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An Investigation into Socio-Economic Factors Explaining Dietary Intake in Pregnant Women: A Study in Urban Areas of District Faisalabad, Punjab, Pakistan

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Abstract: The present study was aimed to assess the dietary intake in pregnant women aged 18-45 year. A sample of 200 respondents was selected through simple random sampling technique from four urban areas of District Faisalabad and 50 respondents were selected randomly from each area. A well structured interviewing schedule was utilized to collect the data. Analysis was conducted through Descriptive and Bi-variate methods and Gamma and chi-square tests were applied to examine the relationship between variables. Maximum numbers of respondents were of age up to 30 years and 12 years schooling was reported by about 42.5% respondents. Huge majority 77.5% of the respondents were taking balance diet during pregnancy, 40.0% of the respondent suffered in anemia and 85.0% of the respondents were using multi vitamins during pregnancy. Strategies and policies to enhance women education to make them independent in socio-economic and cultural decisions are required to have profound impact on their health. Public health awareness campaigns are required to be launched to make people aware about the benefits of small family, prenatal and postnatal care in the form of better food provision and vitamins and utilization of health facilities in the context of women general reproductive health.

Key words: Socio-economic factors, dietary intake, proteins, vitamins, malnutrition, anemia, pregnant women, Pakistan

INTRODUCTION

Over the globe, about 30 million infants open their eyes under stunted growth in the womb of their mother owing mainly to poor dietary situation of their mothers (UN, 2000). Much of the excess Intrauterine Growth Retardation (IUGR) is caused by squat body mass index and low gestational weight gain in mothers due to low energy intake from food (Kramer, 2003). The nutritional status of the mother prior to and during pregnancy plays a vital role in fetal growth and development and maternal undernourishment leads to adverse outcomes including Intrauterine Growth Restriction (IUGR) (Imdad and Bhutta, 2011). Babies with IUGR are born undernourished, have impaired growth and either have a far higher risk of dying in the infancy period or more likely to experience a variety of developmental deficits (UN, 2000). Eighteen million low birth weight babies are born to under nourished mothers each year (Pojda and Kelley, 2000). This is a prime cause of infant mortality in developing countries (WHO, 2005).

Pregnant women of Pakistan daily requires energy 2510 kcal, protein 0.62 per kg of body weight, vitamin A 750, vitamin D 10 µg. Iron 40 µg, iodine 200 µg, zinc 20 µg. To attain 2510 kcal of energy pregnant women should consume 358 gram carbohydrate 82 gram of protein and 84 gram of fats (Johnson, 2008; Berkow, 1981). A Pregnant woman requires an incremental dose of 300 calories a day. At later stage of motherhood, energy rich and safe foods must be a plentiful source to provide these calories for the quick development of feotus (GOP, 2001). A little intake of healthy food is associated with anemia in pregnant women in Pakistan (Ansari *et al*., 2008). Dietary energy requirement increases markedly during pregnancy and lactation. Normally a pregnant women to nursing mother either increases food energy intake or reduces physical activity or both, but when resources are limited and the demand on women's labor are great unmet; energy needs result in low birth weight infant and reduced maternal work capacity and fat stores. The recommended daily allowance of iron for women is 15 mg/day. During pregnancy total allowance increases to 30 mg/day and 50% increase in general needs. Food fortification and supplementation can improve iron status through dietary change (Fatima, 2000).

Pregnancy affirms the augmented need of nutrients and malnourishment owing to insufficient dietetic ingestion in pregnancy leads to poor health of child. Micronutrient supplementation may cause an increase in maternal appetite leading to increased food intake and/or reduced morbidity (Imdad *et al*., 2011). The relative contribution of inadequate intake of these micronutrients in the pregnant women varies greatly by dietary practices, socio-economical status, education and access to health care (Khan *et al*., 2010). Anemia is usually characterized by reduction of hemoglobin than normal

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Table 1: Recommended daily allowances for Pakistani population for selected major nutrients

Age (years)	Weight (kg)	Energy (kg)	Protein (g)	Vitamin A (RE)	Vitamin D (ug)	Iron (ug)	Iodine (ug)	Zinc (mg)
Women moderately active								
Childbearing age	2160	0.52 g/kg	750	2.5	30	150	150	20
Pregnant	46.0	+350	+10	750	10.0	40	200	20
Lactating		+350	+26	1200	10.0	30	200	25

Source: (Johnson, 2008; Berkow, 1981)

