

Effectiveness of educational intervention regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens residing in selected old age homes

Dr. Mrs. Kavita Kelkar,¹ Dr. (Mrs.) Rupali Salvi², Dr.Mrs. Shubhangi Kanitkar³, Mrs. Ceena Bejoy⁴

1. Asso.Professor Ph.D., Community Health Nursing, Dr.D.Y.Patil Vidhyapeeth,Dr.D.Y Patil College Of Nursing,Pimpri,Pune-18
2. Principal, Ph.D.-Community Health Nursing, Dr. D. Y. Patil Vidyapeeth, Dr. D. Y. Patil College Of Nursing ,Pimpri,Pune-18
3. Head of the department,MD, Medicine Department, Dr.D.Y.PatilVidyapeeth, Dr. D. Y. Patil Medical College,Pimpri,Pune-18
4. Faculty, M.Sc Nursing, Medical Surgical Nursing, Dr. D. Y. Patil Vidyapeeth, Dr. D. Y. Patil College Of Nursing ,Pimpri,Pune-18

Abstract

Background:The incidence and prevalence of Corona virus among the population are increasing day by day. It has spread globally. It affects different people in different way. Most of the people will have mild to moderate symptom and recover without hospitalization. Coronavirus disease (COVID-19) is a contagious disease caused by a newly discovered coronavirus. Senior citizen and those with underlying health problems like cardiac disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. People with diabetes develop a viral infection; it can be difficult to treat because of variations in blood glucose levels and probably, the presence of diabetes complications.¹The best way to prevent and control transmission Corona Virus are of educating people regarding causative factor and spread of this infection. The primary prevention of this disease is washing hands or use of alcohol based sanitizer and mask. The other preventive measures to keep safe from Covid 19 infection such as social distancing, avoid crowd and keep rooms well ventilated. **Objective:** To evaluate the effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens. To find out the association between study findings and demographic variables. **Method:** One group pre-test post was adopted as study design and involved 60 Senior Citizens. The pretest was conducted followed by educational intervention and after 7 days post test was conducted. Outcomes were stated that knowledge among the senior citizens residing in old age homes improved remarkably after educational interventions. **Result:** Educational interventions were found to be significantly effective in improving the knowledge of the senior citizens. **Conclusion:** The overall study findings concluded that educational intervention is an effective strategy in improving knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID among the senior citizens.

Key words-Diabetes Mellitus, Self-care Management, knowledge COVID 19, Senior citizens**Introduction**

Novel coronavirus is a newly revealed virus which causes severe acute respiratory syndrome, similar to coronavirus 2 (SARSCoV2), which has spread widely through human to human interaction and was declared a pandemic by the WHO in March 2020. Corona virus is belonging to a big family of viruses which cause respiratory infection in both human beings and animals. The symptom ranges from common cold to Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The transmission of this disease is through micro droplets from the nose or mouth cavity of a person who is infected with COVID-19. Even coughing, sneezing and speaking also spread this disease from person to person. These droplets are heavy which do not travel easily far. A person can have COVID-19 if they breathe this droplet which was left by an infected person. This is why it was essential to maintain 1 meter distance from others. If people touch these objects or surfaces they can become victims of COVID-19.²

The whole world is facing health care challenges due to COVID-19 but the effects vary from country to country. Diabetes mellitus (DM) is an ailment and a worldwide health hazard, the severity of which has enlarged in the last twenty centuries. In 1985, 30 million people suffered from diabetes. According to the latest global estimate from the International Diabetes Federation that number of affected patients in 2019 stands at 463 million. It is estimated that by 2045, around 700 million people will suffer from diabetes. Diabetes is a leading cause for kidney disease, onset blindness, and disability due to foot amputations. Diabetes mellitus patients can take special preventive measures during this pandemic such as maintaining ideal weight, frequently washing hands with soap and water or alcohol based sanitizer at least for 20 seconds. Maintaining safe distance at least 6 feet. Strict use of Mask. It is recommended that diabetes patients should have separate bedrooms and bathrooms to avoid the spread of infection from family members. Regular check-ups on blood sugar should be advised to this kind of client. Self-care management regarding hand and foot care, diet, physical activity and general health check-up.³

Need of Study

Prevalence of Diabetes mellitus in the general public with COVID-19 diverges and is subjective by geographical area, age and severity of disease. Hyperglycaemia is a vigorous forecaster of severity of illness and death in patients infected with various viruses, containing influenza A (H1N1), SARS and MERS, in part remaining to the catecholamine response associated with systemic infections.⁴

