

EMULSIFIED & DRIED MEAT PRODUCTS INTAKES AND THEIR RELATIONSHIP BETWEEN DIETARY RISK PERCEPTIONS IN TAIWAN

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Abstract –This study was focused on the meat products intake of participant's weather related with their dietary risk perception. One thousand participants were surveyed as part of the NAHSIT (Nutrition and health survey in Taiwan) database of 2004~2008. Studies have shown that there were 1.3 times of meat products per week intake in average, which including 0.7 times of emulsified product (including fish products) and 0.6 times of dried meat product. Intake frequency of meat products had fewer than fresh meat (an average of 5.7 times, including poultry, pork and beef. It was noted that part of participants (22%) rarely chose of emulsified & dried style meat products within a week. Totally, most of participants consumed more cooking meat than processed meat. Even most of the participants equipped correct dietary habits, but part of them remained lack of diet knowledge of meat. There were no interaction affected between meat intake frequency with general eating habits ($p=0.515$) as well as the frequency of meat products intake with diet concepts ($p = 0.678$). These results show that comprehensive meat nutrition education is still necessary.

Key Words –dietary intake, meat products, survey.

I. INTRODUCTION

In Taiwan meats consume has been influenced by traditional cuisine culture. There are several types of meat product sale in market, including dry style (sausage, bacon, pressed salted duck, smoked duck), emulsification style (meatballs, hot dogs), cuisine style (marinated chicken, braised pork, braised knuckle), barbecue style (roasted duck, roasted pork), and some of western style ham. Typical meat dishes include thick soup,

dumpling as well as hot pot is very common at home or restaurant. Many researchers related to Taiwan have proposed several important health concerns (Tzeng., 2008; Lin and Lee, 2005; Lvu *et al.*, 1994). Furthermore, FAO report indicated that most of protein, vitamins and minerals serves from meat was tightly connect with human nutrition. Therefore, it is interesting topic to demonstrate that meat and also processed products intake of participant's weather related with their dietary risk perception. Some of information would be applied to people's nutrition education and dietary guidance on the further.

I. MATERIALS AND METHODS

Participant design

Participants' data were quoted at parts from the "Nutrition and Health Survey in Taiwan" database 2004-2008, which was released from the Survey Research Data Archive. The first step report was published on the government web site by Pan and Tu (2010). The 1000 individuals were aged from 19 to 102 years of old. After checking and deduction 28 abnormal data, several variances column were captured into this research, including age, gender and meat products intake frequency. Questionnaires were compared between the dietary concepts and general eating habits (this item was only compared within 19-64 years of age).

The definition of dried meat and emulsified product

Dried meat products were including pork floss, bacon, sausage, ham, hot dogs and smoked duck. Emulsified products were including

meatball, thick pork soup, dumplings as well as products mixed with varieties marine ingredients (such as hot pot dumpling fish ball, cuttlefish ball, Japanese-style tempura, thick squid soup etc.)

Nutrient intakes record & questionnaire topics

Dietary nutrient intakes were assessed by the 24-hour recall method. General eating habits were obtained from eight question original scores, and converted into the levels of dietary risk; the higher the score meant the higher risk. The four questions of diet concepts were compared the characteristics by using equal amount of each food. It was regarded as one score when participants selected the correct answer. The questionnaire instructions were summarized in Table 1.

Statistical analysis

Data were processed by using matrix diagram and principal components model of Minitab version 15.1 statistic programs.

Table 1. Questionnaire composition, responses of eating habits and diet concept.

General eating habits*
Q1. How often do you eat marinade with noodles or rice?
Q2. How often do you eat poultry with skin or fat?
Q3. How often do you eat livestock with skin or fat?
Q4. Do you eat stew meat or roast instead of fry?
Q5. Do you eat lean pork instead belly or hock?
Q6. Do you eat fried poultry and livestock meat?
Q7. Do you eat poultry meat instead livestock meat?
Q8. Do you always eat a little meat?
*1. Removal of participants over the age of 65
*2. The scale ranges from "never true=5" to "always true=1", and converted scale into risk level, with higher scores indicating greater the risk.
Diet concepts**
Q1 Which food contained higher calories? (hock, loin, ham)
Q2 Which food contained higher cholesterol? (peanut oil, soybean oil, lard)
Q3 Which food contained higher iron? (chicken, fish, pork)
Q4 Which food contained higher protein? (chicken, chicken soup, just as much)
**1. Multiple-choice questions, correct answers to give 1 point.