Table 2: Important nutrients along with their potentials health benefits and sources

Nutrient	Needed for	Best sources
Protein	Cell growth and blood production	Lean meat, fish, poultry, egg whites, beans, peanut butter, tofu
Carbohydrates	Daily energy production	Breads, cereals, rice, potatoes, pasta, fruits, vegetables
Calcium	Strong bones and teeth, muscle contraction, nerve function	Milk, cheese, yoghurt, sardines or salmon with bones, spinach
Iron	Red blood cell production (needed to prevent anemia)	Lean red meat, spinach, iron fortified whole grain breads and cereals
Vitamin A	Healthy skin, good eyesight, growing bones	Carrots, dark leafy green, sweet potatoes
Vitamin C	Healthy gums, teeth and bones; assistance with iron absorption	Citrus fruit, broccoli, tomatoes, fortified fruit juices
Vitamin B6	Red blood cell formation; effective use of protein, fat and carbohydrates	Pork, ham, whole grain cereals, bananas
Vitamin B12	Formation of red blood cells, maintaining nervous system health	Meat, fish, poultry, milk (Note: vegetarians who don't eat dairy products need supplemental B12)
Vitamin D	Healthy bones and teeth; aids absorption of calcium	Fortified milk, dairy products, cereals and breads
Folic acid	Blood and protein production, effective enzyme function	Green leafy vegetables, dark yellow fruits and vegetables, beans, peas, nuts
Fat	Body energy stores	Meat, whole milk dairy products, nuts, peanut butter, margarine, vegetables oils

Source: (Johnson, 2008; Berkow, 1981)

level. Prevalence of anemia in developing countries is three to four times higher than in industrialized countries. Young children and pregnant women are most affected groups with an estimated global prevalence of about 40% and 50%, respectively (Hardisty, 1996). World nutrition report by united nations have shown some escalated figures as 53% and 56% respectively in 2000. A smaller proportion of older women about 37% in rural areas and 25% in urban areas are anemic (GOP, 1998).

Unfortunately, despite increased recognition about the need to fulfill human right to nutrition and greater understanding of the role of nutrition especially for a women and children in Pakistan has remained at alarmingly poor levels. Basic indices of prevalence of malnutrition have changed very little over the last 20 years or more. In Pakistan, the aggregate levels of average calorie and protein intake have increased up to 1990 but the most disturbing fact is that the levels of female and child malnutrition has shown an escalating trend over the same period (Malik and Malik, 1993; Alderman and Garcia, 1993; Malik, 1994; Khan *et al*., 1996). The extent of the problems has further increased as number of malnourished children in still birth effects, maternal retardation and infant deaths hemorrhage, hypertension, unsafe abortion, infections and pro-long labor are other factors contributing to the higher mortality rate among women in rural areas (Ghauri, 2007).

According to National Nutrition Survey 2010 overall malnutrition rate was recorded at 11.6% in children and 12.5% of women were malnourished, lactating mothers. National Nutrition Survey 2011 portrayed gloomier picture as malnutrition in Pakistani children reached 15.1%, while in Sindh it was 17.5%. An almost stagnant level of malnutrition in women over a decade has showed that dietary levels and factors explaining these have not changed. Large differentials in infant survival by socio-economic factors and access to water and sanitation indicate that social and gender inequities are the underlying cause of the stagnation of infant mortality in Pakistan (Agha, 2000).

Malnutrition not only was in past but still now an impediment to human development and it represents a major constraint in the national development efforts. Despite of continuous efforts to over come this grave crisis in the last two decades; malnutrition continuous to be a challenge in reaching millennium development goals but will also constrain economic growth. Children are our future and to improve the nutrition status of women to have our future healthy and strong, we should have a knowledge affecting dietary patterns of pregnant women; so that socio-economic base of this problem is realized. This study was an effort to explore the socio economic characteristics of the women and their family to find out their impact on dietary intake of pregnant women.

MATERIALS AND METHODS

The present study is aimed to assess the dietary intake in pregnant women aged (18-45) living in urban areas of Faisalabad city. A sample of 200 respondents was selected through simple random sampling technique. Fifty respondents were selected from each of these four area namely peoples colony, Gulberg, Gulsitan colony and Tariqabad in Faisalabad city. A well structured interviewing schedule was prepared and pre-tested to examine its work-ability. Descriptive and bi-variate analyses of data were employed and statistical test (Gamma and Chi-square) were applied to examine the relationship between variables.

