AN EDUCATIONAL PROGRAM ON FOOD LABEL UNDERSTANDING FOR SCHOOL CHILDREN

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ABSTRACT

Food Labels are an excellent avenue of communication. The modern food package has assumed the responsibility of communicating the relevant information that a consumer needs to know about the product through the label besides performing its basic functions of containing and protecting. There were many researches which focused on intake and eating behavior of middle childhood children but only few have examined their knowledge of the Nutrition Fact Label. The goal of this study was to assess the understanding of Nutrition Fact Label and the response of children to an educational program about Nutrition Fact Label. Data was collected from forty children (11-12 years) from two affluent schools of Delhi using pretested questionnaires related to knowledge, attitude and understanding regarding Nutrition Fact Label. One school children were taken as experimental group and another one as control group. The children of experimental group were exposed to a short educational program on Nutrition Fact Label followed by a posttest questionnaire. Paired t-test was used to calculate the difference in pretest and posttest scores. Initial scores of experimental group regarding knowledge, attitude and understanding for Nutrition Fact Label were 5.5(SD_+1.48), 15.7(SD_+1.61), 4.4(SD_+2.44) respectively which significantly increases to 6.1(SD_+0.77), 16.3(SD_+1.43), 5.5(SD_+1.67) respectively. The calculated p-value of experimental group was significant as $p<0.05$. whereas in the control group no significant change was observed. In Conclusion, children can understand the Nutrition Fact Labels through educational sessions.

Keywords: *Food labeling; Nutrition education; School children; Healthy food choice*

INTRODUCTION

Nutrition information on food labels is an important source of nutrition information but is typically underutilized by consumers. Nutrition knowledge is important for communication of nutrition information through labels on packaged foods (1). The modern dietary pattern include diets high in saturated fats, sugar and refined foods and low in fiber, which is sometime termed as “Westernized diets”(2). With these transformation in dietary pattern the concept of semi-processed foods and processed foods came into being which lead to advances in food production, processing and distribution technology (3).It has been said that “You are what you eat.” Thus to know who you are, you

must understand what you are eating (4). In this context the role of food labels have increasingly important. The food label is direct means of communication of product information between buyer and sellers. It enables the consumer to differentiate between foods and brands to make informed purchasing choices. A label gives basic product information regarding nutrient content, ingredients, manufacturing details, cost, usage etc. Label serves as a vehicle for packed food marketing, promotion and advertising too (5). Food labels are potentially powerful tools of communication which are often not considered when traditional channels are discussed to discourage consumption of unhealthy packed food (6).

Until 1994, food manufacturers had to just print their product's nutritional data anywhere on the cover of the product. And the manufacturers neatly abided by formally printing the information anywhere they wanted to, mostly in very small print size. The Food and Drug Administration (FDA) took notice of the vague and haphazard manner and decided to standardize the whole system. It was in 1994 that food labels were regulated in an organized method. The FDA listed out uniform definitions for terms and a structured format in which information should be presented. All new food labels had to comply with the FDA regulations. Effectively, the title 'nutrition facts' appear on top and should include both the ingredients and nutritional information of the food in a particular size and shape (rectangle). The nutritional information should be listed in a particular order denoting its importance. These amendments are incorporated in today's food labels and benefit the consumer in making healthier food choices.

In Indian context, where prevalence of overweight, obesity and incidence of the resultant non-communicable diseases are assuming epidemic proportions, consumption of unhealthy foods can be discouraged to a large extent by effective food labeling practices, which give ample scope for the consumers to make informed choices. Consumers also have more nutrition information due to expanded food labeling, mandated by the government. Today nutrition labels are being made mandatory on nearly all packaged foods in accordance to the Food Safety and Standards (Packaging and Labeling) Regulations, 2011, notified by Food Safety and Standards Authority of India. The nutritional information or nutritional facts on food label are given as per 100gm or 100ml or per serving of the product and contains energy value in Kcal, protein in g, carbohydrate (Specify quantity of sugar) in g, fat in g, the amount of any other nutrient for which a nutrition or health claim is made or omitted (7).

There is now increasing evidence to indicate that mere display of food labels cannot help the consumers make informed choices. For instance, a recent study on the perceptions and practices of the Indian Households (HHs) related to food safety revealed that as many as 60% of the HHs buy packed food sometime or the other but only 20% check the food labels (8).Studies among south Indian women indicated that although women see the labels on packed foods for date of manufacturing and 'best before date', many of them are not aware of quality symbols like ISI, AGMARK and FPO (9-10). Studies also indicate that literate consumers are more likely to check labels than their illiterate counterparts (11-12). In the Indian context, where the literacy levels are considerably low, addition of symbols to the routine labeling may be more beneficial. For instance, in developed nations the traffic light scheme has been designed to provide at glance information on the quantity of fat/saturated fat, sugars and salt content in the food preparations. Studies revealed that this kind of labeling is becoming more popular (13). But there are hardly any studies that have tested the effectiveness of using such symbols in the Indian scenario. The current status of food labeling in India that way is very primitive and in fact, the exact status is also unknown and also there is no study on educating children about Nutrition Fact Label (NFL).