II. RESULTS AND DISCUSSION

Dried meat products intakes frequency by different age and gender was shown in Fig. 1. Most of elder participants were fewer intakes in those products than younger participants. Compared with the

intake of dried meat products were no gender differences. It was noticed that nearly 86.6% of participants had consumed less than 1 time (0.6 times in average) per week, only 4% participants consumed 3 times per week. Figure 2. shows most of participants consumed less emulsified meat product. Nearly 30.2% of participants have never consumed emulsified product within a week. More than 51.4% of participants consumed only 1 times as well as only 2.4% participants consumed 3 times per week. Totally, figure 3. remained that most of participants (36.2%) consumed meat products less than one times per week. However, 22% of participants did not eat any meat product; data also showed that participants consumed only 1.3 times both these two kinds of meat product within a week. There are obviously differences with our early fresh meat report; we indicated that Taiwanese consumed more than 2.9 servings of livestock lean meat and 1.8 servings of poultry meat in average (Kuo *et al.*, 2012). It might be limited by the questionnaire design and also traditional cooking habits. In general cognitive, a part of meat products such as frozen prepared food and also barbecue meat almost agreement to cooking food than processed meat. Observations from the principle component analysis results could find that it was not main interaction between age and gender, even age (0.988) have a higher effect than the gender (0.826).

From the results of figure 4, more people answered 7~8 answers correctly and it showed that people have better dietary habits and lower dietary risk. Moreover, most of the blue triangle symbol deposit in location 7 and 8 also showed that people with more understanding of iron and protein knowledge will lower of dietary risk. From the view of diet concepts, slope of regression curve showed in fig. 5 indicated that while people had lower meat product intakes do not necessarily to lower dietary risk. Particular results observed that more of people answered two or three answers incorrectly, and it showed that most of people's knowledge of meat nutrition (calories, cholesterol, iron and protein) was not at all clear. It was similar as our previous report (2012), we indicated that lower regression slope was found as not relevant between total meat product intakes with dietary risk. Regression curve of figure also shows there had no relevant between intake frequency and

general eating habits. Further information also shows that elderly women lack understanding for iron intake. In the nearly 143 participants have only 34 correct answers to this question. At the same period, Wu *et al.*, (2007) have been indicated that iron intake of elder women was lower than DRI recommendations. According to FAO (2008) Official statistics report (supply and demand indicators in the world) indicated that developed countries meat in per caput food consumption was 81.8 kg/year, in developing countries is 30.7 kg/year, while the average in world was 41.6 kg/year. It should be noted that the intake of total meat consumption in Taiwan was higher (73.72 kg) than the world average. As compared with 2001, and even that total calories, meat and fish were also reducing the amount of intake (meat consume decreased by approximately 1 kg / year), nutrition researchers remains concerned about the citizens excessive intake of meat can lead to obesity and chronic disease issues. In recent years, the diet emphasizes health care is an important concept (Lake, *et al.*, 2007). It is very important issues to promote people select the adequate nutrition and high-quality meat portion.

III. CONCLUSION

Moreover, to increase public awareness of meat for obtains the balance nutrients. Whether citizens either intake larger amounts of meat per meals or other causes, it is important research topics to improve behavior patterns of meat intake. To promote people and school nutrition education, integrate work through official and several private foundations has already begun

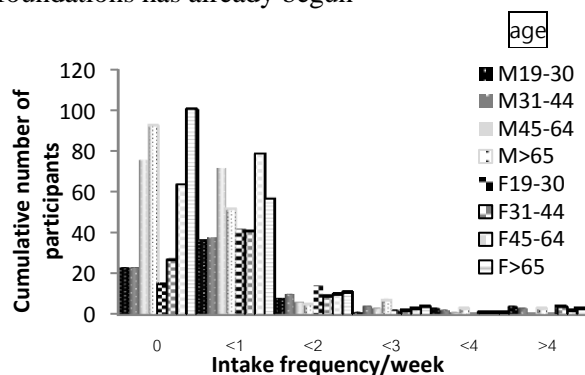


Fig. 1. Intake frequency and cumulative number of dried meat products per week by different age and gender. M: male F: female