RESULTS AND DISCUSSION

Age of respondent: In this study the mothers were selected under from age category 15-49 years indicating the reproductive age. Results reveal that majority of the respondents (40.3%) were of age up to 30 years, in their prime reproductive age where health issue is of great significance. About 34.5% belonged age category of 31-40 years and 22.5% had 41 yrs and above years age.

Education of the respondents: Majority of the respondents had 12 years of schooling. Only a negligible fraction were illiterate, 6.5% respondents had five years of schooling and almost same figure completed 8 years of schooling. More than one fourth have attended the school for ten years and about 17.5% had graduation and above level of education. Higher education was not less but even not much better keeping in view the educational facilities and infrastructure facilities in urban areas there might be several reasons like lack of income resources, school distance and cultural values of early marriages. Parents prefer to wed their daughter over schooling. Pakistani women's literacy rate is the lowest in the region. The educational rate for urban women is more than five times than for rural women. UN (1994-1995) reported that in Pakistan, the women's access to property, education, employment etc. remains considerably lower as compared to men's. Pakistani society is predominantly patriarchal and women participation in outside related work activities conditioned with the permission of family male heads.

Working status of the respondents: Regarding the working status of the respondents 82.0% of the respondents were housewives and 18.0% were working outside the house. In Pakistan women participation in economic activity (working is quite negligible as reflected from the study). Although changes in woman's role are coming still traditional values, rearing and bearing of children, conjugal loyalty and performing household chores are honored.

Table 3: Distribution of the respondents according to their age, education, working status, husband's profession and monthly income

	Frequency	Percent
Age of respondent (Years)		
Up to 30	86	43.0
31-40	69	34.5
41 and above	45	22.5
Education of the respondents		
Illiterate	1	0.5
Primary (5 years)	13	6.5
Middle (8 years)	11	5.5
Matric (10 years)	55	27.5
F.A. (12 years)	85	42.5
B.A. and above (14 years and above)	35	17.5
Working status of the respondents		
House wife	164	82.0
Working women	36	18.0
Occupation of husband		
Unemployed	9	4.5
Working (public or private job)	147	73.5
Business	44	22.0
Family monthly income (Rs.)		
Upto-15000	81	40.5
15001-25000	93	46.5
25000-+	26	13.0
Total	200	100.0

Table 4: Distribution of the respondent according to their balance diet intake during pregnancy and using vitamins during pregnancy

	Frequency	Percent
In take of balance diet during pregnancy		
Yes	135	67.5
No	65	32.5
Total	200	100.0
Using multi vitamin during pregnancy		
Yes	150	75.0
No	50	25.0
Total	200	100.0

Occupation of husband: Occupation is not only the source of income for a person rather a carries social respect for him and his family as well. It further explains the purchasing power and status of the family members. Table distribution shows that 4.5 were not having work at all. While 73.5 and 22.0% of the respondents' husbands' belonged to, working and business category.

Family monthly income (Rs.): Descriptive analysis shows that that 40.5% of the respondents had monthly income up to Rs.15000 and 13.0% had Rs. 25000 and above. Majority 46.5% had 15001-25000 family monthly income. Inflation rate is high; according to results higher income percentage is very low. In Pakistan average family size i.e. 4-7 members, it is difficult for women to have balance diet during pregnancy and lactation.

In take of balance diet during pregnancy: Balanced Diet is defined as when all food groups are represented in healthy proportions or percentages. Micronutrients and

Table 5: Relationship between the age, education and income of the respondents and balance diet

	Balance diet			
	Low	Medium	High	Total
Age				
Upto 30	14 (16.3%)	20 (23.3%)	52 (60.5%)	86 (100.0%)
31-40	4 (5.8%)	32 (46.4%)	33 (47.8%)	69 (100.0%)
41 and above	2 (4.4%)	21 (46.7%)	22 (48.9%)	45 (100.0%)
Total	20 (10.0%)	73 (36.5%)	107 (53.5%)	200 (100.0%)
χ^2 = 49.469, Gamma 0.301, df = 4				
Education				
Illiterate	1 (4.0%)	13 (52.0%)	11 (44.0%)	25 (100.0%)
Matric	6 (10.9%)	31 (56.5%)	18 (32.7%)	55 (100.0%)
FA & Above	13 (10.8%)	29 (24.2%)	78 (65.0%)	120 (100.0%)
χ^2 = 21.445, Gamma 0.325, df = 4				
Income				
Upto 10000	18	41 (50.6%)	22 (27.2%)	81 (100.0%)
10001-15000	2	29 (31.2%)	62 (66.7%)	93 (100.0%)
15000+		3 (11.5%)	23 (88.5%)	26 (100.0%)
Total	20	73 (36.5%)	107 (53.5%)	200 (100.0%)
χ^2 = 49.469, Gamma 0.325, df = 4				

