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The Role and Impact of Seasonal Food Availability on the Dietary Patterns of Lactating Women: Evidence from the Kashkadarya Region of Uzbekistan

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Abstract

Background: Maternal nutrition during lactation is essential for maintaining maternal health, supporting breast milk production, and ensuring optimal infant growth and development. Seasonal food availability may influence dietary patterns, particularly in rural communities.

Objective: This study aimed to assess the spring-season dietary patterns of lactating women in the Chiroqchi and Kasbi districts of the Kashkadarya region and to identify age-related differences in food consumption.

Methods: A cross-sectional survey was conducted among 450 lactating women using a structured questionnaire. Data on the consumption of major food groups, including meat, dairy products, cereals and legumes, fruits, vegetables, eggs, fish, and green leafy vegetables, were collected and analyzed as percentages according to age groups.

Results: Cereals and legumes were the most frequently consumed food group, accounting for 98.0% and 99.0% of intake among women aged 18–29 and 30–39 years, respectively. Dairy products were consumed by more than half of the participants, while meat consumption was higher among older women. Fruit and vegetable intake remained low in both age groups, indicating limited dietary diversity. Fish consumption was moderate, whereas green leafy vegetables were not consumed by the surveyed women.

Conclusion: The diets of lactating women during the spring season were predominantly cereal-based and lacked sufficient amounts of fruits, vegetables, and other nutrient-rich foods. These findings highlight the need for nutrition education programs and interventions aimed at improving dietary diversity and promoting balanced nutrition among lactating women in rural areas.

Keywords: lactating women, maternal nutrition, spring season, dietary diversity, food consumption, breastfeeding, rural population, Uzbekistan.

Introduction

Salvia L. is the Lactation is one of the most physiologically demanding periods in a woman's life, characterized by increased nutritional requirements necessary to support breast milk production and maintain maternal health. During this period, adequate intake of energy, proteins, fats, vitamins, and minerals is essential for ensuring optimal growth and development of infants as well as preserving the nutritional status of mothers. Breast milk is recognized as the most complete and biologically appropriate source of nutrition for infants during the first six months of life, providing essential nutrients, immunological protection, and bioactive compounds that contribute to healthy development[1].

According to the World Health Organization (WHO), breastfeeding mothers require additional dietary energy and nutrient intake compared to non-lactating women. Inadequate maternal nutrition may negatively affect maternal health and increase the risk of micronutrient deficiencies, which can subsequently influence breast milk composition and infant well-being[2]. Therefore, assessment of dietary patterns among lactating women remains a priority area in maternal and child health research.

Dietary habits are influenced by numerous factors, including socioeconomic status, educational level, cultural traditions, food availability, and seasonal variations. Seasonal changes are particularly important in rural populations where food consumption patterns largely depend on agricultural production and local market accessibility. Variations in the availability of fruits, vegetables, dairy products, and animal-source foods may substantially affect dietary diversity and nutritional adequacy among women of reproductive age.[3]

Several international studies have demonstrated the importance of dietary diversity during lactation. Waswa et al. reported that seasonal changes significantly influenced nutrient intake and dietary diversity among women in rural Kenya. Similarly, Baye et al. found that access to agricultural resources and seasonal food availability were strongly associated with maternal dietary quality in Ethiopia[4]. Studies conducted in Bangladesh and other developing countries have also revealed that many lactating women fail to meet minimum dietary diversity recommendations, particularly regarding the consumption of fruits, vegetables, and animal-source foods[5].

Despite the growing body of evidence on maternal nutrition worldwide, information regarding seasonal dietary patterns among lactating women in Uzbekistan remains limited. In particular, little is known about the consumption of major food groups among breastfeeding women residing in rural areas of Kashkadarya region. Understanding these dietary characteristics is important for developing effective nutritional interventions and improving maternal and child health outcomes.