Thus present study was designed to assess the knowledge of children regarding NFL and to educate them about NFL through innovative methods. Children are likely to benefit from

educational programs that teach them how to use labels as tools to compare and select food items available in market and make healthy food choices. The study aims to increase the knowledge and use of nutrition food labels among children. Thus the objective of present study was to design a nutrition education program, to enhance the knowledge of 11 to 12 years old children regarding understanding of NFL.

METHODOLOGY

The present study is a school based educational intervention study designed to assess the knowledge of children regarding NFL and to educate them about NFL through innovative methods to promote lifelong food selection skills and habits. More specifically this study measured changes in nutrition related knowledge by obtaining pre and post intervention scores depicting change in attitude towards selection of food items using questionnaire technique. The study was divided into four phases, first phase was assessment of existing knowledge of children regarding NFL, second phase was to develop of an educational program on NFL, third phase was on imparting education to the experimental group through developed educational program and the fourth phase of the study was to assess the understanding of the children regarding NFL.

The study was conducted in two different public schools of Rohini, Delhi, India. The purpose of the study was introduced to the Principal of both schools and written permission was obtained from the school administration. The sample involved a total of 80 children of grade six (11 to 12 years), 40 children from each school. All participants were from middle and upper middle income group. The researcher developed a questionnaire to obtain pre and posttest scores to assess knowledge of the NFL before and after an education program. Materials were pilot tested on five children to determine the correct difficulty level to allow for room for improvement from the pretest to the posttest, as well as readability by the target audience. Data from these subjects were not included in the final analysis. Data from school children was collected using short questionnaire by conducting workshop with the children during class exercise period of 40 minutes. Questionnaire contained 15 short questions using food labels from food packages commonly consumed by children in this age group, to assess present knowledge of children regarding NFL, their attitude regarding usefulness, accuracy and understanding of food labels. Next, an interactive nutrition education program on how to read and use the NFL was designed on the basis of literature and data obtained from existing knowledge of NFL among children. The program included a group presentation (power point presentation), a class activity (game) and a take home material (hand out). The power point presentation mainly focused on different sections of nutrition label so that children get knowledge about how to read and understand the label. A game was developed to reinforce the knowledge regarding NFL among children. The objective of the game was to make the education interactive and interesting. Children learns better by doing so for better learning a game was prepared by using different food labels of eatables usually consumed by children of 11-12 years. A take home material was also developed with objective of providing information in clear and concise language so that the knowledge gained on NFL during workshop is retained by the children. Thus, a handout was developed on healthy eating habits and food pyramid with a comparison between two food labels for better understanding.

The developed program was administered to only 40 children (experimental group) in one school, during a 40 minutes workshop in class period in presence of their class teacher. After 20 working days, again a 40 minutes workshop was conducted for obtaining post scores in both the school. Same questionnaire that was used for pre score was administered to the children, with only different food package label. Students were also asked to evaluate the developed material on NFL in terms of presentation, content, language and suitability. Statistical tests were performed using SPSS version 10, 2000 for windows, Paired t-test was done to

compare the differences between pre and posttests scores of control and experimental groups.

RESULTS

The sample comprised of 80 students aged between 11-12 years from two affluent schools of Delhi. All the students were from class six. Table 1, depicts gender wise distribution of children and education wise distribution of their parents. Most of the children 64% (n = 51) have working mothers and only 36% (n = 29) children had housewife mothers; this indicates the changing trend of the society in which more women are becoming independent.

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Table 1:Gender wise distribution of children and Education wise distribution of their Parents

Characteristic		Categories	Number	Percentage
Gender of children		Male	43	54
		Female	38	46
Parents Education	Father	Post- Graduate	51	64
		Graduate	29	36
	Mother	Post- Graduate	14	17
		Graduate	63	79
		High School	03	4

In order to impart nutrition knowledge and promote understanding among children to fill gaps of areas in which they lack knowledge and practices, it was decided that the program should have three components to provide better understanding among children. The conceptual framework for education program was developed with key features as a group presentation, class activity and take home educational material. Table 2 depicts the description and outcome of each component of the developed program.