macronutrients are as fats, carbohydrates and proteins. Out of 200, two third of respondents took balanced diet during their pregnancy, while 22.5% of the respondents could not take balance diet during pregnancy. Women exercise nutritional effects on the household by the acquisition of food through work and by the preparation of food for consumption (Chatterjee and Lambert, 2003). Thus, women's nutritional knowledge, habits and their ability to cook and serve appropriate quantities of food to individual household members (based on nutritional knowledge and "autonomy" in 'kitchen' decision-making), are important determinants of women's nutrition-related roles.

Using multi vitamin during pregnancy: Table indicates that a huge majority of the respondents used multi vitamins during pregnancy but 15.0% of the respondents did not use multi vitamins during their pregnancy periods. Stress and poor dietary intake habits need vitamin and minerals to maintain the acquired blood components. A balanced diet also provides sufficient amounts of vitamins for pregnant women, however, need more folic acid and iron. Pakistani women are facing a number of health related factors as lack of medical facilities, lack of health knowledge, importance of nutrition, lack of nutritional facilities, prevalent social environment, unemployment and poverty and psychological factors. National Institute of Health (2008) reported that folic acid is necessary for DNA synthesis and very important in the making of red and white blood cell production. As Vitamin B12 is also required for blood cell production as well as for maintaining healthy nerves system and also provide protein and energy.

Age and balance diet: The chi-square value a highly significance association between age of the respondents and their balance diet. The Gamma value shows a strong relationship between the variables, table clearly indicates that young pregnant women were taking more balance diet than that of old age or medium age group women. Pregnant women from high socio-economic status and living in urban areas were mostly used to take good diet and their, red blood cell count, white blood cell, packed cell volume, mean corpuscular volume and mean corpuscular hemoglobin were more normal than women from rural areas (Dur-E-Afshan, 2000).

Education and balance diet: The chi-square value indicates a highly significance association between education and diet. The Gamma value shows a strong relationship between education and diet, table clearly shows that educated pregnant women were know about balance diet and taking balance diet during pregnancy. Bilenko *et al*. (2004) also worked on women education and their diet status. He estimated that women education and socio-economic status were significantly related to the prevalence of nutrition deficiency and sickness. Education not only enables women to make informed choices and adopt better health and nutrition practices, it also increases the pool of health care service providers and community educators (Patrick and Nicklas, 2005).

Family monthly income and balance diet: The chi-square value shows a highly significance association between family monthly income and diet intake. Socio-economic status is found to be a major explanation for the women having anemia. Sharma *et al*. (2007) in a study comprising of various social status groups, categorized on the basis of family income, found that most of females from low income category were more iron deficient.

Conclusion: Assessment of dietary patterns depends upon area, due to diverse geographic and economic factors. In study only small group of mothers, have enough awareness and resources to consume an adequate amount of balanced meals. However, a vast majority consuming a low calorie diet with an insufficient intake of micronutrients may be exposed to chronic anemia. Nutritional status of girls and mothers, even a long before pregnancy, also affects fetal development and newborn health. This condition is mostly determined by the dietary status of the mother. It is concluded that mothers with good education, sufficient family income have more tendency to use balanced diet and nutrients.

Recommendations:

- Education is the basic factor on change. Government should design strategies and policies to enhance women education to make them independent in socio-economic and cultural decisions, which directly and indirectly women health status
- Sensitization of gender issue need special attention that husband should be make aware about the very particular food and nutritional needs of his wife during pregnancy to ensure healthy generation.
- Government of Pakistan should launch public health awareness campaigns to make people aware about the benefits of small family, sickness, breastfeeding, prenatal and postnatal care and utilization of health facilities in the context of women general reproductive health.
- Children are our generations so parents should pay attention to their children especially daughters healthy brought up, their education, avoid from early marriages and balanced food provision to make coming generation healthy.
- There is dire need that husbands should change their attitudes towards their wives education, food and proper check up in their both status of pregnancy and lactating.

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