



Consumer Awareness and Attitude towards Nutritional Milk Products for People with Metabolic Syndrome

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Abstract

This article examines consumers' awareness and attitudes regarding nutritional milk products designed for people with metabolic syndrome. Data were collected from 612 dairy product consumers in three major cities representing different regions of Vietnam: 204 in Hanoi, 203 in Da Nang, and 205 in Ho Chi Minh City. The study shows that the market for nutritional milk for people with metabolic syndrome is facing a paradox: consumers clearly understand the benefits and have positive feelings about the product, but are hindered by factors related to price, distribution, and a large gap in awareness of the difference and unique value of nutritional milk compared to regular milk. The study proposes solutions for dairy companies and relevant stakeholders to encourage consumer adoption, thereby transforming positive perceptions into sustainable consumption attitudes.

Keywords: Consumer attitude, Consumer awareness, Metabolic syndrome, Nutritional milk.

1. Introduction

The number of people suffering from metabolic syndrome (MetS) in Vietnam is increasing, especially diseases such as diabetes, gout, hypertension, and dyslipidemia. According to the Vietnam Ministry of Health (2023), approximately 7 million people—equivalent to 7% of the population—were living with diabetes. Notably, more than 55% of them have complications, of which 34% were cardiovascular complications; 39.5% had eye complications and neurological complications; 24% had kidney complications. Such complications not only increase medical costs but also significantly reduce the quality of their life. Additionally, about 35% of the population lives with gout, primarily among individuals of working age. Among every 100 adults, 2–5 suffer from arthritis, with symptoms related to the disease (VTV, 2023).

The development of functional foods to supplement nutrition plays an essential role in promoting healthy diets and preventing disease (Wilkinson, 2005; Tapsell, 2008). Functional foods are defined as products that provide health benefits beyond the basic nutrients they contain (Wilkinson, 2005; Topcu et al, 2025). According to the International Life Sciences Institute, a food can be considered functional if it is adequately demonstrated to beneficially affect one or more target functions in the body, beyond its nutritional effects, in a way that is associated with improved health, well-being, and/or reduced disease risk (Ashwell, 2002; Bethsua, 2020). Functional foods are thus believed to provide significant benefits to consumers and improve quality of life (Bleiel, 2010; Barauskaite, 2018).

People with metabolic syndrome tend to pay more attention to appropriate nutritional foods, resulting in rising demand for these product groups. In recent years, numerous studies have examined the health effects of nutritional milk supplements (Quoc Hung et al., 2021; Quoc Hung & Van Hoan, 2021; Tu, Lam, & An, 2021; Tu, Lam, Linh, et al., 2021; Barrios et al, 2008; Cerjak et al, 2015; Crichton et al, 2011; Mena-Sánchez et al, 2019; Nguyen et al, 2019; Nguyen et al, 2021). However, research on consumer awareness of the role of nutritional milk products for people with metabolic syndrome in Vietnam remains limited. To assess consumer awareness, support health communication and education, and promote the informed use of nutritional milk, it is essential to study consumers' awareness of these nutritional milk products' effects on people with metabolic syndrome.

2. Research Methods

The survey method was used to collect primary data on consumer awareness and attitude regarding nutritional milk products for people with MetS.

Non-probability sampling method with specific sample numbers:

$$SS = \frac{Z^2 \times (p \times (1 - p))}{e^2} = \frac{1.96^2 \times (0.05 \times (1 - 0.05))}{0.02^2} = 456.19$$

In which Z is the standard distribution statistical value. With 95% confidence, Z = 1.96
p: probability of selection. With the limitation of study time, we chose p = 5%
e: level of error, e = 2%

The survey groups focused on consumers who purchased milk products. Six hundred thirty-one consumers from 3 major cities, representing three regions in Vietnam (Hanoi, representing the Northern provinces; Da Nang, representing the Central provinces; and Ho Chi Minh City, representing the Southern provinces) were interviewed. After cleaning, 612 samples (204 from Hanoi, 203 from Da Nang, and 205 from Ho Chi Minh City) were used for processing with the support of SPSS 26 software. Descriptive statistics were applied to determine the mean and other key parameters, providing a basis for further analysis and interpretation. In addition, a five-point Likert scale was employed to assess consumer awareness and attitude about nutritional milk products for MetS.

