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Knowledge, Attitude and Practice on Healthy Eating among Special Needs Boarding School Students

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ABSTRACT

Nutrition information is important for everyone in order to get healthy lifestyle and free from any diseases. This study was attempt to determine the effectiveness of the nutrition programme among special needs students aged 13 to 17 years old by evaluating their changes in knowledge, attitude and practice on healthy eating. Eighty students were involved in this study in which 40 students recruited as intervention group were from Sekolah Menengah Pendidikan Khas (visual impaired). Another 40 students were from Sekolah Menengah Pendidikan Khas Vokasional (hearing impaired) were assigned as control group. They were distributed with questionnaires for pre-test and post-test and a nutrition programme was implemented to the intervention group. A significant improvement in students' nutrition scores among intervention group before (36.30 ± 4.78) and after (36.55 ± 3.34) attending the nutrition education programme ($t = -4.03$, $df = 39$, $p < 0.05$). Improvement in attitude scores also seen when intervention group decreased significantly ($t = 2.48$, $df = 39$, $p < 0.05$) from $18.55 (\pm 4.17)$ to $17.03 (\pm 2.79)$. However, for practice scores in intervention and control group shows no significant changes. For knowledge and attitude scores among control group showed no significant differences. In conclusion, this study showed nutrition education also may help to give positive impact to the special needs students in healthy eating lifestyle.

Key words: Special needs, nutrition education, visual impaired, hearing impaired, healthy eating

INTRODUCTION

Healthy eating is essential for adolescents' health and well being and also for the students. Poverty, lack of access to health information and services and unsafe environment were the challenges that need to cope by the adolescents who have certain health and development needs for their life (WHO, 2008). In a study done by Ahmed (2005), stated that nutrition program is the platform for the vulnerable population in enhancing their dietary habits. Therefore, nutrition education should be applied on students since schools are the important settings in which to promote young people's physical and emotional health. According to the study done by Cake and Harris (2006) had revealed that physical activity interventions among young people can be effective and it can be useful when promote it in schools and the community.

A suitable programme should be implementing to provide information about healthy eating. Honisett *et al.* (2009) had made a research in order to identify the best way to engage, motivate and support early childhood services and primary school to create policy and practices changes to

promote healthy eating and physical activity. The information from this research will be used to build up a program to reduce the risk of childhood overweight and obesity. Through the process of design and evaluation outlined a programme named Kids-‘Go for your life’ was developed and it was demonstrated to be a suitable model to engage early childhood services and primary schools. This programme was suitable for support the children in order to make practice changes and realistic to be created as a policy to support healthy eating and physical activity in children. There was a study conducted in Hathras City by Yadav and Singh (2010), in which they had discovered how the effectiveness of nutrition education towards the overweight and obese female. They noticed from the nutrition education on the food practices and habit, there were increasing on their lifestyle. For example, it shows after the nutrition education there was significant enhancement on the physical activities, eating habits such as vegetables intake, breakfast consumption and reduction in sweet intake. Early exposure regarding healthy lifestyle and nutrition may help the students to be more concerned about their health. Khalid *et al.* (2011) reported that the students from two universities only consume 1 cup of fruits per day and 2 to 3 times per week even though more than 50% of the students from both universities knew about the balanced diet.

Nowadays, in Malaysia, obesity becomes a major health concern, since obesity may lead to other chronic diseases such as high blood pressure, diabetes, kidney problem and heart disease (Ruzita *et al.*, 2007). Obesity appears to be the risk factor of chronic disease that may occur in adult and overweight and obese children and this is proven in a study done by Deckelbaum and Williams (2001). Afridi *et al.* (2003) also had discussed about diseases that may be suffered for those who are overweight and obesity such as heart disease, hypertension, diabetes, stroke, cancers, osteoarthritis and problems in psychosocial aspects. A well planned nutrition programme should be implemented especially among students in order to avoid the problems become worse. Since in 2006, unhealthy eating habits had been found as one of the morbidity and mortality in the US (Melonie, 2006). Besides, the students may get a positive impact on their nutrition knowledge, attitude and healthy eating habits after attending the nutrition programme and may apply throughout their lives. Even though this study does not cover feedback from all the special needs students but this result from this study would give level effectiveness of nutrition education programme towards knowledge, attitude and practice among special needs students.

