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#### **Short Communication**

# The effect of family beef taboos on beef consumption on young Taiwanese adults



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#### ABSTRACT

A family tradition of beef taboos exists in Chinese societies. The marketplace for beef in Taiwan is imported mainly from the U.S., Australia, and New Zealand. For mechanised-farming families or even for those no longer engaged in agriculture, beef consumption is often not encouraged nor allowed by family members. Using quantitative data in the analyses, this study was undertaken to examine whether family beef taboos influenced beef consumption for young adults in Taiwan. Respondents from beef-consuming families consumed more beef (4.34 times/week: average, 150.07 g/week: cooked) than respondents from non-beef-consuming families (1.87 times/week: average, 56.67 g/week: cooked). For the respondents from non-beef-consuming families, spiritual burden was a main factor affecting their own beef consumption. The implications based on this study's findings are provided.

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#### 1. Introduction

In Chinese societies, beef taboos had been a traditional social-binding dynamic due to the past contributions of the water buffalo in farming (Lai, 2000). Machinery in Taiwanese farming has been implemented for cost efficiency and a reduction in manual labour. However, for families utilising this farming method or for those no longer engaged in agriculture, beef consumption is often not encouraged nor allowed by family members.

A thorough understanding of food choices is essential for food product development and health improvement (Ares & Gámbaro, 2008). Red meat provides essential nutrients, and so it is imperative that younger generations consume an adequate quantity of it, such as beef, to balance their diets (Gibson & Ashwell, 2004). Beef consumed in Taiwan is imported mainly from the U.S., Australia, and New Zealand. Very limited amount of consumed beef is from the water buffalo.

It is doubtful that the younger generation would follow the family tradition of beef taboos; only because this generation is heavily exposed to beef product information and the promotion to consume it. Nonetheless, family tradition can play a large role in food choices and diet in general; in Taiwan, the younger generation's food preferences are indeed congruent with the prevailing family eating tradition. However, Mackereth and Milner (2007) explain that a phenomenon of a change in eating patterns has occurred over generations within families. Mackereth and Milner

believe the changes in diet in the younger generation could be part of societal changes in general, for example, the availability of an abundance of convenience foods on the market.

When compared to the annual per capita consumption of pork (35.8 kg) and poultry (28.0 kg) in 2010, beef consumption (6.0 kg) has not been a major part of the Taiwanese diet (Foreign Agricultural Service, 2011). The annual per capita consumption of beef, pork, and poultry combined in 2010 was 69.8 kg (Taiwan), 59.4 kg (South Korea), 51.2 kg (China), and 45.6 kg (Japan) (Foreign Agricultural Service, 2011). Because Taiwan has a relatively low annual per capita consumption of beef (<10%) with respect to its total meat consumption, its beef market is potentially lucrative for international exporters.

Beef consumption for the younger generation in Taiwan has not been studied exclusively, and because the market for beef in Taiwan has been expanding, it is worth examining how family beef taboos have influenced young adults' beef consumption. Blades (2001) highlights the influences of parents' food choices at home on the younger generation's diet. Parents usually had specific opinions about their children's food consumption (Brusdal, 2007). However, the younger generation may have its own food preferences (Mackereth & Milner, 2007). With that in mind, this study was undertaken to determine whether beef taboos in Chinese family tradition have influenced beef consumption in the younger generation in Taiwan. Because the Taiwanese market for beef may have profit potential, this study can be of interest to foreign beef exporters as well.

This study attempts to contribute two things: (1) Provide information on the younger generation's beef consumption patterns in Taiwan, and thus fill a research gap, and (2) Provide some insight into the Taiwanese market for beef so that exporters might pursue

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new profit streams. This study's findings could be applied to other Chinese societies with existing family beef taboos in order to form a baseline for further research.

#### 2. Methods

A formal consumer survey was administered at five universities in two metropolitan cities in Taiwan; participants were personally interviewed by trained surveyors. A trial survey was conducted prior to the formal survey, and a convenience sampling method was applied.

#### 2.1. Beef consumption questionnaire

A questionnaire was designed to examine the influencing factors for beef consumption for the younger generation. The first part of the questionnaire asked respondents whether they consumed beef in the month prior to their participation in the survey. If the respondents had consumed beef within this period, a week-long beef consumption diary needed to be filled. The second part of the questionnaire contained 29 statements using five-point Likert scales (Appendix A) that measured the factors for beef consumption. For those respondents who had never eaten beef, a *not able to measure* option was available for this and other similar situations. The final part of the questionnaire asked respondents to provide demographic data.

