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## **Physiological Determinants of Human Milk Requirements: A Review of Metabolic Needs across the Life Cycle**

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### **Abstract**

Milk is a nutrient-rich liquid food produced by the mammary glands of mammals. It is the primary source of nutrition for young mammals and it source of dietary energy, high-quality proteins, and fats. Milk can make a significant contribution to the required nutrient intakes for calcium, magnesium, selenium, riboflavin, vitamin B12, and pantothenic acid for each age group and based on the physiological states of individuals. So, the objective of this paper was, Review on milk consumption of individuals according to physiological status (pregnant, lactating.), age and sex in terms of amount of milk consumed per day for each group. Gender and presence of young children in the household significantly contributes in high milk consumption rates of the household. At pregnancy nutritionist recommend increased servings of milk and dairy products at recommended levels beyond the recommended leads to over weight of fatal and other related health problems. Age also limiting factors for milk consumption amount but less than one year baby totally not offered milk because of unable to digest it and he get the essential nutrients from breast feeding of his mother. So everyone at the time of recommended milk consumption should be taking it hygienic one and use boiled milk to reduce transmission of microbes.

**Keywords:** Milk Consumption, Physiological Status, Pregnant

### **Introduction**

Milk is a nutrient-rich liquid food produced by the mammary glands of mammals. It is the primary source of nutrition for young mammals (including breastfed human infants) before they are able to digest solid food. Throughout the world, there are more than 6 billion consumers of milk and milk products, the majority of them in developing countries. As such, if it is to keep pace with the growth in demand, milk production will need to grow by close to 2% per year. Approximately 150 million households around the globe are engaged in milk production. In most developing countries, milk is produced by small households, and milk production contributes to household livelihoods, food security, and nutrition. Milk provides relatively quick returns for small-scale producers and is an important source of cash income. In the last three decades, world milk production has increased by more than 50%, from 500 million tons in 1983 to 769 million tons in 2013 [1].

Some countries in the developing world have a long tradition of milk production, and milk or its products have an important role in the diet. Other countries have established significant dairy production only recently. In recent decades, developing countries have increased their share in global dairy production. This growth is mostly the result of an increase in numbers of producing animals rather than a rise in productivity per head. In many developing countries, dairy productivity is constrained by poor-quality feed resources, diseases, limited access to markets and services (e.g., health, credit, and training), and dairy animals' low genetic potential for milk production. Unlike developed countries, many developing countries have hot and/or humid climates that are unfavorable for dairying.

Milk provides essential nutrients and is an important source of dietary energy, high-quality proteins, and fats. Milk can make a significant contribution to the required nutrient intakes for calcium, magnesium, selenium, riboflavin, vitamin

B12, and pantothenic acid. Milk and milk products are nutrient-dense foods and their consumption can add diversity to plant-based diets. Animal milk can play an important role in the diets of children in populations with very low fat intakes and limited access to other animal source foods. Regarding factors influencing consumption of dairy products, socio-economic, and demographic characteristics, like gender, age, income, education, presence of young children in the household, ethnicity, and level of knowledge serve as an influence all over the world on households' expenditure for dairy products. Accordingly, the potential of increasing a household's income, higher level of education, and greater presence of young children in the household have positive effects on the household's consumption of dairy products. Therefore, this paper has the following objectives

- Review on milk consumption of individuals according to physiological status per day for each group.

### **Gender Role on Milk Consumption**

Gender and presence of young children in the household significantly influence decisions on milk purchases. Female-headed households were found to be significant in affecting dairy products' expenditure [2]. They were also generally more health-conscious than men [3]. Additionally, the households with a greater presence of young children less than 12 years of age were generally less concerned about price and more interested in purchasing safe milk products. And also ethnic group, household composition, and the size of young children in the household, other demographic variables such as income and educational level have been found to significantly influence milk consumption. household's monthly income and level of education play a more important role in milk consumption [4]. Consumers with higher income were more likely to purchase milk products and respondents who had completed higher level of education were more likely to consume dairy products [5].

### **Demands of Dairy Products**

The demand for dairy products has grown steadily and continues to grow, particularly in the urban centres of the country, small-scale dairy production is considered beneficial to women and children as well as men. Milk sales provide regular income that is often accessible to women, while dairy products can be important in diversifying the diets of poor people, in particular children above the age of 12 months and undernourished pregnant women [6].