MATERIALS AND METHODS

Study design: This study was conducted in two schools which were Sekolah Menengah Pendidikan Khas (visual impaired) and Sekolah Menengah Pendidikan Khas Vokasional (hearing impaired) during the period from 22 May to 14 July 2011. This study design was a pretest and post-test. The student knowledge, attitude and practice were accessed by using questionnaire. The questionnaire was adapted from National Coordinating Committee on Food and Nutrition, Ministry of Health Malaysia with some modification. One week before the intervention nutrition programme implemented, the students were answered the questionnaire. The intervention nutrition programme has been held for a day and it was involved by intervention groups while control group received nutrition booklet. Three weeks after the intervention nutrition programme all the students need to complete the same questionnaire.

Study population: A total of 80 special needs students aged 13-17 years old were recruited for this study. The students were divided into 2 groups for control and intervention group. Forty students were from Sekolah Menengah Pendidikan Khas (visual impaired) were assigned as intervention

group while another 40 students were from Sekolah Menengah Pendidikan Khas Vokasional (hearing impaired) and they were assigned as control group for this study. In addition for Sekolah Menengah Pendidikan Khas (visual impaired) it consists of 3 types of students which are B1 (blind), B2 (partially sighted) and B3 (visually impaired). During this study, only B1 and B2 students were involved and the number two of it was balanced. Same goes to the Sekolah Menengah Pendidikan Khas Vokasional (hearing impaired), some of them were fully hearing impairment and mute while some were partially hearing impairment and mute.

The study protocol was approved by the Department of Nutrition and Dietetics UiTM. The official consent was obtained from the Ministry of Education Malaysia and as well as approval by Education Department of Selangor and Kuala Lumpur for the school selection and the study activities that were involved the students during intervention programme from selected schools. Filled informed consent was obtained from the students for the intervention activity and answering the questions.

Intervention programme: The intervention nutrition programme was known as 'Jom Sihat' was carried out for a whole day which is on 22 June 2011 at Sekolah Menengah Pendidikan Khas (visual impaired). Before the study started, students from both group (control and intervention) were asked to complete a set of questionnaire. A questionnaire comprising question on nutrition Knowledge, Attitude Practice (KAP) was administered to each of the students before they received the nutrition education programme and right after the programme was completed. Both of group of students were assisted during answering the questionnaire. For students from Sekolah Menengah Pendidikan Khas (visual impaired), the questions were read by the enumerator to the B1 students were answered the questions using their Braille sheets while the B2 students were answered on answer sheet provided. For Sekolah Menengah Pendidikan Khas Vokasional (hearing impaired), all the students were divided into six groups and each groups had a research assistant to give explanations for each questions. They were also provided with power point presentation that contained all the questions and pictures were used in order to help the students understand for each question. All the questions were answered in the answer sheet given. Follow up test was done using the same questions and three weeks after the intervention programme had done. Changes in the KAP scores were used as the main factor to analyze the results of this study and to identify how effective the nutrition education programme on these special needs students. For nutrition education programme, all the students from the intervention group (Sekolah Menengah Pendidikan Khas (visual impaired)) were involved. The nutrition intervention programme was consisting of two sessions. The first session was a group discussion which the students were divided into 5 groups and each group were guided by an enumerator. The students were given information regarding nutrition. The points were about food pyramid, healthy eating tips, cholesterol and diseases, 14 key messages of Malaysia Dietary Guidelines 2010 and importance of exercise in life. One hour and a half were spent for the group discussion session. All the research assistant were shared their knowledge and experienced in nutrition with the students and each of them were provided with a module on order to make sure all the students received the same point of nutrition information. There were also had question and answer session. For the second session, four types of games were designed. The objective of the games was to see the students understanding of nutrition information that they received in the first session by applying in the games. The games that had been held are as follow:

- Puzzle of foods : Build a food pyramid
- Who am I? : Answer the questions given
- My plate : Create two menus either for breakfast, lunch or dinner
- Guess what: Taste the food provided and described to the group members about the nutrition feature of the foods. The group members will guess

Most of the games, were used printed words cards (consist name of foods and questions) and Braille codes. In second session, all groups were involved and they need to complete all the tasks as teamwork. Group with highest marks was considered win.

