



EFFICACY OF NUTRITIONAL INTERVENTION ON THE NUTRITIONAL STATUS OF SELECTED DIABETICS IN VADAKETHARA REGION OF KERALA

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ABSTRACT The prevalence of diabetes is rapidly increasing worldwide, and it is a significant health burden for individuals and society. The present study aimed to disseminate knowledge on diabetes prevention strategies such as ICT tools, posters, videos, charts, presentation slides, pamphlets, and individual diet counseling. The study also investigated the effects of a one-week nutrition intervention on the nutrition knowledge, dietary patterns, and blood glucose levels of diabetic patients in Vadakethara region, Kerala. One hundred participants were randomly selected and divided into a control group of 50 and an intervention group of 50. The control group did not receive any intervention, while the intervention group received a one-week nutrition intervention. The data collected after the intervention were assessed and statistically interpreted using the SPSS software package. The results showed an increase in nutrition knowledge and a potential change in dietary patterns and blood glucose levels among the intervention group. However, some areas shows significant improvement due to the control and experimental groups is being in the same area, and the experimental group sharing their knowledge with some control groups. In conclusion, the efficacy of nutritional intervention would educate diabetics in terms of good lifestyle practices and dietary patterns.

KEYWORDS : Diabetes, diet, lifestyle, knowledge, educational intervention.

INTRODUCTION:

Diabetes is a chronic disease with high blood sugar levels and can lead to various complications (American Diabetes Association, 2021). The disease can be managed through various methods (American Diabetes Association, 2021), and diabetes education programs can improve outcomes (Li et al., 2020). The prevalence of diabetes is increasing globally, and contributing factors include obesity, population growth, aging, and lifestyle (Yatsuya et al., 2014; NCD Risk Factor Collaboration, 2016). India has a significant diabetes burden, with higher prevalence rates in rural areas and healthcare disparities (Anjana et al., 2011; Zargar et al., 2000; Ramachandran et al., 2001). The term "diabetes mellitus" originated from the Greek physician Aetaeus (Kaul et al., 2013).

Type 1 diabetes mellitus (T1DM) is caused by autoimmune destruction of pancreatic endocrine cells, while type 2 diabetes mellitus (T2DM) is associated with impaired insulin production and sensitivity. Gestational diabetes mellitus (GDM), occurring during pregnancy, has long-term effects on the health of both the mother and child. Obesity, lifestyle choices, and genetic factors contribute to the development of diabetes.

Nutrition education interventions have been shown to be effective in promoting healthy eating habits. Supermarket-based nutrition education programs increased the consumption of fruits and vegetables among low-income buyers (Jilcott Pitts et al., 2018). Computer-based nutrition education can improve nutritional knowledge and eating behaviors (Cha et al., 2018). Mobile phone applications providing nutrition education and assistance can also improve dietary practices and nutrition understanding (Kim et al., 2020). Print-based nutrition education interventions enhance dietary knowledge and practices among different populations (Gatto et al., 2018). Social media-based nutrition education interventions are effective, according to a review by Klassen et al. (2018).

METHODOLOGY

The study consists of six phases aimed at improving the nutritional status of individuals with diabetes. In Phase I, 100 diabetic patients were selected using non-probability sampling, and information was collected on their socioeconomic status, dietary profile, and biochemical parameters. In Phase II, further information was collected on socio-economic status and anthropometry. Phase III involved pre-assessment of vulnerable groups of individuals with diabetes using a questionnaire. Phase IV involved providing nutrition education using various models. In Phase V, post-assessment was done to evaluate the effectiveness of the intervention. In Phase VI, data were statistically analyzed using SPSS software to draw meaningful conclusions.

RESULT AND DISCUSSION

DEMOGRAPHIC PROFILE OF THE SELECTED SUBJECTS

This demographic information on a population studied, including age, gender distribution, education level, family structure, and income distribution. It highlights that older individuals and those with lower levels of education are at a higher risk of developing diabetes. The data can inform policies and programs related to public health, education, family support, and poverty reduction.

ANTHROPOMETRIC MEASUREMENT OF THE SELECTED SUBJECTS

TABLE-1
Anthropometric measurements of Selected Diabetic Patients as per Pre and Post test

		Mean	N	Std. Deviation	Std. Error Mean	^t	Significance
Weight	Pre test	55.19	100	10.61	1.06	0.243	0.809NS
	Post test	55.04	100	10.61	1.06		
Height	Pre test	1.54	100	7.90	0.79	0.814	0.418NS
	Post test	1.54	100	7.63	0.76		
BMI	Pre test	23.05	100	3.65	0.36	-0.196	0.845NS
	Post test	23.10	100	3.72	0.37		

NS- Not Significant

The data provides information on body mass index (BMI) across different age groups and genders. There is no significant difference in BMI between individuals aged 71-80 years and above 80 years, while a significant difference is observed among those in the age group of 61-70 years. Females have a higher BMI than males. The intervention was effective in controlling weight and BMI, as shown by the data. Overall, the data provides insight into BMI trends across age groups and gender differences.