The International Diabetes Federation stated that 463 million people were living with diabetes globally. Research study shown that diabetes is one of the essential risk factors for mortality who were having acute respiratory distress syndrome (ARDS) in hospitalized patients with COVID-19. The reports from China and Italy noted that prevalence of diabetes present among severe cases of COVID-19. Most

of the study observed that diabetes patient develop Covid 19 infection were having worse prognosis and death rate was also high among them. Individuals with diabetes mellitus (DM), hypertension, and severe obesity are more prone to get infected and are at a greater risk for complications and morbidity from COVID-19⁵. Mostly people with diabetes mellitus considering as an other risk factors such as hyperglycemia, modulate immune and inflammatory responses, thus this individual are prone to get infection of COVID-19 and possible complication.⁶

Epidemic at Wuhan, the SARS-CoV-2 virus prolonged rapidly all over China. The virus was not limited to a country. It was highly infectious and speedy transmission to more than 100 countries in the last 2–3 months and affected more than 300,000 people globally. On March 24, 2020, the infected with Corona virus the cases were found in the Western Pacific Region under which China, Republic of Korea, Australia, Malaysia, Japan, Singapore, New Zealand. The World Health Organization (WHO) acknowledged coronavirus a pandemic due to extensive scale of the eruption and has notified that the worst of Covid-19 is yet to come. The United Nations said the coronavirus pandemic is the worst global crisis since World War II.⁷

The first case of Corona Virus infection reported in India on 30 March 2020 in the Kerala state. The affected person had travel from Wuhan, China. New cases of this disease being in reported to various cities such as India's Capital New Delhi, Mumbai, Bengaluru, Hyderabad, and Patna. Most of the suspected cases were been tested and resulted in confirmed cases of Corona virus Infection. Maximum cases were reported in India's state like Maharashtra, Kerala, Delhi, Karnataka, Andhra Pradesh, Uttar Pradesh, Rajasthan and Tamil Nadu.⁸

In Maharashtra the first cases was notify on 9 March 2020. The Maharashtra was hot spot for Covid 19 infection because one third of the total cases were present with high death rate. Mumbai Maharashtra capital were affected worstly. Maximum confirmed cases were found in others places of state and declared as cantonment zone for further prevention of community spread.⁹

Objectives:

1. To evaluate the effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens residing in selected old age homes
2. To find out the association of the study findings with selected demographic variables.

Material and Methodology

Design and setting

Pre experimental one group pretest post test was adopted as a research design. This study was conducted in selected old age home. This study was approved by the institutional research ethics committee. Informed consent obtained from the study participants and they had the freedom to withdraw from the study at any point in time.

Hypothesis

H₀: There will be no statistical significant difference between mean pre-test and mean post-test knowledge score regarding Self-care management of Diabetes Mellitus among Senior citizens.

Independent Variable

Educational intervention on Self-care management of Diabetes Mellitus.

Dependent Variable

Knowledge of senior citizens on Self-care management of Diabetes Mellitus.

Conceptual Framework.

The present study aims evaluating the effectiveness of educational intervention regarding self care management among the senior citizen of selected old age home. The framework, of the present study is based on system model for the development of learning materials and modules program for continuing education of health workers (WHO 1985).The conceptual framework is divided into their phase, input, process and output in a specific context, including evaluation of all phases in this study

Input refers to targeted group is senior citizen. Their levels of knowledge are assessed using a structure questionnaire.

Section I

Demographic variables-age, gender, educational status, previous history of DM, BMI

Section II

Structure questioner on self-care management of Diabetes Mellitus

Process refers to different operational procedures in implementing the program.

The operation procedure includes

- Validation by expert
- Preparation of final tool
- Imparting educational Intervention
- One group pre-test-post-test design

Output

In the present study, output refers to appreciable increases in the knowledge scores of senior citizen regarding self care management of Diabetes Mellitus.

Sample

The research sample of this study were Senior citizen both male and female residing in selected in old age home. A total of 60 samples were recruited using non-probability purposive sampling technique. The inclusion criteria senior citizens residing in selected old age home with diagnosis DM and understand read, write English and Marathi language.

Study instruments

The researcher prepared a demographic profile and structured knowledge questionnaire as a tool for this study.

The tool includes the following sections:

Section A: This section involves the items searching the information on demographic variables of a sample such as Age, Gender, Education, Diet, Family history of diabetes mellitus.

Section B: This section involves the items searching the information on clinical profile of a sample such as Height, Weight, and Body Mass Index (BMI).

