IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

An Overview on Milk Nutrition

Dr Jaspreet Kaur Jaura, Assistant Professor,
Department of Physiology, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India
Email Id- drjaspreetkaur@rediffmail.com

ABSTRACT: ***Many individuals in today's culture are switching to a vegan or dairy-free lifestyle. Lactose digestion is impaired in about 65 percent of the human population, according to the US National Library of Medicine. A non-dairy movement has emerged as a result of the growth in veganism and increased knowledge of lactose sensitivity. This article will look at why individuals choose to exclude milk from their diets, as well as the impacts and advantages of milk. Milk has been shown in many studies to be very helpful to one's diet. Many vitamins, minerals, and acids contained in milk, according to the American Journal of Clinical Nutrition, are best absorbed by drinking cow milk. For a variety of reasons, many individuals have eliminated milk from their diet. This article will look at what previous researchers have discovered on the social and health implications of milk intake. It will also reveal the findings of a social media survey performed to learn about customers' attitudes about milk. This study looks at why people don't drink milk, as well as their perceptions of what's in milk. Supplementation is feasible, but it must be done with a thorough knowledge of nutritional needs.***

KEYWORDS: ***Disease, Fat, Milk, Nutrition, Pasteurized.***

1. INTRODUCTION

Cow's milk has a long and illustrious history in northern mythology. A Norse story claims that a cow called Audhumla was born from melting ice. Milk was "running like a torrent through her teats," and Audhumla had horns. It was then revealed that this milk was intended for the Ymer, the very first species ever to exist. Milk has been a contentious issue in the United States in recent years as more individuals become vegans and more research have been conducted on the health advantages of milk and the minerals in milk. Lactose digestion is impaired in about 65 percent of the human population, according to the US National Library of Medicine. Veganism is on the rise, and people are becoming more conscious of lactose sensitivity, thus non-dairy goods are becoming more popular. This thesis will look at why individuals choose to include or omit animal milk from their diets, as well as the health implications of doing so. There are many peer-reviewed scholarly papers on milk products. There has also been a rise in consumer magazine articles addressing the advantages of milk, the hazardous components of milk, and milk replacements for people who are unable or unable to eat milk products [1]–[3].

Dairy Milk's Positive Effects:

Milk has a lengthy history in the United States; in 1525, the first milking cow arrived in what is now known as the United States. Milk has additional health benefits in addition to nourishment. In the 1800s, for example, it was discovered that the maids who milked the cows were resistant to smallpox, leading to the development of a smallpox vaccine. Milk initiatives in schools began in the 1940s, and the federal government began to promote milk. Since then, many campaigns and initiatives have been launched to guarantee that people, particularly schoolchildren, have simple access to milk. Cow's milk is a common and handy source of nourishment for people today.

Cow's milk is composed up of elements such as lipids, proteins, amino acids, vitamins, and minerals that are meant to feed the newborn calf. Immunoglobulin's, hormones, growth factors, peptides, polyamines, enzymes, and other bioactive peptides are also present, all of which aid calf development. As a colloidal dispersion, all of these nutrients are emulsified

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

throughout the milk. The nutritional content of milk varies depending on lactation stage, age, breed, nutrition, and the energy balance and physiological condition of the udders [4]–[10].

Cow's Milk contains the following Nutrients:

The protein level of cow's milk is a significant advantage. Milk proteins have a high bioavailability, which means they are readily digested by the body. Milk is a complete protein source since it includes all of the necessary amino acids. Milk proteins serve a variety of purposes, including antibacterial activity, killing or inhibiting the development of undesirable microbes, and assisting in nutritional absorption. Casein, which makes up approximately 80% of milk's protein, transports calcium and phosphate throughout the body and helps digestion. Whey is a protein present in milk that has been known for ages, as shown by an Old Italian adage that says, "If you wish to live a healthy and active life, drink whey." All proteins, from animal to plant-based proteins, are digested and absorbed at various rates: whey and casein, for example, are both readily digested and complete protein sources.

Pasteurized vs. Unpasteurized Animal Milk: What's the Difference?