Table 2. Components of education material on nutrition fact label

EDUCATION TOOLCOMPONENT	DESCRIPTION	OUTCOME
Group Presentation	Power Point Presentation (workshop)	Knowledge imparting
Class Activity	Learning by doing and Discussion (Game)	Reinforcement
Take Home Material	Hand out	Retention of information

The developed program was implemented only on the experimental group i.e. one school. The knowledge, attitude and understanding scores obtain in phase-I of the study were considered as pretest scores. Posttest scores were obtained from children of both the schools using same questionnaire that was used for pretest score, with only different food package label. Comparison of mean scores of children of both the groups can be seen in Table 3

Table 3: Comparison between mean scores of experimental and control group

Assessment Scale	EXPERIMENTAL GROUP (n=40)				CONTROL GROUP (n=40)			
	Pretest scores (mean±SD)	Posttest scores (mean±SD)	T-Scores	P-value	Pretest scores (mean±SD)	Posttest scores (mean±SD)	T-Scores	P-value
Knowledge (Max.=15)	5.5±1.48	6.1±0.77	-2.62	0.012 (< 0.05)	5.8±1.23	5.9±0.61	-1.77	0.9901 (> 0.05)
Attitude (Max.=30)	15.7±1.61	16.3±1.43	-2.53	0.015 (< 0.05)	15.05±1.45	15.1±1.43	-1.68	0.3296 (> 0.05)
Understanding (Max.==15)	4.4±2.44	5.5±1.67	-2.37	0.023 (< 0.05)	4.6±1.60	4.7±1.25	-1.13	0.0800 (> 0.05)

Data presented in Table 3 depicts that there was significant difference ($p<0.05$) in pretest and posttest knowledge, attitude and understanding scores in the experimental group. In experiment group the subjects mean knowledge score significantly increased from 5.5±1.48 to 6.1±0.77 ($p=0.012$), attitude score significantly increased from15.7±1.61 to 16.3±1.43 and understanding scores 4.4±2.44 to 5.5±1.67, whereas in control group no significant difference ($p>0.05$) in pretest and posttest scores was observed. Thus the significant difference in increased scores depict that the developed program improved the knowledge, attitude and understanding of the children regarding NFL.

DISCUSSION

An educational, school-based intervention had significant improvement ($p<0.05$) in nutrition knowledge, attitude and understanding of school children regarding NFL. The program successfully reached out to children while also providing nutrition education during a short period of time. Thus, the results from this study support previous findings of the benefit of an educational-based school intervention (14-15). Knowledge does not directly relate to behavior change; however, it is the first step in creating a healthy lifestyle (16). Behavior change occurs slowly over time and requires positive reinforcement.

Nutrition label usage also varied according to education levels. A study on adult Americans by Bender et al (17) found that female read the labels more than male, and higher education group use nutrition labeling more than lower education group. It was found that education level had significant relationship to nutrition labeling usage behavior. Most of the children in the present study too have graduate and post graduate parents. High educated people usually have better knowledge and paid more attention to their health more than others and also motivate their children to develop healthy lifestyle practices.

A successful nutrition intervention should include content and teaching strategies that are appropriate for the children and also address changes in the environment (18-19). Fun and interesting health and nutrition education activities will increase the attention and motivation among children to learn and consequently change their dietary practices (20). In the present study, the nutrition education intervention incorporated the 'fun while learning' concept into its various activities which were group presentation, class activity and a take home material.

The present study shows that children mean knowledge, attitude and understanding scores significantly increased from 5.5(SD±1.48), to 6.1(SD±0.77), 15.7(SD±1.61) to 16.3(SD±1.43) and 4.4 (SD±2.44) to 5.5(SD±1.67) respectively. The subjects' scores improved significantly ($p<0.05$), as reflected by a change in the pretest and post test scores of knowledge, attitude and understanding of NFL. Whereas no significant change ($p>0.05$) in pretest and posttest scores was observed in control group. Research work by Seth, 2008 (21) on Development of Nutrition Education Module for Healthy Lifestyle of Adolescents also found that nutrition education brought significant change in knowledge and attitude of adolescents in experimental group with pretest mean scores changing from 13.4 to 20.7 ($p<0.0001$), whereas no significant improvement in scores where observed in control group. Similar, findings were presented by Hawthorne et al, 2006 (4) study which also found that a simple, brief educational program could significantly help the children in increasing their knowledge regarding NFL.

The results thus demonstrate that children participating in this study successfully learned how to read and compare NFL. The research thus, demonstrates that after a teaching session, the NFL can be an effective educational tool to increase nutrition knowledge in children.

CONCLUSIONS

In conclusion, 11-12 years old children can learn how to read and understand the Nutrition Facts labels through educational sessions. Nutrition education intervention has a positive impact on nutrition knowledge, attitude and understanding of children. The developed program's concept, content, and presentation strategies and support from teachers and schools are the major factors that have contributed to the outcomes of the intervention. The provision of necessary nutrition knowledge and skills to children in promoting healthy dietary behaviors is integral to long-term health and nutrition of children as dietary behaviors established during childhood may well extend into adolescence and adulthood. This helps children in developing healthy eating behaviors through choosing those foods which are healthy for them after carefully reading nutrition labels. Reproduction of this study on a larger sample and on other age groups too would increase confidence in its reliability.

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