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Effectiveness of Nutritional Education Program on Knowledge Regarding Prebiotic Diet Among Elderly at Thiruvarur District

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Abstract

Aim and Objectives: To compare the effectiveness of the nutrition education program on knowledge regarding prebiotic diet among the elderly. **Methodology:** Quantitative approach and quasi-experimental design were adopted to compare the effectiveness of nutrition education program on knowledge regarding prebiotic diet among 180 elderly people (90 in the control group and 90 in the experimental group) residing in Veppathangudi, Ovalicudi, Vanjur, Vayalur villages in Thiruvarur was selected by purposive sampling method who fulfilled the inclusion criteria. The nutritional education program was administered and the level of knowledge regarding the prebiotic diet was assessed by using a self-structured knowledge questionnaire and compared with pre and post-test levels between the control group and experiment group. **Results:** The study findings revealed that the post-test and pre-test mean knowledge of the control group and experiment elderly was 11.40 with SD 0.88 and 3.01 with 1.26 and their control group post-test mean knowledge score was 2.70 with SD 0.57, the calculated unpaired t values (78.454 and 51.157) for knowledge between the groups indicates there was high statistically difference at $p<0.0001$ with more mean score among the experiment and control group elderly. **Conclusion:** The results revealed that the intervention nutritional education was effective in improving the knowledge regarding prebiotic diet and can be utilized as a step in a nutritional education program on knowledge regarding prebiotic diet among the elderly.

Keywords: Elderly, Intervention Nutrition Education Program, Knowledge, Prebiotic Diet

1. Introduction

A sizable portion of the world's population, the elderly is affected by senescence's natural processes, which change the composition of the gut microbiota. These changes significantly lower their quality of life and, as a result, cause an overall inflammatory and putrefactive state[1].

Constipation, undernutrition, neurological illnesses, susceptibility to opportunistic infections, metabolic imbalance, and other conditions are some of the most prevalent ones associated with this syndrome. For these reasons, there is growing interested in enhancing their quality of life through non-invasive means, such as the consumption of prebiotics. As a result, a study evaluating

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the impact of an interventional nutritional education program on elderly people's knowledge of prebiotic diets was conducted[±].

Gibson and Roberfoid established the idea of prebiotics when they identified specific non-digestible food elements that have a positive impact on the host by deliberately promoting the development or activity of one or a small number of beneficial bacteria in the colon. A dietary prebiotic is now understood to be a selectively fermented component that causes particular changes in the composition and activity of the gastrointestinal microbiota and enhances host health as a result of this enhanced understanding of the gut microbiota composition. Age-related decreases in the body's capacity to develop a successful defensive response to disease are known as immune senescence. Ageing individuals may have impaired immune systems. Elderly subjects' gut microbiota likewise gradually shifts toward less diversity of bacteria, with fewer helpful microbes and more facultative anaerobic bacteria[3].

1.1 Statement of Problem

A quasi-experimental study to assess the effectiveness of nutritional education program on knowledge regarding Prebiotic diet among elderly at Thiruvarur District.

1.2 Objectives

- To assess the pretest and posttest effect of a nutritional education program on knowledge regarding prebiotic diet among the elderly.
- To compare the effectiveness of nutritional education programs on knowledge regarding prebiotic diet among the elderly.
- To associate the variables with mean differed knowledge regarding prebiotic diet practices among the elderly.

1.3 Alternative Hypothesis

AH1: There will be a significant difference in the pretest and posttest effect of a nutritional education program on knowledge regarding prebiotic diet among the elderly.
AH2: There will be a significant difference between the comparative effectiveness of nutritional education programs on knowledge regarding prebiotic diet among the elderly.
AH3: There will be a significant difference in the association of the variables with mean differed knowledge regarding prebiotic diet practices among the elderly.

2. Materials and Methods

A quasi-experimental–research design was adopted to assess the effectiveness of a nutritional education program on knowledge regarding prebiotic diet among the elderly in the Thiruvarur District. The independent variable in the study was the nutrition education program on knowledge regarding prebiotic diet. The dependent variable in the study was knowledge regarding prebiotic diet among the elderly. The study was carried out in the Thiruvarur District, and the sample size was 180 senior people (90 for the experimental group and 90

Table 1. Knowledge of assessment

Content	No. of questions
Prebiotic diet	**15**

Table 2. Scoring and interpretations of knowledge

Scores	Level of knowledge
≤50%	Inadequate knowledge
51-74%	Moderately adequate knowledge
75-100%	Adequate knowledge

for the control group, chosen using a non-randomized purposeful selection technique). The elderly who was willing to engage in the study were included, but those who were already practising or who had already attended a comparable nutritional education programme about a prebiotic diet were not.

The tool consisted of two parts i.e., a data collection tool and an intervention tool.

Part B: The Interventional tool (prebiotic diet) was administered which included self-structured video teaching towards the concept of prebiotic diet (define prebiotic, the gut function, prebiotic effects gut, microflora, benefits of prebiotic diet, health promotion of prebiotic, prebiotic food habits, prebiotic killers, current health aspect drivers). Which lasted for 15 minutes. The demonstration of the Body Mass Index (BMI) calculation took about 5 minutes.

