INTRODUCTION

Women of reproductive age constitute 22% of total population and are considered vulnerable or special risk group for nutritional health problems. The nutrition and health status of women is important for the quality of their lives, survival and healthy development of their children. Nutritional status of women is important for health and work capacity of women themselves as well as for the health of their offspring. Unfortunately, problems of under as well as over-nutrition prevail in female population world wide. The proportion of women suffering from chronic energy deficiency (BMI < 18.5 Kg/m²) is about 70% in India, Bangladesh and Pakistan. A woman’s nutritional status at conception may modify not only the course of pregnancy and its outcome but also the way her nutritional status changes during her pregnancy.

The physiological condition of women influence the nutritional status, because Indian mothers are pregnant too frequently, malnourished, anaemic and dying of causes which could have been easily prevented. In addition in our society, health and nutritional status of women are adversely affected by social, cultural and economic system.

A woman who has been well-nourished before conception begins her pregnancy with reserves of several nutrients so that the needs of growing foetus can be met without affecting her health. The effect of under-nutrition during reproduction will vary depending upon the nutrients involved, the length of time it is lacking and the stage of gestation at which it occurs. A woman whose diet is adequate before pregnancy is usually able to bear a full-term viable infant, without extensive modification of her diet. Mothers diet should provide adequate nutrients so that the maternal stores do not get depleted and produce sufficient milk to nourish her child after birth. The
nutritional demands are highly increased in an adolescent mother. Due to under-nourishment of the mother baby is at an increased risk of being premature with low birth weight and developmental irregularities. Intra-uterine nutrition is highly important for the growth of central nervous system and kidneys of the foetus which mature during the latter part of pregnancy. Therefore nutrition deficits before birth can never be wholly reversed after birth; although role of nutrition in determining pregnancy outcome is not yet precisely known but increasing evidence indicates that malnutrition of mother is associated with low birth-weights, still-births, neonatal mortality and birth defects. It is very difficult to define a direct cause and effect relationship between the nutritional status of the mother and the pregnancy outcome, in part because nutrition is associated with socio-economic variables and exerts its influence in concert with many other factors. A variety of ill effects caused by prolonged and severe maternal malnutrition during pregnancy include reduced size and number of brain cells, organs and placenta as well as changes in normal physiological functioning and cell constituents.

Lactation also exerts significant physiological and nutritional demands on mother. A mother whose nutrition is inadequate may often deplete her reserves to provide needed extra energy for lactation. The calorie and protein content of milk from well-nourished mothers may not significantly vary from that of under-nourished mother, but the quantity is often reduced.

Nutritional Status refers to both types and amounts of nutrients available and the body’s utilization of nutrients. Good nutritional status is necessary but not sufficient for optimal health. The nutritional status of an individual is the result of many interacting factors operating simultaneously.

ABSTRACT
on the individual in the physical, ecological and cultural setting of the community. Attempts to improve nutritional conditions can not be made intelligently unless the factors other than the knowledge of nutrition which determines food choices are known and considered. The quantity of various foods consumed and the associated food practices or habits are a reflection of the economic conditions and the social, cultural and educational values of a community.

Dietary habits are among the oldest and most enriched aspects of any culture. Their formation begins in early childhood and is effected by variety of factors and all impinge on individual. By the time adulthood is reached food habits are apt to be fairly rigid and immutable. Food habits are the sum of the food choices of an individual, constituting his total diet. Eating behaviours develop from cultural, societal and psychological patterns. These patterns reflecting food habits that have been transmitted from preceding generations are the heritage of any ethnic group. They may be influenced by interactions with other groups, so that some intermingling of patterns is inevitable. Nutritional practices and patterns are developed by people’s tendency to settle into fixed habits. Eventually, they characterize regional and national eating practices either poor or good. Food habits are generally classified as good when a person eats the kind and amounts of food needed for good nutrition. Poor food habits, including eating only what a person likes, regardless of individual nutrient requirement can result in a poor nutritional status. Food habits, good or bad, however, can be an extremely powerful force in determining what a person eats. The best way to be well-nourished throughout life is to develop food habits and attitudes that are conducive to the selection of a healthy diet. Food habits of a community furnish presumptive evidence of the nutritional status of its population.
State of nutritional health of an individual or group of individuals is determined by the process of nutritional assessment. It includes anthropometric, clinical, biochemical and dietary data. The conclusion reached through nutritional assessment becomes the basis for the development of nutritional care for individuals. Nutritional assessment is important to identify those individuals who are vulnerable to nutritional problems, monitors the nutritional status (changes) and provides overall information about the nutritional status of the community.

