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Original Research Paper

Nursing

IMPACT OF DIGITAL TEACHING ON KNOWLEDGE REGARDING LOW GLYCEMIC INDEX DIET AMONG THE DIABETES MELLITUS PATIENTS AT MANDYA.

Mrs. Shruthi K P

Assistant Professor, RVS Institute of Nursing sciences, B. M. Road, Ummadahalli Gate, Mandya.

ABSTRACT

Background: Diabetes mellitus is a growing public health concern, and dietary management plays a key role in glycemic control. However, many patients lack adequate knowledge about low glycemic index (GI) diets. **Methods:** A pre-experimental one-group pretest-posttest design was used. Data were collected using a structured knowledge questionnaire. The pretest mean score was 22.10, and the post-test mean score was 29.45, with a mean difference of 7.35. The paired t-test value (t = 14.989) indicated statistical significance. **Results:** The digital teaching programme significantly improved the knowledge of diabetic patients regarding low GI diets. **Conclusion:** Digital education is an effective strategy to enhance dietary knowledge among diabetes patients and should be integrated into routine nursing practice for better patient outcomes.

KEYWORDS : Diabetes Mellitus. Low Glycemic Index Diet, Digital Teaching Programme, Patient Education, Knowledge

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycaemia due to defects in insulin secretion, insulin action, or both. It is a global health problem that affects millions of people, imposing a significant burden on individuals, families, and healthcare systems. According to the International Diabetes Federation (IDF), as of 2021, over 537 million adults were living with diabetes worldwide, and the number is expected to rise to 643 million by 2030 if current trends continue. India, often referred to as the "diabetes capital of the world," accounts for a substantial proportion of this population, with over 77 million people affected.

Dietary management plays a pivotal role in controlling blood glucose levels in individuals with diabetes. Among the various dietary strategies, the concept of the Glycemic Index (GI) has gained prominence. The GI is a measure of how quickly carbohydrate-containing foods raise blood glucose levels. Foods with a low GI are digested and absorbed more slowly, resulting in gradual increases in blood sugar and insulin levels. Incorporating low GI foods into the daily diet can lead to improved glycemic control, reduced insulin resistance, and decreased risk of diabetes-related complications.

Despite the growing awareness about diabetes, many patients remain unaware of the concept of the glycemic index and its significance in meal planning. Inadequate knowledge often results in poor dietary choices, leading to uncontrolled blood sugar levels and increased morbidity. Therefore, educating patients on the benefits of low GI diets is crucial.

Traditional methods of health education often fall short in terms of engagement and retention. Video-assisted teaching, being a visually rich and interactive method, has emerged as an effective educational tool to enhance knowledge retention and behaviour modification among patients. It provides a standardized, accessible, and repeatable way to convey important health information, especially in hospital settings.

The increasing prevalence of diabetes in India, particularly in semi-urban and rural areas like Hassan, Karnataka, highlights the urgent need for effective educational interventions. Poor dietary practices are one of the leading causes of poor glycemic control among patients, and there is a noticeable gap in patients' understanding of the role of different food types-especially the importance of low glycemic index foods.

Clinical observations and informal interviews with diabetic patients admitted in selected hospitals of Hassan have revealed that many of them have minimal or no knowledge about the concept of the glycemic index. They often consume foods that lead to rapid spikes in blood glucose, contributing to the worsening of their condition. While most patients are aware of avoiding sugar, their understanding of how other foods impact blood sugar is limited.

Video-assisted teaching has been found effective in previous studies in improving patient knowledge in a variety of health domains. Unlike conventional methods, it can cater to different learning styles and provide visually engaging, easy-to-understand information. Implementing this approach may improve dietary knowledge and practices among diabetic patients.

Hence, this study aims to assess the effectiveness of a digital assisted teaching program in improving the knowledge regarding low glycaemic index diet among diabetes mellitus patients. The findings can contribute to better health education strategies and improved diabetic care outcomes.

MATERIALS AND METHODS

To achieve the current study's goals, a single group pre-test post-test (pre-experimental) design was employed. The study was carried out at a particular hospital of Mandya Independent Variable is digital teaching on low glycaemic index diet and Dependent Variable: Awareness of diabetes mellitus patients on low glycaemic index diet. Ddiabetes mellitus patients from Manday were the study's target group. Data was gathered from 40 diabetes mellitus patients from a chosen using the purposive sampling approach. The on-month data gathering period ran from April 2025 to June 2025. SPSS for Windows, Version 16.0, was used to evaluate the data once it was imported into Excel sheets.

