013) Furthermore, a review of the literature shows that health care during pregnancy are primarily aimed at overweight and/or obese women but the importance of discussing GWG with women who begin pregnancy with a healthy BMI, between 18.5 and 24.9 kg/m², has not been explored.

In a study done by Shub, etal., (2013) who assessed pregnant women's knowledge regarding their BMI, complication associated with excess gestational weight gain, and knowledge of safe weight management strategies in pregnancy. They found that 74% of obese women have inaccurate self-classification about their Body Mass Index, 94% of women consider that obesity would cause pregnancy complication, but there was poor knowledge about the specific nature of the risks. In addition, Okezie, Hawkins, Butler &Younis (2015), found that women's have limited knowledge of BMI, goals of weight gain during pregnancy, and risk of maternal obesity on them and their fetus. They recommended that education and awareness about the risk of adverse outcome associated with obesity in pregnancy is important to all women of child-bearing age.

Many studies suggest that the health care providers should increase pregnant women's awareness about the potential risks of perinatal and maternal morbidity in women with increased BMI. Also, take these complication into account by ensuring early management to improve both maternal and neonatal health (Vinturache, McDonald, Slater, &Tough (2015); and Aimukhametova, Ukybasova, Hamidullina, Zhubanysheva, Rashid, &Sakamoto, et al (2012). Furthermore, application of correct education from the health care provider can prevent pregnancy complication and adverse obstetric outcomes by using Health Belief Model with usual pregnancy care practice in health care centers (Khoramabadi, Dolatian, Hajian, Zamanian, et al., 2016).

Significance of the study

Maternal obesity and excess gestational weight gain (GWG) are associated with increased perinatal risk. The effect of Maternal obesity and excessive gestational weight gain (GWG) are a well-recognized associations with preeclampsia, gestational diabetes mellitus (GDM), instrumental or operative delivery (increase cesarean section) , failed induction, fetal macrosomia, neonatal hypoglycemia, resuscitation at birth , perinatal mortality and infant and childhood obesity (Rode, Kjaergaard, Ottesen, Damm, Hegaard 2012). Few studies focused on assessing the relationship between a women's actual and perceived Body Mass Index (BMI) in pregnancy, and the effect this has a greater gestational weight gain (GWG) and also limited published data demonstrating the level of pregnant women's knowledge regarding these problems, including consequences and management strategies. Moreover, in Saudi Arabia, Sulaimani, et al., (2016) recommended for more researches to design educational programs that will increase the level

of knowledge, awareness, and assist women's in achieving appropriate gestational weight gain and prevent the risk for feto-maternal outcome.

Based on evidence from previous studies, overweight and underweight during pregnancy need more attention from the healthcare providers such as doctors, midwifes, and nutrition consular to prevent adverse outcome on maternal and fetal outcome. No previous study assess impact of an educational session about gestational weight gain on Saudi pregnant women's knowledge and perception in Saudi Arabia. The impact of antenatal education about gestational weight gain has not been well studied. Therefore, the aim of this study was to assess the impact of an educational session about gestational weight gain on Saudi pregnant women's knowledge and perception.

Materials and Methods

Research hypothesis

(1) There will be a significant improvement of knowledge levelaboutgestational weight gain among pregnant women who received the educational session.

(2) There will be a significant improvement on theperception about gestational weight gain among pregnant women who received the educational session.

Design

A quasi-experimental (pre-post-test) design was used to assess impact of designed nursing session on improving pregnant women knowledge and perception about gestational weight gain. It was chosen to determine a cause-and-effect relationship.

Setting

This study was conducted at Obstetrics & Gynecology outpatient clinic (101) at King Fahad hospital in King Abdulaziz Medical City, Ministry of National Guard Health Affairs/Riyadh (KAMC-MNGHA). It runs by physicians, nurses, patient care technicians, unit assistants. It divided to three subdivisions which are General Obstetrics & Gynecology, In Vitro Fertilization & Reproductive Endocrinology, and Perinatology: Feto Maternal Medicine.