The demographic characteristics of the survey sample are described in Table 1.

Table 1. Characteristics of the survey sample.

Characteristic	Number of people	Proportion (%)
1. Gender		
Male	240	39.22
Female	372	60.78
2. Average age: 47.7 years old	612	
3. Education level		
- Not going to school	5	0.82
- Primary school	26	4.25
- Secondary school	82	13.40
- High school	185	30.23
- Vocational school/college	119	19.44
- University	124	20.26
- Postgraduate	71	11.60
4. Occupation		
- Freelance worker	106	17.32
- Office staff	113	18.46
- Worker	111	18.14
- Civil servants	121	19.77
- Business/trade	128	20.92
- Other	33	5.39
5. Family income		
- No stable income	3	0.49
- Less than 10 million/month	144	23.53
- From 10 to 20 million/month	174	28.43
- More than 20 million/month	198	32.35
6. Place of residence		
- Urban	326	53.27
- Rural	286	46.73

The majority of participants are female, with 372 people (60.78%), while 240 men (39.22%) were represented. The average age of the surveyed people was 47.7 years old. The education level of the survey group was quite diverse. The group with high school level has the highest proportion (30.23%). Next were the groups with university level (20.26%) and vocational school/college level (19.44%). The proportion of people who did not attend school (0.82%) and only completed primary education (4.25%) was very low, indicating that the majority of participants had an educational background from high school or higher.

Occupational distribution was relatively balanced across major groups. Business and trade accounted for the largest share (20.92%), followed by civil servants (19.77%), office workers (18.46%), workers (18.14%), and freelance workers (17.32%).

In terms of household income, most families earned between 10 and 30 million VND per month. Specifically, the group with an income of 20–30 million VND/month made up the largest proportion (32.35%), followed by those earning 10–20 million VND/month (28.43%). A considerable portion (23.53%) reported an income below 10 million VND/month, while only a very small group had no stable income (0.49%). Regarding place of residence, 53.27% of respondents lived in urban areas, compared to 46.73% in rural areas.

3. Research Results

3.1. Consumer Awareness of the Benefits of Nutritional Milk for People with Metabolic Syndrome

The results indicated that consumer awareness of the benefits of nutritional milk for people with MetS was generally high and positive. Specifically, the majority of respondents (86.9%) agreed or strongly agreed that nutritional milk provided a rich source of calcium and supplied good energy for people with MetS. A similar proportion (88.9%) recognized nutritional milk as a rich source of vitamins and proteins beneficial for this group. Notably, 90.0% of consumers considered nutritional milk necessary in the daily diet of people with MetS,

while 90.2% regarded it as a suitable dietary choice. In addition, 89.7% believed that nutritional milk helps balance the diet for people with MetS.

These findings demonstrate that consumers possess a good understanding and believe in the positive role of nutritional milk in supporting the health of people with MetS—both as a provider of essential nutrients and as an important component of a balanced diet.

