
ARTICLE REVIEW

A Scoping Review on Factors Influencing Milk Consumption Behavior Among Adults

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ABSTRACT

Introduction	Milk and dairy products are good sources of high-quality protein. Protein is important during weight loss and subsequent weight maintenance due to the high satiating effect which helps to prevent over-consumption of energy and thereby reduces body fat stores. Furthermore, dairy protein is a good source of essential amino acids for muscle protein synthesis and thus helps to maintain metabolically active muscle mass during weight loss. Regarding milk consumption, it is important to find the association between personal, environmental and behaviour factors with milk consumption.
Objective	The aim of the study was to identify factors influencing milk consumption behaviour among adults.
Methods	This study was based on the literature review and on different case studies from different parts of the world to fulfill the main scope of factors influencing milk consumption.
Results	Based on this review, environmental factors were found to be the main influences on milk consumption behaviour, followed by personal factors and behaviour factors.
Conclusion	This review is also expected to enrich the documentation on the influencing of milk consumption behaviour among adults.
Keywords	Influencing- milk consumption- scoping review- behaviour.

Article history

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INTRODUCTION

Milk is a good source of many essential nutrients, including calcium, protein and vitamin D. Many people see it as a vital part of a balanced diet. Others, however, cite various reasons for choosing not to consume it. Milk's health depends on the individual and the type of milk they consume. Pasteurized milk that is high in protein, low in fat and free from unnecessary additives that can be healthful for many people. On the other hand, some flavoured milk contains as much sugar as a can of soda. These are not healthful choices¹.

Milk has been not only the primary source of nutrition for any new-born in mammalian species but also an excellent source of nutrients for children's growth and most adults, which has been recommended by a great number of dietary guidelines in all over the world^{2,3}.

Throughout the world, there are more than 6 billion consumers of milk and milk products, and most of them are 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 percent per year. Approximately 150 million households around the globe are engaged in milk production. In most developing countries, milk is produced by

smallholders, and milk production contributes to household livelihoods, food security and nutrition. Milk provides relatively quick returns for small-scale producers and it is an important source of cash income. In the last three decades, world milk production has increased by more than 50 percent, from 500 million tons in 1983 to 769 million tons in 2013.³

METHODS

A scoping review was conducted using the Preferred Reporting Items for Systematic Meta-Analysis extension for scoping review (PRISMA-ScR).⁴ Figure 1 depicted the study selection process. Any articles that irrelevant were excluded in the early stages of the search, whilst the decision to exclude or include the articles were only be made once the articles had been sorted systematically. The researchers then compiled these records and made a summary. The search strategy was developed based on the search terms by the experienced researcher and the research librarian supported the search activities. Boolean operators (OR, AND, NOT etc) including adjacencies and truncations were used to combine the keyword and related term during the literature search (see Table 1).

