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Nutrition counselling during pregnancy on maternal weight gain

BR Abha Ayushree, Dr. Sunita Kumari and Dr. Usha Singh

Abstract

Background: Maternal weight gain has been consistently associated with low birth weight (LBW) infants. However, studies showed that lower maternal weight gain during pregnancy leads to LBW babies. Thus, nutrition counselling during pregnancy can be effective in increasing maternal weight gain.

Objective: To study the impact of nutrition counselling on maternal weight gain.

Methods: A cohort study was carried out on 40 pregnant women of age group 18-30 years in first trimester randomly selected from Harpur panchayat in Pusa, Samastipur, Bihar (India). Subjects were divided into two groups; control and experimental group. Nutrition counselling was imparted to experimental group in different sessions. Their weights gain before and after counselling was recorded.

Results: The weight gain of subjects in the experimental group was significantly ($P \leq 0.05$) higher during 5th, 6th, 7th, 8th and 9th month of pregnancy. About 60% of the subjects in experimental group and 3 per cent in control group had 10-12 kg of weight gain during pregnancy.

Conclusion: It can be concluded that there was a significant and positive impact of nutrition counselling during pregnancy on maternal weight gain and a sound healthy baby. Thus, nutrition counselling during pregnancy should be given utmost importance in reducing maternal and foetal morbidity and mortality.

Keywords: maternal weight gain, nutrition counselling, pregnancy, low birth weight

Introduction

Pregnancy is a stage of highest anabolic activity when the speedy rate of development takes place. It is a circumstance in which the foetal growth is accompanied by extensive changes in maternal body composition and metabolism (Nerlekar *et al.* 1999) ^[1]. It has been found that dietary counselling, a mostly used approach to improve nutritional status of pregnant women was lacking in multi planning community intervention. Nutrition counselling attempts to enhance nutrition practices before and during pregnancy to develop maternal nutrition and lessen the chances of poor health of both mothers and their children (Rush, 2000) ^[2]. Nutrition counselling programmes are commonly centred in improving maternal diet quality by increasing variety and quantity of foods consumed with required weight increase through use of adequate and balanced protein and energy and the steady implementation of micronutrient supplements, food supplements or fortified foods. Nutritional education messages uses an integrated approach of directing on all the significant determinants such as the improved food intake within the socio-economic limitations, iron supplements, TT injection immunization and administration of iodized salt. Ante Natal Care (ANC) with periodic supplementation and motivation are advised basically in third trimester of pregnancy can be successful and achieve improvements in health status of underprivileged pregnant ladies. Nutrition Counselling should be about adhering to a good diet and keeping physically active during pregnancy to stay healthy and to develop extreme gaining of weight (10 kg) in pregnant mothers (Nielsen *et al.* 2006) ^[3]. If nutrition counselling was provided during the time of pregnancy, in a large health benefit environment might lower the disorders relating to pregnancy, promoting proper growth and development of foetus and resulting in long-term health care benefits to both mother and foetus. Moreover, dietary counselling has revealed to be an economical technique in health management services for inspecting and imparting guidance in non-communicable diseases with available resources (Murray *et al.* 2003) ^[4].

Materials and Methods

In the present study, a total of 40 pregnant women at first trimester of age group 18-30 years were selected from all the Aganwadi Centres (AWC) under Harpur panchayat in Pusa block, Samastipur district, Bihar. The subjects were divided into two groups; Control group comprised up 20 pregnant women whose weight gain was monitored in each month and Experimental group comprised up 20 pregnant women to whom nutrition counselling was imparted in their regional language (Hindi) with the help of nutrition counselling package covering various aspects such as education about balanced diet, correct cooking practices, dietary guidelines, low cost ready to eat recipes, importance of hygiene and environmental sanitation, complications during pregnancy, anaemia, its symptoms, causes and effect of birth outcomes, etc. The weight of the subjects in both groups was recorded before providing counselling. During counselling session, the subjects were taught to increase their intake of green leafy vegetables, fruits, sprouted pulses, calorie dense foods, low cost easily available foods based on food guide pyramid and its importance in weight gain during pregnancy were all discussed with them. They were also told to increase number of meals intake per day so that most of the nutrients reaches to the baby. To make dietary counselling more effective, low cost nutritious recipes were made for the subjects and their recipes was also shared with them. The total counselling sessions were five in number. The nutrition education was carried out through lectures, demonstrations, discussions, audio-visual presentation, charts, posters and food plate method. Subjects were given detailed information and knowledge about dietary intervention during pregnancy, role of their diet and nutritional status on the baby as well as its association with their health. A follow-up was continually kept in contact through telephonic call or home-visits. The weight gain in each month after first trimester until delivery was monitored for a period of 6 months based on IOM (Institute Of Medicine) 2009 [5] guidelines after nutrition counselling that occurred due to consumption of foods through knowledge gained in the counselling sessions. The data were analyzed with the help of various simple statistical tools such as mean, SD along with percentage calculation. T-test was done to calculate significant variation in mean values for different variables.