Sample

A total of 100 pregnant women who attended prenatal clinic waiting rooms at outpatient (clinic 101) with the following criteria were recruited in the study: Saudi pregnant women, singleton pregnancy, and attended during their first half of pregnancy. The following women's were excluded from the study: multiple pregnancy, and women's diagnosed with conditions that might affect their normal weight gain such as diabetes mellitus, hypertension, renal disease, cardiac disease, thyroid, and hyperemesis gravidarum. Sample size was determined by using G* power software with a paired sample t-testing, with a p-value of 0.05, a power of 0.95, and a medium low effect size of 0.15. The needed sample size was 80 women. To ensure representative, sample was increased up to 100 women.

Data collection

Data collection tool was developed by the researchers based on extensive electronic review of literatures. The questionnaire was a Self-administered close-ended questions which consisted of four parts: 1) Socio-demographic characteristics; 2) Obstetrical history; 3) knowledge assessment; and 4) perception assessment about pregnancy weight gain. *The first part of the questionnaire* was socio demographic characteristics such as maternal age, educational level, type of work, pre-pregnancy weight (kg), weight during pregnancy (kg), and height (meters). *The second part* was the obstetrical history which included gestational age in weeks, number of pregnancies, number of deliveries, number of living children, number of abortions, and number of prenatal visits. *The third part* was to assess the level of knowledge about pregnancy weight gain and risk of over or less weight gain. This part was consisted of 13 closed ended questions related to risks of improper weight gain (overweight, underweight). Women whose score below 60% were categorized as having a poor knowledge of the risks of improper weight gain. While those who got 60%-80% correct answers were categorized as having fair knowledge, while, Women who had 81-100% score were categorized as having good knowledge.*The fourth* part was to assess the level of women's perception about pregnancy weight gain. It is a Likert scale consists of 13 statements with five response's ranges between strongly disagree = 1 to strongly agree = 5. The total score was calculated for each woman. The score was ranged from 13 to 65. *The third and fourth parts* were administered twice once before the session (pre-test) and once after the session (post-test).

Tool Validity and Reliability

Face and content validity of the questionnaire were assessed by 3 PhD faculty members who are expert in the field (Maternal and Newborn Health Nursing). They reviewed the questionnaire and gave their feedback. Some modifications were carried out according to the panel judgment on clarity of the sentences and appropriateness of the content. Reliability test was assessed by applying the questionnaire on 15pregnant women as a pilot study to check validity, reliability, feasibility and applicability of the questionnaire using test-retest. Also, pilot study determined the appropriate time required to conduct the educational session. Based on its result changes were carried out.

Procedure

After approvals to conduct this study was obtained, the researchers introduced themselves to antenatal women who met the inclusion criteria and informed them about the purpose of the study, benefit, and risk in order to obtain their acceptance to participate in the study as well as to gain their cooperation. Informed consent was obtained from each woman who agreed to participate in the study. The researchers ensured that women's data were confidential and private and kept in a safe place. The questionnaire was anonymous. The woman was informed that they can withdraw from the study at any time. The researchers were constructed and prepared power point presentation and booklet. Data collection was carried out through three phases: interviewing and assessment phase, implementation phase, and evaluation phase.

Interviewing and assessment phase: In this phase, data collected over a period of 5 months from beginning of May 2017 to end of September 2017 in the outpatient clinic from 9 AM to 2 PM, four days per week. Self-administered close ended questionnaire were carried out by each woman,(for those who can't read and write, the questionnaire filled by the researchers). Socio demographic characteristics, obstetrical history as well as knowledge assessment, and perception assessment about pregnancy weight gain (pretest) were collected. This interview and assessment phase consumed about 15-25 minutes for each woman; the questionnaire was written in Arabic language and documented the answer in the tools utilized.

