
Research Article

The Effect of Nutrition Education and Instant Chayote on the Knowledge of Pre-Diabetes Teachers

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Abstract:

Pre-diabetes is a condition that precedes the incidence of Diabetes Mellitus and may increase the risk of cardiovascular disorders by 1.5 times higher than healthy people. This research aims to assess nutrient perforation and provision of an instant chayote to the knowledge pre-diabetes teachers. This research uses quasi-experimental with pre-post test group design. The number of research samples 25 for the intervention group given nutritional education and 25 of nutritional education interventions group and the provision of instant chayote for 30 days. Normality test used Shapiro-Wilk. Statistical analysis used Wilcoxon, Mann-Whitney and Independent sample t-test. The results showed that there were differences of knowledge before and after intervention in both nutrition education training groups and nutrition education and chayote training groups. The conclusion of this research is the training of nutrition education and the provision of instant chayote have an effect to improve the knowledge of pre-diabetes high school teacher.

Keywords: Nutrition Educational, Chayote, knowledge, prediabetes

INTRODUCTION

Pre-diabetes is a condition that initiates the incidence of diabetes mellitus (DM) and continues to increase its prevalence [1]. As many as 4-9% of people with prediabetes suffer from DM every year. Prediabetes is characterized by fasting blood glucose levels between 100-125 mg/dL or blood glucose levels during 100-199 mg/dL. Pre-diabetes can increase the risk of cardiovascular disorders by 1.5 times higher than healthy people. The condition of pre-diabetes can be improved by changing lifestyles, losing weight, regulating diet, and exercising regularly [2, 3].

DM disease can be controlled by pharmacology and non-pharmacology, pharmacologically, such as the use of existing therapies such as Sulfonylurea and Biguanide, but limited by its pharmacokinetic properties, secondary failure rate and side effects that accompany [4]. Non-pharmacology is by exercising regularly, balanced diet, reduce excessive intake, reducing weight, using traditional/herbal remedies. Herbal therapy is a process of healing by using various medicinal herbs medicine. Currently, this type of therapy is being widely populated for people as valued as a treatment that has few side effects, is cheap and is easy to obtain among others with the treatment of chayote [5-8].

The prevalence of DM in Indonesia continues to increase from year to year and by the year 2013 is 6.8%. Prevention of DM incidence can be done among others through nutrition

education about prevention of pre-diabetes to DM.

Health education is an activity undertaken by spreading the message and instilling confidence, so that the community not only aware, know, and understand, but willing and do a suggestion that has to do with health, the source of information can be in the form of online health material that has become a central issue in patient education [9, 10].

The purpose of health education is divided into two, namely changing attitudes and behavior of individuals, groups, society in the field of health as something of value in the community and so that people have a better understanding of the existence and changes in the system and how to use it effectively and efficiently. The level of knowledge owned enough, it can affect teachers' attitudes and behaviors, which will have an impact on increasing knowledge about degenerative diseases, especially pre-diabetes and diabetes, which can provide teachers with a correct view of safe foods, and prevent negative impacts from food to maintain health.

METHOD

Research Design & Population and sample

This type of research is a quasi-experimental with pre-post test group design. This research was conducted at 9 high schools in Palu City. Samples of research are some high school teachers who have the status of Civil Servants in the city of

Palu who experienced pre-diabetes based on the determination of samples using Lames show formula amounted to 22 samples and to avoid loss of sample plus 10% Pre-diabetes teachers for each group, so for 2 groups required 50 pre-diabetes teachers.

Method of collecting data

Provision of nutrition education is done through: a). Classical meetings for 2 x 60 minutes, for 3 meetings with an interval of 14 days (first meeting at the beginning of the intervention, second meeting of the 15th day of intervention and third meeting at the end of the intervention b). The face to face meetings of the researcher and the respondent are done at a certain time, according to the agreement of the researcher and the respondent with time 30-60 minutes. c). The meeting between the school group where the respondent teaches is done 1x 60 minutes.

Table 1. The characteristics of respondents by sex, education and age.

Characteristics	Intervention groups				Amount	
	Nutrition education training		Nutrition education training and instant chayote feeding		n	%
	n	%	n	%		
Sex						
male	8	32,0	7	28,0	15	30,0
female	17	68,0	18	72,0	35	70,0
Education						
Bachelor degree (S1)	20	80,0	23	92,0	43	86,0
Masters degree (S2)	5	20,0	2	8,0	7	14,0
Age						
18-40 years (early adult)	5	20,0	2	8,0	7	14,0
41-60 years (middle adult)	17	68,0	22	88,0	39	78,0
above 61 years (final adult)	3	12,0	1	4,0	4	8,0

Data source: primary 2017

Table 2. Differences in prediabetes teacher knowledge before and after intervention

knowledge	Intervention groups		pValue
	Nutrition education training	Nutrition education training and instant chayote feeding	
	mean±SD	mean±SD	
Beforeintervention	17,08±3,39	15,08±5,041	0,195*
After intervention	20,52±3,405	20,04±3,458	0,582*
pValue	0,000***	0,000***	
Δ knowledge	3,44±2,434	4,96±3,942	0,109**

Data source: primary 2017

p-value>0,05, *Mann Whitney test,
 p-value>0,05, ** independent t-test,
 p-value<0,05, *** Wilcoxon Signed Ranks Test

Data analysis

Data analysis using paired t-test/Wilcoxon Signed Ranks Test and independent t-test/Man Whitney.

