Effect of Self-Instructional Module on knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients

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Abstract- The present study assessed the knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients and to provide a detailed Self-Instructional Module and to evaluate its effect. The objective of the study was toAssess the pre-test and post-test knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients, to assess the pretest and posttest practice of health promotion strategies to prevent COVID-19 among Diabetic patients.to find the relation between knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients, to find the association between knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients and selected socio personal variables and to find the association between practice of health promotion strategies to prevent COVID-19 among Diabetic patients and selected socio personal variables. The conceptual frame work of thestudy is based on Pender's health promotion model. Pre experimental one group pretest posttest designwasused.50 Diabetic patients with age group 20 years and above, were attending Endocrine OPD of KIMSHEALTH, Thiruvananthapuramselected by non-probability consecutive sampling technique.. Structured interview schedule and rating scale was used to collectdata.Afterpre testAfter conducting the pretest, Self-Instructional Module on the health promotion strategies of COVID-19 among Diabetic patients was given. Posttest conducted after one week using structured interview schedule.Datawereanalyzedusingdescriptive and inferential statistic.The study findings shows that in pretest, 36% had good knowledge, 54 % of patients had average knowledge, and 10% had poor knowledge. In posttest 100% of patients had good knowledge. In pretest 68% of Diabetic patients had satisfactory practice, 32% of diabetic patients had good practice, and in posttest 98% of diabetic patients had good practice 2% had satisfactory practice.The mean knowledge score in pre-test was 14.58±2.43 and after the posttest mean knowledge score was 18.60±1.05. The 't' value shows that observed difference was statistically significant in mean pretest and posttest knowledge score; t=11.95, (p<0.05).The mean practice score in the pretest was 42.98±4.87 and mean posttest practice score was 54.94±2.28. The 't' value shows that the observed difference was statistically significant t=18.30, (p<0.05) in pretest and posttest practice score.The study also shows that there is a statistically a strong positive correlation (r=0.321) between knowledge and practice on health promotion strategies to prevent COVID-19 among diabetic patients.Thus the present study shows that the Self Instructional Module was found effective in improving the knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients.

Keywords: Knowledge, Practice, Self-Instructional Teaching Module, Health promotion strategies of COVID-19, Diabetic patient.

INTRODUCTION

The novel Coronavirus (2019-nCoV, officially known as SARS-CoV-2 orCOVID-19) was first reported in December 2019, as a cluster of acute respiratory illness in Wuhan, Hubei Province, China, from where it spread rapidly to over 198 countries. It was declared as a global pandemic by WHO on 12th March 2020 due to its highly replicative genomic character[1]

The novel Coronavirus undergo changes in genetic materials and evolve as new variants including Omicron. Each variant are unique in disease dissemination capacity and causing clinical severity of symptoms. The common symptoms of corona include fever or chills, dry cough, shortness of breath, fatigue, muscle or body aches, joint pain, headache, low back pain, loss of taste or smell, sore throat, congestion or runny nose, nausea, vomiting and diarrhea. The complications of corona virus ranging from ARDS shock sepsis, multy-organ failure the severity of consequences is accelerated by the presence of comorbid disease like diabetes, hypertension, cancer and systemic disorders[2]. Since the SARS-CoV-2 virus, the virus that causes COVID-19, has been spreading globally, variants have emerged and been identified in many countries around the world[3].

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin that produces.[4]

According to WHO, 8.5% of adults aged 18 years and older had diabetes in 2014. In 2019, diabetes was the direct cause of deaths in 1.5 million people and 48% of all deaths are due to diabetes occurred before the age of 70 years[5]. As per Global Burden of Disease study 2017, states that, global incidence, prevalence, death, and disability-adjusted life-years (DALYs) associated with diabetes were 22.9 million, 476.0 million, 1.37 million, and 67.9 million, with a projection to 26.6 million, 570.9 million, 1.59 million, and 79.3 million in 2025, respectively so it is one of the top10 causes of death globally[6]. Depending on the global region, 20-50% of patients in the coronavirus disease 2019 pandemic had diabetes[7]. Patients with diabetes have an increased risk of severe complications including Adult Respiratory Distress Syndrome, multi-organ failure and death[8].