Implementation phase: In this phase, the session aims were explained to the women at the beginning of the session. The session lasted for about 25 minutes. The main objective of the session was to equip pregnant women about recommended weight gain during pregnancy. The session content were included: definition of weight gain, how to calculate BMI, ideal weight gain during pregnancy, the risk associated with overweight during pregnancy for both women and fetus as (still birth, large baby, spontaneous abortion, gestational diabetes and elevation of blood pressure), the risk associated with underweight during pregnancy for both women and fetus as (low birth weight, preterm baby, anemia, and intrauterine growth retardation), and misperceptions regarding weight gain that the woman practice during pregnancy. Audiovisual materials such as PowerPoint, and pictures were used to clarify the session content.

Evaluation phase: In this phase, all women reassessed regarding their knowledge and perception (posttest) about weight gain during pregnancy. This posttest consumed about 15-20 min for each woman.

Ethical considerations

Approvals to conduct this study were obtained from Research Unit at king Saud Bin Abdulaziz University for Health Sciences- College of Nursing, King Abdullah International Medical Research Center (KAIMRC), and the Institutional Review Board Committee (IRB). All women were informed about the purpose of the study, benefit, and risk in order to obtain their acceptance to participate in the study. There were no risks to the women. An informed consent was obtained from each woman who agreed to participate in the study. All events that occurred during educational session considered confidential, and data and information that they share were confidential. Also, the women were assured about their right to withdraw at any time. Privacy and confidentiality were completely protected, No identifiers or personal information were collected or stored including participant's name, IDs and others.

Statistical Analysis

Data was coded, tabulated, and analyzed by using SPSS version 20 statistical software. According to study objectives, the descriptive statistics were inform of means, standard deviations, frequency, and percentage. Inferential statistics were informed of Paired t test, and Chi Square test. Probability of error (p-value) < 0.05 considered significant.

Results

This study was conducted to assess the impact of an educational session about gestational weight gain on Saudi pregnant women's knowledge and perception. One hundred women were included in the studysample. Each women did the pretest to assess her knowledge and perception toward gestational weight gain and attended an educational session and completed the post test.

The result of the study is divided into three parts as the following:

Part one: Demographic and Obstetrical Data.
Part 2: Objective one (Assess impact of an educational session about gestational weight gain on pregnant women's knowledge).
Part 3: objective two (Assess impact of an educational session about gestational weight gain on pregnant women's perception).

Part one: Demographic and Obstetrical Data

Table1: Frequency Distribution of the Socio-demographic Data of the Sample:

Variable	Number	Percent
Age range <20- >41		
Mean $\pm$ SD	30.28$\pm$6.32	
Educational Level:		
Can't read& write	3	3.0
Primary School	7	7.0
Intermediate School	7	7.0
High School	34	34.0
College	46	46.0
Graduate	3	3.0
Occupation:		
Housewife.	62	62.0
Working.	27	27.0
Student.	11	11.0
BMI category (kg/m²**):**		
<18 (underweight)	4	4.0
From 18-24.9 (normal)	39	**39.0**
From 25-29.9 (overweight)	36	36.0
From 30-39.9 (obese)	19	19.0
40 and above (morbid obesity)	2	2.0
Mean $\pm$ SD	26.61$\pm$5.48	

Table (1) shows frequency distribution of the socio-demographic data of the sample. The age range was 18-41 years old with mean age of 30.28+6.32 years old. Almost half of them (46%) completed their college education and about two third(62%) were housewife while, 11% were student. The mean BMI was 26.61+5.48. More than one third of the sample (39%) their BMI was normal (18-24.9 kg/m²), while only 19% were obese. Regarding obstetric history of the sample, the mean gestational age was 20.92+2.61weeks. Most of the sample (96%) was in the second trimester (13-28 gestation weeks) and majority (80%) had from 0-3 deliveries. Majority of the sample (82%) had regular antenatal visit. In addition, only 21% of the sample stated that the healthcare provider discussed the risks of improper weight gain (overweight, underweight) with them, and mostly from doctors.