Section C: This section contains structured knowledge questionnaire designed for the study consisted of 23 multiple choice questions. Each question had four options which include one right answer. Each correct answer carries 1 mark and wrong answer carries 0 Mark. The score is categorized into

Total Score: 23

0 - 7 = Poor Score

8 – 16 = Average Score

17 – 23 = Good Score

Data collection

After assessing the eligibility criteria, samples were selected in the study and complete details about the study was explained to them. The data collection was done from 01/02/2021 to 17/02/2021. Pre-test was conducted followed by educational intervention and after seven-day post test was conducted.

Statistical analysis

The collected data were analysed using the Statistical Package for Social Sciences. The descriptive and inferential statistics utilized. The frequency, percentage were calculated to describe the samples demographics variables. Paired t-test for the effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19. Fisher's exact test for the association of the knowledge with demographic variables.

Result

Table 1: Description of the samples (senior citizens residing in selected old age homes) based on their personal characteristics in terms of frequency and percentages.

N=60

Demographic variable	Freq	%
Age		
60 – 65 Years	34	56.7%
66 – 70 Years	14	23.3%
71 – 75 Years	8	13.3%
Above 76 Years	4	6.7%
Gender		
Male	35	58.3%
Female	25	41.7%
Education		
No formal education	20	33.3%
Primary	25	41.7%
Secondary	10	16.7%
Undergraduate	5	8.3%
Diet		
Vegetarian	19	31.7%
Non-Vegetarian	7	11.7%
Mixed	28	46.7%
Eggetarian	6	10.0%
Family history of Diabetes Mellitus		
Yes	27	45.0%
No	33	55.0%

Table 1 indicated that 56.7% of the senior citizens residing in selected old age homes had age 60-65 years, 23.3% of them had age 66-70 years, 13.3% of them had age 71-75 years and 6.7% of them had age above 76 years. 58.3% of them were males and 41.7% of them were females. 33.3% of them did not had formal education, 41.7% of them had primary education, 16.7% of them had secondary education and 8.3% of them were undergraduates. 31.7% of them were vegetarian, 11.7% of them were non-vegetarian, 46.7% of them had mixed diet and 10% of them were eggetarian. 45% of them had family history of diabetes mellitus.

Effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens residing in selected old age homes.

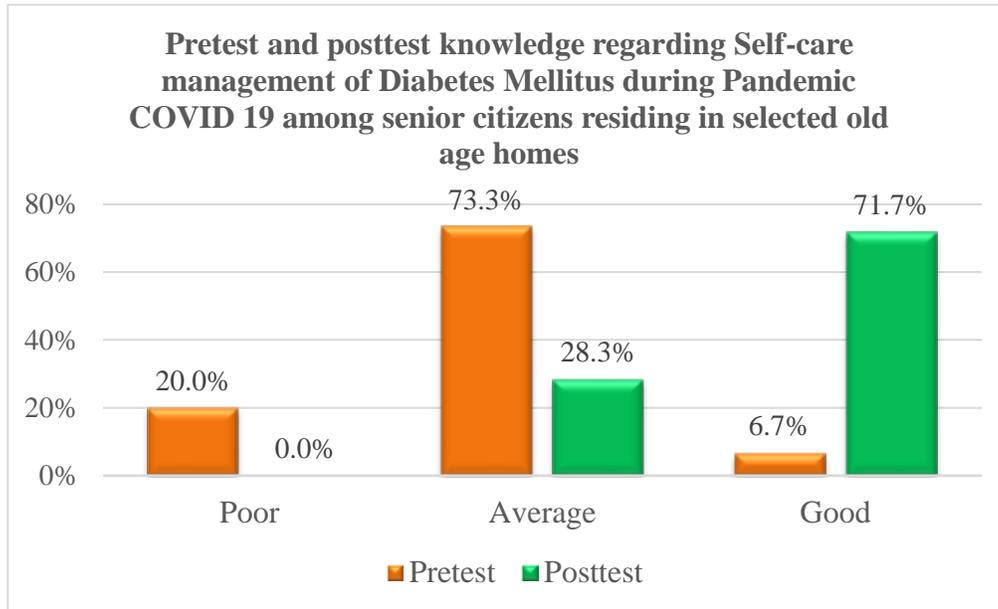


Fig. 1 revealed that In pretest, 20% of the senior citizens residing in selected old age homes had poor knowledge (score 0-7), 73.3% of them had average knowledge (Score 8-15) and 6.7% of them had good knowledge (Score 16-23) regarding self-care management of Diabetes Mellitus. In posttest, 28.3% of them had average knowledge (Score 8-15) and 71.7% of them had good knowledge (Score 16-23) regarding self-care management of Diabetes Mellitus. This indicates that the knowledge among the senior citizens residing in old age homes improved remarkably after educational interventions

Paired t-test for the effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens residing in selected old age homes.