People with diabetes who get COVID-19 are at risk of severity and mortality of the disease due to the impaired immune response, intensified inflammatory response and hypercoagulable state contribute to the increased disease severity[9]. When people with diabetes,develop viral infection it will be hard-to-treat due to fluctuations in blood glucose levels andthe presence of diabetes complications[10].

Those with diabetes had a meta-analysis was conducted by China to evaluate the prevalence of diabetes among COVID-19 patients and its impact on clinical outcomes. The study included 23 eligible articles including 49564 participants. The result showed that the pooled prevalence of diabetes in COVID-19 patients was 10%, the diabetes is higher among the age group of >50 years (13%) and the disease severity (17%) and death (30%) are also higher than non-diabetic patients[11].

Centers for Disease Control and Prevention (CDC) and other National Health Centres and Hospitals reported that the risk of fatal outcome from COVID-19 is up to 50% higher in patients with diabetes than non-diabetic patients[12]

Statementoftheproblem
A study to assess the effect of Self Instructional Module on knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients in a selected tertiary care hospital, Thiruvananthapuram**.**

Objectives
• Assess the pretest and posttest knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients.
• Assess the pretest and posttest practice of health promotion strategies to prevent COVID-19 among Diabetic patients.
• Find the relation between knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients**.**
• Find the association between knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients and selected socio personal variables.
• Find the association between practice of health promotion strategies to prevent COVID-19 among Diabetic patients and selected socio personal variables.

Material and methods Setting of the study
The study was conducted in Endocrine OPD of **KIMS**HEALTH, Thiruvananthapuram..

Sample and Sample size
Sample consists of 50 Diabetic patients with age group 20 years and above, were attending EndocrineOPD of **KIMS**HEALTH, Thiruvananthapuram.
Sample size,N=50.

Research Design
Pre-experimental one group pretest posttest design.

Sampling technique
The sampling technique used for the study was non probability consecutive samplingtechnique..

Inclusion Criteria
• Patients diagnosed with Diabetes, with age group 20 years and above, who was taking treatment for more than one year.
• Patients who are willing to participate in the study.
• Patients who can read, write and understand Malayalam or English.

Exclusion Criteria
• Diabetic patients who are physically or mentally disabled.
• Patients who has the previous history of COVID-19.
        Data were collected usingstructured questionnaire, (to assess the socio personal data andclinical data) Structured interview schedule (to assess the knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients) and a rating questionnaire (assess the practice of health promotion strategies to prevent COVID-19 among Diabetic patients).

        Structured interview schedule which was used to assess the knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients consist of 20 multiple choice questions. Each question carries 1 mark and the total knowledge score is 20,knowledgeisgradedas,

Structured interview schedule which was used to assess the knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients consist of 20 multiple choice questions. Each question carries 1 mark and the total knowledge score is 20.

Based on the total score, knowledge was graded as,

Knowledge level	Scores	Percentage
Good	: 16-20	76-100%
Average	: 11-15	51-75%
Poor	: 1-10	<50%

Rating scale to assess the practice of health promotion strategies to prevent COVID-19 among Diabetic patients consisting of 20 questions, the good practice is given as score of 3, satisfactory practice is given 2 and poor practice is given 1. Total score is 60.
• Based on the total score, practice was graded as,

Practice level	Scores	Percentage
Good	: 46-60	76-100%
Satisfactory	: 31-45	51-75%
Poor	: 1-30	<50%

Data collection process
Data collection process for the main study started from 18-2-22 to 9-3-22. Fifty patients who fulfilled the inclusion criteria were selected using non probability consecutive sampling technique. Detailed description about the study was given to the participants using participant information sheet. After obtaining informed consent from the subjects, the tool were administered. Interview schedule is used to collect the data regarding socio personal variables and knowledge on health promotion strategies of COVID-19. Practice rating scale is used to assess the practice on health promotion strategies of COVID-19. After conducting the pretest, Self Instructional Module on the health promotion strategies of COVID-19 among Diabetic patients was given. Posttest conducted after one week using structured interview schedule. It took approximately 30 to 40 minutes to collect the data from each patient. Data were collected from 6-7 patients per day.