Part 2: Objective (**Assess impact of an educational session about gestational weight gain on pregnant women's knowledge).**

Table 2: Comparison between Pre and Post-test of the Sample's Knowledge about Pregnancy Weight Gain:

Knowledge	Pre-test		Post-test		P Value
	No.	%	No.	%	
What is the normal weight gain that woman should get during pregnancy? Correct Answer Wrong answer Do not know	13 40 47	13.0 40.0 47.0	85 13 2	85.0 13.0 2.0	0.000
Do you know how to calculate your BMI? Yes No	13 87	13.0 87.0	100 0	100.0 0	0.000
If yes, how: Correct Answer Wrong answer Do not know	10 90 0	10.0 90 0	94 5 1	94.0 5 1.0	0.000
What is the total weight in kg the pregnant women should gain in the first trimester (1-13) weeks of pregnancy? Correct Answer Wrong answer Do not know	20 29 51	20.0 29.0 51.0	94 6 0	94.0 6.0 0	0.000
What is the total weight in kg the pregnant women should gain in the second trimester (14-26) weeks of pregnancy? Correct Answer Wrong answer Do not know	8 40 52	8.0 40.0 52.0	87 13 0	87.0 13.0 0	0.000
What is the total weight in kg the pregnant women should gain in the third trimester (27-40) weeks of pregnancy? Correct Answer Wrong answer Do not know	22 24 54	22.0 24.0 54.0	90 10 0	90.0 10.0 0	0.000
How many calories do the pregnant women need to increase? Correct Answer Wrong answer Do not know	9 20 71	9.0 20.0 71.0	89 9 2	89.0 9.0 2.0	0.000

Comparing total knowledge score before and after educational session, 72% of the sample had poor knowledge score pretest, compared to 91% had good knowledge score post-test.

Table (2) shows that, there were statistically significant difference in all items that assessed women's knowledge about pregnancy weight gain between pre and post-test (p= 0.000 for all items). Only 13% of the sample in pretest had correct knowledge about normal gestational weight gain compared to 85% in posttest.

Moreover, the majority (87%) didn't know how to calculate BMI in pretest compared with 94% who can correctly calculate BMI in posttest. Regarding appropriate weight gain, most of the sample didn't know and have incorrect answer regarding the required weight gain during first, second and third trimester in pretest (80%, 92% and 78% respectively) compared to 94%, 87% and 90% who gave a correct answer in posttest. Moreover, only 9% of the sample correctly answered the appropriate calories intake that pregnant women need to increase pretest compared to 89%posttest.

Table 3: Comparison between Pre and Post-test of the Women's Knowledge about Risk of over Weight Gain during Pregnancy:

Knowledge about Risk of Over weight gain	Pre-test		Post-test		P Value
	Number	Percent	Number	Percent	
Maternal risk					
Gestational diabetes (elevated blood sugars). Yes No	87 13	87.0 13.0	96 4	96.0 4.0	0.315
Need for induction of labour. Yes No	22 78	22.0 78.0	72 28	72.0 28.0	0.000
Increase the chance of a caesarean section. Yes No	41 59	41.0 59.0	84 16	84.0 16.0	0.000
Having high blood pressure. Yes No	57 43	57.0 43.0	90 10	90.0 10.0	0.000
Increase the risk for spontaneous abortion. Yes No	13 87	13.0 87.0	56 44	56.0 44.0	0.003
Fetal risk					
Increase rate of stillbirth. Yes No	15 85	15.0 85.0	78 22	78.0 22.0	0.000
Getting a large baby (weighing more than 4 kg). Yes No	31 69	31.0 69.0	88 12	88.0 12.0	0.000
Having a baby with a structural anomaly (e.g. spina bifida, neural tube defect). Yes No	7 93	7.0 93.0	69 31	69.0 31.0	0.000

