Assessment of nutritional status of lactating mothers in Multan, Pakistan: A case study.

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ABSTRACT… Objective: The main purpose of the study was to assess the nutritional status of lactating mothers. **Study Design:** Cross Sectional study. **Setting:** Fatima Jinnah Hospital, Chowk Ghantaghar, Multan. **Period:** March 2019 to November 2019. **Material & Methods:** The study comprised of 250 lactating mothers aged 18-40 years. The data for this study was collected by trained nutritionist when lactating mothers came for checkup and SPSS software was used for data analysis. **Results:** This study showed that mother status mostly effected due to iron deficiency. Only 20% women were having normal Hemoglobin level. 80% women were anemic and 61.6% women were underweight and 4.8% women were overweight during lactation period. Their serum ferritin level was significantly low due to iron deficient diet/ low iron supplementation. In this conducted study 34.4% women were uneducated and 70.8% women were from rural areas of Multan. 42.4% women were poor socioeconomic status. **Conclusion:** Nutritional status of lactating mother is mostly affected by iron deficiency. Iron deficient diet or lack of iron supplementation due to poor socioeconomic status/ lack of education about nutrients affect the lactating status of mother.

Key words: Anemia, Lactating Mothers, Malnutrition, Nutritional Status, Serum Ferritin.

INTRODUCTION

Breast milk is an ideal source of nourishment for the infant or child. Lactating women are one of the most nutritionally vulnerable groups of the society.[1] Ideally, a lactating mother produces around 700-800 ml of breast milk per day. This usually requires an extra 500 kcal increase in the daily nutritional requirement of the mother.[2] In 2015, the maternal mortality rate for Pakistan was 178 per 100,000 live births.[3] In Pakistan, 44.1% of infants less than 4 months of age are exclusively breastfed, which decreases to 37% at 6 months of age. 79% of babies were breastfed till one year whereas only 54.9% of children at two years of age were provided with breast milk. According to the Pakistan Demographic Survey (2007), the infant mortality rate was 69.7 per 1000 live births. The under 5 mortality rate in 2016, was 78.8 per 1000 live births.[4] Unfortunately, inadequate information is available on the nutritional status of lactating mothers although it is a key factor in determining the quality and quantity of breast milk produced and the health status of the mother.

The nutritional status of lactating mothers depends on their economic status, culture, and social and demographic factors.[5,6] Severely malnourished women are energy deficient and poor lactation performance lead to inadequate nutrition supply to the infant.[7] Undernourished children may cause an increase in child morbidity and mortality rates. Hence, nutritional status of the mother is a crucial factor in the health and wellbeing of the mother herself as well as the infant or child.[8] Studies show that post-partum anemia is also common, which may pose a threat to lactating women.[9]

In a study conducted by Malik et al. in 2017, nutritional assessment of lactating mothers visiting an immunization clinic in Kolkata was done in order to find out factors influencing the nutritional status of these women by a hospital

based cross sectional observational study. 28.4% of the subjects were undernourished mostly including mothers of low-socioeconomic status.[10] In 2014 Zhao et al. conducted a study in which they showed that child and maternal anemia is most prevalent in low income countries especially iron deficiency anemia mostly accured. WHO recorded that, anemia contributes about 324,000 deaths in Southeast Asia, which is among the highest numbers in the world.[9] In 2013, a community based cross-sectional survey in Tigray, Ethiopia, the nutritional status of four hundred lactating mothers was analyzed by Haileslassie et al. 31% of breastfeeding women were found to be undernourished and associating factors that were affecting this value included size of farm land, length of marriage, frequency of antenatal care visit, age of breastfeeding child, etc.[11] Anemia is still a considerable health issue currently which effects the people of different age groups mainly lactating women and children.[12]

Pakistan is a developing country, and thus lacks adequate resources and research regarding maternal health. The nutritional status of lactating mothers holds a strategic importance in the development of a safe and healthy community. Multan is an advancing city, yet appropriate knowledge is not available to lactating mothers on the importance of consuming an appropriate number of calories derived from a balanced diet. To rectify the current maternal health status and to formulate appropriate policies for a reduction in the burden of nutrition related issues in lactating mothers, extensive research is required. This fact motivated us for this study. The main purpose of the study was to assess the nutritional status of lactating mothers of Multan.