Malnutrition plays a key role in maternal mortality. "Next to young children, pregnant and lactating women are nutritionally the most vulnerable group, especially in the developing regions of the world and yet comparatively little is known of their special needs" (WHO – 1965). Majority of women are in constant state of nutritional stress beginning in the childhood, then adolescence, and continuing through the child bearing period which often commences before growth has ceased, and consist of a continuous cycle of pregnancy and lactation, all too resulting in premature death. Chronic protein energy malnutrition and iron deficiency anaemia are among the common nutritional deficiencies prevalent in women.

Women should not be considered solely with respect to their reproductive roles as mothers. Adequate nutrition is a 'human right' for all and the nutritional benefits to women’s social and economic capabilities need to be viewed as goals. Careful systematic analysis of women’s diet and nutritional status are rare. Data from small and infrequent studies of women’s anthropometry, Iron Status and dietary intake suggest that they are at high nutritional risk.
In the State of Jammu and Kashmir much work has not been done to study ‘nutritional status and dietary habits of Kashmiri women’ around their reproductive period. A need was hence felt to undertake such a study. Therefore the present study entitled “Nutritional Status and Dietary Habits of Kashmiri Women” has been undertaken with following objectives:-

1. To assess nutritional status of women through:
   i) Anthropometry.
   ii) General Physical Examination.
   iii) Dietary Assessment.
2. To know dietary habits of women and their likeliness towards these foods.
3. To assess if women are aware about various nutrients, their sources and functions.
4. To know if women have knowledge regarding nutrient requirements and meeting additional nutrient requirement during different physiological states.
5. To assess the knowledge of women regarding cooking practices.

**METHODOLOGY**

The present study has been carried over a period of two and a half years on cross sectional basis with the aim to obtain information about “Nutritional Status and Dietary Habits of Kashmiri Women.”

1. **Material Selection**
   a) *Selection of Area:*

   Out of six districts of Kashmir Division, two districts were selected viz district Srinagar and district Budgam. Systematic proportionate random sampling technique was used to select the area from each district. District
Srinagar included only urban area whereas district Budgam mainly rural area. The urban area of Srinagar City was arbitrarily divided in four zones. From each zone six wards were randomly selected and thereafter ward to be surveyed from zone were identified from the list provided by Municipality (Srinagar). Similarly, from district Budgam blocks were randomly selected for the survey representing various geographic areas (six were included to obtain proportionately same sample size as for urban area).

b) **Sample Size:**

The total number of women selected for this study were 1600 with equal proportion of 800 from rural and 800 from urban area. From each group same number of women belonging to different physiological status like pre-pregnant (married but without children), pregnant (mostly women in early pregnancy), lactating and non-pregnant non-lactating women were included.

2. **Method Used**

❖ *For assessment of nutritional status:*

➢ For clinical assessment: A standard pre-designed schedule used as criteria for clinical assessment as per WHO expert committee within classified signs used in nutrition surveys appeared in WHO technical report series 258 was used.

➢ Anthropometric assessment: Anthropometric measurement of height and weight (thereby calculating Body Mass Index) was used.

❖ *Dietary Intake / Habits:*

For this 24 Hour recall method was used which collected information on dietary intake, dietary likes and dislikes, food taboos
and food consumption pattern. The information was collected as per proforma to know about food intake and food habits.

❖ *Nutritional Knowledge*:

Nutritional knowledge was obtained by collecting information on an open ended proforma about sources, functions of nutrients, cooking practices and nutrient requirements.

