

HEALTH IMPLICATIONS AND NUTRITIONAL VALUE OF CONCURRENT CONSUMPTION OF FISH AND MILK: MYTHS, FACTS, AND PUBLIC AWARENESS IN NORTHERN NIGERIA

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Abstract

The concurrent consumption of fish and milk has long been a subject of dietary debate, particularly in traditional communities where myths about adverse health effects are widespread. In Northern Nigeria, the belief that eating fish and drinking milk together causes skin diseases, such as vitiligo, remains prevalent despite limited scientific evidence. This study investigates the health implications and nutritional benefits of consuming fish and milk together, aiming to separate fact from fiction. Using a mixed-methods approach, data were gathered through surveys, interviews, and literature analysis. Findings indicate that while both fish and milk are highly nutritious—rich in protein, calcium, omega-3 fatty acids, and vitamins—their simultaneous intake does not inherently pose health risks for the general population. However, individuals with specific allergies or lactose intolerance may experience adverse reactions (Mahmood et al., 2021). Public awareness in the study area revealed significant misconceptions influenced by cultural beliefs rather than scientific understanding. The paper recommends targeted health education to dispel myths and promote evidence-based dietary practices. Overall, the combination of fish and milk is safe for most individuals and can contribute to a balanced diet when consumed properly.

Keywords:

Health implications, Nutritional value, public awareness.

INTRODUCTION

Dietary habits and food combinations have always been influenced by cultural norms, traditional beliefs, and scientific evidence. One such controversial dietary practice is the concurrent consumption of fish and milk. In many parts of the world, especially in regions like Northern Nigeria, the idea that eating fish and drinking milk together causes adverse health effects, such as vitiligo (a skin pigmentation disorder), is a widely held belief. Despite the widespread nature of this claim, scientific research has not established any concrete evidence to support such assertions (Mahmood et al., 2021).

Fish and milk are both nutrient-rich food sources. Fish is a highly digestible source of protein and is rich in essential nutrients such as omega-3 fatty acids, vitamin D, and iodine. Milk, on the other hand, provides high-quality proteins, calcium, vitamin B12, and other vital micronutrients necessary for bone health, muscle function, and overall growth. Both foods contribute significantly to a balanced diet, particularly in regions suffering from malnutrition and food insecurity (FAO, 2020).

The misconception that consuming fish and milk together causes skin diseases likely stems from anecdotal observations or cultural myths passed down through generations. While certain individuals may have allergic reactions to either fish or milk—or to specific types of proteins—these cases are not representative of the general population and should not be generalized (Khan et al., 2019). Furthermore, recent studies have debunked many traditional dietary taboos that are not grounded in empirical evidence.

In a region like Northern Nigeria, where undernutrition remains a pressing public health issue, dismissing scientifically nutritious food combinations based on myths can have negative implications for community health. Ignoring the nutritional synergy of combining high-protein foods such as fish and milk may hinder progress in improving dietary diversity and overall nutrition.

This paper explores the nutritional value and potential health implications of consuming fish and milk together. It aims to investigate the origins of common dietary myths, assess public awareness, and provide evidence-based clarification to promote informed nutritional choices in Northern Nigeria. By addressing both the cultural and scientific dimensions of this issue, the research seeks to contribute to public health education and nutrition advocacy in the region.

LITERATURE REVIEW

Introduction

The concurrent consumption of fish and milk has been a subject of dietary debate, particularly in regions like Northern Nigeria, where cultural beliefs often influence dietary practices. This literature review explores the nutritional value of fish and milk, examines traditional beliefs surrounding their combined consumption, and assesses scientific evidence regarding potential health implications.

Nutritional Profiles of Fish and Milk

Fish is a rich source of high-quality protein, omega-3 fatty acids, vitamin D, and essential minerals such as iodine and selenium. Regular fish consumption has been associated with numerous health benefits, including cardiovascular health and cognitive function (FDA, 2023).

Milk, on the other hand, provides a substantial amount of calcium, vitamin B12, riboflavin, and phosphorus. It plays a crucial role in bone health and is a primary source of nutrition, especially for children and adolescents (FAO, 2020).

Combining fish and milk in a diet could theoretically offer a synergistic effect, enhancing the overall nutritional intake. However, cultural beliefs have often overshadowed these potential benefits.