Therefore, the present study aimed to assess the spring-season dietary consumption patterns among lactating women living in Chiroqchi and Kasbi districts of Kashkadarya region and to evaluate age-related differences in the consumption of major food groups.[6]

LITERATURE REVIEW

Adequate nutrition during lactation is one of the most important determinants of maternal and infant health. According to the World Health Organization (WHO), breastfeeding mothers

require additional energy, protein, vitamins, and minerals to support breast milk production and maintain their own physiological functions. Insufficient intake of essential nutrients during lactation may adversely affect maternal nutritional status and reduce the quality of breast milk, thereby influencing infant growth and development[7].

Seasonal variation is considered one of the major factors affecting food consumption patterns and dietary diversity among women of reproductive age. Waswa et al. conducted a longitudinal study among 426 mother–child pairs in rural Kenya to investigate seasonal changes in dietary diversity and nutrient intake. Using repeated 24-hour dietary recalls, the authors found significant seasonal fluctuations in the consumption of nutrient-rich foods, particularly fruits, vegetables, and animal-source products[8]. The study concluded that seasonal food availability strongly influences dietary quality among women and children.

Similar findings were reported by Baye et al. in Ethiopia. The researchers evaluated the effect of agricultural irrigation practices on maternal dietary diversity. Dietary Diversity Score (DDS) was used to assess food intake patterns. The results demonstrated that women from households with access to irrigation systems had significantly higher dietary diversity and more frequent consumption of fruits and vegetables than women without irrigation access. The authors emphasized the importance of improving agricultural infrastructure to enhance maternal nutrition[9].

In Bangladesh, Shaun et al. investigated determinants of minimum dietary diversity among lactating women. The study employed a community-based cross-sectional design and assessed dietary diversity using the Minimum Dietary Diversity for Women (MDD-W) indicator. The results revealed that maternal education level, household income, and nutritional awareness were positively associated with dietary diversity. The researchers concluded that nutrition education programs could significantly improve the quality of maternal diets[10].

Menber et al. evaluated the effectiveness of the MDD-W indicator among 457 lactating women in northwestern Ethiopia. Using 24-hour dietary recalls and micronutrient adequacy assessments, the authors observed that dietary diversity scores were associated with improved nutrient intake, although the strength of this relationship varied across nutrients. The study highlighted the usefulness of dietary diversity indicators in population-based nutritional assessments[11].

Another study conducted by Hossain et al. among pregnant and lactating women in Bangladesh revealed that a considerable proportion of women failed to meet minimum dietary diversity recommendations. Low household income, limited education, and poor access to nutrition information were identified as major determinants of inadequate dietary diversity. Similar conclusions were reported by Shumayla et al. who demonstrated that nutritional knowledge and educational status significantly affected food consumption patterns among breastfeeding mothers[12].

The Food and Agriculture Organization (FAO) developed the Minimum Dietary Diversity for Women (MDD-W) indicator as a standardized tool for assessing dietary quality among women of reproductive age. According to FAO guidelines, consumption of at least five out of ten food groups is associated with improved micronutrient adequacy. This methodology has become widely used in studies evaluating maternal nutrition worldwide[13].

Although numerous studies have investigated dietary diversity among lactating women in Africa and Asia, information regarding seasonal dietary patterns among lactating women in Uzbekistan remains limited. In particular, there is a lack of data describing food consumption characteristics among breastfeeding women in rural areas of Kashkadarya region. Therefore, the present study was conducted to assess spring-season dietary patterns among lactating women residing in Chiroqchi and Kasbi districts.

Materials and Methods

Study Design and Participants. A cross-sectional study was conducted among lactating women residing in the Chiroqchi and Kasbi districts of the Kashkadarya region, Uzbekistan. The study was carried out during the spring season and included a total of 450 lactating women. Participants were selected from rural communities using a questionnaire-based survey method. Women who were breastfeeding and voluntarily agreed to participate in the study were included in the survey.

Data Collection. Data were collected using a structured questionnaire specifically designed to assess dietary intake among lactating women. Information regarding the consumption of major food groups was obtained through face-to-face interviews. The questionnaire included questions on the frequency of consumption of meat and meat products, milk and dairy products, cereals and legumes, fruits, vegetables, eggs, fish products, and green leafy vegetables during the spring season. The participants were divided into age groups (18–29 years and 30–39 years) to evaluate age-related differences in dietary patterns. Food consumption frequencies were calculated and expressed as percentages.