3. **Tools Used:**

❖ *For Anthropometry:*

- A spring weighing machine (Krusp) for assessment of weight of women.
- For assessment of height non-stretchable measuring tape fixed on wall was used.
- For assessment of BMI calculations of Wt (Kg)/ Ht² (m) was used.
- Nutritional assessment schedule (Clinical examination schedule as per WHO Expert Committee was used to find out deficiency symptoms).

❖ *For Dietary Intake / Habits:*

- For dietary intake 24 hour dietary recall method was used.
- For dietary habits pre-tested and pre-designed questionnaire was used.

❖ *For Nutritional Knowledge:*

- A scoring technique was used.

4. **Collection of Data:**

Data was collected by the questionnaire cum interview method from the sample selected and various questions in the schedule were discussed in detail before hand. Assessment of nutritional status was performed with the help of a general practitioner and then applied on trial basis on some women.
in the presence of same. The exercise was repeated several times to become familiar with anthropometry as well as clinical assessment. A pre-designed and pre-tested schedule was tested on 10% of the sample for finding its acceptability and completeness before administering it on the entire sample population. The requisite modification to questionnaire was incorporated on the proforma that was finally used.

❖ Structure of Questionnaire:

The five different sections of questionnaire were:

A. General information:

This section was pertaining to family background of the respondents and included residential address, age, religion, literacy status, occupation, income, type of family, family size and number of children etc.

B. Anthropometric measurement:

• Height: Height was measured with the help of a non-stretch tape that was fixed to a flat wall. The women were asked to remain barefoot and the hair flat. Both feet were lying together with heals, buttocks, shoulders touching the wall. The women were asked to stand erect, looking straight ahead. The top of the ear and outer corner of the eye were in line parallel to the floor (Frankfort plane). The hands were hanging by the sides in a natural manner.

A horizontal bar was allowed to rest flat on the top of the head and height was recorded to nearest 0.5 cm.
• Weight: Weight was recorded with the help of weighing machine (spring type). Woman was asked to stand on the balance without shoes and minimal clothing. Before recording the weight of women every day, using the known weight (standard weight) balance was standardized and the scale was adjusted accordingly if required. Weight was recorded to the nearest 100 gms.

• BMI: BMI was calculated directly from the observed measurements of weight and height. The formula used for calculation was

\[
\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height}^2 (m)}
\]

• Clinical examination: This section included information on general appearance, hair, eyes, lips, tongue, teeth, gums, skin and nails of women which helped in assessing out any sings of nutritional deficiencies

• Dietary Habits: A quantitative and qualitative diet survey was carried out on the sample to collect information regarding nutrient intake. This was done by:

  ➢ 24 hour – recall (Quantitative assessment): The quantity of food consumed by the sample in terms of household measurements were recorded and latter converted into metric weights and nutritive value was calculated with the help of food composition table

  ➢ Qualitative diet survey included respondents information about the number of meals consumed per day, nature of diet, food likes and dislikes, food beliefs and taboos, medium of cooking
food, inclusion of special foods in daily diet during pregnancy / lactation.

- Frequency of consumption of different foods was also found.

- Nutritional Knowledge: Respondents knowledge regarding sources and functions of nutrients, nutritional requirements and cooking practices were assessed by scoring the information gathered from the respondents by ordinal scale. For this purpose a special scoring technique was devised which was approved by a sociologist.

5. Data Analysis:

The analysis was divided into three main parts. First part dealing with general characteristics, second with nutritional assessment and third part with nutritional knowledge. Data was analyzed by descriptive procedures for evaluating contingency tables (for various comparisons), averages and dispersion. Besides this inter and intra group comparison between / among the groups was made by using chi-square test, students t-test was also used to analyze the data.

LIMITATIONS

The researcher had to face a number of difficulties while collecting data. Prevailing conditions in the valley proved to be at times a hindrance in collecting data, secondly women were not much co-operative and were reluctant to allow the investigator to take anthropometric measurements, and record 24 – hour recall. Some women were also reluctant to disclose their food habits, taboos, likes and dislikes. It needed lots of persuasion and motivation on the part of investigator to overcome these hindrances. District Budgam is near to Srinagar city and some of the areas cannot be truly
considered rural areas. Also religious ethnicity between the two districts may be a limiting factor.

