

ORIGINAL**Comparison of School Lunch Menus in Vietnam and Japan**

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ABSTRACT *Background and Objectives:* Vietnamese school lunch program needs improvements. For that purpose, this study aimed to compare Vietnamese and Japanese school lunch menus and food materials. *Methods and Study Design:* The study was a cross sectional study which data were collected throughout the year from elementary schools in both countries, categorized the menu items into six, numbered all food items, and tabulated the occurrence frequencies for each item. Each country had 190 lunches. *Results:* The menu diversities in Vietnam and in Japan was 23 and 190 with item numbers were 3 and 74 for staple foods, 26 and 95 for main dishes, 9 and 107 for vegetables, 14 and 53 for soups, 1 and 41 for desserts, 0 and 5 for beverages, and total 53 and 376. Standard deviations for items were small, indicating menus similarities from the chosen schools. Menus and food items numbers were different. *Conclusions:* The factors are discussed to develop future strategies for improving the Vietnamese school lunch.

Key Words : school lunch, menu, food items, primary school, children

INTRODUCTION

Since 1986, the Vietnamese economic system has changed and improved greatly, which resulted in easily available and abundant foods. Along with this, intake of high energy foods has been increasing, which contributes to obesity and other lifestyle-related diseases(1). This problem is growing in children, especially in big cities(2-6).

Until about a decade ago, children usually had lunch at home. Nowadays, parents are busy and the time to prepare lunches is limited(1,7). For this reason, many schools have started a school lunch program(1). However, the school lunch program is still under development because meals are prepared by ordinary people without a proper knowledge of nutrition(8). The repetition of items is frequent, making the menus monotonous(1). As a result, children tend not to eat well and to waste food.

In contrast, people all over the world rate the Japanese school lunch program very highly(7,9,10). It was established under the school lunch law of 1951(11,12). The school lunch program is managed by school dietitians, about half of whom also provide nutrition education through school lunch as nutrition teachers(10,11). Thus, the Japanese school lunch

system has developed from merely satisfying hunger to meeting several goals, especially for the health of children(11). In this study, we compared school lunch menus in Vietnam and Japan for the purpose of improving the school lunch program in Vietnam.

MATERIALS AND METHODS

We contacted public schools in each country randomly until three schools in each country agreed to cooperate for this study. The ethical consideration was not required. No human participation was included. The schools and students information were closed. The data needed for the research were the menus data. All the menus in the last year were collected from each school. After the collection, we classified items in the menus into 6 groups (Group 1: staple foods, Group 2: main dishes, Group 3: side dishes, Group 4: soups, Group 5: desserts, and Group 6: beverages). All the daily food items in each group throughout a year were entered in a table by school.

Statistical analyses Variables were checked for normal distribution and compared by unpaired Student *t*-test. *p*-values of less than 0.05 were considered statistically significant for all the analyses. The above statistical procedures were performed using Excel (Microsoft Excel version 10)

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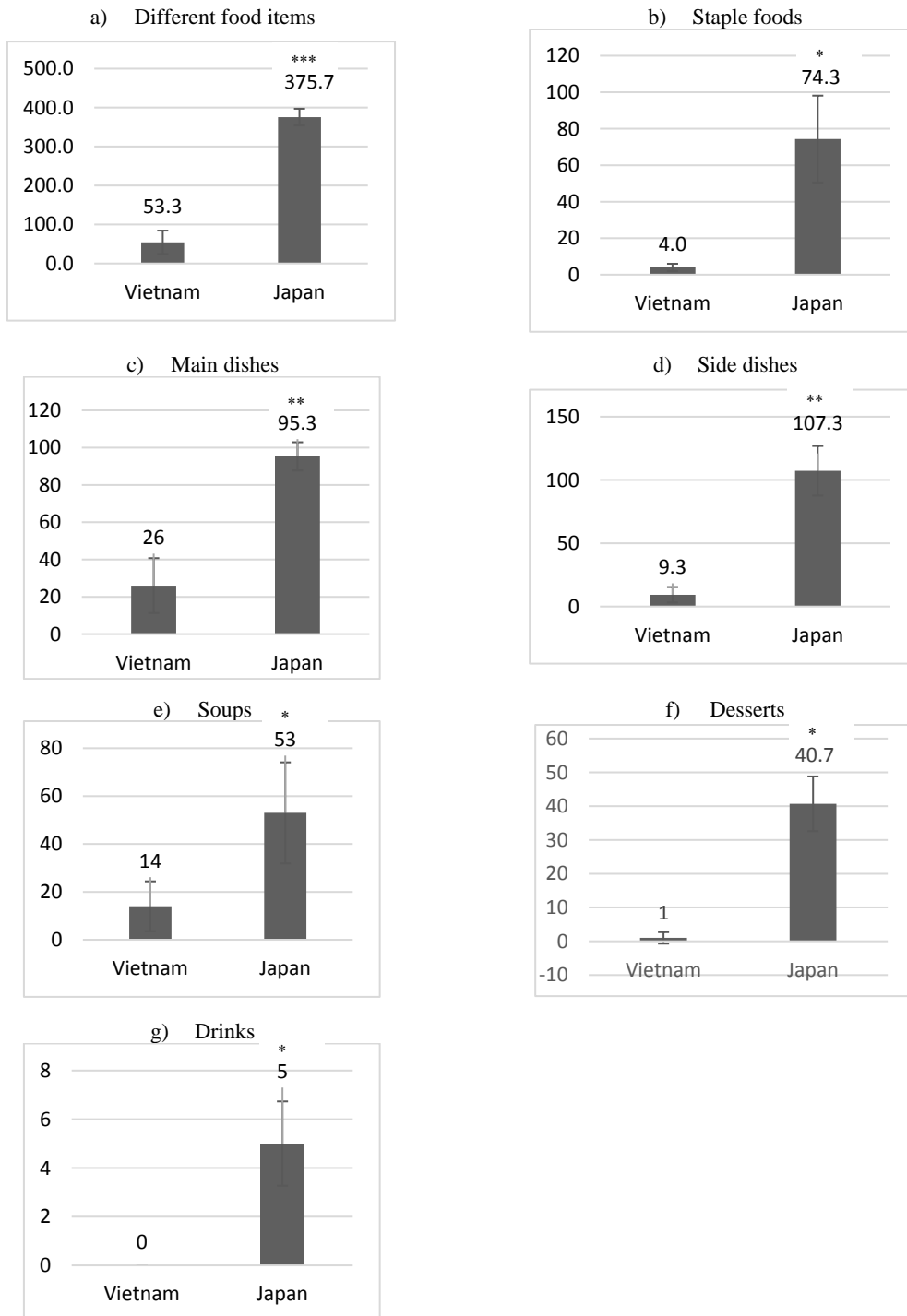


