What Factors Influence the Price U.S. Dairy Milk Consumers' are Willing to Pay for Whole Milk?

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Introduction

The federal government's Dietary Guidelines recommend consuming dairy milk and fortified soy beverages as part of a healthy diet (U.S. Food and Drug, 2023). Drinking milk from domesticated animals' dates back to the 7th millennium BC and has played a crucial role in human nutrition across all ages (Evershed et al., 2008; Wijesinha-Bettoni & Burlingame, 2013). Regarded as a vital nutrient in the human diet, dairy milk is a complete food that meets the body's nutritional needs (Lambrini et al., 2021). Dairy milk consumption is heavily influenced by familiarity, habit, and the presence of children in the home (Schiano et al., 2022). There is limited research on the effects of labeling on consumer acceptance of whole milk, yet prior findings on 2% milk indicated that fat-related labeling can reduce perceived willingness to pay (Kazi et al., 2022). However, sales of whole milk are increasing, which may indicate changing perceptions and discussions about full-fat dairy, possibly influenced by the recent protein diet trend (Kirwan, 2025). Therefore, there is a need to investigate the relabeling of whole milk with a technical label "3.25% milk fat" to assess its economic impact.

Theoretical Framework

Our study was guided by Goffman's (1974) framing theory. Framing theory explains how individuals interpret information to make sense of events or make decisions. By highlighting or framing specific information related to a topic, it can influence how an individual perceives reality (Goffman, 1974). Previous research indicates that, when an individual encounters complex technical information, such as science-based nutrition information related to milk, framing can assist with understanding (Priest & Eyck, 2003). The purpose of our study was to identify variables and their relationships that explain the price consumers pay for whole milk based on random exposure to one of three whole milk labels: 1) "3.25% milk fat"; 2) "3.25% milk fat" with science-based nutrition information; and 3) traditional whole milk. Our study sought to answer the following research question: What effect do perceived knowledge, behavioral belief, subjective social norm, perceived benefit, perceived risk, trust, health consciousness, environmental concern, attitudes toward dairy milk, and purchase intention have on the price consumers are willing to pay for whole milk while controlling for primary household grocery shopper status, gender identity, highest level of education completed, household income, political views, marital status, parent status, diet, age, and ethnicity?

Methods

The study described herein is part of a larger funded project, so similar methods may appear elsewhere. Funded by the [Blinded], the current study used a cross-sectional survey to present information treatments via randomized controlled trials and collect data from U.S. consumers. The sample comprised U.S. dairy milk consumers, primarily 65 years old and older (f = 338, 33.9%) or between 35 and 44 years old (f = 265, 26.6%). Consumers were the primary grocery shoppers in their household (f = 898, 90.1%), most identified as white (f = 812, 81.4%), males (f = 527, 52.9%), and collectively had completed a bachelor's or master's degree or graduated from high school (f = 637, 63.9%). The information treatments were presented in the form of voluntary food labels consistent with what consumers would see in the grocery store on a whole milk container. The survey consisted of several sections for consumers to answer questions about their dairy preference, independent variables (e.g., knowledge, attitude, perceived risk), post-exposure purchasing intention, and various demographic variables (e.g., ethnicity, age, gender).

As for the dependent variable, we measured willingness to pay by asking consumers how much they would be willing to pay for a gallon of the whole milk product by sliding a scale from $0 to $10. Data were collected using Qualtrics sampling services, and we ended up with 997 total dairy milk consumer responses. A pilot test was conducted to ensure the instrument was valid, and Cronbach's alpha was used to assess the reliability of the scales. We analyzed the data by conducting descriptive analyses and a robust multiple regression analysis. The independent variables included in the model were: knowledge, behavioral belief, attitude, subjective social norm, perceived benefit, perceived risk, trust, health consciousness, behavioral intention, and environmental concern. We controlled for primary household grocery shopper status, gender identity, highest level of education completed, household income, political views, marital status, parent status, diet, age, and ethnicity.

Results

Most dairy milk consumers indicated they would purchase whole milk labeled "whole milk" (f = 494, 49.6%). Consumer confidence varied, with most indicating they are moderately confident in the difference between whole milk and 3.25% milk fat (f = 289, 29%). A correlation analysis revealed positive, statistically significant and substantial associations between consumers' beliefs and perceived benefit ($r = 0.65$, $p < 0.001$; see Table 42), attitude and perceived benefit ($r = 0.65$, $p < 0.001$), subjective social norm and perceived benefit ($r = 0.65$, $p < 0.001$), and trust and health consciousness ($r = 0.50$, $p < 0.001$).

The robust multiple linear regression model revealed two significant predictors: knowledge and trust. The significant control variables were education, income, diet, and age. Holding all other variables constant, consumers' knowledge was positively associated with paying $0.03 more per gallon of whole milk ($t(997) = 2.26$, $p < 0.05$), and trust was positively associated with paying $0.07 more ($t(997) = 7.22$, $p < 0.05$). Relative to participants with some high school, education predicted $0.57 higher pay for consumers with some college ($t(997) = 1.99$, $p < 0.05$), $1.11 higher pay for consumers with a master's degree ($t(997) = 3.51$, $p < 0.05$), $1.77 higher pay for consumers with a doctoral degree ($t(997) = 3.27$, $p < 0.05$), and $1.65 higher pay for consumers with a professional degree ($t(997) = 3.69$, $p < 0.05$). Additionally, relative to consumers making $10,000 or less, consumers with incomes between $150,000 and $249,000 would pay $0.84 more ($t(997) = 2.30$, $p < 0.05$). Compared to consumers who are not on a diet, influencing their milk purchasing, consumers who are on a diet would pay $0.51 more ($t(997) = 2.93$, $p < 0.05$). Moreover, age was found to be a significant predictor, relative to those between 18 and 24, those who are 25–34 would pay $1.22 more ($t(997) = 2.70$, $p < 0.05$); those who are 35–44 would pay $1.09 more ($t(997) = 2.70$, $p < 0.05$); those who are 45–54 would pay $0.86 more ($t(997) = 2.13$, $p < 0.05$); and those who are 55–64 would pay $0.86 more ($t(997) = 2.09$, $p < 0.05$).

Discussion and Conclusions

The descriptive results indicated U.S. dairy consumers prefer the traditional "whole milk" label over "3.25% milk fat," even though many recognize the terms are equivalent, revealing a knowledge-behavior gap at the point of purchase. Similar to Kazi et al. (2022), relabeling whole milk with technical language alone does not increase purchase intention or willingness to pay. Knowledge, trust, and key sociodemographic factors (i.e., education, income, age, and diet) significantly predict willingness to pay. Findings suggest label familiarity (Schiano et al., 2022) and heuristic processing outweigh technical accuracy, highlighting the need for hybrid labeling approaches that pair familiar language with technical language and nutrition information.

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