**FINDINGS**

Some of the main findings of the study are reported under following headings:

**General Characteristics**

Overall mean age among studied women was $27.89 \pm 6.33$ years. Mean age of pre-pregnant women was $23.6 \pm 4.49$ years, for pregnant women it was $25.09 \pm 4.55$ years, that of lactating women was $28.31 \pm 4.97$ years, whereas for non-pregnant non-lactating it was $34.50 \pm 5.01$ years. Studied women were mostly Muslims (99.0%), with 55.9% women being literate of which 11.5% were primary, 10.8% matriculate, 20.0% graduates and 11.6% had technical education (professionals and post-graduates). Majority of women (52.9%) were either semi-skilled or skilled and about 43.5% were housewives. 13.7% women belonged to low socio-economic status, 36.6% were in lower-middle or upper-middle socio-economic class and 49.7% belonged to high socio-economic class. Mean per-capita income per month of women was Rs. $2,210 \pm 1579$. Three-fourth women were living in joint families and 26.2% lived in nuclear families. Average median number of family members per family was seven and median number of children per woman was two. 58.5% women had 1-2 children, 31.8% had 3-4 children and 9.7% had more than four children.

**Nutritional Assessment**

❖ *Clinical Examination:*

Clinical examination of women showed that about 15% women had thin built, 12.6% women had hair abnormalities manifested either as lack of
lustre or easy-pluckability. Hair abnormalities were highest in lactating women (16.0%), followed by pregnant (13.2%), non-pregnant non-lactating (12.5%) and pre-pregnant women (8.5%) respectively. 8.3% women had skin abnormalities which were seen as diffused-depigmentation of skin or presence of dry and scaly skin. Percentage of women with skin abnormalities were highest among pregnant group (11.0%). However this percentage was almost same (8.7%, 8.0%) for lactating and non-pregnant non-lactating women and least among pregnant women (5.5%). Overall 52.0% ladies had pale conjunctiva. The percentage of women with pale conjunctiva was highest among pregnant group (66.2%) followed by lactating women (54.2%). 49.0% non-pregnant non-lactating women and 38.5% pre-pregnant women also had pale conjunctiva, the signs indicative of anaemia. 94.9% women had normal lips whereas 4.3% women had angular-stomatitis and 0.8% chilosis. Clinical examination of tongue showed 88.1% women (overall) had normal tongue with 11.9% women having abnormalities like red and raw tongue signs or pale and flabby tongue signs indicative of B-complex deficiency. Percentage of women having B-complex deficiency were comparatively higher among lactating and pregnant women. 9.1% women presented deficiency symptoms of Vitamin C (Bleeding Gums). 22.8% women had either spoon shaped nails or had white spots on nails, a common sign suggestive of anaemia among women.

Clinical assessment of women at large revealed symptoms and signs suggestive of anaemia as a common finding with occasional B-Complex deficiency symptoms which gets more prominent during pregnancy and lactation and continues during non-pregnant non-lactating status.
❖ Anthropometry:

Present study revealed that there was significant variation in the mean body weight of women in different physiological status. Overall mean body weight of women was 53.89 ± 8.53 Kgs which corresponds well with an average reference women. It was lowest in pre-pregnant state (51.10 ± 6.42 Kgs). There was not much difference in the mean body weight of lactating (52.88 ± 9.16 Kg) and non-pregnant non-lactating women (53.89 ± 8.53 Kgs). The mean body weight of pregnant women was expectedly higher. The mean height of women in the present study was 155.70 ± 7.34 cms and an insignificant difference (p = .331) in heights of women belonging to different physiological status was observed. Thus pointing towards the fact that height is independent of physiological status after it has attained particular potential. Mean BMI of women as per present study was 22.534 ± 3.4219 Kg/m^2. 69.3% women were normal as per BMI classification and 30.7% women had either under or over-nutrition. Mean BMI of pregnant and non-pregnant non-lactating women was towards higher side in comparison to pre-pregnant and lactating women. The overall percentage of women with BMI below 18.5 Kg/m^2 was very low, viz., 10.9% and it ranged between 11.5% in non-pregnant non-lactating women to 13.5% in lactating women. Thus minor percent of our mothers begin their reproductive life with chronic energy deficiency.