Fig1. Foods used in a year at schools in Vietnam and Japan (number)
 *, **, *** Significantly different at $p < 0.05$, 0.01 and 0.001 , respectively.

RESULTS

Fig. 1 shows the numbers of a) different food items, b) staple food, c) main dish, d) side dish, e) foods in soup, f) dessert and g) drink. Values are means \pm SD. When p -values lower than 0.05 were considered statistically different between the two countries.

The numbers of different food items in Vietnam and Japan were, respectively 53.3 ± 30.1 and 375.7 ± 21.5 ($p=0.0002$) (Fig.1 a). The numbers of food items in Vietnam and Japan were 4.0 ± 2.0 and 74.3 ± 23.8 for staple foods ($p=0.05$), 26.0 ± 14.7 and 95.3 ± 7.6 for main dishes ($p=0.01$), 9.3 ± 6.1 and 107.3 ± 19.6 for

side dishes ($p=0.0006$), 14.0 ± 10.4 and 53 ± 21.1 for soups ($p=0.03$), 1.0 ± 1.7 and 40.7 ± 8.1 for desserts ($p=0.02$), and 0.4 ± 0.7 and 5.0 ± 1.7 for drinks ($p=0.04$) (Fig.1b-g).

Fig. 2 shows the frequency of occurrence of main dishes (%). The frequencies in Vietnam and Japan respectively were 85 ± 13 and 64.3 ± 4.2 for meat ($p=0.03$), 32 ± 3.5 and 32.7 ± 3.1 for fish ($p=0.41$), 21 ± 3.6 and 7.3 ± 2.5 for eggs ($p=0.002$) and 11.7 ± 2.9 and 11.3 ± 1.5 for soybean products ($p=0.43$). Frequencies of meat were higher in Vietnam than in Japan and frequencies of egg were vice versa. Frequencies of fish and soybeans were similar in the two countries.

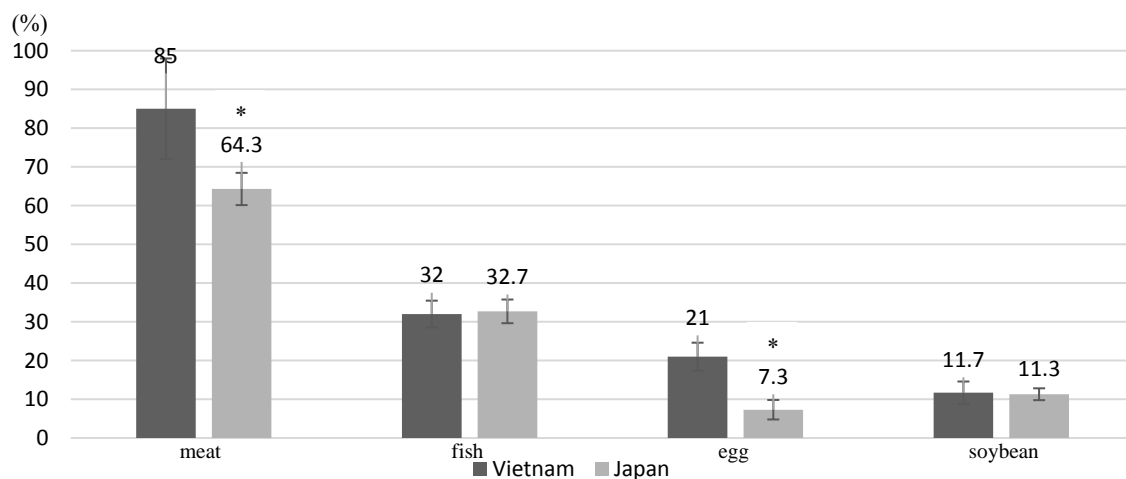


Fig.2 The frequency of occurrence of main dishes
* Significantly different at $p < 0.05$