Results and Discussion

Additionally, weight of the mother was recorded at an interval of 1 month through a period of 4th to 9th month of pregnancy to record the body weight gain (Table 1 and Fig. 1). The mean weight of the subjects in the control group was as follows: - 4th month (44.6±6.94 kg), 5th month (45.55±6.75 kg), 6th month (46.25±6.82 kg), 7th month (49.9±3.33 kg), 8th month (51.45±2.79 kg) and 9th month (53.25±2.97 kg) comparative to the experimental group having mean weight in the 4th month (48.55±6.09), 5th month (50.3±5.21 kg), 6th month (52.2±5.57 kg), 7th month (55.5±7.13 kg), 8th month (58.15±7.71 kg) and 9th month (61.64±6.64 kg). Though, the total weight of the subjects was higher in all the months but it was observed to be significantly ($P \leq 0.05$) higher in the 5th, 6th, 7th, 8th and 9th month of pregnancy in the experimental group due to the impact of nutritional counselling. The intake of all the food groups was found to have improved after counselling sessions which lead to significant weight gain during pregnancy (average 10 kg). Also, studies have investigated the considerable maternal weight gain is directly related with health of their neonates. The Institute of Medicine (IOM, 2009) guidelines, suggested a Gestational Weight Gain (GWG) of 12.5-18 kg for underweight women, 11.5-16 kg for normal, 7-11.5 kg for overweight and 5-9 kg for obese women. Girard *et al.* (2012) [6] found that nutrition education and counselling significantly improved gestational weight gain by 0.45 kg, reduces the risk of anaemia in late pregnancy by 30 per cent, increased in birth weight by 105g and lowered the risk of preterm delivery by 19 per cent.

Table 1: Impact of nutrition counselling on the mean weight of the selected subjects during pregnancy

(n=40)

| Months of pregnancy | Weight (kg) | Control (n=20) | Experimental (n=20) | t-value |
|---------------------|-------------|----------------|---------------------|---------|
| 4th month | | 44.6±6.94 | 48.55±6.09 | 1.95NS |
| 5th month | | 45.55±6.75 | 50.3±5.21 | 2.85* |
| 6th month | | 46.25±6.82 | 52.2±5.57 | 2.99* |
| 7th month | | 49.9±3.33 | 55.5±7.13 | 3.75* |
| 8th month | | 51.45±2.79 | 58.15±7.71 | 3.79* |
| 9th month | | 53.25±2.97 | 61.64±6.64 | 5.20* |

Values are Mean±SD

*Significant at 5% level of significance

NS-Non significant

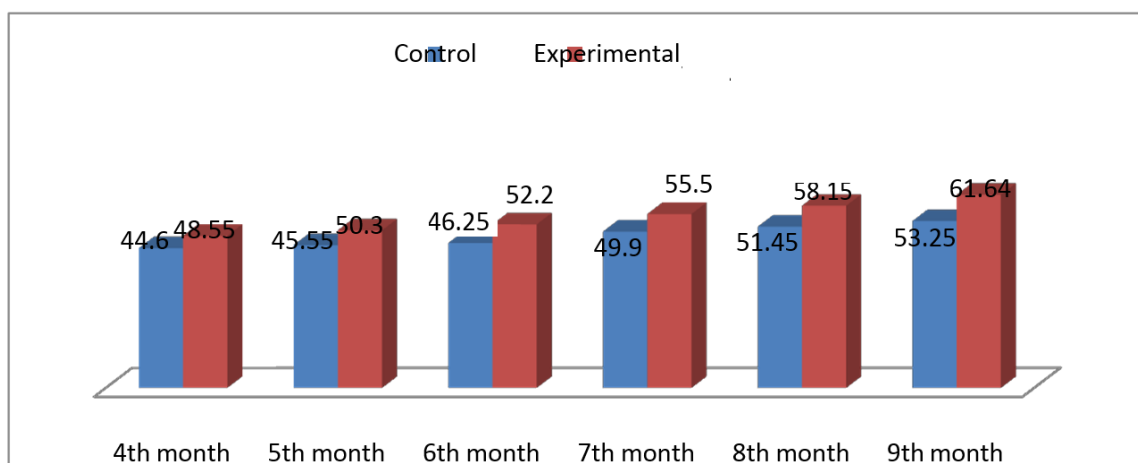


Fig 1: Mean weight of the selected subjects

Table 2: Impact of nutrition counselling on the gain in weight of the selected subjects during pregnancy

| Months of Pregnancy | Control (n=20) | Experimental (n=20) | t-value |
|---------------------|----------------|---------------------|---------|
| 4th month | 1.19±1.04 | 1.24±0.98 | 0.29NS |
| 5th month | 3.33±1.72 | 4.13±1.35 | 3.53* |
| 6th month | 4.37±0.91 | 6.02±1.44 | 6.54* |
| 7th month | 5.29±1.28 | 8.02±1.85 | 8.12* |
| 8th month | 7.15±1.63 | 10.32±1.78 | 9.48* |
| 9th month | 10.61±1.17 | 12.1±1.45 | 4.71* |