❖ Nutrient Intake:

Overall mean calorie intake of women was 1967.07 ± 366.85 Kcal with about two-third (77.5%) of women having varying percentages of calorie deficit in comparison to RDA. 45.9% were having upto 20% deficit. The mean calorie intake (1801.24 ± 279.75 Kcal) was lowest among pregnant ladies and the percentage of women with calorie deficit was also highest (94.0%) among them; moreover about one-third (30.0%) pregnant
women had calorie deficit between 20% - 40% in comparison to RDA. This was because there was lower intake of bulk foods by pregnant women due to nausea vomiting etc. which are common features in pregnancy and also a specific dislike towards rice (a major source of calories in Kashmiri diet). Mean calorie intake was better in lactating women (2366.99 ± 401.99 Kcal) and percentage of women showing calorie deficit between 20% - 40% was almost half the percentage than in pregnancy (30.0%) and this improved calorie intake was because good percentage of women were consuming special foods during lactation. Mean calorie intake of pre-pregnant and non-pregnant non-lactating women was almost same i.e. 1856.38 ± 185.36 Kcal and 1843.68 ± 22.64 Kcal respectively. However, the percentage of women in pre-pregnant status with 20% - 40% calorie deficit was 17.5% as compared to 10.5% in non-pregnant non-lactating status. This was attributed to restricting of calories or foods in general during pre-pregnancy stage to maintain body shapes and avoid overweight. Mean calorie intake in relation to age revealed that with advancing age there was increased mean intake of calories among pregnant, pre-pregnant and non-pregnant non-lactating women. However inter-group variations were insignificant. It was further observed that with advancing age there was a decrease in percentage of women with below normal calorie intake per day in general as well as in different physiological groups. Similarly, almost no difference was observed in mean calorie intake among women in different physiological groups and also the percentage of women with normal or below normal calorie intake belonging to joint / nuclear families. Type of family showed some effect during lactation and pregnancy. Mean calorie intake of women belonging to different socio-economic classes showed lot of variations and inconsistency. Yet mean-calorie intake of pregnant women did increase as the socio-economic status improved whereas reverse was true for non-pregnant non-
lactating women. There was no definite relationship between occupation and calorie intake.

Literacy status had a positive impact on calorie intake of mothers i.e. mean calorie intake and percentage of women with normal calorie intake was higher among literate group as compared to illiterate. This was related to overall knowledge and understanding of nutritional requirements and intakes.

Overall mean protein intake of women was 51.07 ± 12.79 gms; with 76.3% having varying degrees of protein deficit, of which 41.7% were having only upto 20% protein deficit compared to RDA. Mean protein intake of lactating women was higher (63.91 ± 11.40 gms) than mean protein intake of pregnant and non-pregnant non-lactating women (45.72 ± 11.78 gms and 45.15 ± 8.62 gms respectively). The percentage of women with protein deficit was highest amongst pregnant group with 34.5% having more than 40% deficit and 32.0% having between 20% - 40% deficit. This was related to multiple factors such as dislike towards meat, food taboos like non-consumption of fish and curds, milk and fish together or egg and milk together. Mean protein intake among pre-pregnant women (49.49 ± 8.98 gms) was better than non-pregnant non-lactating women and the percentage of pre-pregnant women with protein deficit ranging between 20% - 40% was also better (13.5%) in comparison to non-pregnant non-lactating group (25.5%). The percentage of women with protein deficit (around 20% - 40%) being lesser in lactation than in pregnant women (32.0%) was because of consumption of protein rich foods used as special foods by women during lactation. It was also seen that with increase in age there was increase in mean protein intake in all physiological status. Percentage of women with below normal protein intake dropped down
significantly with increase in age during pregnancy and lactation. Type of family as such had no definite impact on protein intake. Except non-pregnant non-lactating group, the mean protein intake and percent of women with normal protein intake was highest among professional women followed by skilled group and housewives. Similarly mean protein intake and percentage of women with normal protein intake in relation to socio-economic status depicted that women from high socio-economic class had highest mean protein intake in all categories and those belonging to low socio-economic class had lowest mean protein intake. Mean protein intake and percent women with normal protein intake was higher among literate ladies as compared to illiterate women in general and also in different physiological status. The difference being statistically significant (p = .000). This was related to better knowledge and positive attitudes towards various protein rich foods.