Pasteurized vs. unpasteurized milk has sparked heated discussion. Some people feel that raw milk is dangerous to consume, while others argue that pasteurization destroys most of the nutrients in milk. Commercial pasteurization equipment first appeared in the United States in 1895. This followed a time in which milk-borne diseases were a significant issue. Dr. Henry Thatcher saw a dirty rag doll fall into the open bucket of milkman carrying milk in the year 1884. As a result, Thatcher invented the first glass milk container. The milk jar became the industry standard in 1889, and it remained so until the 1950s, when paper cartons started to emerge. The National Environmental Health Association said in 2008 that pasteurization before consumer sale was a strong supporter. Pasteurization is required by the FDA for all milk and milk products in their final stages of processing before being consumed by humans. The FDA is also a major supporter of public awareness campaigns regarding the risks of drinking unpasteurized milk. Despite the FDA's warnings, some continue to promote unpasteurized milk's nutritional advantages. Traditional Foods Are Your Best Medicine and The Untold Story of Milk were written by Ron Schmid, a naturopathic physician. For a long time, raw unpasteurized milks have been a wonderful nutrition and enzyme-rich meal for treating illness, according to his book. Raw Milk Cures Many Diseases was written by John Crewe, a doctor and founder of Mayo Clinic, in the 1930s. Francis Pottenger performed a renowned experiment known as the Pottenger Cat Study in the 1930s and 1940s. In this research, Pottenger discovered that "heat-treating milk interferes with calcium metabolism," affecting bone growth and disease resistance.

Milk from a Goat:

Some people purchase goat's milk, which is comparable to cow's milk. The nutritional advantages of goat's milk are comparable to those of cow's milk, but not identical. Goats are smaller and need less grass, which may be seen as a positive in terms of the environment. Giving them a tiny pasture with little grass, on the other hand, may result in a lack of nutrients, lowering milk quality and output. When comparing goat's milk to cow's milk, the greatest variation in fat content is that goat's milk has a distinct distribution of fatty acid chains. The smell and taste of goat's milk are altered by the presence of more capric, caprylic, and caproic acid chains.

Fat from Animal Milk:

The question of whether milk fat is beneficial for humans is often debated among nutritionists. Saturated fatty acids make up more than half of the fatty acids in milk. Milk contains fatty acids that have been proven to enhance health and even reduce illness risk.

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

Butyric acid, for example, is widely recognized for its gene activity and may help prevent cancer; caprylic acid may help slow tumor development; and lauric acid has been found to have antiviral and antibacterial properties. When it comes to serum cholesterol, numerous research have demonstrated that consuming reduced fat-dairy has positive effects. Furthermore, milk fat intake has been found to have a lower impact on blood cholesterol levels than one would anticipate from fat.

Non-Dairy Milk's Positive Effects:

Despite the nutritional advantages, many individuals refuse to consume cow's milk for a variety of reasons. Animal milk is not permitted in the diet. Another reason why many people avoid drinking animal milk is the high number of individuals who are lactose intolerant. Lactose intolerance affects around 65 percent of the population in the United States. Lactose intolerance affects approximately 90% of people of West African, Arab, Jewish, Greek, and Italian ancestry. Lactose intolerance occurs when the enzyme lactase is missing, which would normally break down lactose, a sugar present in milk. Bloating, stomach pain, excessive gas, and diarrhea may all be symptoms of an inability to break down lactose.

- *Milk made from Coconuts:*

Over the last decade, coconut milk has grown in popularity, and more restaurants and cafés are using it as a non-dairy alternative. Many different types of coconut milk are now available in grocery shops and big corporations. Coconut milk has become extremely popular since it contains an average of 70 calories per cup, compared to full cow's milk, which has up to 150 calories per cup. Coconut milk, like other non-dairy milk substitutes, has almost twice as much calcium as cow's milk. Coconut milk provides 45 percent of daily calcium requirements, whereas cow's milk only provides approximately 30 percent. However, it is important to remember that most of the calcium in coconut milk has been added and is not present natively, while calcium is found naturally in cow's milk.

- *Soy Milk:*

Soy milk is one of the few non-dairy types of milk that comes close to matching the protein contents of cow's milk. One cup of soy milk has approximately 6-8 grams of protein, compared to 8 grams in cow's milk. The fact why soy milk has a wide range of protein content is due to the many businesses that produce it. Different kinds of non-dairy milks and the businesses who produce them have been compared in the Environmental Nutrition magazine.

- *Almond Milk:*

Almond milk was developed in the 1990s and is lactose-free. It has no cholesterol or saturated fat. It's produced by soaking almonds in water and then combining them in a machine that makes vegetable drinks. Finally, the "nut water" takes approximately 30 minutes to make and has an almond-to-water ratio of 8:100. Almond milk is excellent for lactose intolerant individuals, however it is not suitable for those who are allergic to nuts.