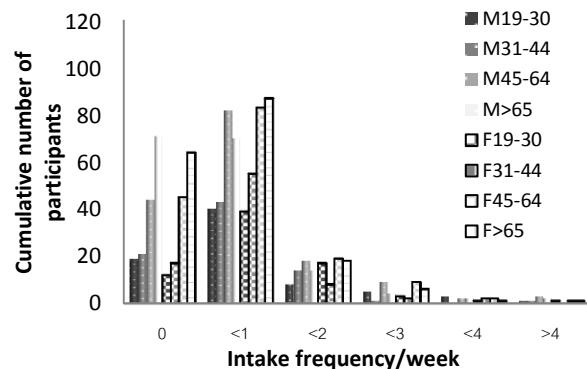


Fig. 2. Intake frequency and cumulative number of emulsified meat products per week by different age and gender.

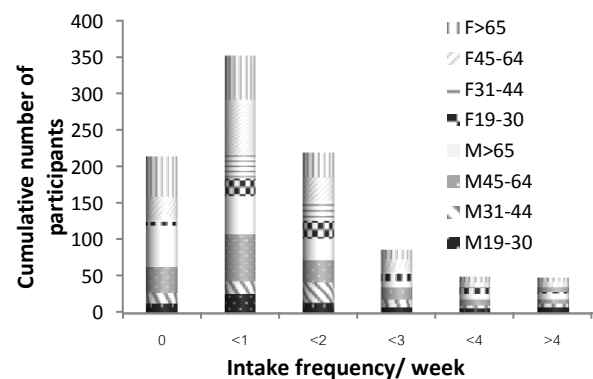


Fig. 3 Intake frequency and cumulative number of total meat products per week by different age and gender.

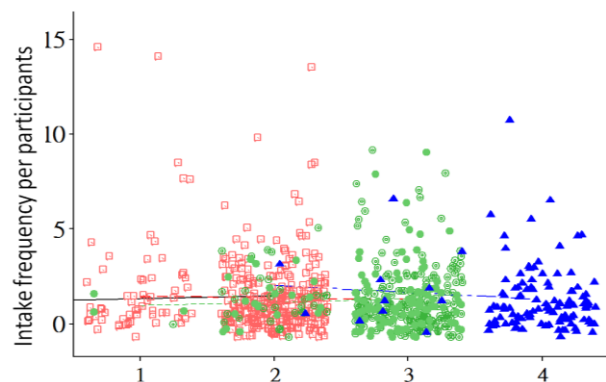


Fig. 4 Scree plots showing the relationship correlation between total meat products intake frequency with general eating habits.

X-axis represent labeled correct answer numbers (1-8) of "general eating habits" as shown in Table one, different color symbol noted that correct answer of iron and protein. (▲: both iron and protein are correct, ●: only Iron correct, ◎: only protein correct, □: both iron and protein are wrong).

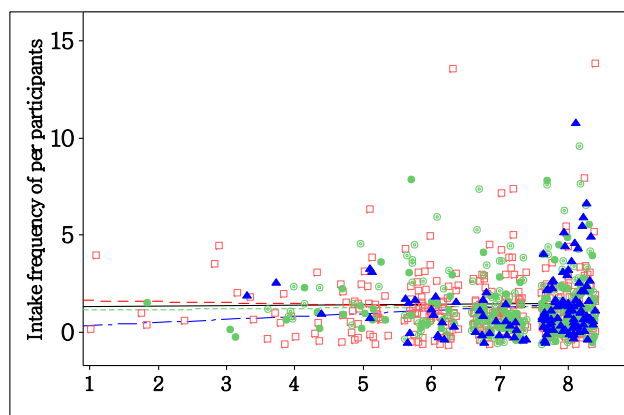


Fig. 5 Scree plots showing the relationship correlation between total meat products intake frequency with general eating habits and diet concepts.

X-axis represent labeled correct answer numbers (1-8) of "general eating habits" as shown in Table one, different color symbol noted that correct answer of iron and protein. (▲: both iron and protein are correct, ●: only Iron correct, ○: only protein correct, □: both iron and protein are wrong).

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