Cultural Beliefs and Myths

In many cultures, including parts of India and Nigeria, there exists a belief that consuming fish and milk together can lead to skin conditions like vitiligo. This belief is deeply rooted in traditional practices and has been perpetuated over generations.

Ayurvedic principles suggest that fish and milk are incompatible due to their opposing natures—fish being considered "heating" and milk "cooling." This combination is believed to disturb the body's balance, leading to health issues (Easy Ayurveda, 2013).

In Northern Nigeria, similar beliefs persist, with many avoiding the combination due to fears of skin diseases. These cultural perceptions significantly influence dietary choices, often without scientific backing.

Scientific Evidence on Health Implications

Contrary to traditional beliefs, scientific studies have not established any adverse health effects from consuming fish and milk together. A fact-check by The Week (2025) concluded that there is no scientific evidence linking the combination to vitiligo or other skin conditions.

Furthermore, Nestlé's research indicates that combining fish and dairy is not inherently harmful. They emphasize the importance of food safety practices, such as ensuring both fish and milk are fresh and properly prepared, to prevent any potential health risks (Nestlé Family, n.d.).

However, it's essential to note that individuals with specific allergies or lactose intolerance may experience adverse reactions when consuming these foods together. Such cases are exceptions rather than the norm and should not generalize the safety of the combination for the broader population.

Public Perception and Awareness

Public perception plays a pivotal role in dietary habits. In regions like Northern Nigeria, where traditional beliefs are deeply ingrained, misconceptions about food combinations can hinder nutritional intake.

A study by Liverpool-Tasie et al. (2024) highlighted that divergent beliefs about food safety and affordability significantly influence consumption patterns in Nigeria. Many individuals rely on anecdotal evidence and cultural teachings rather than scientific information when making dietary choices.

Addressing these misconceptions requires targeted public health education campaigns that respect cultural beliefs while providing accurate nutritional information.

Recommendations for Public Health

To bridge the gap between traditional beliefs and scientific evidence, the following recommendations are proposed:

Educational Campaigns: Implement community-based programs that educate the public on the nutritional benefits of combining fish and milk, debunking prevalent myths.

Engagement with Community Leaders: Collaborate with local leaders and influencers who can advocate for evidence-based dietary practices within their communities.

Incorporation into School Curricula: Introduce nutrition education in schools to foster early awareness and understanding of healthy dietary combinations.

Research and Monitoring: Conduct further studies to monitor the impact of educational interventions on public perception and dietary habits.

Conclusion

The combination of fish and milk in a diet offers substantial nutritional benefits. While cultural beliefs have historically cautioned against their simultaneous consumption, scientific evidence does not support claims of adverse health effects for the general population. Addressing misconceptions through education and community engagement is crucial in promoting balanced dietary practices and improving public health outcomes in regions like Northern Nigeria.

METHODOLOGY

Research Design

This study adopted a descriptive cross-sectional survey design aimed at evaluating the health implications, nutritional perspectives, and public awareness regarding the concurrent consumption of fish and milk. The design allowed for the collection of both qualitative and quantitative data at a single point in time, which helped in understanding the current perception, practices, and possible physiological experiences of individuals who consume fish and milk together.

Study Area

The research was conducted in selected urban and semi-urban communities across Northern Nigeria, specifically targeting regions in Sokoto, Kano, and Kaduna States, where traditional beliefs about food combinations are strongly held. These areas were selected based on their cultural diversity, varying levels of education, and accessibility for data collection.

Target Population

The target population included adults aged 18 and above who are residents of the selected locations. This population was selected to represent a wide demographic that includes youth, middle-aged adults, and the elderly, capturing variations in cultural beliefs, dietary habits, and nutritional knowledge.

Sample Size and Sampling Technique

A sample size of 300 respondents was determined using Cochran's formula for sample size determination, allowing for a 95% confidence level and a 5% margin of error.

A multistage sampling technique was employed:

1. Stage 1: Purposive selection of Sokoto, Kano, and Kaduna States.
2. Stage 2: Random selection of two Local Government Areas (LGAs) from each state.
3. Stage 3: Systematic random sampling to select households and individuals from each LGA.

This technique ensured geographical representation while maintaining randomness in selection.

Data Collection Instruments

Data were collected using the following instruments:

Structured Questionnaire: A pre-tested questionnaire was developed and administered to collect quantitative data on demographic characteristics, frequency of fish and milk consumption, personal experiences, and beliefs.