MATERIAL & METHODS
It was descriptive cross sectional study. In this study 250 lactating mother of Multan region involved and their age were 18-40 years. They belonging to different socioeconomic status and mostly mothers were from rural areas of Multan. This study was conducted in department of gynecology of Fatima Jinnah Hospital Ghantaghar Chowk Multan. The purpose of this study was to know the status of lactating mother. This study

conducted during January 2019 to November 2019. In this study involved participants came hospital for routinely checkup. During their checkup data were collected and Performa's were filled by trained nutritionist as per requirement of study.

This study was conducted after the approval of higher authority of Fatima Jinnah Hospital, Chowk Ghantaghar, Multan. (IRB # 333), Consent of each participant was also obtained after explaining the objectives of study. In this study, lactating mother aged 18-40 years of different nutritional and anemic status were included. Selection of lactating mothers was based on their routine medical checkup during hospital visit. Those mothers whose fed their children formula milk and along with breast milk were excluded and those women having some disorder like diabetes and chronic diseases were also excluded from this study.

The data was collected by a questionnaire base performa. Performa contained different type of questions i.e., anthropometry of the participant, socioeconomic status, education status, number of siblings, eating practices during pregnancy and lactation. These questions were conducted face to face and also explained all those questions in their local language which were not understood by the participant. All that data was collected by trained nutritionist at Fatima Jinnah Hospital Ghantaghar Multan. This study was conducted to check the nutritional status. After data completion data, data was entered and analyzed by using SPSS software, version 21.0.

RESULTS
The study collected from Fatima Jinnah Hospital Ghantaghar chowk Multan who came there for checkup of her infants or for her assessment and 300 women were involved in this study. This study contained 250 lactating mother and their age were between 18-40 years. A total of 62 (24.8%) lactating women were in group of age 18-25 years, 84 (33.6%) were in group of age 26-32 years and in last group whose range were 33-40 years comprised of 104 (41.6%) women. The 86 (34.4%) women were uneducated and 106

(42.4%) women were belonged to very poor socio economic status. With respect to their siblings, 60.8% were having 1-3 siblings (Table-I).

Characteristics	Groups	No. of Participants	Percentage (%)
Age group (years)	18-25	62	24.8
	26-32	84	33.6
	33-40	104	41.6
Socioeconomic status	Upper	32	12.8
	Middle	112	44.8
	Poor	106	42.4
Education level	Primary	110	44
	Middle	32	12.8
	Middle or above	28	8.8
	Uneducated	86	34.4
Residence	Rural	177	70.8
	Urban	73	29.2
No. of siblings	No	54	21.6
	1-3	152	60.8
	>3	44	17.6

Table-I. Socio-demographic distribution of studied population.

Hemoglobin level during their lactation period were also noticed. Almost 20% women were normal Hemoglobin (>11 g/dl). 80% women were anemia (The normal level for lactating women defined by WHO is 12 g/dL). Among total study 54% women were mild anemic (10-11 g/dl) and 22.4% women were moderate anemic (7-10 g/dl) and 4.8% women were severe anemic (<7 g/dl) (Table-II).

Severity of Anemia	No. of Participants	Percentage (%)
Normal >11 g/dl	50	20
Mild anemia 10-11 g/dl	132	52.8
Moderate anemia 7-10 g/dl	56	22.4
Severe anemia <7 g/dl	12	4.8

Table-II. Status of hemoglobin level in study population.

To determine the iron deficiency anemia prevalence in study their serum ferritin level was checked. 38% women of study population were low serum ferritin level (<12 ng/ml) which reveals that this group needed interventions. 48.5% women were moderate level of serum ferritin level (12-30 ng/ml) (Table-III).

Category	No. of Participants	Percentage (%)
Category I <12 ng/ml	76	38
Category II 12-30 ng/ml	97	48.5
Category III 31-300 ng/ml	23	11.5
Category IV >300 ng/ml	4	2

Table-III. Serum ferritin level in lactating mother.

Nutritional status of study population were checked by taking their anthropometry measurement. Out of 300 only 84 (33.6%) women were having normal nutritional status. Underweight women were 184(61.6%) and 12 (4.8%) women were those who were overweight. Fifty women excluded from the study because they were feeding breast milk as well as formula milk (Table-IV).

Nutritional Status	No. of Participants	Percentage (%)
Normal weight	84	33.6
Under- weight	154	61.6
Over- weight	12	4.8

Table-IV. Nutritional status of lactating mother.