#### 2.2. Survey

A trial survey was conducted prior to the formal survey. The trial survey resulted in the questionnaire being modified by the suggestions provided by both the practitioners and the participating respondents. The formal survey was administered at five universities in two Taiwanese cities, Taipei and Taichung. The surveyors approached one in every 5-10 students who were exiting campus student unions, offered a gift of approximately three U.S. dollars to those who participated, and thoroughly explained the purpose of the study to potential respondents. The refusal rate was less than 10%. The main reason given for refusal was time constraint. A total of 255 valid responses were collected; slightly more responses (58.04%) were from females. The average age of the respondents was 21.11 years (age range: 18-28, standard deviation: 1.96), and their average monthly food expenditure was NT\$3743.33 (standard deviation: 1419.91). This food expenditure was extracted from the respondents' average monthly personal expenditure of NT\$6290.20 (standard deviation: 2877.09).

In order to show the beef consumption patterns for young adults in Taiwan, researchers looked for and purchased food items near the universities where the survey was administered. At least three samples of every beef item listed in a respondent's week-long beef consumption diary were purchased and brought to a laboratory. The samples were coded, and the cooked beef was carefully separated from the other ingredients. The beef was then soaked in purified water for 2 h, drained, towel-dried, and then weighed; the cooked weight was used to determine an average for the weekly consumption of beef.

#### 3. Results

#### 3.1. Beef consumption

Based on the survey results, 199 out of 255 respondents (78.04%) consumed beef in the month prior to their participation in the survey. For those respondents who recorded a week-long beef consumption diary, beef hot pot and barbecued beef were

the two most documented items; hamburgers (ground beef) were not listed as often. Other beef dishes commonly consumed were beef noodle soup, beef with rice or noodles, and beef stir-fry. The average amount of cooked beef consumed per week was 120.77 g/person. This amounts to 6280.04 g (cooked) annual per capita, which is slightly higher than the published data (6.0 kg) for Taiwan. The fact that the calculations in the surveyed data are higher than the published data indicates that young adults in Taiwan are major consumers of beef.

#### 3.2. Factor analysis results

Using the SAS program, a factor analysis with the varimax rotation method was applied in order to isolate the underlying factors from the 29 statements listed in the questionnaire. The result was that 9 statements were removed due to low factor loadings (<0.5 on all factors). Although these particular statements were excluded, they were not directly linked to actual beef consumption. For example, one of these statements asked respondents if they agreed with *I think it is important to taste delicious food in life* (Appendix A, #17). Another asked for agreement on *I think the price of beef is high* (Appendix A, #25). After analysing the underlying factors, both statements about delicious food and the price of beef did not load heavily on any of the factors and were therefore eliminated. The above analysis was then repeated in order to generate meaningful underlying dimensions.

A total of 75.29% variance was explained by the seven factors, which were chosen based on their eigenvalues and scree plot results. Table 1 outlines all seven factors: Factor 1 (Quality-oriented) includes safety issues, freshness, and quality. Factor 2 (Enjoyment and exploration) expresses attitudes toward new beef items and the likelihood of switching among other beef items. Factor 3 (Involvement) consists of statements measuring whether respondents would share or pay attention to beef-related information. Factor 4 (*Texture and flavour*) describes how respondents view beef in terms of texture, flavour, chewiness, and calories. For those who had never tasted beef, a not able to measure option was available. Factor 5 (Spiritual burden) depicts how respondents would feel morally if they consumed beef. Factor 6 (Nutrition and choices) offers perspectives on beef as a nutritious food and whether it diversifies meals. Factor 7 (Social aspect) shows how friends and western culture might influence beef-eating habits.

Cronbach's alpha coefficients for the seven factors were all above 0.6 for the recommended cut-off value (Hair, Black, Babin, & Anderson, 2010). Overall, the structure of the factors was quite clear; only one item, *try new taste of beef items with friends*, in Factor 2 (*Enjoyment and exploration*) had a cross-loading higher than 0.3 with Factor 3 (*Involvement*). This result indicates that respondents who enjoyed beef dishes with friends could be involved in beef-related discussions with friends as well. No other items showed cross-loading on the various dimensions.

#### 3.3. Influences of tradition on beef consumption

In order to reveal influences that family beef taboos had on beef consumption on young Taiwanese adults, a segmentation of respondents was performed: those from beef-consuming families and those from non-beef-consuming families. As shown in Table 2, more respondents (n = 175) were from beef-consuming families than from non-beef-consuming families (n = 80). The vast majority of respondents from beef-consuming families (94.29%) had eaten beef in the month prior to their participation in the survey. However, less than half of the respondents (42.50%) from non-beef-consuming families had eaten beef during this timeframe, indicating that young adults from non-beef-consuming families may not be eating beef on a regular basis. Respondents from beef-consuming

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