Results
Sociopersonal Variable
52% of the patients with Diabetes were belong to the group of 51 years and above and 56% were males.46% of Diabetic patients were graduate /diploma educationAmong the Diabetic patient, 40% had government job, 30% had private job, and 20% were unemployed.50% of Diabetic patients were doing sedentary level of physical activity, and 46% were on moderate level of physical activity. 72%of Diabetic patients were married and 66% of patients' were lives in urban areas.34% of Diabetic patients had monthly income of Rs 20001/- to Rs 30000, 30% of patients had monthly income of Rs 30001/- to Rs 40000, 22% had monthly income of Rs 10000/- to Rs 20000/- and 14% had Rs 40001/- and above as monthly income. 40% of the patients were Diabetic for more than 10 years, 38% were diabetic for 1-5 years and 22% were Diabetic for 5.1 to 10 years.Among the patients, 44% of the patients had Hypertension, 10% had both Hypertension and Heart diseases and 10% of the patients had Hypertension, Heart disease and Respiratory diseases. 32% of the patients had neuropathy, 6% of patients had Neuropathy and Nephropathy and 6% of patients had Neuropathy and Retinopathy.Among the patients 42% of Diabetic patients had poor glycemic control, 32% had fair glycemic control and 24% had good glycemic control.Majority (82%) of Diabetic patients were using oral hypoglycemics agents (OHA). 12% were using insulin and 6% were using both OHA and insulin.

Frequency distribution and percentage of Diabetic patients based on pretest and posttest score of knowledge regarding health promotion strategies to prevent COVID-19   n=50

Knowledge	F	%
Pretest		
Poorknowledge	5	10
Averageknowledge	27	54
Goodknowledge	18	36
Posttest		
Goodknowledge	50	100

Table shows that, in pretest 36% had good knowledge, 54% of patients had average knowledge , and 10% had poor knowledge. In

posttest 100% of patients had good knowledge.

Frequency distribution and percentage of Diabetic patients based on pretest and posttest score of practice on health promotion strategies to prevent COVID-19.   (n=50)

Practice	F	%
Pre test		
Good practice	16	32
Satisfactory practice	34	68
Post test		
Good practice	49	98
Satisfactory practice	1	2

Table shows that in pretest 68% of Diabetic patients had satisfactory practice, 32% of Diabetic patients had good practice. In posttest 98% of Diabetic patients had good practice and 2% had satisfactory practice.

Relation between the knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients. (n=50)
This section describes the relation between knowledge and practice on health promotion strategies to prevent COVID-19 among Diabetic patients**.**

Variables	Karl Pearson correlation coefficient (r)
Knowledge	0.321*
Practice	

Table shows that there is statistically strong positive correlation (r=0.321) between knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients ($p < 0.05$).

Discussion
The findings of the present study shows that 52% of the patients with Diabetes were belong to the group of 51 years and above and 56% were males.46% of Diabetic patients were graduate /diploma educationAmong the Diabetic patient, 40% had government job, 30% had private job, and 20%   were unemployed.50% of Diabetic patients were doing sedentary level of physical activity, and 46% were on moderate level of physical activity. 72%of Diabetic patients were married and 66% of patients' were lives in urban areas.34% of Diabetic patients had monthly income of Rs 20001/- to Rs 30000, 30% of   patients had monthly income of Rs 30001/- to Rs 40000, 22% had monthly income of Rs 10000/- to Rs 20000/- and 14% had Rs 40001/- and above as monthly income. 40% of the patients were Diabetic for more than 10 years, 38% were diabetic for 1-5 years and 22% were Diabetic for 5.1 to 10 years.Among the patients, 44% of the patients had Hypertension, 10% had both Hypertension and Heart diseases and 10% of the patients had Hypertension, Heart disease and Respiratory diseases. 32% of the patients had neuropathy, 6% of patients had Neuropathy and Nephropathy and 6% of patients had Neuropathy and Retinopathy.Among the patients 42% of Diabetic patients had poor glycemic control, 32% had fair glycemic control and 24%   had good glycemic control.Majority (82%) of Diabetic patients were using oral hypoglycemics agents (OHA). 12% were using insulin and 6% were using both OHA and insulin.