Mean dietary Iron intake of women in general (11.0845 ± 5.8626 mgs) and in different physiological conditions was lower than RDA. Mean dietary iron intake was lowest in pregnant women (8.5124 ± 2.2517 mgs) and in pre-pregnant state it was 10.625 ± 2.1562 mgs (which was comparatively better than in pregnant and non-pregnant non-lactating status). During pregnancy percent women with 40% or more dietary Iron Intake deficit was more as compared to lactating group. This was not only related to poor intake of Iron rich foods (like green-leafy vegetables) throughout the year due to non-availability and variations in dietary consumption resultant of pregnancy induced nausea and vomiting but also to poor nutritional knowledge regarding sources and functions of nutrients in these groups. Age did not influence men dietary Iron intake of women in general and in different physiological status. Type of family and occupation as such had no definite effect on dietary Iron intake. However, mean
dietary intake of literate women was better than illiterate women and professional women had higher mean dietary Iron intake per day (but lower to RDA), yet this trend was not seen in all physiological status which indicated that occupation did not as such influence dietary Iron intake.

Overall mean dietary Calcium intake of women was $434.72 \pm 265.56$ mgs (ranging between 75 mgs – 1684 mgs). The mean calcium intake was lowest among non-pregnant non-lactating women ($371.38 \pm 180.95$ mgs) and highest amongst women of lactating status ($543.60 \pm 337.91$ mgs). There was not much difference in mean calcium intake of women belonging to pre-pregnant ($421.18 \pm 269.53$ mgs) and pregnant ($402.71 \pm 214.33$ mgs) status. Overall 78.2% women had dietary calcium deficit of varying degrees. 47.6% of the total studied women had > 40% calcium deficit, however the percentages were higher among women belonging to pregnant group (72.7%), followed by lactating women (67.0%). The lower calcium intake of women was related to exclusion of milk and milk products (71.3%), a major source of calcium in their diet and poor nutritional knowledge of women regarding sources of nutrients. While comparing the nutrient intake of studied group of women with RDA for different physiological status it was found that women consumed all nutrients in lesser quantities in general especially Iron was worst hit nutrient followed by calcium, calories and proteins respectively.

❖ Dietary Habits:

98.4% women were non-vegetarian and just 1.6% were vegetarian. Rice was universally consumed by all women irrespective of their physiological status. Food frequency showed 98.3% women consumed green-leafy vegetables on daily basis whereas 1.7% included it 4 – 5 times per week in their diet. 81.3% women consumed pulses on weekly basis and
percentage consumption was comparatively better during pregnancy and non-pregnant non-lactating state. 92.5% of women consumed pulses occasionally and percentage consumption of pulses once or twice was almost negligible, however, it was better during pregnancy (11.7%) and lactation (7.5%). 46.2% of studied women included meat / poultry occasionally in their diet. Frequency of meat / poultry was better among pregnant (28.5%) women followed by pre-pregnant group (23.1%). This frequency was almost same among lactating and non-pregnant non-lactating women. More than half (56.4%) women in general consumed milk / curd occasionally, however it was mostly consumed by lactating (37.4%) and pregnant women (31.0%) on daily basis. Again there was not much difference in the percentage of women belonging to pre-pregnant and non-pregnant non-lactating status as far as milk / curd consumption on daily basis was concerned. 62.4% women followed four-meal pattern, 33.6% ate five times a day and 4% followed three-meal pattern. Percentage of women following four-meal pattern was highest among pregnant group (80.3%) and five-meal pattern was mostly followed by lactating women (40%) and those belonging to non-pregnant non-lactating state (44.8%). Salt tea and (Tandoori roti) bread was common breakfast item and only one fifth mothers add milk during pregnancy and about 20% add egg in pregnancy and lactation.