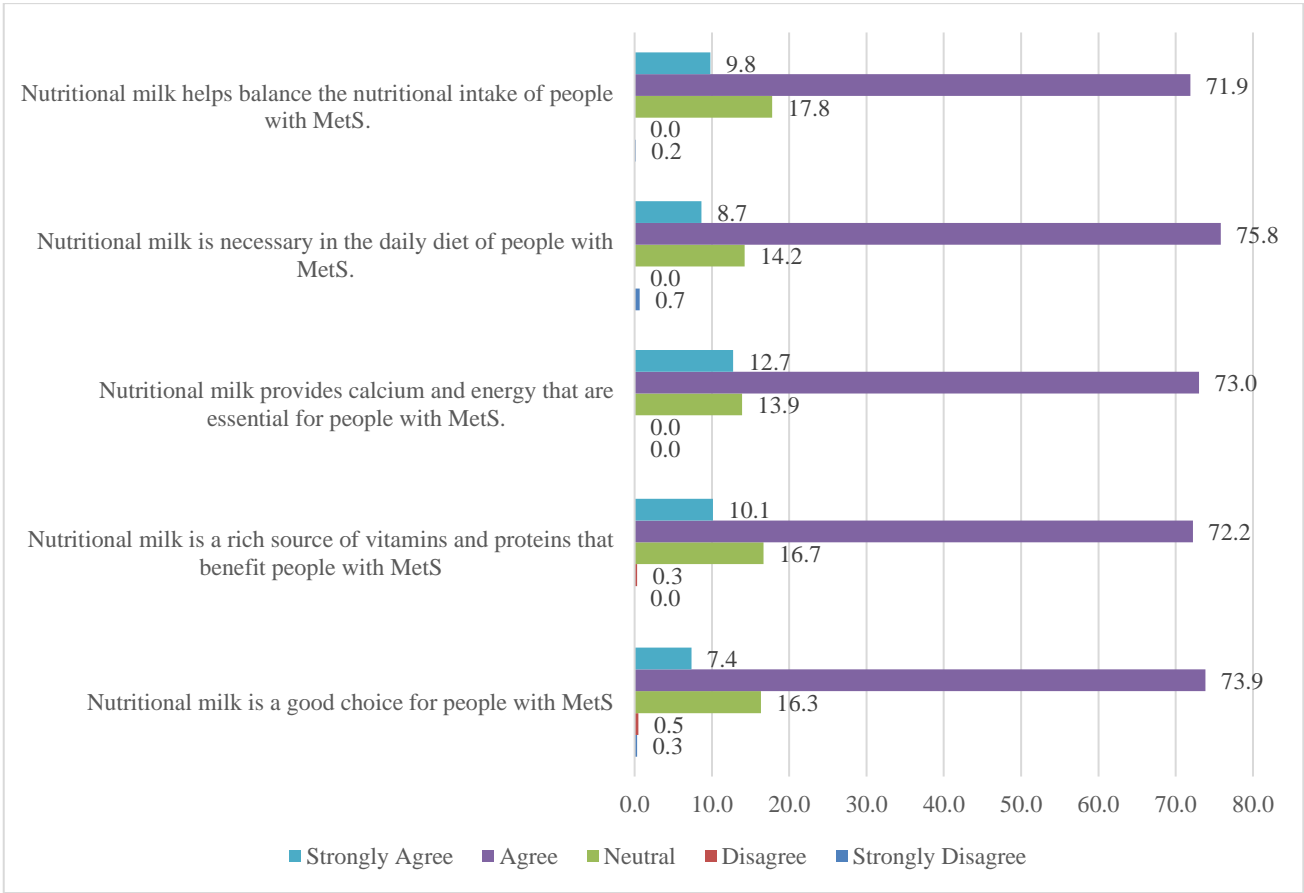


Figure 1. Consumer perceptions of the benefits of nutritional milk for people with metabolic syndrome

3.2. The Influence of Society and Community on Consumers’ Use of Nutritional Milk Among People with Metabolic Syndrome

Social and community factors played an important role in shaping consumers’ decisions to use nutritional milk. Among these, family was the most influential factor, with 69.0% of consumers agreeing or strongly agreeing that their family thought they should buy nutritional milk to help prevent and support the treatment of MetS. This emphasizes the role of the family in shaping health attitudes.

The influence of a doctor or health professional was also significant, with 47.8% of consumers saying their doctor or health professional recommended it. Trust in medical advice was an important driver. Friends or colleagues had slightly lower levels of influence than family and doctors, with 44.3% of consumers receiving recommendations from this group. Notably, a large proportion of consumers (approximately 43-49%) were neutral about the influence of friends/colleagues and doctors, suggesting that there may be a divide in perceptions of advice from these sources.