Aspects of Milk That Are Negative:

Many individuals prefer to consume milk for a variety of reasons; conversely, many others avoid milk for a variety of reasons. Milk is a complicated meal with many distinct components that the human body cannot always accept. The primary component of milk that the body may not accept is lactose, which is a sugar. Lactose is broken down in the small intestine and converted to glucose and galactose, which are subsequently utilized to provide energy to the body. Lactase, a specific enzyme, is required to break down lactose, the sugar found in milk. Lactase is plentiful throughout childhood, when milk is the primary source of

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

nutrition. Lactase is no longer present in most animals after infancy, although many people may maintain a high level of lactase throughout their lives. Lactase deficiency in the small intestine necessitates limiting or eliminating dairy intake. Lactase may be found in a variety of places in the human body, although it is most often found in the epithelial cells of the small intestine.

Fat from animal milk:

Milk has more than 50% saturated fat, which has given it a poor image since the 1960s, when many people were seeking to avoid saturated fats. Saturated fatty acids such as lauric, myristic, and palmitic acid may all increase HDL (high-density lipoprotein) and LDL (low-density lipoprotein) levels in the body, leading to higher total blood cholesterol levels. Saturated fat and cholesterol consumption have been linked to an increased risk of becoming obese and getting heart disease.

Non-Dairy Milk's Negative Effects:

- *Milk made from coconuts:*

Coconut milk is a new favorite in the non-dairy milk section of the supermarket. Coconut milk has the greatest fat content among non-dairy milks, according to a graphic published in Environmental Nutrition magazine. In 8 ounces of milk, Silk™ Coconut milk contains 5 grams of fat and Silk™ Almond milk has 2.5 grams of fat. Saturated fats, like the ones mentioned above, tend to elevate bad cholesterol levels (LDL), which increases the risk of heart disease. Saturated fat intake must be reduced in order for these levels to stay low.

- *Soy Milk:*

Many health experts consider soy milk to have a similar profile to cow's milk due to its greater protein levels compared to other non-dairy milks, which may have extremely low protein levels. Soy milk contains a range of 6-8 grams of protein per cup, which is quite high for non-dairy milk, according to a chart published in the Environmental Nutrition magazine in 2015. However, consumers must check the label to verify that the brand of soy milk they are buying has a high protein content, while cow's milk contains an even 8 grams of protein per cup.

2. DISCUSSION

Milk is a nutrient-dense liquid food produced by animals' mammary glands. It is the main source of nourishment for young animals, including breastfed human babies who have not yet developed the ability to digest solid food. Colostrums' is a kind of early-lactation milk that includes antibodies that improve the immune system and therefore lower the risk of numerous illnesses. It also contains a variety of other nutrients, including as protein and lactose. Milk eating across species is widespread, especially among humans, who drink the milk of other animals. According to studies, individuals above the age of nine should consume three glasses of milk each day. This is due to the fact that milk and other dairy products are high in calcium and phosphorus. Vitamin A, vitamin D, riboflavin, vitamin B_{12}, protein, potassium, zinc, chlorine, magnesium, and selenium are all important minerals to have. This article addresses the benefits and drawbacks of milk feeding.

The most recent evidence suggested that intake of milk and dairy products was associated with reduced risk of childhood obesity. In adults, intake of dairy products was shown to improve body composition and facilitate weight loss during energy restriction. In addition, intake of milk and dairy products was associated with a neutral or reduced risk of type 2 diabetes and a reduced risk of cardiovascular disease, particularly stroke. Furthermore, the evidence suggested a beneficial effect of milk and dairy intake on bone mineral density but

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

no association with risk of bone fracture. Among cancers, milk and dairy intake was inversely associated with colorectal cancer, bladder cancer, gastric cancer, and breast cancer, and not associated with risk of pancreatic cancer, ovarian cancer, or lung cancer, while the evidence for prostate cancer risk was inconsistent. Finally, consumption of milk and dairy products was not associated with all-cause mortality. Calcium-fortified plant-based drinks have been included as an alternative to dairy products in the nutrition recommendations in several countries. However, nutritionally, cow's milk and plant-based drinks are completely different foods, and an evidence-based conclusion on the health value of the plant-based drinks requires more studies in humans.

Several media stories and organisations claim that dairy increases risk of chronic diseases including obesity, type 2 diabetes, cardiovascular disease, osteoporosis, and cancer. Therefore, there is an increasing scepticism among the general consumers about the health consequences of eating dairy products. This is reflected in an increasing consumption of plant-based drinks, for example, based on soy, rice, almond, or oats. Dairy is an essential part of the food culture in the Nordic countries; thus, inclusion of milk and dairy products in the diet may be natural for many Nordic individuals. The major causes of loss of disease-free years in the Nordic countries today are type 2 diabetes, cardiovascular diseases, and cancers. Moreover, the increasing prevalence of obesity greatly increases the risk of these chronic diseases. Given the increasing prevalence of these chronic diseases, it is critically important to understand the health effects of milk and dairy products in the diet. Accordingly, this narrative review presents the latest evidence from meta-analyses and systematic reviews of observational studies and randomised controlled trials on dairy intake (butter excluded) and risk of obesity, type 2 diabetes, cardiovascular disease, osteoporosis, and cancer as well as all-cause mortality.