After the intervention towards the concept of a prebiotic diet, the investigator did the post-test assessment on the level of knowledge among the elderly. The data collected were analyzed to identify the effectiveness of the Nutrition education program among the elderly. The findings proved that Nutrition education effectively improved the knowledge of the elderly towards the concept of a prebiotic diet.

2.1 Ethical Consideration

Ethical approval was obtained from the Institutional ethical committee and formal approval was obtained from the principal, and permission from the village president. The researcher has followed fundamental ethical principles like the right to freedom from harm and discomfort, and respect for human dignity. The researcher gave full freedom to all the participants to decide voluntarily whether to participate in the study. The investigator has maintained the study participant's privacy throughout the study. The investigator administered the same intervention tool to all the participants.

2.2 Statistical Analysis

Descriptive statistics were used to describe demographic variables. Paired t-test was used to compare the pre and post-test levels of knowledge. The knowledge correlation was done using Karl Pearson's coefficient of correlation. The link between knowledge and certain demographic factor and elderly people's lifestyle patterns was investigated using an ANOVA.

3. Results

In the control group, 25 (27.8%) of the elderly participants are between 60-65 years. In terms of gender, 48 (54.4%) are men. 54 (60%) of them did not have a high significant level of education. 39 (43.3%) of them are workforce and semi-skilled. 59 (65.6%) of them belong to a joint family. And 61 (67.8 %) of them live in a family of 7-8 people. In terms of their family's income per month, 90 (100%) of the members receive their monthly income in Indian rupees RS 47348.33 (36.7%) of their guardians were self-sufficient.

In the experimental group, 31 (34.4%) of the elderly participants are between 66-70 years. In terms of gender, 50 (55.6%) of them are men. Among them, 45 (50.0%) had their primary level of education. 40 (44.4%) of them

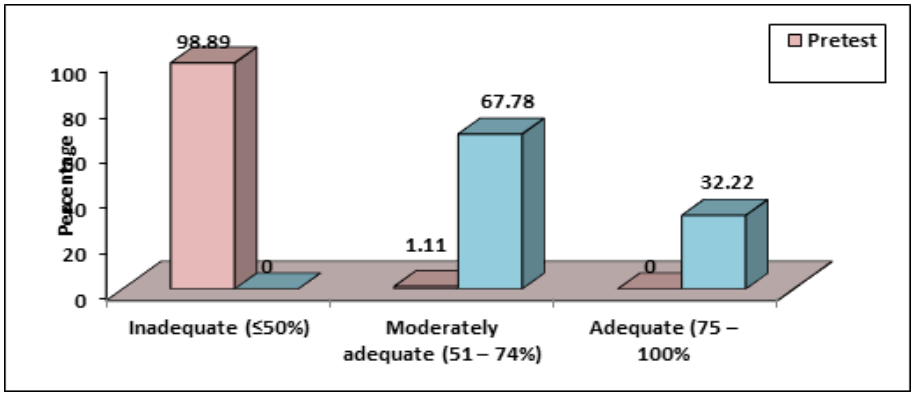

Figure 1. Percentage and frequency distribution of level of knowledge regarding prebiotic diet among elderly (experimental group). N= 90

are workforce and semi-skilled. 32 (35.6%) of them live in a joint family, with a family size of 58 (64.4%). As regards their family's monthly income, 90 (100.0%) members received the income monthly in Indian rupees RS 47348.35 (38.9%) of their guardians were self-sufficient.

In the control group, 45 (50.0%) of them are identified as regular alcohol consumers. 34 (37.8%) sleep an average of 10 hours. 50 (45%) of them are healthy. 40 (44.4%) of them had sickness after consuming their meals. 60 (66.7%) of individuals were experiencing an unpleasant burn after eating. 60 (66.7%). 51 (56.7%) of them suffer from stomach issues, 51 (56.7%) of them had a dietary allergy, 68 (75.6%) of them reported facing no gastrointestinal issues and 48 (53.3%) of them have stomach discomfort after eating.

In the experimental group, 48 (53.3%) of them are alcohol consumers, 34 (37.8%) of them sleep an average of 10 hours, 48 (53.3%) of not very healthy, 47 (52.2%) of them facing illness after consumption of food, 57 (63.3%) of the individuals experiencing an unpleasant burn after eating, 60 (66.7%) of them suffers from stomach issues for various reasons, 53 (58.9) of them had a dietary allergy. 55 (61.1%) of them, report having no gastrointestinal issues. 53 (58.9%) of them have stomach discomfort after eating.

In the majority experimental group, 58 (64.4%) of participants reported having an appetite, 90 (100.0%) of them utilized non-vegetarian foods, 33 (36.7%) of them, are dining in their house. 63 (70.0%) of them are consuming home-cooked meals, 90 (100.0%) of them normally consumed snacks, there aren't any dietary restrictions in the experimental group, 77 (85.6%) of participants ate regularly spaced meals.

The mean intake of energy was 1396.29 kcal/day, CHO was 237.87 g/day, Protein was 70.16 g/day, Fat intake was 17.79 g/day, and fiber intake was 14.07 g/day.