While for the control groups, all the students were provided with nutrition booklet. Contents of the booklet were same like in the module (for the research assistant). Pictures and colored booklet was created for attraction.

Statistical analysis: All the data were analyzed by using SPSS program version 17.0. The results were presented as mean and standard deviation. T-test was used in interpretation the data and statistical significant was considered when p-value <0.05.

RESULTS AND DISCUSSION

Nutrition knowledge: For nutrition knowledge, the students were test with 22 questions regarding knowledge in nutrition. The questions consist of nutrition questions such as food pyramid, function and source of foods and nutrients and diseases. Figure 1 shows the mean of the nutrition knowledge scores for both groups before and after attending the nutrition intervention programme. Based on the results, the mean of the post-test (38.55 ± 3.34) for the intervention group was higher than the one in pre-test (36.30 ± 4.78). Based on t-test results, data showed that this different was significantly ($t = -4.03$, $df = 39$, $p < 0.05$). Therefore, it was concluded that there was significant improvement in students' nutrition knowledge before and after attending the nutrition education programme. For control group, the mean was not significantly different ($t = -4.17$, $df = 39$, $p > 0.05$) in their nutrition knowledge with mean before (30.88 ± 4.44) and after (30.98 ± 4.46). In nutrition knowledge, higher score was indicated for good in nutrition knowledge.

In study done by Saksvig *et al.* (2005), based on their results, after the programme of healthy eating and physical activity named The Sandy Lake Diabetes prevention intervention, they found that there were significant increases in few aspects such as knowledge, dietary intention, dietary preference and dietary self-efficacy. The components that they focus on during the intervention programme were such as curriculum, family, peer and environmental.

Eboh and Boye (2006) also had investigated the effects on nutrition knowledge among primary school pupils after attending nutrition education programme. From their findings, the results also showed significantly increase which nutrition knowledge score was increased after the subjects attend the nutrition education for 4 days in a week and 40 min for per session.

Nutrition attitude: The students had answered about 6 questions which related to food choice and mealtime. Format of the questions was five level likert which were strongly disagree, disagree, neither agrees or disagrees, agree and strongly agree. Each of levels had it is own scores. For nutrition attitude score, the lower score was indicated the better in nutrition attitude of the student.

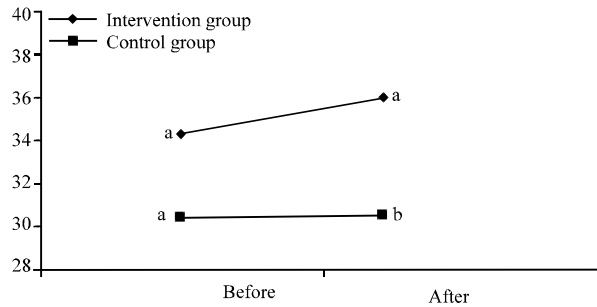


Fig. 1: Comparison of mean nutrition knowledge scores for intervention and control group. Values with same letters in the same line are not significant different ($p < 0.05$)

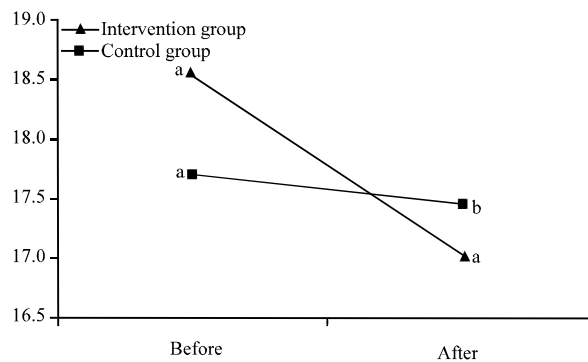


Fig. 2: Comparison of mean nutrition attitude scores for intervention and control group. Values with same letters in the same line are not significant different ($p < 0.05$)

Based on the results, intervention group decreased significantly as shown in Fig. 2 ($t = 2.48$, $df = 39$, $p < 0.05$) from (18.55 ± 4.17) to $17.03 (2.79)$. However, no significant changes occurred in the control group during the study.