Regarding duties and responsibilities in participant recruiting and data collection, the researcher complied with a number of important ethical guidelines. 1] The institutional human rights committee has given its approval. 2] The management of a hospital formal administrative approval. 3] Diabetes mellitus patients signed an informed written agreement. 4] Preserve data confidentiality.

Inclusion Criteria Of Sample

- Who are having type 1 and type 2
- Who are available during the time of data collection
- Who are willing to participate in the study?
- Who understands Kannada and English languages.

Exclusion Criteria Of Sample

- Diabetes mellitus patients in life threatening condition
- Diabetes mellitus patients having hearing and visual deficits

The Split Half method was employed to determine the tool's reliability, and the raw score formula was utilized to get the reliability coefficient. The created tool was proven to be extremely dependable, with an estimated "r" value of 0.88.

Description Of The Tool

The tool was organized as follows.

Step-I: Socio-Demographic variables of the diabetes mellitus patients

Step-II: Structured knowledge questionnaire Consists of the Questionnaire with 40 items related to General information regarding diabetes mellitus, General concept of glycemic index, Knowledge on low glycemic index diet and Knowledge on planning Glycemic Index diet.

RESULTS

The current education was showed to assess awareness of diabetes mellitus patients on low glycemic index diet.

The age distribution revealed that majority 30% (n=12) of the subjects belong to each of 31-40 years and 41-50 years age group, 27.5% (n=11) were aged 51 years and above.

It reveals that the majority 57.5 % (n=23) of the subjects were males and remaining 42.5% (n=17) were females.

In relation to the education, it shows that majority 35% (n=14) of the subjects passed matriculation, 22.5% (n=9) of them completed PUC, 20% (n=8) of them completed diploma and 12.5% (n=5) of them completed degree and remaining 10% (n=4) of them were post graduates.

Majority 40% (n=16) of the subjects had BMI between 23 to 25kg/m^2, 35% (n=14) of them had BMI of 22kg/m^2 and remaining 17.5% (n=7) of them had BMI greater than 30kg/m^2.

Majority 30% (n=12) of the subjects were self-employed, 30% (n=12) of the subjects were government employees, 27.5% (n=11) of them were housewife, 10% (n=6) were private employees and remaining 2.5% (n=1) of them is a retired employee.

Majority 77.5% (n=31) of the subjects had type II diabetes and remaining 22.5% (n=9) of them had type I diabetes.

In relation to the duration of illness, majority 50% (n=20) of the subjects had diabetes since 5-8 years, 40% (n=16) of the subjects had diabetes since 1-4 years and remaining 10% (n=4) of the subjects had diabetes since 9-12 years.

Majority 60% (n=36) of the subjects take mixed diet, 20% (n=8) of them were vegetarians and remaining 20% (n=8) of them were non vegetarians.

Majority 80% (n=32) of the subjects had no history of diabetes mellitus in their family and remaining 20% (n=8) of the subjects had history of diabetes in their family.

It reveals that majority 57.5% (n=23) of the subjects had no knowledge regarding diabetes and remaining 42.5% (n=17) of them had previous knowledge.

The knowledge regarding low glycemic index diet among the diabetes mellitus patients admitted in selected hospitals at Hassan Karnataka, before administering the video assisting teaching.

The findings revealed that 72.5% of diabetes mellitus patients had a moderate level of knowledge regarding the low glycemic index diet. The mean pre-test knowledge score was **22.10**, with a **mean percentage of 55.25%** and a **standard deviation of 2.77**. These results indicate that although the patients had some awareness of the low glycemic index diet, there was still a significant gap in knowledge that warranted educational intervention.