Values are Mean±SD

*Significant at 5% level of significance

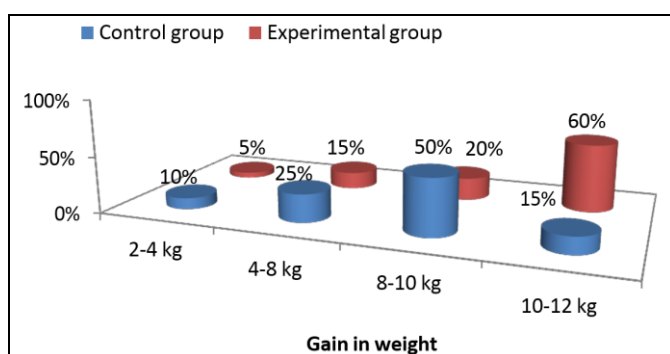
NS-Non significant

The total gain in body weight was higher in experimental group than the control group with maximum weight gain during 9th month (12.1±1.45 kg vs. 10.61±1.17kg) followed by 8th month (10.32±1.78 kg vs. 7.15±1.63 kg), 7th month (8.02±1.85 kg vs. 5.29±1.28kg), 6th month (6.02±1.44 kg vs. 4.37±0.91 kg), 5th month (4.13±1.35 kg vs. 3.33±1.72 kg) and 4th month (1.24±0.98 kg vs. 1.19±1.04 kg). However the gain in body weight of the subjects was within the normal range of 10-12 kg (Table 2). Lam *et al.* (2012) [7] assessed the weight gain during pregnancy and found that 62.4 per cent gained 7-16 kg recommended weight during pregnancy, while 28.6 per cent gained more than recommended. The weight gain of subjects in the experimental group was significantly ($P \leq 0.05$) higher during 5th, 6th, 7th, 8th and 9th month of pregnancy. Tanentsapf (2011) [8] imparted that dietary advice during pregnancy were effective in decreasing total gestational weight gain and long term post partum weight retention among obese pregnant women

Table 3: Distribution of subjects on the basis of gain in body weight during pregnancy

| Gain in body weight (kg) | Control (n=20) | Experimental (n=20) |
|--------------------------|----------------|---------------------|
| 2-4 | 2(10.00) | 1(05.00) |
| 4-8 | 5(25.00) | 3(15.00) |
| 8-10 | 10(50.00) | 4(20.00) |
| 10-12 | 3(15.00) | 12(60.00) |

Figures in parenthesis indicate percentage

**Fig 2:** Impact of nutrition counselling on gain in weight during pregnancy of selected subjects

The total gain in body weight during pregnancy was 2-12 kg and observed to be higher in the experimental group as compared to control group (Table 3 and Fig. 2). Half of the subjects (50%) in control group gained weight between 8-10 kg followed by 25 per cent between 4-8 kg, 15 per cent between 10-12 kg and only 10 per cent gained between 2-4 kg whereas majority (60%) of the subjects in the experimental group gained weight between 10- 12 kg followed by 20 per

cent between 8-10 kg, 15 per cent between 4-8 kg and only 1 subject (5%) gained between 2-4 kg. These findings indicate that dietary counselling and better health care facilities aimed at improving birth outcomes will have the greatest impact if they direct maternal nutrition both before and during pregnancy. Ota *et al.* (2011) [9] reported that the chances of adverse birth outcomes are higher in women with both low preconception BMI and inadequate Gestational Weight Gain (GWG) i.e. among Vietnamese women with who gained less weight than 5 kg and had 40 per cent risk of delivering a SGA (Small for Gestational Age) infant.

Conclusion

From the above results, it can be concluded that there was a significant and positive impact of nutrition counselling during pregnancy on maternal weight gain and a sound healthy baby. Nutrition counselling increases the weight gain during pregnancy. Thus, nutrition counselling during pregnancy should be given utmost importance in reducing maternal and foetal morbidity and mortality. It should be carried out throughout pregnancy to reduce MMR (Maternal Mortality Rate) and IMR (Infant Mortality Rate) in India

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