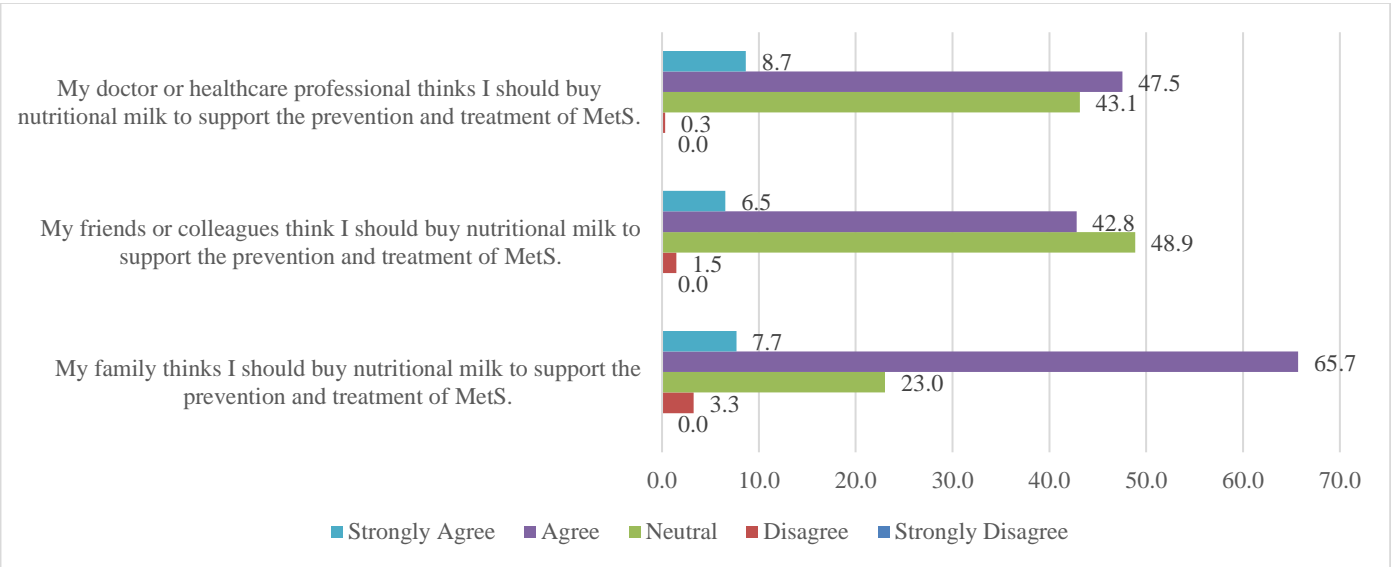


Figure 2. The influence of society and community on consumers in using nutritional milk to support the prevention of MetS.

3.3. Barriers for Consumers in Using Nutritional Milk among People with MetS

Although consumer perceptions of benefits and social influence were generally positive, significant barriers remained in the use of nutritional milk for people with MetS. The most prominent barrier was price: 75.0% of respondents agreed or strongly agreed that the price of nutritional milk products for people with MetS in

Vietnam was currently too high for them to purchase. This indicates that economic factors were a major obstacle to consumption.

Another critical barrier was the lack of trust in product differentiation. A large majority (77.6%) of consumers stated that they did not recognize the difference and unique value of nutritional milk for people with MetS compared to regular milk. This highlights shortcomings in communication and market education.

Accessibility also posed challenges. Specifically, 64.2% of consumers reported difficulty finding nutritional milk for people with MetS, while 33.5% agreed that few stores in their area stock such products. These results point to weaknesses in distribution channels and limited product availability.

Information gaps further exacerbate the problem. A total of 63.4% of consumers indicated they had very little information about nutritional milk for people with MetS. Although only 20.4% agreed that some of the current information is unreliable, the high proportion of neutral responses (65.4%) suggests cautiousness or limited trust in available information sources.