There were statistically significant difference between pre and post-test score items (p=0.000) that measure sample's knowledge about the risk of over weight gain except the risk of gestational diabetes (p= 0.315). Table (3) shows that, most of the sample in pretest didn't have enough knowledge about the risk of over weight gain on maternal and fetal outcome, while after the educational session their awareness increased as, they knew that overweight increases the risk of induction of labor (72%), increase the chance of a caesarean section (84%), elevate blood pressure (90%), stillbirth (78%) and having macrosomic baby (88%). Also, 56% posttest recognized increase risk for spontaneous abortion verses 13% in pre-test.

Overall knowledge evaluation posttest revealed 66% of the women recognized having a baby with a structural anomaly chance increase with overweight, while, only 7% in pre-test.

Table 4: Comparison between Pre and Post-test of the Women's Knowledge about Risk of Less Weight Gain during Pregnancy:

Variables	Pre-test		Post-test		P Value
	Number	Percent	Number	Percent	
Increase risk rate of preterm delivery (less than 37 weeks).					
Yes	43	43.0	88	88.0	0.000
No	57	57.0	12	12.0	
Increase risk of intrauterine fetal growth retardation.					
Yes	39	39.0	89	89.0	0.000
No	61	61.0	11	11.0	
Increase risk rate of low birth weight for the baby (less than 2500 gram).					
Yes					
No	45	45.0	86	86.0	0.000
	55	55.0	14	14.0	
Increase risk of anaemia for the mother.					
Yes					
No	67	67.0	91	91.0	0.005
	33	33.0	9	9.0	

Regarding knowledge about risk of less weight gain during pregnancy, the current result shows a limited knowledge among the sample. There were statistically significant difference between pre and post-test regarding women's knowledge about increase risk rate of preterm delivery with less weight gain during pregnancy as table (4) shows that 88% posttest recognized increase risk of preterm delivery verses 43% in pre-test, 89% recognized increase risk of intrauterine fetal growth retardation posttest, while only 39% in pre-test. In addition, there were statistically significant difference between pre and post-test regarding sample's knowledge about increase risk of low birth weight for the baby with less weight gain during pregnancy as table (4) shows that 86% recognized increase risk rate of low birth weight for the baby verses 45% in pre-test. Also, most of the sample (91%) recognized increase risk of anemia for the woman compared to 67% in pre-test.

Part 3: objective two (Assess impact of an educational session about gestational weight gain on pregnant women's perception).

Table 5: Comparison between Pre and Post-test of the Women's Perception toward their Weight Gain:

Variables	Pre-test		Post-test		P Value
	Mean	SD	Mean	SD	
I believe that I will gain the normal amount of weight during this pregnancy.	3.17	0.96	3.77	0.93	0.000
I believe that eating proper food will lead to normal weight gain during this pregnancy.	3.75	0.88	4.03	0.77	0.002
I believe that pregnant women need to change her dietary intake during pregnancy.	3.93	0.86	4.12	0.76	0.039
I believe that exercise during pregnancy can cause problem for me and my baby.	2.59	1.22	4.22	1.01	0.000
I believe that if i gain more weight than required during pregnancy it will lead to health problem for myself.	4.22	0.91	4.57	0.57	0.000
I believe that if I gain more weight than required during pregnancy it will lead to health problem for my baby.	4.17	0.99	4.62	0.49	0.000
I believe that if I gain less weight than required during pregnancy it will lead to health problem for myself.	4.21	0.88	4.52	0.64	0.000
I believe that if I gain less weight than required during pregnancy it will lead to health problem for my baby.	4.25	0.85	4.57	0.52	0.000
I believe that I will loss the weight I gained during pregnancy after delivery.	3.77	1.02	4.14	0.74	0.000
I believe that I should eat double amount of my food as I eat for two (me and my baby).	3.19	1.23	4.19	0.95	0.000
I believe that I should not eat more than my regular meals before pregnancy as this will lead to obesity.	2.71	1.145	3.85	1.10	0.000
I believe that the vitamins supplements is providing me and my baby with required nutrients that my body needs during pregnancy.	3.58	1.16	3.66	1.27	0.379
I believe that the food that I eat during this pregnancy have sufficient minerals and vitamins.	3.31	1.13	3.43	1.11	0.267
Total	46.85	5.46	53.49	5.77	0.000