Nutrition practice: As in nutrition attitude, lower score was indicated better in nutrition practice and the students were answered 10 practices questions relating to nutrition. Fig. 3 shows the mean of the nutrition practice scores for both groups before and after attending the nutrition intervention programme. At the beginning of the study, the pre-test mean of intervention group was slightly higher (19.98 ± 3.71) as compared with control group (17.63 ± 2.93) . However, the changes of the nutrition practice in the post-test of both groups were not showed significantly difference throughout the study ($p > 0.05$).

Bere *et al.* (2006) investigated the intervention education programme. From their results, they found that the intervention programme has no effect on the subjects regarding their fruits and vegetables consumption. There were no changes in the subject's preferences on fruits and vegetables.

Changes in knowledge, attitude and practice according to sex and type of students among intervention group students before and after attending intervention programme.

An independent t-test was conducted to compare changes in knowledge, attitude and practice among male and female students in intervention group. Table 1 show the t-test results on the pre-test and post-test of the nutrition knowledge, attitude and practice between two genders in the subjects. Based on the results, it was found that there is no significant different ($p > 0.05$) between

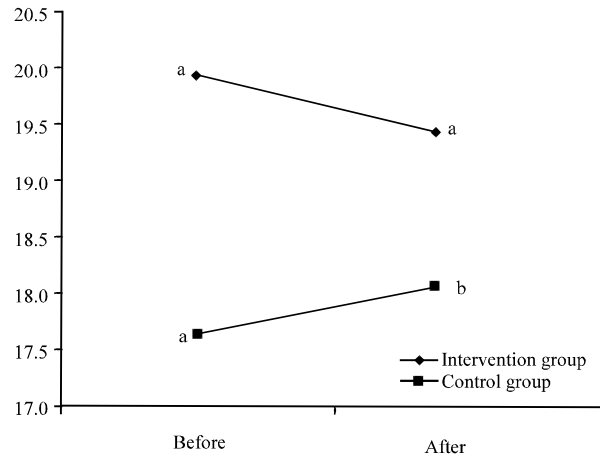


Fig. 3: Comparison of mean nutrition practice scores for intervention and control group

Table 1: Results of knowledge, attitude and practice scores according to sex among intervention group students before and after attending intervention program

Variable	Male (n = 20)	Female (n = 20)	p - value
Knowledge			
Pre	36.10±6.03 ^a	36.50±3.24 ^b	0.80
Post	38.75±3.91 ^a	38.35±2.74 ^b	0.71
Attitude			
Pre	19.25±5.04 ^a	17.85±4.40 ^b	0.36
Post	17.00±2.34 ^a	17.05±3.24 ^b	0.96
Practice			
Pre	20.60±3.59 ^a	19.35±3.82 ^b	0.29
Post	20.10±3.32 ^a	18.75 ^b ±2.51	0.16

Values are as Mean±SD. Values with the different letters in the same rows are not significantly difference (p>0.05)

male and female subjects in terms of nutrition knowledge, attitude and practice before and after attending nutrition education programme.

While according to type of students among intervention groups students, there is no statistically significant difference (p>0.05) in mean scores of knowledge and attitude between B1 and B2 students and there are presented in Table 2. However, there was a significant difference (t = 2.19, p<0.05) between mean score of practice before attending nutrition education programme for B1 (Mean = 21.20, sd = ±3.87) and B2 (Mean = 18.75, SD = 3.18). These results show that although both groups were had different ability on their visual but based on the results, it shows that the type of students may have an effect on nutrition knowledge, attitude and practice.