The present study findings showed that 44% of the patients had Hypertension, 10% had both Hypertension & Heart diseases and 10% of the patients had Hypertension, Heart disease and Respiratory diseases.The present study findings are supported by a population-based surveillance for COVID-19 associated hospitalizations among persons of all ages in the United States to report the COVID-19-associated hospitalizations. The study was conducted among 178 (12%) adult patients with underlying conditions, 89.3% had one or more underlying conditions; the most common were hypertension (49.7%), obesity (48.3%), chronic lung disease (34.6%), diabetes mellitus (28.3%), and cardiovascular disease (27.8%). These findings suggest that older adults have elevated rates of COVID-19–associated hospitalization and the majority of persons hospitalized with COVID-19 have underlying medical conditions

The present study findings showed that 32% of the Diabetic patients had Neuropathy, 6% of patients had Neuropathy and Nephropathy and 6% of patients had Neuropathy and Retinopathy.The present study findings are supported by a web-based cross-sectional study, we aimed to evaluate the acute stress response, depression, and anxiety in patients with diabetes mellitus (DM) during the COVID-19 pandemic, and to examine the effect of these psychiatric problems on diet habits and glycemic controls of

patients. 304 patients with DM [(141 type 1 DM and 163 type 2 DM] were included in the study. The result showed that 23.0%, 10.9% and 38.5% diabetic patients having retinopathy, nephropathy and neuropathy respectively as diabetic complications

The present study findings showed that 42% of Diabetic patients had poor glycemic control, 32% had fair glycemic control and 24% had good glycemic control.The present study findings are supported by a retrospective, observational study was conducted on eighty COVID-19 patients with known cases of type 2 diabetes mellitus (T2DM) already on antidiabetic medications, admitted to S.M.S. Medical College and Attached Hospitals, Jaipur, Rajasthan, India. The result showed that, 22 patients (27.50%) had poorly controlled blood sugar levels with HbA1c level more than 8 g%, 58 patients (72.50%) had controlled blood sugar levels with HbA1c level less than 8 g%. In this study, complications were more pronounced in uncontrolled diabetes group as compared with controlled diabetes group.

The present study findings showed that 82% of Diabetic patients were using oral hypoglycemic agents (OHA), 12% were using insulin and 6% were using both OHA and insulin. The present study findings are supported by a prospective, cross-sectional, observational survey was carried out in 100 patients of diabetes mellitus attending diabetes outpatient/medicine outpatient departments, to assess their prescribing pattern of anti-diabetic drugs, and their blood-glucose level and to determine their glycemic control. The findings suggest that 56.4% Diabetic patients were using oral hypoglycemic drugs and 43.6% were using insulin for glycemic control.

The present study findings are supported by a web-based cross-sectional study, we aimed to evaluate the acute stress response, depression, and anxiety in patients with diabetes mellitus (DM) during the COVID-19 pandemic, and to examine the effect of these psychiatric problems on diet habits and glycemic controls of patients. 304 patients with DM [(141 type 1 DM and 163 type 2 DM] were included in the study. The result showed that the usage of OHA, insulin and both OHA and insulin were 59.5%, 6.1%,34.6% respectively

The present study findings showed that in pretest 36% had good knowledge, 54% of patients had average knowledge, and 10% had poor knowledge. In posttest 100% of patients had good knowledge.The findings ware supported by findings of another study done in public health facilities in Ambo, Ethiopia among 423 respondents to evaluate the knowledge attitude and practice of COVID-19 among people with Diabetes and Hypertension. The result showed that, 31.44% had poor knowledge, 37.59% had moderate knowledge and 30.97% had good knowledge. Both together consisting of overall good knowledge was 68.66%