Table (5) shows comparison between pre and post-test of the sample's perception toward their weight gain. There were statistically significant increase in most items of perception scale in the post test than the pretest (P = 0.000). Such as "believe that I will gain the normal amount of weight during this pregnancy", "I believe that eating proper food will lead to normal weight gain during this pregnancy, I believe that if I gain more weight than required during pregnancy it will lead to health problem for my baby (p= 0.000, p=0.002 and p=0.000 respectively). However, there was no statistical improvement in the in mean scores of two items such as "I believe that the food that I eat during this pregnancy have sufficient minerals and vitamins" and "I believe that the vitamins supplements is providing me and my baby with required nutrients that my body needs during pregnancy" (p= 0.267, and p=0.379 respectively).
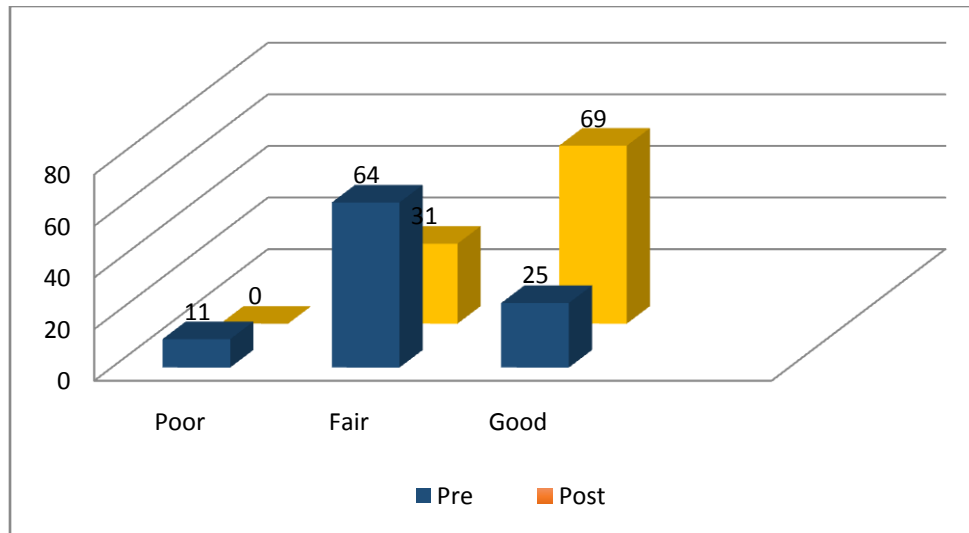
Figure 2: Comparison between Total Perception Score before and After the Session

Figure (1) shows comparison between total perception score before and after the session. Only 25%had good perception score pretest compared to (69%) score posttest. There were statistically significant differences between mean total score of women's perception toward their weight gain pre and post-test (46.85±5.4, 53.49±5.7 respectively) (p= 0.000).

Discussion

Women and their fetus health can be affected by the amount of weight gained during pregnancy (Janbi, etal., 2013). A small number of studies suggest that knowledge regarding appropriate gestational weight gain among pregnant women is poor, and that poor knowledge predicts failure to meet gestational weight gain (Paul, Graham, & Olson, 2013); Mcphie, Skouteris, Hill, & Hayden, 2015). These findings highlight the likely importance of women identifying and understanding their GWG targets. So, this study was conducted to assess the impact of educational session about gestational weight gain on Saudi pregnant women's knowledge and perception. One hundred women were included in the sample of the study. Each woman did the pre-test to assess her knowledge and perception toward, gestational weight gain and attended an educational session for about 50-60 minutes and completed the post test.