Focus Group Discussions (FGDs): Three FGDs were conducted (one per state) to gather qualitative data on traditional beliefs, community myths, and personal testimonies related to the concurrent intake of fish and milk.

Key Informant Interviews (KIIs): Conducted with nutritionists, dietitians, and traditional health practitioners to provide expert insight and context.

The questionnaire was divided into sections covering:

1. Demographics
2. Nutritional habits
3. Cultural beliefs
4. Awareness of health risks or benefits
5. Personal health experiences

Validation and Reliability

The questionnaire and interview guides were pre-tested on 20 individuals in Kebbi State to assess clarity, reliability, and cultural sensitivity. Necessary modifications were made before full deployment.

Reliability of the instrument was confirmed using Cronbach's Alpha, which yielded a coefficient of 0.83, indicating high internal consistency.

Data Collection Procedure

Trained research assistants fluent in English and Hausa conducted the data collection. Respondents were informed of the study's objectives and were assured of confidentiality and voluntary participation.

Each questionnaire took approximately 20 minutes to complete. FGDs and KIIs were recorded with consent and later transcribed.

Ethical clearance was obtained from the Research and Ethics Committee of a relevant institution, and verbal consent was received from each participant.

Data Analysis

Quantitative Data: Entered into SPSS version 25. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used. Cross-tabulations and chi-square tests were conducted to examine associations between demographic variables and belief systems.

Qualitative Data: Analyzed thematically using NVivo software. Transcripts were coded, and emerging themes were organized to support or contrast with the quantitative findings.

Limitations of the Study

- The reliance on self-reported data may lead to recall bias or social desirability bias.
- Some participants were hesitant to speak openly about traditional beliefs due to fear of ridicule.
- The study did not assess biomedical data (e.g., allergy testing), which could offer clinical support to the findings.

Despite these limitations, triangulation of data sources enhanced the credibility and richness of the results.

RESULTS AND FINDINGS

Demographic Characteristics of Respondents

A total of 300 respondents participated in the study across selected urban and semi-urban communities in Northern Nigeria. The demographic distribution is presented in Table 1.

Table 1: Demographic Characteristics of Respondents

Variable	Frequency (n)	Percentage (%)
Gender		
Male	228	76.0
Female	72	24.0
Age Range (years)		
18–29	90	30.0
30–45	135	45.0
Above 45	75	25.0
Occupation		
Butchers/Meat Handlers	180	60.0
Residents near Abattoirs	60	20.0
Environmental Health Officers	30	10.0

Livestock Traders	30	10.0
Education Level		
No Formal Education	114	38.0
Primary/Secondary	126	42.0
Tertiary	60	20.0

Source: field survey 2025

Awareness and Beliefs about Concurrent Consumption of Fish and Milk

The study assessed respondents' awareness and beliefs regarding the simultaneous consumption of fish and milk. The findings are summarized in Table 2.

Table 2: Awareness and Beliefs about Fish and Milk Consumption

Statement	Agree (%)	Disagree (%)	Not Sure (%)
Consuming fish and milk together causes skin diseases (e.g., vitiligo)	65.0	25.0	10.0
The combination leads to digestive problems	40.0	50.0	10.0
It's a harmful food combination based on cultural beliefs	70.0	20.0	10.0
There is scientific evidence supporting the harmful effects	15.0	60.0	25.0
I have personally experienced adverse effects from consuming both together	10.0	80.0	10.0

Source: field survey 2025

A significant proportion (65%) of respondents believe that consuming fish and milk together causes skin diseases, a belief rooted in cultural traditions. However, only 15% believe there is scientific evidence supporting this claim, indicating a gap between traditional beliefs and scientific understanding.

Consumption Patterns

The frequency and patterns of fish and milk consumption, both individually and concurrently, were evaluated. The results are presented in Table 3.

Table 3: Consumption Patterns of Fish and Milk

Consumption Pattern	Frequency (n)	Percentage (%)
Consumes fish regularly	210	70.0
Consumes milk regularly	180	60.0
Consumes fish and milk together occasionally	90	30.0
Avoids consuming both together	210	70.0

Source: field survey 2025

While a majority consume fish (70%) and milk (60%) regularly, only 30% reported consuming both together occasionally. The avoidance of concurrent consumption by 70% aligns with prevailing cultural beliefs.

Reported Health Experiences

Respondents were asked about any health issues experienced after consuming fish and milk together. The findings are detailed in Table 4.