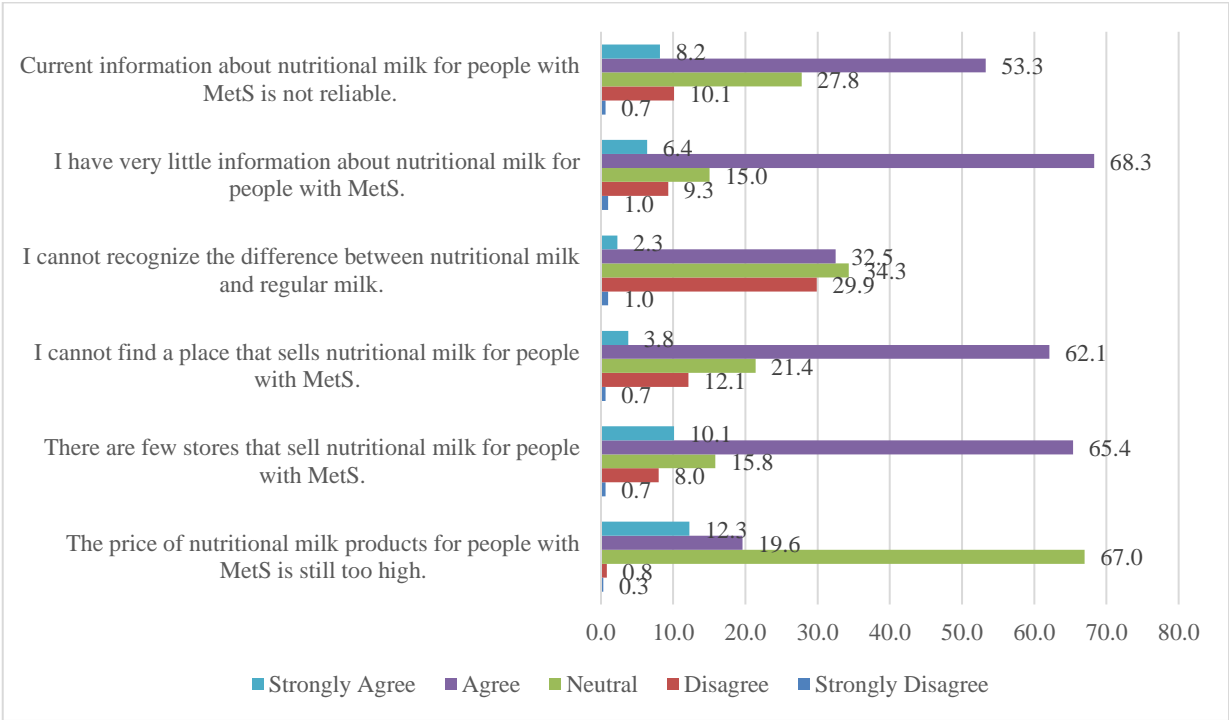


Figure 3. Barriers for consumers in using nutritional milk to support the prevention of MetS.

3.4. Consumer Perceptions of Nutritional Milk Product Use Among People with Metabolic Syndrome

When using nutritional milk products, consumers have positive feelings about health benefits and peace of mind. The majority of consumers (70.0%) considered buying nutritional milk a good choice. More than two-thirds (67.4%) of consumers believed that buying nutritional milk would help them improve their health. In particular, 71.0% of consumers felt more secure about their health when buying nutritional milk.

These figures confirm that consumers have strong faith in the ability of nutritional milk to provide peace of mind and improve health, making purchasing this product a strategic decision for personal health.