Weight gain is an expected change during pregnancy. Ideal increase in weight should be calculated according to a woman's pre-pregnant BMI (Centers for Disease Control and Prevention (CDC), 2017). With regards to body mass index (BMI), more than two third of the sample had normal BMI and overweigh. Meanwhile, 19 out of 100 women were obese during the study and only few were underweight and morbidly obese. Similar pattern was observed in Shub, etal., (2013) in their study, as they mentioned 50.7% women were classified by BMI as being normal weight, 28.0% were overweight and 21.2% were obese. Moreover, a study in Pakistan aimed to determine the prevalence of obesity among Bangladeshi pregnant women in their first trimester of pregnancy. They foundthere were about 21.2% and 40.1% obese and overweight pregnant women (Goon, 2013).

Successful health educations about risk of over or less weight gain during pregnancy necessitate women to understand BMI classifications and to be able to identify themselves as normal, underweight, overweight or obese. If women do not understand their own BMI, they may not recognize the proper gestational weight gain. Initially during the pre-test, most of the pregnant women did not know how to compute their body mass index (BMI). This case was completely resolved after post-test when the sample learned to compute their BMI. Knowledge of BMI calculation among pregnant women provided them the opportunity to be aware of their expected weight gain every trimester or weeks during pregnancy. Thus, overweight and obesity can be prevented on their pregnancy state when early instillation on the pros and cons of too little and too much weight gain (American Pregnancy Association, 2017). Leslie, Gibson,and Hankey, (2013), assessed patient awareness of gestational weight gain and showed a lack of awareness amongst overweight and obese women however attributed this to poor delivery of lifestyle counseling by the healthcare professionals.

The current result shows, during pre-test, majority of the women were not informed by their health care provider on proper weight gain during pregnancy. In a cross-sectional prospective online survey of Wilkinson and Stapleton (2012) which investigated the knowledge of healthcare staff of gestational weight gain found only 51.9% maternity health staffs were aware of the clinical guidelines in pregnancy weight gain. Thus, lack of knowledge of health care staff on weight gain during pregnancy affects the health information given to pregnant women. Moreover, Willcox, Campbell, Pligt, Hoban, Pidd, and Wilkinson(2012), in their study stated that GWG was perceived by many health care providers to be of low priority. Pregnant women weighed at the first antenatal visit and did not re-measured during her pregnancy unless the woman was defined as "high risk" (BMI > 35 kg/m2 or presenting with a co-morbidity) at the outset

In terms of comparison on pre-test and post-test of the sample's knowledge about pregnancy weight gain, near three quarter of the sample had poor knowledge regarding weight gain pretest. On the other hand, more than one third of the women gave a wrong answer while only 13 out of 100 women got the correct answer of normal gestational weight gain pretest, Amazingly, after post-test, majority of the women got the correct answer of weight gain during pregnancy. Hence, knowledge on improper weight gain during pregnancy increases with proper information dissemination and knowledge must be provided in order for the pregnant to be aware of normal weight gain during pregnancy. In a study done by Bookari, Yeatman and Williamson (2016) who explored the pregnant women's knowledge of their optimal gestational weight gain (GWG) and recommended dietary approaches for GWG management. It was found that, knowledge about gestational weight gain (GWG) was lacking among pregnant women. Health care providers have a great responsibility on information dissemination about weight gain pattern during pregnancy. Hence, GWG guidelines must be addressed by health care providers and educational awareness initiates to assist women on ideal weight gain during pregnancy (WHO, 2017).