There was vast variation in likes and dislikes of women in different physiological groups. Amongst cereals, wheat was liked by negligible percentage (0.9%) and rice was more liked during lactation and pre-pregnancy compared to pregnant and non-pregnant non-lactating status. 26.7% women liked pulses, however pulses were mostly liked by pre-pregnant and pregnant ladies. Similarly among milk and milk products curds was liked by half of the women (50%) that too during pregnant and lactating
status. Amongst foods of animal origin poultry was most liked, followed by meat and liking for both these foods was low during pregnancy. Liking for same was better during non-pregnant non-lactating and pre-pregnant status. One-third of women liked green-leafy vegetables, however during pregnancy spinach and sag was more liked. Variation in liking for green-leafy vegetables was not much between women in different physiological status. One-fourth of women liked fruits especially apples and citrus fruits than dry fruits and liking for fruits was much better during pregnancy and lactation than pre-pregnant and non-pregnant non-lactating status.

Commonly disliked foods were some of cereals, green-leafy vegetables, animal foods, sweets and miscellaneous foods. 11.3% women belonging to pregnant group disliked rice, 12% meat whereas 48.0% didn’t like knol khol and 57.2% didn’t liked sweets during pregnancy. Low frequency of food intake for certain food items coupled with likes and dislikes especially for rice and animal foods was probably one of the major reasons for caloric as well as protein deficit during pregnancy and increased frequency / liking of these items during lactational status had contributed to lowering of percentage deficit for mean calorie and protein intake. Even this was also responsible for specific nutrient insufficiency in these physiological states. The enormous variation in food likes and dislikes among women in general especially during various physiological status were attributed to cultural factors, social influences or relative availability of food items that has determined the overall consumption pattern.

Consumption pattern of vegetables varied with seasons. During summers women consumed seasonal and all seasonal vegetables mainly. Whereas during winters legumes and pulses, dried vegetables, roots and tubers and quince apples were consumed. This difference in the
consumption pattern of vegetables is attributed to seasonal availability, and Kashmir Valley being a hilly area mostly remains covered by snow during winters and most often remains cut-off from its winter capital Jammu, so people have to depend on semi-perishable, perishable and preserved foods e.g. legumes and pulses, roots and tubers and dried vegetables.

Special foods were consumed overall by 69.3% women (pregnant / lactating), however they were preferably consumed during lactation as compared to pregnancy. Garden cress (30.4%), organ meat (18.2%), milk and milk products (15.1%) fish (10.1%), fruits juices (5.9) included the list of special foods consumed by lactating group. The beliefs for such consumption were increase in haemoglobin content by use of organ meat / garden cress, increase in milk production with satiety to the child through mothers milk by consuming fish; also adds calories and small fraction of proteins. The list of special foods consumed by pregnant women included fruit juices (29.1%), milk and milk products (17.3) and dry fruits (13.8). Pregnant women even consumed gum Arabica soaked in water or milk (12.8%) and sharbats (9.2%). Thus adding foods of no calorie value but minor protein and vitamin benefits. Percentage of women consuming special foods was highest among the age group 21-30 years. Type of family, socio-economic status showed better intake of special foods among women in joint family and high socio-economic class, occupation had no impact on same. During pregnancy literacy had an impact on special food consumption however during lactation it did not show any impact.

The most common food taboos generally followed by women were avoiding combination of fish and curds (67.9%), fish and milk (64.4%), dal and curds (27.4%) or discarding cooking water of spinach (22.0%). Likely nutritional impact of such restrictions or avoidance can lead to low calcium,
vitamin and to some extent protein intake which otherwise is required in higher quantity during these physiological conditions and thus further adding to overall percentage deficit of these nutrients.

The dietary pattern of the women covered by the present study revealed that it was largely dependent on their habitual types and food items locally available. The food habits of Kashmiri women were also found to be related to seasonal variations that control the availability of food materials. Culture and taboos also had its impact on food habits of women.

❖ *Nutritional Knowledge:*

45.9% studied women in general had poor overall nutritional knowledge. Percentage of women with poor nutritional knowledge was more during pregnancy (21.5%) and lactation (17.0%).