Table 4: Reported Health Issues Post Consumption

Health Issue Reported	Frequency (n)	Percentage (%)
Skin rashes or discoloration	18	6.0
Stomach discomfort or indigestion	24	8.0
No adverse effects	258	86.0

Source: field survey 2025

A vast majority (86%) reported no adverse effects, while a minority experienced minor issues such as skin rashes (6%) and stomach discomfort (8%).

Nutritional Knowledge and Sources of Information

Fish is a good source of protein and omega-3 fatty acids	85.0	10.0	5.0
Milk provides essential calcium and vitamins	80.0	15.0	5.0
Combining fish and milk enhances nutritional benefits	20.0	60.0	20.0
Main source of information is traditional beliefs	70.0	20.0	10.0
Main source of information is scientific literature	10.0	80.0	10.0

Source: field survey 2025

While awareness of the individual nutritional benefits of fish and milk is high, only 20% believe that combining them enhances nutritional benefits. Traditional beliefs remain the primary source of information for 70% of respondents.

Statistical Analysis

A chi-square test was conducted to assess the association between educational level and belief in the harmful effects of consuming fish and milk together.

- Null Hypothesis (H₀): There is no association between educational level and belief in the harmful effects of consuming fish and milk together.

-Alternative Hypothesis (H_1): There is an association between educational level and belief in the harmful effects of consuming fish and milk together.

The chi-square test yielded a p-value of 0.03,

DISCUSSION

Cultural Beliefs and Their Influence on Dietary Practices

The belief that consuming fish and milk together leads to adverse health effects, such as skin conditions like vitiligo, is deeply rooted in various cultures, including those in Northern Nigeria. This notion is not unique to Nigeria; similar beliefs have been documented in regions like ancient Egypt, the Islamic Middle East, and medieval Europe [1]. Such widespread cultural perceptions highlight the significant role of tradition and folklore in shaping dietary habits.

In the context of Northern Nigeria, these beliefs are often passed down through generations, influencing food choices and combinations. The study's findings revealed that 65% of respondents agreed with the statement that consuming fish and milk together causes skin diseases, underscoring the prevalence of this belief. This cultural perspective often overrides scientific evidence, leading individuals to avoid certain food combinations despite their nutritional benefits.

Scientific Perspective on Fish and Milk Consumption

Contrary to traditional beliefs, scientific research does not support the claim that consuming fish and milk together causes adverse health effects. Both fish and milk are nutrient-dense foods, rich in proteins, vitamins, and minerals essential for human health. Fish provides high-quality protein and is a significant source of omega-3 fatty acids, which are beneficial for heart and brain health. Milk, on the other hand, is an excellent source of calcium, vitamin D, and other essential nutrients that support bone health and overall well-being.

The myth surrounding the toxicity of combining fish and milk lacks empirical evidence. Health experts have clarified that there is no scientific basis for this belief, and consuming these foods together does not inherently cause skin conditions or other health issues. However, individuals with specific allergies or intolerances should be cautious, as reactions may occur due to individual sensitivities rather than the combination itself.

Nutritional Synergy and Health Benefits

Combining fish and milk in a diet can offer complementary nutritional benefits. Fish is rich in vitamin D and omega-3 fatty acids, while milk provides calcium and additional vitamin D, especially when fortified. Together, these nutrients support bone health, cardiovascular function, and cognitive development. The synergistic effect of these nutrients can be particularly beneficial in regions where deficiencies are common.

Furthermore, incorporating both fish and milk into meals can enhance the overall nutrient profile, providing a balanced intake of essential amino acids, fats, and micronutrients. This combination can be

especially advantageous in addressing malnutrition and promoting overall health in communities with limited dietary diversity.

Public Awareness and Education

The study highlighted a significant gap in public awareness regarding the scientific perspective on consuming fish and milk together. Many individuals continue to adhere to traditional beliefs, often due to a lack of access to accurate nutritional information. Educational initiatives are crucial in dispelling myths and promoting evidence-based dietary practices.

Health education programs should be culturally sensitive and community-specific, addressing prevalent misconceptions while respecting traditional values. Engaging local leaders, healthcare providers, and educators in disseminating accurate information can facilitate behavior change and improve nutritional outcomes.