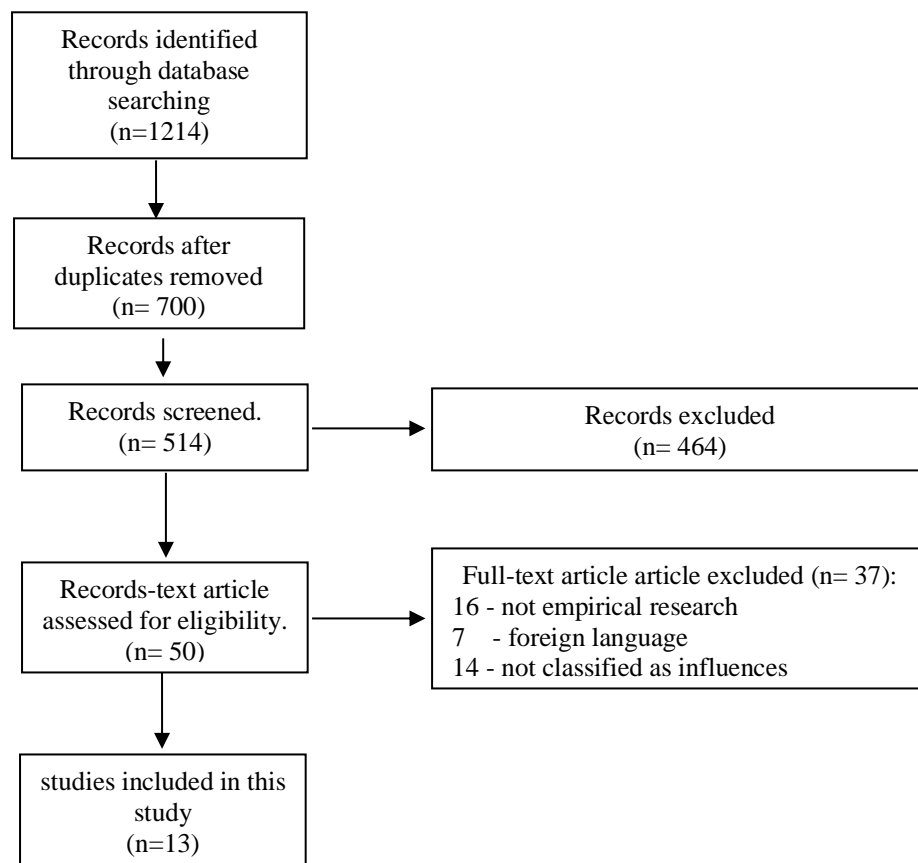


Figure 1 PRISMA-ScR flow diagram on selection process

This article focuses on studying various factors influencing adults to consume milk. The reason why we choose milk as the target of our attention lies in the fact that milk, as one category of dairy products is important to keep people healthy. It is recommended that people should consume 1-2 servings a day; one (1) glass of milk (250 ml) since it can help in preventing osteoporosis later in life.⁵ Malaysian Adults Nutrition Survey⁶ reported on the food consumption patterns of 6,742 consumers aged 18 to 59 years. It was revealed that adults aged 50-59 years old consumed full cream milk frequently, while only 15% of those below 20 years of age consumed milk daily.⁷ In connection with this, the main aim of this article is to identify scientific and research literature on factors influencing milk consumption behaviour for the purpose of compiling a summary literature review, pointing out the importance of its consumption.

RESULTS

Literature Search on Factors Influencing Milk Consumption Behaviour

In the case of milk, we could identify that the changing variation of consumer behaviour can be explained by personal factors, environmental factors and behaviour factors⁸. In the connection with the factors influencing adults in consuming milk and milk products, there were several research studies identified locally and abroad (see Table 1 – Review of Research on Factors Influencing Milk Consumption Behaviour). We decided to present the results and findings of several selected studies to point out what factors may have influenced milk consumption behaviour.

Table 1 Review of Research on Factors Influencing Milk Consumption Behaviour

No.	Year	Author/s	Framework	Findings
1.	2019	Quang ⁹	Factors affecting fresh milk consumption of Vietnamese households.	Key factors influencing milk consumption: household income, education, living places and fridge availability
2.	2019.	Jun Hyun Park et al. ¹⁰	Milk consumption patterns and perceptions in Korean adolescents, adults and the elderly. (Korea)	Key factors influencing milk consumption: for height growth, as a snack, or as a meal substitute, for bone health, and because it is rich in nutrients.
3.	2019	Shaosheng. et al. ¹¹	Chinese Consumers' Preferences for Attributes of Fresh Milk: A Best–Worst Approach. (China)	Key factors influencing milk consumption: Safety certification, shelf life, nutrition taste, brand, organic, fat, sterilization technique, traceability, price and origin.
4.	2018	Ansar Mehmood et al. ¹²	Factors Affecting Consumer Behaviour Towards Consumption of Fresh Milk (Pakistan)	Key factors consumption pattern of fresh milk: Easily available, taste, quality, size of family, income and education.
5.	2016	Nga BT ¹³	Factors Affecting Milk Consumption Behaviour in Vietnam. A Case Study in Long Bien District of Hanoi.	Key factors influencing milk consumption: Higher educational level, good career and household income.
6.	2014	Trung et al. ¹⁴	Factors Influencing Milk Consumption of Rural Households in Northern, Vietnam.	Key factors influencing milk consumption: Household income, household composition, age, gender, education, perception of milk price and origin, and convenience of purchase place.
7.	2014	Kumar & Babu ¹⁵	Factors Influencing Consumer Buying Behaviour With Special Reference To Dairy Products in Pondicherry State. (Sri Lanka).	Key factors determining the purchase of a dairy product: advertisement, brand preference, product availability, product pricing, product quality and product variety
8.	2012	Bonaventure & Umberger ¹⁶	Factors Influencing Malaysian Consumers' Consumption of Daily Products.	Key factors determining the purchase of dairy products: Location (cleanliness, position, availability of higher quality products), label information, health benefits,

Influencing Milk Consumption

9.	2012	Kuma et al. ¹⁷	Factors Affecting Packed and Unpacked Fluid Milk Consumption in Wolaita Zone of SNNP Regional State, Ethiopia	certificate, brand, perceptions (good source of protein, calcium, vitamins), age, ethnicity, nutrition, reference from family and friends, and social status. Key factors affecting packed and unpacked fluid milk purchase: Age, household size, household composition, education, income and price.
10.	2010	Ates & Ceylan ¹⁸	Effects of Socio-economic Factors on the Consumption of Milk, Yogurt and Cheese (Turkey)	Key factors determining consumption of milk: income, age, education and occupation.
11.	2009	Alvis et al. ¹⁹	Analysis of Factors Affecting Fresh Milk Consumption among the Mid-country Consumers (Sri Lanka)	Key factors determining to consumption of fresh milk: package, brand, price, design, taste, nutrition, availability, age, education, income and health.
12.	2007	Bharat & Pradip ²⁰	A Study on Consumer's reference Towards Packed and Unpacked Fluid Milk with Special Reference to Veraval City (India)	Key factors influencing consume of packed and unpacked milk: Standard quality, minimum fat level, freshness, price and availability.
13.	2006	Hsu & Lin ²¹	Consumption and attribute perception of fluid milk in Taiwan	Key factors determining fluid milk consumption: Income, education, household size, household structure, taste, flavour, fat, nutrition, certification and brand.