53.8% women had poor knowledge regarding sources and functions of nutrients and nutrient losses during cooking and this percentage was much higher during pregnancy and lactation. However nutritional knowledge with regard to nutritional requirements was comparatively better among women in general (32.7%) with 29.1% having poor knowledge. The percentage of pregnant and lactating women with poor knowledge regarding nutritional requirements remained lowest – which lead us to believe that mothers do possess better idea about nutritional requirements, however they were ignorant as to how or where from these nutrients can be provided (sources) and what is their role (functions).
CONCLUSION

The present study conducted among women around their reproductive period on nutritional status, dietary intake, food habits and nutritional knowledge revealed that majority of Kashmiri Women marry at proper age (21+ years) and observe family planning norms (2 or 3 children). They continue to live in joint families. Both literacy status and working status is on the rise.

The overall pre-pregnant nutritional status is better and is comparable to most of North Indian women however, anaemia constitutes a major (specific) nutritional problem throughout reproductive period with occasional B-complex deficiency being observed in small percentage of women. The main reason being low dietary Iron intake. The women in pre-pregnant stage have also predilection for restriction of diet (primarily calorie rich foods than protein rich) to maintain weight and body shape. During and after reproductive period although nutritional status remains more or less stable, yet calorie deficit can be observed in different physiological status. There is definite increase in percentage deficit of both calories and proteins especially in pregnancy than during lactation. The problem of anaemia is not only carried over to pregnancy as well as to lactational period but becomes more pronounced during pregnancy. This is mainly due to low intake of dietary iron because of poor knowledge about food sources, that is compounded by cultural beliefs, cooking practices, vague food habits, likes and dislikes. B-complex deficiency signs are also seen during these states. This is due to reduced intake of cereals, seasonal variation in intake of green-leafy vegetables and other foods rich in B-complex. The continuation of calorie insufficiency (deficit) to non-pregnant non-lactating state confirms influence of these factors having deep seated cultural roots. A significant influence of socio-cultural / socio-medical factors on food intake
during pre-pregnancy, pregnancy and lactation showed both quantitative and qualitative improvement with better educational status, improved economic status and good occupational status (working status). It is interesting to observe that these factors also affect the nutritional knowledge (with regard to source, requirement) and thus the intake.

RECOMMENDATIONS

In order to improve the knowledge and thereby have a favourable attitude and practices for better food intake by women of reproductive age, both long term and short term measures are recommended.

Amongst long-term measures various programs of general and specific nature are already in vogue. General (welfare) programs such as Total literacy campaign ‘TLC’, income generating and poverty alleviation programs, improvement of women status programs, improvement of nutrition education by inducting nutrition syllabus in primary classes and adult literacy programs in their long run will have a definite impact on overall nutritional status. Similarly specific programs like ICDS and specific nutrition programs [National Nutrition Anaemia Prophylaxis Program for prevention of nutrition anaemia] with direct nutritional components, have not only helped in enhancing nutritional status but also in improving nutritional knowledge amongst masses and thereby creating a favourable attitude towards better nutrition. What is required is to strengthen and support these activities and it is here that the department of Home Science can play a vital role by sensitizing implementing agencies. The department can hold seminars and symposia at regular intervals to stress importance and contribution of such programs in improving nutritional knowledge in communities. Also department could directly provide material support like providing nutrition education material or even conduct nutrition
demonstration classes for the implementing agencies or for the communities. A highly co-ordinated effort can make it quite effective.

**Short term measure** proposed could be a unique co-ordinated effort of 'linking' "nutrition extension services" from the department of Home Science through a specially identified cadre of 'Link workers'. These link workers (nutrition workers) would be identified from a large fleet of existing workers belonging to Health Department (Health workers – female or TBAS), Social Welfare Department (ICDS – AWW’S), Education Department (primary school teachers) who are local and are directly or indirectly involved in nutrition activities. The selected workers will be further motivated, reinforced and updated on nutritional knowledge (especially sources, requirements, cooking practices, socio-cultural factors etc.) on regular basis to enable them to interact and create awareness on various issues of food and nutrition. The entire activity can be co-ordinated and monitored by the department in collaboration with other departments and periodic evaluation can help in making desired changes where-ever required. Such type of a program activity has a tremendous potential if planned and co-ordinated properly.