Effectiveness Of Digital Teaching By Comparing Mean Pretest And Posttest Knowledge Scores Of Low Glycemic Index Diet Among The Diabetes Mellitus Patients

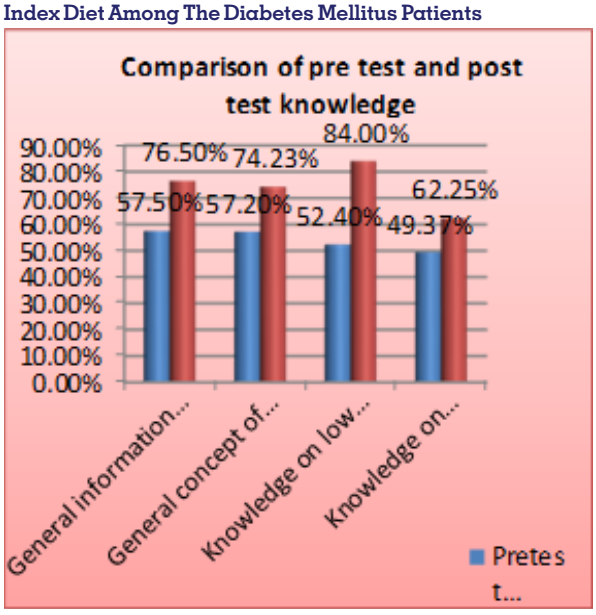

Figure 1: Compression of pre and posttest knowledge scores the comparison of overall knowledge scores on low glycemic index diet before and after the video assisted teaching. The mean pretest score 22.1 and the mean post test score is 29.45. The mean difference is 7.35 with a standard deviation of 0.3.101. The student's paired t test value t=14.989 and is significant.

DISCUSSION

The present study aimed to assess the effectiveness of a digital teaching programme on knowledge regarding a low glycemic index (GI) diet among diabetes mellitus patients. The findings demonstrated a significant improvement in knowledge following the intervention.

The **mean pre-test knowledge score** was 22.10, which increased to **29.45** in the post-test, with a **mean difference of 7.35** and a **standard deviation of 3.101**. The result of the **paired t-test (t = 14.989)** confirmed that the improvement in knowledge was **statistically significant**, indicating the effectiveness of video-assisted teaching as an educational strategy.

These findings are consistent with the results of a study conducted by **Mohan et al.**, who reported that structured education on dietary practices, including low GI foods, significantly improved the knowledge and glycemic control among type 2 diabetic patients (1). Similarly, a study by **Patil and Reddy** found that video-based dietary education led to better retention and understanding of diabetes management concepts among hospitalized patients (2).

In another study by **Thomas et al.**, video-assisted interventions showed a measurable improvement in dietary knowledge and compliance, especially among patients with limited formal education, suggesting that visual aids enhance comprehension and recall of health information (3).

Moreover, a randomized controlled trial by **Singh and Kavitha** supported the use of video-based education in improving knowledge regarding the glycemic index and food choices in diabetic patients, with a significant post-intervention increase in scores (4). This aligns with the present study's findings,

reinforcing the value of multimedia education in patient care.

The use of video-assisted teaching enables consistent delivery of content, appeals to multiple learning styles, and is especially beneficial in settings where patient literacy levels vary. It also allows for repeated viewing, which can further reinforce learning.

The improvement in knowledge among participants in this study underscores the importance of integrating such innovative educational methods into routine diabetes education programmes, particularly in semi-urban and rural healthcare settings like Hassan, where access to dieticians and structured counselling is often limited.

Nursing Implications

The findings of the study emphasize the crucial role of nurses in enhancing patient knowledge through innovative teaching methods like video-assisted education. Given the significant improvement in knowledge scores post-intervention, nurses can effectively incorporate such tools into routine diabetic care to educate patients about low glycemic index diets. This approach not only ensures consistent and engaging information delivery but also supports patients in making informed dietary choices, thereby contributing to better glycemic control and overall diabetes management. Nurses in both hospital and community settings can use this strategy to bridge knowledge gaps, especially among patients with limited health literacy.

CONCLUSION

The present study concluded that the digital teaching programme was highly effective in enhancing the knowledge of diabetes mellitus patients regarding the low glycemic index diet. A significant increase in the post-test mean knowledge scores compared to the pre-test scores indicates that structured, visually engaging digital educational interventions can play a vital role in improving patient awareness and understanding of dietary practices. This method of education not only promotes better self-management among diabetic patients but also supports the prevention of complications through informed dietary choices. Therefore, integrating digital teaching methods into routine nursing practice is a valuable strategy for strengthening diabetes education and improving patient outcomes.

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