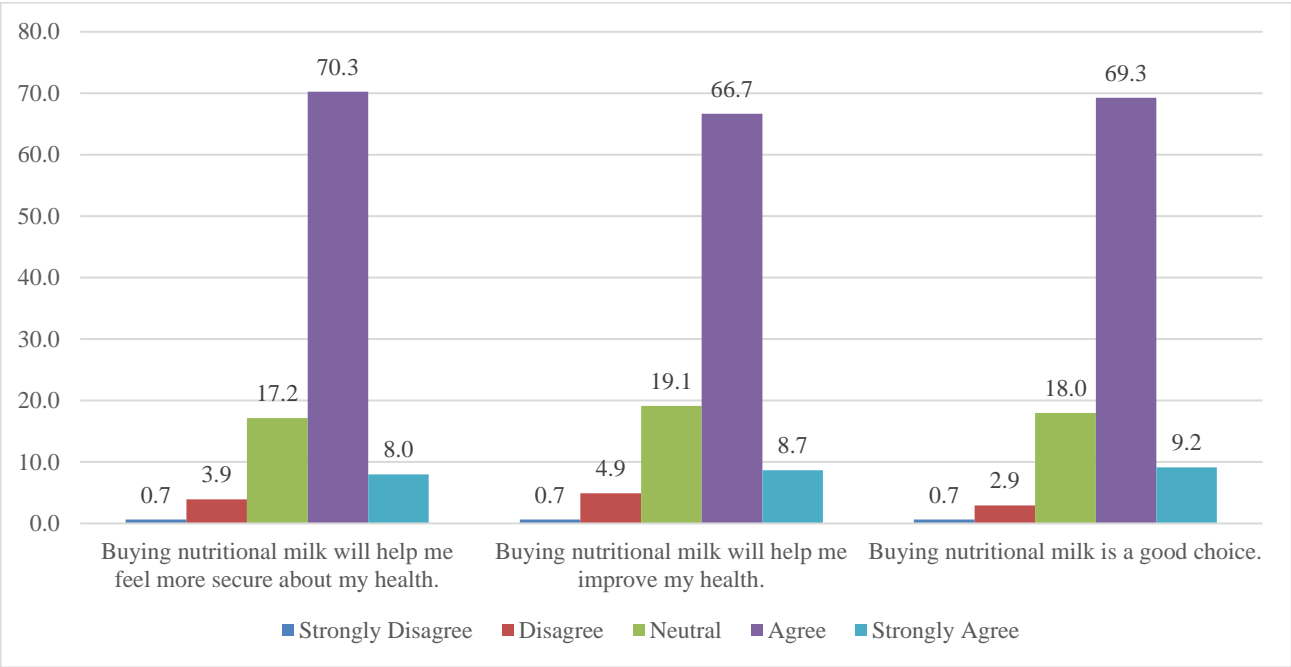


Figure 4. Consumer perceptions of nutritional milk product use.

4. Conclusion

The number of people suffering from metabolic syndrome in Vietnam was increasing, especially diseases such as diabetes, gout, hypertension, and dyslipidemia. When people suffer from metabolic syndrome, they

would pay more attention to nutritional supplements, supporting the prevention and treatment of this syndrome.

Consumers in Vietnam had a very clear and positive awareness of the benefits of nutritional milk for people with MetS, considering it an essential source of nutrition and a good choice to help balance health. Family was the strongest motivator, followed by advice from health professionals, while friends/colleagues also had some influence in promoting the product use attitude. Despite positive perceptions, consumers faced major barriers such as high prices, difficulty in finding products/limited distribution channels, and especially the difficulty in recognizing the difference between nutritional milk for people with MetS and conventional milk. Lack of reliable information was also a factor that needs improvement. When using the product, consumers felt secure and believed in the health-improving ability of nutritional milk for people with MetS.

To promote consumer awareness and attitude, manufacturers and distributors need to focus on:

- Clearly communicating the differences and unique benefits of nutritional milk for people with MetS, highlighting the unique value that regular milk cannot provide..
- Expanding distribution channels to improve accessibility.
- Adjusting pricing strategies to better align with consumer affordability, or more effectively conveying the value that justifies a higher price.
- Providing transparent and trustworthy information, particularly through health experts and reputable communication channels, to strengthen consumer confidence.

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