DISCUSSION

a. Personal Factors

Personal factors are the individual factors of the consumers that strongly influence their consumption behaviours.²² Several studies reported that women were generally more knowledgeable about the recommended consumption of milk compared to men. This may be attributed to the fact that most women (even those with professional careers) are still performing the traditional role of housewives, where they are responsible for purchasing food and preparing meals and tend to consume more milk.¹⁴ Specifically, regarding the influence by the gender, was proven higher demand for women for purchasing low-fat dairy beverages and even all dairy products specifically for men.¹⁵

One of the researchers who dealt with the issue of factors influencing the consumption of dairy products were Bonaventure and Umberger.¹⁶ Within the research, they focused on investigating drivers of the demand for dairy products (specifically demand for fresh fluid milk, powdered milk, butter, cheese, yogurts and ice creams) in the sample of Malaysian consumers. Based on the answers of

respondents gained via face-to-face interviews and outcomes obtained via statistical calculations, researchers identified a group of most significant factors influencing consumers and their dairy consumption and showed that there were three factors having a significant and positive impact on the consumption of dairy products among Malaysian consumers, namely age, ethnicity and nutrition benefits for the human body (i.e. source of nutrients and proteins).

Three attributes namely age, income and level of education were positively associated with milk intake among adults. The study showed that milk consumption decreased with increasing age.^{14,17,19} The result also revealed that income differences influenced the pattern of milk consumption. Individuals in the higher income group drank significantly more milk than those in the lower income group. This finding was expected, as lower-income people tended to prioritize their income on basic needs as compared to purchasing milk. The findings also showed that the level of education on the importance of milk was a motivator to the

contributing factors to milk consumption.
9,12,13,14,17,18,19,21

Next, the findings showed that the respondents consumed milk because of the perceived health benefits.^{16,19}

b. Environmental factors

Environmental factors make up the physical, social and attitudinal environment in which people live and conduct their lives.²³ Through the literature search, we can declare that, as for milk consumption, it was found that product quality (i.e. freshness, taste, and texture), product availability, product pricing, product variety, brand image and finally advertising, were the important influencing factors in consuming milk and dairy products. Studies reported that the media can educate and encourage the promotion of drinking milk to the public.^{17,18,19,20}

The previous studies also reported that label information, perceived health benefits and the presence of the Halal logo (that is, a logo that indicates the consumption of food is permitted by Islamic Law) also had a relationship with milk consumption.¹⁶ Finally, with respect to purchasing, i.e. store environment, consumers highlighted that the cleanliness, convenient location of the store and the availability of higher quality product offerings represented the most important criteria influencing their dairy purchase intentions. In addition to this, it was known that taste was also an important motive stimulating the consumption of dairy beverages, followed by health benefits, brand, weight control and price.

A specific group of milk product, i.e. the group of fresh milk was examined.¹⁷ In the research, the findings revealed that selected product-related factors (i.e. packaging, price, brand, appearance, taste, convenience, nutrition value, relative nutrition quality and availability) were related to milk consumption. With respect to product-related factors, nutritional importance and sensory factors appeared to have a positive impact on purchasing fresh milk, and high price levels and poor availability showed up to have a negative impact on fresh milk consumption. This research showed us other important factors that should be taken into consideration when marketing which were not only applied for fresh milk but also other dairy products.

In addition, the study also showed that it was challenging for those who lived in suburban or rural areas, especially areas

with an absence of electricity and refrigerator to consume milk and dairy products. Thus, this had becoming some barriers to milk and dairy products consumption since milk and dairy products require cool and chilled safekeeping to avoid them becoming spoiled.⁹

c. Behaviour Factors

Behaviour factors stem from human behaviour. They might be due to personality, the situation, or a reaction to the environment.²³ For this literature search, the reasons for consuming milk were a healthy concern, habit and its wide usage in households (for the purpose of cooking and the presence of children). Besides, respondents also drank milk because of usage habits and traditions. An interesting finding also showed that taste was a motivating factor to consume milk.
11,12,19,21

CONCLUSION

Numerous studies had revealed that milk consumption was influenced by various potential factors such as personal, environmental, and behaviour factors. Understanding adults and their milk consumption behaviour is very complicated. This is caused by the complex nature of adult's behaviour which means that their decision-making on milk consumption are influenced by a wide range of factors, information and elements resulting from their internal nature of themselves and the external character of the environment in which adults live.

We went through several local and foreign research articles and studies, essentially, for the purpose of studying and knowing how various factors influence adults milk consumption behaviour. The information gathered from the selected studies were valuable for future reference. Therefore, it is hoped that future strategies and intervention programmes that aim to increase milk consumption and promote adults healthy dietary behaviours can be achieved by exploring the relationship between milk consumption, and these three variables: environmental, personal and behaviour factors.

Ethical Consideration

This study is registered under the National Medical Research Registry (NMRR-19-2659-50846) and the protocol has been approved by the Medical Research and Ethics Committee (MREC), Ministry of Health, Malaysia.

Conflict of Interest

The authors declare no conflict of interest.

Influencing Milk Consumption

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