The Effectiveness of nutritional education programs on knowledge regarding prebiotic diet among the elderly in the experimental group the p-value is 0.0001 there is statistically highly significant. Which demonstrated better enhancement of the effectiveness of nutritional education programs. The box plot shows the results of the pre- and post-test where we could see the massive change in terms of knowledge gain and program effectiveness the median knowledge score for the pre-test is 3.0 and the median knowledge score after the program for the post-test is 11.0. The post-test mean score is greater than the pre-test mean score in the experimental group hence it is concluded that there is a significant improvement in

Table 3. Frequency and percentage distribution of level of knowledge regarding prebiotic diet among elderly (control group)

N = 90

Level of Knowledge	Post Test	
	Frequency	Percentage
Inadequate (≤50%)	90	100.0
Moderately adequate (51 – 74%)	-	-
Adequate (75 – 100%	-	-

Table 4. Effectiveness of nutritional education program on knowledge regarding prebiotic diet among elderly (experimental group) N=90

Test	Mean	S.D	Mean Difference & %	Paired 't' Test & p-value
Pretest	3.01	1.26	8.39	**t = 51.157**
Post Test	11.40	0.88		**p=0.0001, S*****

***p<0.001, S – Significant

Table 5. Comparison of post-test knowledge regarding prebiotic diet among the elderly between the experimental and control group N = 180(90+90)

Test	Experimental Group		Control Group		Mean Difference & %	Student Independent 't' Test & p-value
	Mean	S.D	Mean	S.D		
Post Test	11.40	0.88	2.70	0.57	8.70	t = 78.454 p=0.0001, S***

***p<0.001, S – Significant, N.S – Not Significant

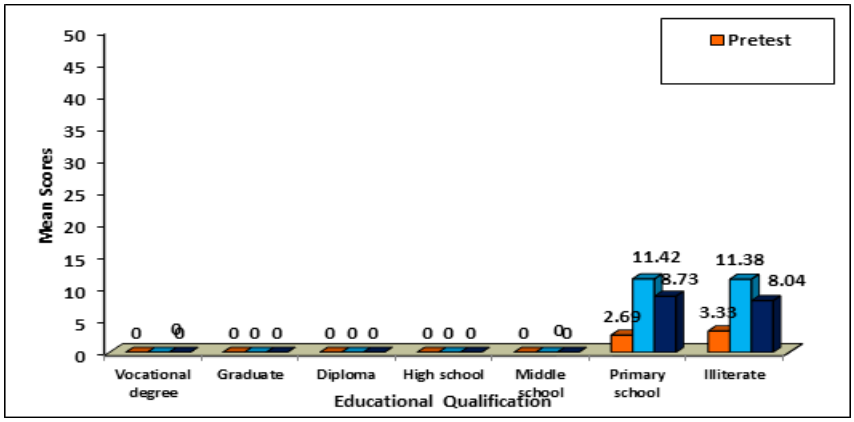

Figure 2. Association of selected demographic variables with mean differed knowledge.

knowledge of prebiotics among the elderly. The prebiotic diet was effective.

The comparison of statistical data of the experiment and control group. The mean and S. D values of the experiment group (11.40, 0.88) and control group (2.70, 0.57) is leading to a significant p-value which once again shows the potency of the nutritional program. The box chart below illustrates the knowledge score for the experiment and control group in the post-test. For the experiment group, the knowledge score is 11.00 and for the control group, it is 3.00. The post-test mean score is greater than the pre-test mean score hence it is concluded that there is a significant improvement in the prebiotic diet of the elderly. In the control, the comparatively experimental group knowledge score is a highly significant improvement in the prebiotic diet.

The association of mean differential knowledge scores on prebiotic diet among the elderly with demographic characteristics in the experimental group is shown in the last figure. Several key demographic characteristics, educational qualification means of before and post-test, and mean difference was examined statistically in this study.

4. Discussion

This clearly proved that the elderly who received the Nutrition knowledge had significant improvement in the level of knowledge with a more mean score.

According to the mean difference knowledge correlation score, which was calculated using Karl Pearson's coefficient correlation approach, knowledge scores among elderly people were moderately positively correlated. Thus, the increase in knowledge that there is high improvement knowledge has been shown to affect the enhancement of knowledge towards the concept of a prebiotic diet. Elderly knowledge was improved by nutrition education that focused on the prebiotic diet idea.

4.1 Limitations

The researcher had difficulty in collecting National reviews related to prebiotic diet and also the researcher also had difficulty in obtaining setting permission from the institutions.

5. Conclusion

The study was proven at assessing the effectiveness of an intervention nutritional education program on knowledge regarding prebiotic diet among the elderly. Thus, the study findings state enriched evidence that Nutrition education is an effective educational package in enhancing the knowledge towards the concept of a prebiotic diet.

6. Acknowledgement

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7. Contributors

AK: Conceptualization of the study, collection, analysis of the data, writing the manuscript, finalized the manuscript and will act as the guarantor of the paper; **EJ, AD, NG, PP:** Edited and critically evaluated the manuscript.

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