RESULTS AND DISCUSSION

The results of the research based on the characteristics showed that the sex of the subjects in this research who intervened most were women 35 respondents (70.0%) and men 15 respondents (30.0%). The most subjects are Bachelor degree (S1), which is 43 respondents (86,0%) while those with Master’s degree (S2) are 7 respondents (14.0%). The number of subjects aged 41-60 years (middle adult) numbered 39 respondents (78.0%) than the age group of 18-40 years (early adult) numbered 7 respondents (14.0%) and age above 61 years (final adult) are 4 respondents (8.0%) (Table 1).

Nutrition education training group the mean value of nutritional knowledge before the intervention was 17.08 ± 3.39, while the mean value of nutritional knowledge after the intervention was 20.52 ± 3.405. The result of normality score test of nutritional knowledge before intervention is a normal distribution and nutritional knowledge value after intervention in this group is not abnormal distribution, then transformed the result data of nutritional knowledge value after intervention remains abnormal distribution, so tested Wilcoxon Signed Ranks Test. Wilcoxon Signed Ranks Test results showed significant differences in nutritional knowledge before and after intervention in the nutrition education training group (p <0.05) (Table 2).

Nutrition education training group and feeding of the average nutritional value before the intervention was 15.08 ± 5.041, while the mean value of nutritional knowledge after the intervention was 20.04 ± 3.458. The result of normality score test of nutritional knowledge after normal distribution intervention and nutritional knowledge value before intervention in this group is not abnormal distribution, then transformed the result data of nutritional knowledge value after intervention remains abnormal distributed, so tested

Wilcoxon Signed Ranks Test. Results of the Wilcoxon Signed Ranks Test showed that there were significant differences in nutritional knowledge before and after intervention in the nutrition and nutritional training group ($p < 0.05$) (Table 2).

Based on the results of the research from 25 items of questionnaires in the two intervention groups namely nutrition education training and nutrition education training and instant chayote feeding, obtained the average scores of both groups respectively 17.08 and 15.08, after the intervention of nutrition education training happened improvement respectively to 20.52 and 20.04. The highest average increase in the nutrition education training group and the provision of individual gourd pumps was 4.96 points (table 2). This demonstrates that nutrition education training is a process of acquiring knowledge because of new insights because knowledge in constructivist view is not a fact of a fact being learned, but as a person's cognitive construct of the object, experience, and environment [11, 12].

Knowledge of pre-diabetes and DM is the ability of respondents to know and understand factors affecting pre-diabetes and DM consisting of general knowledge about pre-diabetes and DM, knowledge of risk factors of pre-diabetes and DM, knowledge of complication of pre-diabetes and DM. Knowledge can provide benefits in self-management to change lifestyle and bad habits that have an impact on improving the quality of life of people with pre-diabetes and DM [13, 14].

Al-Aboudi (2016) states that high knowledge can provide benefits to self-management in changing lifestyle and bad habits that have an impact on improving the quality of life-related to DM disease [15]. Higher public knowledge will raise awareness and is a key determinant in improving people's lifestyles and behavior [16]. On average, knowledge in the pre-diabetes group and DM also had a higher average (40.87%) than the non-DM group (36.74%).

Based on the results of the Selvam (2017) study the training is very effective and useful in improving teacher knowledge in Tamilnadu, India [17]. The training has altered perceptions of health and changes in eating habits and increased physical activity, physical activity activities such as yoga and meditation. The teacher then assigns students about diabetes prevention and management to share knowledge with parents and family members.

Training programs significantly improve teacher knowledge about general facts, treatment, and complications of diabetes. Knowledge change is important in understanding the metabolic changes involved in the mechanism of the incidence of diabetes and the benefits of a healthy diet. Intervention in the form of social cognitive theories significantly increases knowledge about diabetes and behavioral changes among school children [17].

Teachers are one of the most respected and influential people in society, especially by teenage age groups. Therefore, teachers can be used to educate, motivate and influence students to follow a healthy lifestyle. The training program has a broad influence up to the limited remote areas to get information on healthy living habits. The teacher training

program is very useful in improving the interaction of health education between teachers and students [17, 18]. Teacher education training aims to enable teachers to educate students and the public about healthy lifestyles, prevention of diabetes and obesity through education on behavior, lifestyle, and changes related to diet and physical activity [17, 19].

The research conducted by Fatema (2017) in exploring knowledge, attitudes, and actions about diabetes mellitus (DM) in Bangladesh, showed Knowledge, attitude and action about diabetes were in women show better score than men [19]. Overall, knowledge, attitudes, and actions were significantly higher ($p < 0.001$) in elderly participants (31-50 years) in each group. In linear regression analysis showed a strongly correlated knowledge score with education, income, residence and the state of diabetes.

There were significant differences in nutritional knowledge before and after intervention in the nutrition education training group and in the training group on nutrition and pumpkin nutrition ($p < 0.05$). This shows the provision of nutrition education training in high school teachers can increase knowledge.

The research conducted by Visiedo and Palao (2017) on 36 wrestlers under 18 years who were trained on nutrition, weight control, and risk, training programs were conducted three sessions each for 30 minutes in the form of lectures, videos, and assignments. The results showed that the training program was effective to improve the wrestler's knowledge under 18 about weight control and risks as well as nutritional knowledge. The involvement of resource persons and parents in training is very important because it is an athlete's reference to obtain information about nutrition. Informants provide information on knowledge and skills to improve health before and after exercise [20, 21].

CONCLUSSIONS

The training of nutrition education and the provision of instant chayote have an effect to improve the knowledge of pre-diabetes high school teacher. The recommendation for the education office is to provide training to teachers in the prevention of DM incidence with the consideration of teachers can be used to educate, motivate and affect students to follow a healthy lifestyle. This can assist health workers in reducing the prevalence of DM in Palu City

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