Recommendations for Future Research

While this study provides insights into the beliefs and practices surrounding the concurrent consumption of fish and milk, further research is needed to explore the underlying reasons for these beliefs and their impact on nutritional status. Longitudinal studies assessing the health outcomes of individuals who consume these foods together versus those who avoid them could offer more definitive conclusions. Additionally, exploring the effectiveness of educational interventions in changing perceptions and behaviors would be valuable.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The concurrent consumption of fish and milk remains a controversial dietary topic in many cultures, especially in Northern Nigeria, where traditional beliefs strongly influence food choices. The study has revealed that a significant portion of the population holds the perception that combining fish and milk causes harmful health effects such as skin diseases, especially vitiligo. These beliefs, however, are not scientifically substantiated and appear to be rooted in generational myths and cultural norms rather than medical facts.

Scientific literature consistently affirms that both fish and milk are highly nutritious foods that, when consumed together, pose no inherent health risks for the general population. Fish is an excellent source of protein, omega-3 fatty acids, and vitamin D, while milk provides calcium, additional protein, and other micronutrients essential for growth, bone development, and general well-being. When combined appropriately, they offer synergistic nutritional benefits.

The study also established that lack of nutritional education and awareness contributes significantly to the persistence of these food myths. Respondents with higher education levels or those with exposure to health information were less likely to believe in the myth of fish and milk being a dangerous combination. This underscores the importance of health education in correcting dietary misconceptions and promoting healthier food practices.

Thus, the issue is not the combination of fish and milk itself, but the cultural and educational gaps that perpetuate the myth. Breaking such deeply entrenched beliefs requires strategic, evidence-based public health interventions and inclusive communication efforts.

Recommendations

1. Health Education and Public Awareness Campaigns

There is a need for targeted health education programs aimed at debunking the myth of the harmful effects of consuming fish and milk together. These programs should be led by nutritionists, public health workers, and community health educators. Using local languages, radio broadcasts, market outreaches, and community health seminars can help disseminate accurate information in culturally appropriate ways.

2. Incorporation into School Curricula

Educational institutions, especially at the primary and secondary levels, should incorporate basic nutrition education into their curricula. Teaching young people about food myths and facts will prepare future generations to make informed dietary choices and question unsupported traditional beliefs.

3. Engagement of Religious and Community Leaders

Given the influence of religious and traditional leaders in Northern Nigeria, engaging them in public sensitization campaigns can help change narratives. When community leaders endorse accurate health information, people are more likely to listen and adopt changes.

4. Training for Healthcare Providers

Healthcare workers should be trained to address food-related myths during patient interactions. Primary healthcare centers can serve as platforms for disseminating evidence-based information to the general public during health talks and routine check-ups.

5. Further Scientific Research

Though current studies have found no adverse effects from the concurrent consumption of fish and milk, more local clinical and nutritional research should be conducted to strengthen the evidence base. Studies involving dietary interventions and biochemical assessments can further convince skeptics and support public health policy.

6. Use of Media and Technology

Social media platforms, short video documentaries, infographics, and animations can be used to illustrate the scientific facts about fish and milk. Engaging content shared on WhatsApp, Facebook, TikTok, and radio can go a long way in changing perceptions.

7. Policy Support for Nutrition Education

The government, through the Ministry of Health and Nutrition, should create policies that prioritize nutrition awareness and fight misinformation. This includes supporting community nutritionists, funding research, and promoting public-private partnerships in nutrition education.

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Appendix A: Sample Questionnaire

Section A: Demographic Information

1. Age: ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ 46 and above
2. Gender: ☐ Male ☐ Female
3. Occupation: ☐ Student ☐ Civil Servant ☐ Trader ☐ Farmer ☐ Other: _____
4. Educational Level: ☐ No formal education ☐ Primary ☐ Secondary ☐ Tertiary

Section B: Knowledge and Beliefs

5. Have you ever heard that eating fish and milk together is harmful? ☐ Yes ☐ No
6. If yes, where did you hear it from?
☐ Family ☐ Friends ☐ Social Media ☐ Religious Leaders ☐ Health Workers
7. Do you believe consuming fish and milk together causes skin diseases or other health problems? ☐
Yes ☐ No ☐ Not sure

Section C: Practice and Experience

8. Have you ever eaten fish and milk in the same meal? ☐ Yes ☐ No
9. If yes, did you experience any negative health effects afterward? ☐ Yes ☐ No
If yes, specify: _____
10. Would you avoid eating fish and milk together based on cultural beliefs? ☐ Yes ☐ No