In this study, the nutrition intervention programme that have been conducted improve the nutrition knowledge and attitude of the target group (intervention group students). While for the nutrition practice were not showed significant difference before and after attending the intervention programme. Although in this study, only nutrition knowledge and attitude scores showed increased significantly but it may help to change the student's behavior since there was a research reported that nutrition knowledge may play a role in implementing healthy food habits. However, Ruzita *et al.* (2007) had conducted nutrition education programme and the results in intervention group showed increased significantly in nutrition knowledge and attitude score from pre-test to post-test and follow-up test. While nutrition practices score had no significant

Table 2: Results of knowledge, attitude and practice scores according to type of students among intervention group students before and after attending intervention program

Variable	B1 (n = 20)	B2 (n = 20)	p-value
Knowledge			
Pre	36.30±5.20 ^a	36.30±4.46 ^b	1.0
Post	37.75±3.55 ^a	39.35±2.98 ^b	0.13
Attitude			
Pre	18.25±4.54 ^a	18.85±5.00 ^b	0.69
Post	16.45±3.00 ^a	17.60±2.50 ^b	0.2
Practice			
Pre	21.20±3.87 ^a	18.75 ±3.18 ^a	0.04
Post	19.90±3.11 ^a	18.95±2.86 ^b	0.32

Values are as Mean±SD. Values with the different letters in the same rows are not significantly difference (p>0.05)

improvement. On the other hand, a study done Shariff *et al.* (2008), the intervention group who attending nutrition education intervention had significant increments in each scores (knowledge, attitude and practice). In another intervention programme that have been done by Ha *et al.* (2009) found that, effects of intervention programme on milk and soft drink consumption showed that there was positive impact on soft drink consumption among subjects who are attending the nutrition class lectures and some activities. Their findings showed a decrease in soft drink consumption however for milk consumption, the female subjects showed increase in fat free milk choice and for male subjects they start change their milk choices from low fat milk to skim milk.

In previous studies, the nutrition intervention programme were conducted among school students while in this study, the nutrition programme were conducted among special needs students. They were visual impaired students (intervention group) and hearing impaired students (control group). The subjects chosen in this study maybe one of the factors that affect the results. More programme and activities concerning about nutrition that appropriate and suitable with their ability should be apply among these special needs students. Maybe involvement from experienced dietitian and nutritionist may contribute to great programme and activities that may give huge impact to these special needs students. Perez-Rodrigo and Aranceta (2003) had said that educational strategies should be relevant to the objective of the programme and the information given should be delivered in a way the students can easy to understand. Since the intervention group were from special education schools (visual impairment), group discussion and teamwork were more work among them. Sovyanhadi and Cort (2004) also found that small group discussion has a tendency to let a great participation. The students can ask any questions, clarify information and give opinion regarding nutrition. Involvements by other professionals are one of the big contributions in order to make this study more successful. For example, the famous healthy food brands that become favorite choice among students can together promote healthy eating lifestyle to the students. As well the individuals involved may show their support by giving a fund investment or sponsored their products and make it as a gift to the students. By doing this, the students will be happier and enjoyed attending the nutrition education programme. Besides, short intervention period may be another factor to only some changes in practice and attitude score. Moreover, since both groups were boarding school students, this may cause difficulty to change their eating habits because it is compulsory for all students to have their meals in the dining hall during all meal periods. For those who like all the menus provided by the dining hall personnel, it is not a matter for them to eat. Nevertheless, for students who do not like the menu, they will tend to skip the meals and same will happen if the students are person who hard to follow the meal time

especially during the breakfast, they will refuse to go to dining hall for a breakfast. As a student, they should have breakfast because breakfast has been labeled the most important meal of the day. Rampersaud *et al.* (2005) had done a research to get a data in order to support this claim. Breakfast has been said that it contributes to whole diet nutrient adequacy. People who consume breakfast are more likely to have better overall diet quality.

CONCLUSIONS

Nutrition education programme could improve nutrition understanding among special needs students. With programme and activities that suitable with the student's ability, it will help to improve the student's knowledge, attitude and practice in nutrition. For these special needs students, activities can be more effectively attract the students compared to the nutrition discussion. Involvement from other professionals such dietitian, nutritionist and food company may give more impact to the students because they are experienced more in promoting healthy lifestyle and in giving nutrition education.

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