Regarding sample knowledge of the risk of over weight gain, the current study showed a limited amount of knowledge among the sample pretest. More than half of the sample were not aware that excessive weight will have consequences like labor induction, risk for cesarean delivery and stillbirth. Thus, the ability to go through pregnancy without complications seemed almost near to impossible as many changes happen during the process. Gestational diabetes and preeclampsia were significantly associated with overweight and obese women. There were also more incidences of caesarean childbirth and macrosomic neonate. These findings are with the same line of Okezie etal., (2015) who assessed knowledge and perception of risks and complications of maternal obesity during pregnancy.

They found that, the participants were aware that obesity increases the risk of preeclampsia (89.2%); cesarean section (73.5%);gestational diabetes (87.3%); and anesthesia complications (70.8%). Overall knowledge evaluation revealed 18.6% had poor knowledge, 62.7% had moderately good knowledge, and only 18.6% had broad knowledge about maternal obesity risk. Also, Olagbuji, Olofinbiyi, Akintayo, Aduloju, Ade-Ojo (2015) in their study reported approximately one third (29.3%) and quarter (23.6%) of the women believed there were maternal and infant risks, respectively, with excess GWG. Near half of sample (46.3%) correctly reported risk(s) with inappropriate weight gain during pregnancy. The common reported maternal risks involved with excess weight gain were caesarean section, gestational diabetes, labor dystocia and hypertension (15.8%, 6.3%, 4.6%, and 4.0% respectively). Also, the study result showed a limited knowledge regarding the risk of in adequate weight gain (less GWG). These findings are consistence with Olagbuji, etal., (2015) who mentioned that approximately 1 in 5 women (20.7%) reported fetal growth restriction as risk of inadequate weight gain. Low birth weight and prematurity rated as risks associated with inadequate GWG were 12.4% and 1.4% respectively.

Comparing between total perception score before and after session, about two third had fair perception score pretest compared to good perception score posttest. Thus, pregnant women perceived reasonable information about weight gain during pregnancy and improved their perception after providing them with adequate information. These findings is consistent with Olagbuji, etal., (2015) who reported that there were lower rates of perception of maternal and infant risks associated with inappropriate GWG (ranging from approximately 23-34%) and there are a higher proportion of women believed that there were risks with excess weight gains to themselves compared to their infants. Conversely, the proportion of women who perceived infant risks with inadequate weight gain is greater than those perceiving maternal risks with inadequate weight gain

Thus, knowledge and perceptions on the outcome of improper weight gain during pregnancy is poor. There was a gap on the adverse effect of excessive or less weight gain in this study during pretest, yet, there were improvement in knowledge and perception post-test.

Shub and colleagues (2013) in their study concluded that many pregnant women have poor knowledge about obesity, gestational weight gain (GWG), their consequences and management strategies. Furthermore, they also found that 74% of obese women have inaccurate self-classification about their Body Mass Index, 94% of women consider that obesity would cause pregnancy complication, but there was poor knowledge about the specific nature of the risks.

Conclusion

In conclusion, pregnant women have poor knowledge about proper weight gain and its impact on pregnancy outcome. Bridging this knowledge gap is an important step towards improving perinatal outcomes by sharing the pregnancy care and plan between the nutritionist and the obstetrician about excess weight gain or excessive weight loss during pregnancy. The educational session has an impact on improving pregnant women's knowledge and perception about proper weight gain during pregnancy

Recommendation

- ❑ Emphasis to equip pregnant women with adequate knowledge about GWG in early pregnancy
- ❑ Nurse has a crucial role to guide pregnant women to achieve the recommended weight gain and healthy pregnancies.
- ❑ Further studies focus on safe strategies to gain appropriate gestational weight.
- ❑ Include the nutritionist to intervene during pregnancy, especially in the second and third trimester because the weight of the pregnant women increase more and also the pregnant women will have more visits for continue care.

Conflict of Interests

The authors declare that they have no conflict of interests with any organization regarding the materials discussed in this manuscript.

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