### **Milk Requirement for Pregnancy Women**

To meet the requirements for macronutrients and minerals during pregnancy nutritionist recommend increased servings of milk and dairy products [7]. Maternal milk consumption greater than 3 glasses (450 mL of milk) per day was associated with greater fetal weight gain in the third trimester of pregnancy, which led to an 88 g higher birth weight than that with milk consumption of 0 to 1 glass per day [8]. This association was limited to milk, whereas protein intake from non-dairy food or cheese was not associated with increased birth weight. A possible explanation for this finding is the presence of biologically active microRNAs in milk and their absence in processed milk products such as cheese. Milk consumption increase the fetal weight is high [8].

### **Milk Consumption Rates Based on Age**

Milk consumption is recommended by many nutritional guidelines for meeting daily requirements for calcium, animal protein and vitamin B12. In the United States the national dietary guidelines, recommended that adults should drink three cups or 732ml/day of milk [9]. This implies that most adults drink less than the recommended amount of milk each day (dietary guidelines of Americans, 2010). Milk and other dairy products provide essential nutrients to help lower the risk for a number of. Different health conditions if you consume them in the recommended amount. Drinking milk right from childhood was found to help reduce the risk of developing breast cancer. On the contrary, it should also noted that consumption of excess milk and milk products also has an adverse effect on the health of consumers.

Hence, it is essential to know the ideal quantity of milk to be consumed by everyone according to age group, in order to get maximum health benefit. According to boldsky report on world milk day, the idea of age-wise milk consumption requirement per day divide the age into five categories those listed below

#### **Zero-Twelve Month**

For infant and babies less than 12 month of age drinking cow's milk is not recommended breast feeding is best for them to get a sufficient amount of the required nutrients.

#### **One –Ten Years of Age**

For children in the age group of 1-3 years 360 milligrams of calcium is required per day.to meet this need, they should at least drink about 100 ml of milk and about 100-125 g of milk products like yoghurt and cheese. For those in the age group of 4-10 years, 130-150 ml of milk of milk is ideal to meet the requirement of 450-500 milligrams of calcium per day.

#### **Eleven –Eighteen Years of Age**

To meet the sufficient requirement of calcium about 800-1000 milligram for those in the age groups of 11-18years; they should drink at least 200-250 ml of milk. In addition to milk they should take other milk products such as yoghurt about 200g and cheese 30-40g.

## **Nineteen-Fifty Years of Age**

For those in the age groups of 19-50 years, they should drink about 200ml of milk every day along with consuming other milk products such as yoghurt 150g and cheese about 30 g to meet the ideal calcium requirement.

## **Above Fifty Years**

To get an adequate calcium supplement, those above 50 years of age need to drink about 200ml of milk every day along with having other milk products like yoghurt 150g and cheese 30g. further, for those above 70 years of age, milk intake needs to be increased to about 230-250ml per day.

## **Conclusions**

Milk consumption is recommended by many nutritional guidelines for meeting daily requirements for calcium, animal protein and vitamin B12. Animal milk can play an important role in the diets of children in populations with very low fat intakes and limited access to other animal source foods. Regarding factors influencing consumption of dairy products, socio-economic, and demographic characteristics, like gender, age, income, education, presence of young children in the household, ethnicity, and level of knowledge serve as an influence all over the world on households' expenditure for dairy products. Consumption of milk provides essential nutrients to help lower the risk for a number of Different health conditions if you consume them in the recommended amount. Drinking milk right from childhood was found to help reduce the risk of developing breast cancer. On the contrary, consumption of excess milk and milk products also has an adverse effect on the health of consumers. So, consume milk in recommended amount based on physiological status is better to be healthy.

## **Recommendations**

Based on the above conclusions the following recommendations should be forwarded:

- Due to lack of awareness about the balanced diet the communities in rural and urban provide milk for child less than 1 year (12 months) of age. It is not recommended and it leads to over intake of nutrients and the stomach unable to digest it so the child expose to other unexpected impact so to reduce the problem the stockholders like nutritionist and other researchers should be create awareness about recommended milk usage in each age categories and also for supplementation amounts based on physiological amounts like that of pregnant women.
- Milk is highly nutritious food and high water content up to 87% of total volume it leads for the growth of different microbes in which some are harmful effects to humans. So everyone at the time of recommended milk consumption should be taking it hygienic one and use boiled milk to reduce transmission of microbes.

## **Conflict of Interests**

The authors have not declared any conflict of interest.

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