The present study findings showed that in pretest 68% of Diabetic patients had satisfactory practice, 32% of Diabetic patients had good practice. In posttest 98% of Diabetic patients had good practice and 2% had satisfactory practice. The findings was supported by findings of another study done in public health facilities in Ambo, Ethiopia among 423 respondents to evaluate the knowledge attitude and practice of COVID-19 among people with Diabetes and Hypertension. The result showed that, 45.39% had poor practice, 44.21% had moderate practice and 10.40% had good practice.

The present study findings shows that there is statistically strong positive correlation (r=0.321) between knowledge and practice of health promotion strategies to prevent COVID-19 among diabetic patients (p<0.05). The obtained 'r$_s$' value is 0.321 (p<0.05). Subjects with high knowledge score had high practice score. The present study findings are supported by findings of another study done in Vietnam to assess knowledge, attitude and practices regarding COVID-19 among 522 patients with chronic diseases. The result showed that 68.4% had sufficient knowledge of COVID-19. 90.8% had a positive attitude towards COVID-19 and 77.2% maintained good practices for prevention. The rate of good practices in those who had sufficient knowledge was 1.24 times greater than that among those who had insufficient knowledge.

The present study findings shows that there is statistically no significant association between knowledge of health promotion strategies to prevent COVID-19 among Diabetic patients and selected socio personal variables such as age, gender, education, occupation, physical activity, marital status, place of residence, monthly income and clinical variables such as duration of Diabetes, presence of comorbidities, Diabetic complications, level of glycemic control and type of antidiabetic drug. The findings were congruent with findings of another cross-sectional study was conducted among 3,388 participants of the general population of Saudi Arabia, from 20 March 2020, to 24 March 2020. The aim of the study is to assess the knowledge, attitudes, and practices toward COVID-19. The data were collected via an online self-reported questionnaire. The result showed that the mean knowledge, attitude and practices score were 17.96, 28.23, 4.34 respectively. Regarding the association with socio personal variables the knowledge had statistically no significant association with marital status, work status and religion.

The present study findings shows that there is statistically no significant association between practice of health promotion strategies to prevent COVID-19 among diabetic patients and selected socio personal variables.The findings was congruent with the findings of another questionnaire based cross sectional study was done for a period of 7 days to access the knowledge attitude and practice towards COVID-19 among patients attending a tertiary care hospital in Durg, Chhattisgarh. The aim of the study is to assess the knowledge, awareness and practices of the people to help prevent the further outbreak of COVID-19. A total of 288 patents participated in the study. The result showed that 80.4% of the participants had good knowledge, 68.6% of the participants had a positive attitude, 83.8% of the participants had good practices. Regarding the association with socio personal variables the practice had statistically no significantly association with gender and income (p value >0.05).

The result showed that the knowledge, attitude and practice towards COVID-19 was seen to be adequate among participants aged 50 years or older as compared to less than 50 years old participants 89.4% vs. 75.8%, 78.8% vs. 71.1%, 51.5% vs. 50.8%, respectively. Regarding the association with socio personal variables the practice had statistically no significantly association with age, gender, monthly income, diagnosis with comorbidities, duration of Diabetes, comorbid conditions like, Diabetes, Hypertension,

history of heart attack, Kidney disease, thyroid disorders and Respiratory disorders

CONCLUSION

The present study was conducted to assess the effect of knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients, at Endocrine OPD in **KIMS**HEALTH. The study findings showed that in pretest 36% had good knowledge, 54% of patients had average knowledge and 10% had poor knowledge. In posttest 100% of patients had good knowledge. The study findings also showed that in pretest 68% of Diabetic patients had satisfactory practice, 32% of Diabetic patients had good practice. In posttest 98% of Diabetic patients had good practice and 2% had satisfactory practice. There is statistically strong positive correlation between knowledge and practice of health promotion strategies to prevent COVID-19 among Diabetic patients (r=0.321, p<0.05).

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