We aim to answer the key questions: 1) For the general consumer, will a diet with milk and dairy products overall provide better or worse health, and increase or decrease risk of major diseases and all-cause mortality than a diet with no or low content of milk and dairy products? 2) Is it justified to recommend the general lactose-tolerant population to avoid consumption of milk and dairy products? 3) Is there scientific evidence to substantiate that replacing milk with plant-based drinks will improve health?

3. CONCLUSION

To summarize, we now know that milk has a variety of nutritious components and that milk advertising has a variety of effects on the kind of milk we choose to consume. The health and nutritional impacts of cow's milk have been researched extensively by both government and commercial organizations. The majority of these sites promote cow's milk, claiming that its nutrients are necessary for human consumption. Calcium is important for heart, muscle, and nerve function, as well as blood clotting, and cow's milk is the primary supply of calcium in the American diet. However, considerable study has been done on the harmful effects of milk. Lactose intolerance is one of the major reasons why people don't drink milk. With saturated fats accounting for more than half of the fat in milk, this is yet another major complaint of cow's milk, and even the USDA recommends avoiding milk fat. However, many research in recent years have shown the nutritional advantages of milk fat and its numerous beneficial fatty acids.

Because of the increasing vegan movement and strong demand from big non-dairy milk businesses, non-animal milks have become a highly popular culinary trend today. Many vegan and nondairy milk manufacturers have conducted research and written papers to explain why customers should select their products. Low calorie, low fat, and high calcium content are just a few of the reasons why non-dairy milks seem to be nutritionally appealing.

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, October 2022

Those who oppose non-dairy milks claim that these milks are nutritionally deficient, with little protein and a small quantity of naturally occurring vitamins and minerals. Non-dairy milk is required for certain people owing to allergies or intolerances; nevertheless, non-dairy milk is a health or taste preference for others.

REFERENCES:

[1] E. S. Tkacheva and S. Y. Zavalishina, "Physiological Aspects Of Platelet Aggregation In Piglets Of Milk Nutrition," *Res. J. Pharm. Biol. Chem. Sci.*, 2018.

[2] J. H. Kim, C. S. Chan, Y. E. Vaucher, and L. M. Stellwagen, "Challenges in the practice of human milk nutrition in the neonatal intensive care unit," *Early Hum. Dev.*, 2013, doi: 10.1016/j.earlhumdev.2013.08.002.

[3] C. Y. Boquien, "Human milk: An ideal food for nutrition of preterm newborn," *Frontiers in Pediatrics*. 2018, doi: 10.3389/fped.2018.00295.

[4] F. Serrao *et al.*, "Effect of early expressed human milk on insulin-like growth factor 1 and short-term outcomes in preterm infants," *PLoS One*, 2016, doi: 10.1371/journal.pone.0168139.

[5] E. Pecka-Kiełb, A. Zachwieja, E. Wojtas, and W. Zawadzki, "Influence of nutrition on the quality of colostrum and milk of ruminants," *Mljekarstvo*. 2018, doi: 10.15567/mljekarstvo.2018.0302.

[6] L. T. Tyasi, M. Gxasheka, and C. P. Tlabela, "Assessing the effect of nutrition on milk composition of dairy cows: A review," *Int J Curr Sci*, 2015.

[7] A. B. Hair, D. J. Rechtman, M. L. Lee, and V. Niklas, "Beyond necrotizing enterocolitis: Other clinical advantages of an exclusive human milk diet," *Breastfeed. Med.*, 2018, doi: 10.1089/bfm.2017.0192.

[8] N. J. Andreas, B. Kampmann, and K. Mehring Le-Doare, "Human breast milk: A review on its composition and bioactivity," *Early Human Development*. 2015, doi: 10.1016/j.earlhumdev.2015.08.013.

[9] L. Iannotti, E. Muehlhoff, and D. Mcmahon, "Review of milk and dairy programmes affecting nutrition," *Journal of Development Effectiveness*. 2013, doi: 10.1080/19439342.2012.758165.

[10] A. Haug, A. T. Høstmark, and O. M. Harstad, "Bovine milk in human nutrition - A review," *Lipids in Health and Disease*. 2007, doi: 10.1186/1476-511X-6-25.