DISCUSSION

Both Vietnam and Japan have 190 lunches. However, there were 23 menus in Vietnam and 190 menus in Japan. The number of food items in Vietnam and Japan, respectively were staple foods 4 and 74, main dishes 26 and 95, (side dishes 9 and 107, soups 14 and 53, desserts 1 and 41, and drinks 0 and 5. Total food items were 53 in Vietnam and 376 in Japan. This indicated that the two countries have a similar number of lunches, but Vietnam has fewer food items than Japan does. We can point to some factors for the differences which may be useful for the improvement of Vietnamese school lunches.

First, the placement of high quality professional staff should be considered for the Vietnamese school lunch program. The

Vietnamese school lunches are prepared by ordinary people with no educational background in nutrition, while professional school dietitians are available in basically every school in Japan(1,8,14,15). Furthermore, about half of these dietitians have their teacher's license and are officially designated as school nutrition teachers. As professionals, they are required to make nutritious, tasty, and educational menus, which essentially increase the variety of menus for Japanese school lunches (11,13).

The Vietnamese school lunches adopt cycled menus for two to four week periods(8). Obviously, menu variety is low and children might get bored with the meals offered. This may result in an increase in food waste. In Japan menu charts are given to every student's family a month in advance so that family members

know what their children will be eating(11). It is also recommended that the menu chart, along with the food items, be prominently posted at each student's home so that everyone in the family can easily refer to it(14). Parents and guardians can avoid serving the same items for lunch and dinner and it is also useful in preventing food allergy problems(11). This system motivates the school dietitians to take their task seriously. Consequently the variety of menu increases. Occasionally, professional school dietitians serve food that children dislike with the purpose of establishing good dietary habits(11,13). They try to use various cooking methods to provide good-tasting dishes for the children(7). With these trials, dietitians are capable of providing varied menus.

The Japanese government has recommended the use of locally available foods at home and in the community(14). School lunch is no exception(11). All children receive compulsory education for 9 years from 6 to 15 years old and 99% of elementary school students and 75% of junior high school students have school lunch(16). For locally produced items, the local agricultural association provides information about vegetables that will be available in following months(11). The use of locally available foods also increases their seasonal variation. Japan has spring, summer, fall, and winter. Food products, from vegetables to fish, thus vary according to the seasons. Consequently, the effort to use locally available foods increases variety in lunch menus.

Cost is an important factor for the variety of foods. The cost of school lunch in Vietnam is borne by parents, while in Japan parents need to pay only for food materials, which contributes to greater variety of materials(1,11). When locally available foods are included, the food materials cost will become less expensive(10). In Vietnam, the morning of each school day, kitchen workers go to markets and purchase the most economical foods they can find, which also the foods that are currently in season. This consequently decreases the variety of menus.

Dietary reference intakes (DRIs) for Japanese school lunches may increase food variety(11). Unfortunately, DRIs are not available in Vietnam, so the aim of the school meal program is just to satisfy hunger, which is easier to do with high energy foods. Cycle menus without DRIs and professional supervision may contribute to the frequent use of high energy

foods in the menus. Consequently, food variety is reduced. It is unlikely that good dietary habits can be formed under such conditions. DRIs with professional supervision are required for school meal programs in Vietnam to foster good food habits.

The use of greater food variety has been positively influenced legal developments(11). When the Second World War ended, Japanese suffered hunger(13). In 1945, the Head of Public Health and Welfare of GHQ suggested the introduction of a school lunch program to the Japanese government(13,17). In 1951, a national school lunch law was established(17). Under this law, Japanese school lunch has developed impressively, including the presence of a school dietitian in every school. In 2005, the Japanese National Shokuiku Basic Act became law(18). The law focusses on 'shokuiku', the Japanese word for food and nutrition education, and a good model for healthy daily meals is indicated inside(19).

A limitation of this study is the small number of schools surveyed but schools were concerned about student privacy. In order to collect data that would be closer to ordinary children we conducted the study in public schools. We contacted about 10 schools randomly in each country until three schools agreed to cooperate in this study. Standard deviations of all the results were small, suggesting that the three schools chosen had similar lunches and also suggesting that these schools were not special and the data may be representative.

Another limitation of this study arises from considering rice as a staple food. Vietnam has 4 types of rice while Japan has 36 types. This occurs because the Vietnamese use rice just the way it is, while the Japanese use rice mixed with vegetables or meats, which is counted as a staple food(1,11). Whether it is appropriate to count mixed rice as a staple food remains debatable.

In conclusion, in this study we found that the Vietnamese school lunch program should increase the variety of menus and food items. To achieve this, active participation by nutrition professionals in the management and preparation of school meals may be the most important factor.

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