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Short Communication

Evaluation of weight gain status and its relationship to personal information of pregnant mothers

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Abstract

BACKGROUND: Appropriate weight gain during pregnancy could have a positive impact on the outcome of pregnancy. The aim of this study is to determine the frequency of weight gain disorders based on the individual characteristics.

METHODS: This is a cross-sectional study. A checklist was used to collect data from 244 records of pregnant women who attended health centers during the first 12 weeks of their pregnancy and received care at least 3 times during this period. Statistical tests like chi-square and variance analysis was used to analyze the data.

RESULTS: The results of this study showed that weight gain in 41 percent of women was normal, but in 59% of them was higher (34/8%) or lower than (24/2%) the expected limit. The findings indicate a significant relationship between the type of weight gain and variables such as body mass index (BMI), place of living and infant's birth weight.

CONCLUSION: Based on the results of this study it seems that more and stronger counseling programs during pregnancy and skilled health workers competency should be employed to diagnose weight gain disorders in time.

KEY WORDS: Pregnancy, weight gain, disorders of weight gain.

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Pregnant mothers must have weight gain no matter what body type (thin, normal, fat) they had before pregnancy and the rate of weight gain must be controlled by hygienic personals or doctors. The best way to determine the weight gain limit period is to use the weight indicator based on weight before pregnancy or maximum weight to the end of 12th week.[1]

Considering weight gain limit graph, mothers' body mass index (BMI) is defined and after supervision and mother's measurements, the supervisor can see if she has a weight gain disorder. The weight gain less than recommended amount accompanied by the birth of small infant for gestation age (SGA: Small for Gestation Age), early birth and infant with less than 2500 gr weight (LBW: Low Birth Weight) and weight gain more than recommended amount will lead to big infant for gestation age (LGA: Large for Gestation Age) and increase the cesarean sections.[2] In this research the weight gain pattern in pregnant mothers was considered, the outbreak of weight gain disorders was determined, current disorders were recognized. Considering their relationship with individual's characteristics we can provide a suitable field in designing the interventional actions especially in hygienic systems.

Methods

This was a descriptive analytic and cross–sectional study. All the mothers who have filled pregnancy control file in health centers in Ardestan city and received care at least 3 times in this period and don't have the excluding criterion which is the first reference was after the 12th week of pregnancy, were selected for the

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study. Pregnancy of twins or more or having illness basis or pregnancy illnesses such as diabetes, high blood pressure and anemia were settled in this research. After considering excluding criterion, 244 records were selected. Data collecting tool was a checklist which has individual characteristics in the first part such as: age, occupation, number of pregnancies, education and place of living. In the second part the necessary information such as: BMI, determination of height and weight, beginning of pregnancy, weight gain position in every sample considering drawing graph in form of pregnancy nomogram and in 3 fields of weight gain in expected limit and weight gain higher than expected limit and weight gain lower than expected limit and infant's birth weight so the checklist was completed for every sample. Collected data was analyzed by SPSS software and chi-square statistical test and variance analysis in significant level less than 0.050.

Results

Most women (95.9%) were between 18 to 35 years old and 91% were housewives and 46.7% had their first pregnancy. Women from urban areas were 67.2%. The most rate of normal weight gain (55.6%) was in the group of thin women (BMI < 19.8) and the least rate of normal weight rate (12.5%) was in the group of fat women. By increase in BMI, more than expected limit weight gain was observed in the cases. So that in fat women weight gain higher than expected limit showed more frequency (67.5%) and in thin women it had lower frequency (7.4%). Weight gain lower than expected limit was more in thin women (37%) (Table 1).

Normal weight gain in rural areas' women was more than urban areas' and disorders in weight gain in form of weight gain higher than expected limit and lower than expected limit was more in rural women. In urban areas' women the most weight gain higher than expected limit was 38.4%. Chi-square test showed a significant relationship between living place and weight gain type ($p < 0.0076$). The frequency of normal birth weight was higher in women who had normal expected weight gain than the others (2500-4000 gr) and the frequency of normal birth weight was lower in women who had lower than expected weight gain. In women who had higher than expected weight gain there were infants who were 4 kg or more (62.5%). Variance analysis test indicated a direct relationship between mothers' weight gain and infant's birth weight. Normal weight gain in 18 to 35 years old was more than others.

Discussion

Prevalence of normal weight gain was 41% in this research. Based on the results of Olsen et al study the frequency of normal weight gain was 38%[3] and in another study conducted in 2000 it was 33.3%.[4] By increase in BMI the rate of normal weight gain was decreased. So it was observed that the most rate of normal weight

Table 1. The frequency of weight gain types in pregnant mothers according to BMI during 2005 in Ardestan city

BMI	BMI < 19.8 (Thin)		19.8 ≤ BMI ≤ 26 (Normal)		26 ≤ BMI ≤ 29 (Overweight)		BMI > 29 (Fat)		Total	
Status of weight gain	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Normal weight gain	15	55.6	56	47.1	24	41.4	5	12.5	100	41
High weight gain	2	7.4	28	23.5	28	48.3	27	67.5	85	34.8
Low weight gain	10	37	35	29.4	6	10.3	8	20	59	24.2
Total	27	100	119	100	58	100	100	100	242	100

Statistical tests like chi-square showed a significant relationship between BMI and weight gain type. ($p < 0.001$)

gain was in fat women and the least rate of normal weight gain was in thin women. Also the research of Olson indicated that BMI at the beginning of pregnancy and family income were two effective factors in normal weight gain during pregnancy period.[3] Prevalence of disorders of weight gain in this study was 59% that is consist of weight gain higher than expected limit (34.8%) and weight gain lower than expected limit (24.2%).

In studying the relationship between BMI and weight gain higher than expected limit, the findings indicated that by increasing mothers' weight, weight gain higher than expected limit was increased. Considering the prevalence of obesity from 20 to 74 years old[5] and increasing the eventuality of weight gain higher than expected limit in fat women's pregnancy period, it is important to strengthen counseling before pregnancy and control the process of weight gain during pregnancy. In thin women the weight gain lower than expected limit is more than fat women and normal women ($p < 0.001$). It seems that more health care programs in pregnancy period in rural areas, easy access to pregnant mothers and fluency of supervisions were the reasons of increase of normal weight gain in rural area's women. Also eating invaluable food and low activities can be the factors of weight gain higher than expected limit in urban area's women. There is a relationship between mother's weight gain and infant's birth weight ($p = 0.00021$). So by increase in the weight gain, infant's birth weight is increased.[6,7]

We suggest to:

1) Strengthen counseling before pregnancy especially considering weight indicator. Try to hold weight indicator in normal limit by strengthening counseling before pregnancy especially considering the weight indicator and explaining to pregnant mothers about the process of weight gain.
2) Emphasis on generalizing the caring programs for mother's health and using the form of measurement in pregnancy period.

Finally the Author declares that have no conflict of interest in this study and they have surveyed under the research ethics.

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