DISCUSSION
This study showed that mostly women have poor nutritional status and low Hemoglobin level. Low hemoglobin level were mostly due to iron deficiency. Iron deficiency anemia effected mostly women throughout the life. Iron deficiency in lactation showed that mother has not taken enough iron rich diet during pregnancy and lactation. Therefore, iron stores were not enough support mother in lactation period and fulfill her requirement. This study revealed the frequency of anemia in involved subjects is high (80%), mild

anemia was in 52.8% and moderate anemia was in 22.4% and 2% studied population was severely anemic. This study compared with other studies conducted in Pakistan. A study conducted in Karak district, where the anemia percentage was 67.6% in pregnancy[13], while the anemia prevalence was 66.6% in a study conducted in Kohat.[14,15] Behre et al.[16] and Tamang[17] reported 7.9% and 34.73% prevalence of anemia among pregnant women.

Due to role of prevalent myths for food restriction during pregnancy and lactation are prevalent at southern Punjab. The study conducted in Multan comprised 34.4% uneducated women and 65.6% educated women and among these mostly were middle pass. This study like study conducted in Mardan on iron deficiency anemia (76.7%) in pregnant women. Among these women 65% were uneducated and 35% were educated.[12] From this study it was reverted that low/illiteracy is a key factor of anemia in pregnancy and poor nutritional status during lactation. Residential status is also a factor of poor nutritional status. The study conducted in Multan comprised of 70.8% women from rural areas and 29.2% women from urban areas. According to these study women belonged to rural areas were having more poor nutritional status than women from urban areas and this study is similar to study conducted in Mardan (rural 70%, urban 30%).[13] The availability of food in rural and urban areas also affected the mother status. Income status of family also observed in determining the nutritional status in lactation practices. Good practices in hygiene and eating determined a good nutritional status of mother and infants. A study conducted in district Karak where more women belonged to rural areas with low income and poor nutritional status.[17] In this study also more women belonged to low income family. The duration between pregnancies also contribute in nutritional status of mother, good eating practices and optimum duration between pregnancies determined a good health status of both mother and infant and prevented from chronic diseases.[18]

This study also focused on serum ferritin level of mother. Good iron stores help mother and infant maintaining a good nutritional status during lactation period and preventing complications. Four categories were made to check the serum ferritin level of study population. According to this study serum ferritin level of 38% population was <12 ng/ml which was significantly low and indicating severe anemia. 2nd category was made of range 12-30 ng/ml and in this 48.5% of total population came and this was also a low iron store level and could not support good feeding practices. In normal (31-300 ng/ml) group only were 11.5% of total population. Two percent of studied population were those whose serum ferritin level was more than 300 ng/ml indicating some infection in these population. Due to some infection nutritional status was also affected.

Nutritional status of mother during lactation affect the infant status among told population of this study. 33.6% women were normal, 61.6% women were underweight and 4.8% women were overweight. Infant fed on poor eating practices are more prone to diseases.

Iron deficiency that caused in second and third trimester leads towards pre-term birth/low birth weight baby.[19] Government should make necessary arrangements for pregnant women so nutritional status of pregnant and lactating mother can be improved. Healthy women give birth to a healthy infant. Good practices and care, help mother and infant to a good health recovery. Good eating practices helps mother maintain good nutritional status and prepare her for next pregnancy.

CONCLUSION
From this study it is concluded that anemia especially Iron deficiency anemia is more prevalent in pregnancy and lactation which affects the nutritional status of both mother and infant. Lactation period is also affected by poor nutritional status. The nutritional requirement of mother and infant are not fulfilled due to which both mother and infant are vulnerable to diseases.

Proper pregnancy planning and nutrients supply during pregnancy results in better outcomes. Folic acid supplementation before pregnancy help in prevention of neural tube defects. Iron rich diet and supplementation leads to good nutritional status and prevention from preterm birth. Proper screening and checkup helps in maintaining good nutritional status. Better iron stores after delivery help infant'' developing resistance against infection. Better mother and infant status prevents most of the chronic diseases. A well balanced diet throughout and during lactation helps in maintaining a good nutritional status.
**Copyright© 21 Nov, 2020.**

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2	Saadia Khan	Data compilation, Critical revision, Final approval for submission.	
3	Sumbal Nayab	Data collection entry and analysis.	
4	Asad Abbas	Statistical analysis conception and design, Drafting of article.	
5	Reema Arshad	Statsitical expertise and analysis and interpretation.	
6	Iqra Akram	Collection and Assembly of data.	
7	Abeeha Ajmal	Collection of data.	