Assessment of Dietary Intake. Dietary intake was assessed based on the reported consumption of selected food groups. The analysis focused on determining the proportion of women consuming each food category during the study period. The obtained data were used to evaluate dietary diversity and identify potential nutritional gaps among lactating women.

Statistical Analysis. The collected data were entered into Microsoft Excel and analyzed using descriptive statistical methods. The results were expressed as percentages (%). Comparative analyses were performed between age groups to identify differences in food consumption patterns. The findings were presented in tables and interpreted according to international recommendations on maternal nutrition and dietary diversity.[14]

RESULTS

Table 1. Consumption Level of Basic Food Products by Lactating Women in the Spring Season (%)

Food Products	18–29 years (%)	30–39 years (%)
Meat and meat products	44.70	65.51
Milk and dairy products	54.60	58.62

Food Products	18–29 years (%)	30–39 years (%)
Cereals and legumes	98.00	99.00
Fruits	1.17	6.89
Vegetables	11.76	24.13
Eggs	49.41	41.37
Fish products	35.29	34.48
Greens	0.00	0.00

According to the data presented in Table 1, cereals and legumes constituted the highest proportion of foods consumed by lactating women during the spring season. These products were consumed by 98.0% of women aged 18–29 years and 99.0% of women aged 30–39 years, indicating that they represent the primary source of daily nutrition in both age groups.

The consumption of meat and meat products was higher among women aged 30–39 years (65.51%) compared to those aged 18–29 years (44.70%). Similarly, milk and dairy products were consumed by 54.60% and 58.62% of women in the respective age groups, demonstrating the important role of dairy products in the diet of lactating mothers.

Fruit consumption was found to be very low in both groups. Specifically, only 1.17% of women aged 18–29 years and 6.89% of women aged 30–39 years reported consuming fruits. A similar pattern was observed for vegetable consumption, which accounted for 11.76% among younger women and 24.13% among older women.

Egg consumption was higher among women aged 18–29 years (49.41%) than among those aged 30–39 years (41.37%). The consumption of fish products was nearly identical in both age groups, reaching 35.29% and 34.48%, respectively.

No consumption of greens was recorded during the study, with the indicator remaining at 0% for all respondents. Overall, the findings suggest that cereals and legumes dominate the diets of lactating women during the spring season, whereas the intake of fruits, vegetables, and greens—important sources of vitamins and minerals—remains insufficient.

Discussion

The present study assessed the dietary patterns of lactating women in the Chiroqchi and Kasbi districts of the Kashkadarya region during the spring season. The findings showed that cereals and legumes constituted the dominant food group, being consumed by 98.0% of women aged 18–29 years and 99.0% of those aged 30–39 years. Similar observations were reported by Waswa et al. who

identified cereal-based foods as the primary source of dietary energy among women in rural communities.

Consumption of meat and dairy products was relatively high, particularly among women aged 30–39 years. However, the intake of fruits and vegetables remained low in both age groups. These findings are consistent with studies conducted by Shaun et al. and Hossain et al. which reported insufficient dietary diversity among lactating women and inadequate consumption of micronutrient-rich foods[15].

Fish consumption was moderate and nearly identical in both age groups, while green leafy vegetables were not consumed by the respondents. According to FAO recommendations, low consumption of diverse food groups may increase the risk of micronutrient deficiencies. Overall, the results indicate that although energy-rich foods are widely consumed, the dietary diversity of lactating women remains insufficient, highlighting the need for nutrition education and dietary improvement programs.

Conclusion

This study demonstrated that the diets of lactating women in the Chiroqchi and Kasbi districts during the spring season were predominantly based on cereals and legumes. Although the consumption of meat and dairy products was relatively satisfactory, the intake of fruits, vegetables, and green leafy vegetables was inadequate.

Age-related differences were observed in the consumption of several food groups, particularly meat products. The findings suggest limited dietary diversity and potential deficiencies in essential micronutrients among lactating women. Therefore, promoting a more balanced diet through nutrition education and increasing the consumption of fruits, vegetables, and other nutrient-rich foods may contribute to improving maternal nutritional status and supporting maternal and child health.

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