DIETARY HABITS OF THE SELECTED SUBJECTS

The study evaluated an intervention program's effectiveness in promoting healthy eating habits among predominantly non-vegetarian participants. The intervention successfully reduced meal skipping behavior, reduced consumption of certain unhealthy foods, and improved meal timings and home-cooked meals. Water intake increased, and coffee consumption decreased, while healthy foods' frequency intake increased, and unhealthy food intake decreased. The intervention program was successful in promoting healthy eating habits.

DIABETES KNOWLEDGE OF THE SELECTED SUBJECTS

TABLE- 2 Diabetic Knowledge of Experimental group as per pre and post test

Diabetic knowledge		Mean	N	Std. Deviation	Std. Error Mean	t	Significance
Causes of diabetes	Pre test	0.38	50	0.49	0.06	-8.573	0.000*
	Post test	0.98	50	0.14	0.02		
Kidney produce insulin	Pre test	0.00	50	0.00	0.00	-49.000	0.000*
	Post test	0.98	50	0.14	0.02		
Insulin reduces blood sugar	Pre test	0.54	50	0.50	0.07	-5.067	0.000*
	Post test	0.92	50	0.27	0.03		
Insulin and glucagon reduces blood sugar	Pre test	0.00	50	0.00	0.00	-17.349	0.000*
	Post test	0.86	50	0.35	0.04		
Pancreas secretes insulin	Pre test	0.00	50	0.00	0.00	-23.738	0.000*
	Post test	0.92	50	0.27	0.03		
Type 1	Pre test	0.00	50	0.00	0.00	-21.000	0.000*
	Post test	0.90	50	0.30	0.04		
Liver regulates Blood sugar	Pre test	0.00	50	0.00	0.00	-23.738	0.000*
	Post test	0.92	50	0.27	0.03		
Organs affected	Pre test	0.02	50	0.14	0.02	-23.738	0.000*
	Post test	0.94	50	0.23	0.03		
Risk factors	Pre test	0.40	50	0.98	0.13	-5.378	0.000*
	Post test	1.50	50	0.93	0.13		
Regular exercise	Pre test	0.02	50	0.14	0.02	-2.333	0.024*
	Post test	0.12	50	0.32	0.04		
HbA1C	Pre test	0.00	50	0.00	0.00	-27.707	0.000*
	Post test	0.94	50	0.23	0.03		
What is Diabetes	Pre test	0.00	50	0.00	0.00	-23.738	0.000*
	Post test	0.92	50	0.27	0.03		

**Highly Significant ($P \leq 0.01$), *Less Significant ($P \leq 0.05$)

The study evaluated the effectiveness of an intervention in improving diabetic knowledge among participants. The experimental group showed significant improvement in their diabetic knowledge after the intervention, while the control group did not receive any intervention. The results suggest that the intervention was effective in enhancing participants' understanding of diabetes. Additionally, it's possible that the experimental group could share their knowledge with the control group, which could lead to some improvement in the control group's knowledge about diabetes.

BIOCHEMICAL STATUS OF THE SELECTED SUBJECTS

TABLE - 3 Biochemical parameters as per Age, Educational Status and Annual Income

Profile		Age	Educational status	Annual income
FBS	Pearson Correlation	-0.089	0.134	0.011
	Sig. (2-tailed)	0.378	0.184	0.913NS
	N	100	100	100
PPBS	Pearson Correlation	-0.061	-0.007	-0.104
	Sig. (2-tailed)	0.544	0.942	0.301NS
	N	100	100	100
RBS	Pearson Correlation	0.081	-0.041	0.115
	Sig. (2-tailed)	0.421	0.687	0.254NS
	N	100	100	100
Systolic pressure	Pearson	0.101	-0.144	-0.302
	Sig. (2-tailed)	0.316	0.152	0.002**
	N	100	100	100
Diastolic pressure	Pearson Correlation	0.101	-0.144	-0.302
	Sig. (2-tailed)	0.316	0.152	0.002**
	N	100	100	100

**Highly Significant ($P \leq 0.01$), NS- Not Significant

The study measured the effects of an intervention on various health indicators, including fasting blood sugar (FBS), postprandial blood sugar (PPBS), and blood pressure. The results showed no significant difference in FBS and RBS scores before and after the intervention, but there were slight differences in mean values, suggesting some minor effect. The analysis also found no significant difference in PPBS mean values between the pre-test and post-test conditions. However, the intervention had a significant effect on reducing both systolic and diastolic blood pressure, as indicated by the paired-sample t-tests. Overall, the intervention appeared to have some positive effects on certain health indicators, but not on others.

CONCLUSION:

About 100 subjects were selected for the study and collected all the details from the subjects. A study involving 50 subjects who received nutrition education showed a positive impact on their diabetic knowledge and healthy lifestyle habits after one month of intervention. Nutrition education interventions can play a critical role in promoting healthy eating habits and reducing the risk of chronic diseases such as diabetes. It can be concluded that the knowledge of the particular disease will help to control or prevent the disease not only diabetes.

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