	Mean	SD	T	df	p-value
Pretest	10.2	3.2	15.8	59	0.000
Posttest	16.8	1.7			

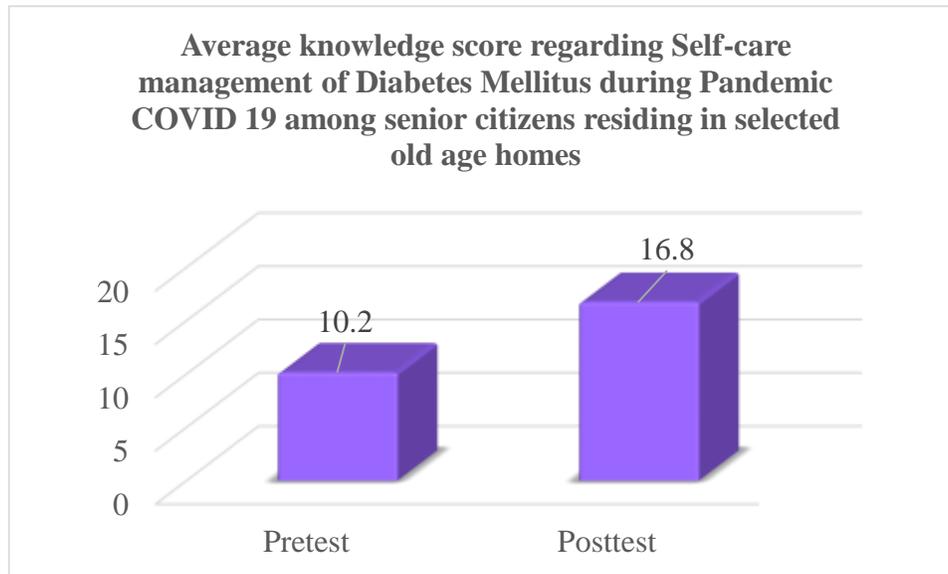


Fig. No 2 Researcher applied paired t-test for the effectiveness of educational interventions regarding knowledge of Self-care management of Diabetes Mellitus during Pandemic COVID 19 among senior citizens residing in selected old age homes. Average knowledge score in pretest was 10.2 which increased to 16.8 in posttest. T-value for this test was 15.8 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Educational interventions were found to be significantly effective in improving the knowledge of the senior citizens residing in selected old age homes.

Fisher's exact test for the association of the knowledge among senior citizens regarding Self-care management of Diabetes Mellitus with selected demographic variables

N=60

Demographic variable		Knowledge			p-value
		Average	Good	Poor	
Age	60 – 65 Years	25	2	7	0.938
	66 – 70 Years	11	1	2	
	71 – 75 Years	5	1	2	
	Above 76 Years	3	0	1	
Gender	Male	25	4	6	0.229
	Female	19	0	6	
Education	No formal education	14	2	4	0.300
	Primary	21	1	3	
	Secondary	7	0	3	
	Undergraduate	2	1	2	
Diet	Vegetarian	13	2	4	0.730
	Non-Vegetarian	4	0	3	
	Mixed	22	2	4	

	Eggetarian	5	0	1	
Family history of Diabetes Mellitus	Yes	17	3	7	0.283
	No	27	1	5	

Table 2 indicated that since all the p-values are large, none of the demographic variables was found to have significant association with the knowledge among senior citizens regarding Self-care management of Diabetes Mellitus.

Discussion

The present study to assess is assess the effectiveness of educational intervention knowledge regarding Self-care management of Diabetes Mellitus among senior citizens.

In relation to the other study, the discussion in this study that the COVID-19 pandemic has challenged both institutional and self-management of diabetes. The ongoing social distancing and lock downs have negatively impacted to access to care and self-management. They had suggested that culturally tailored educational plan on self care management of diabetes during covid 19 was deficit. Reemphasis on given to components of educational teaching which consist of general preventive measures, medications, diet, physical activity, self-monitoring of blood glucose, stress management, foot care, smoking and drinking and preventing complications of diabetes mellitus during pandemic covid 19.¹⁰

The other study finding revealed that the people who are living with comorbidity like diabetes and hypertension were at greater risk of getting corona virus infection due to their immunodeficiency. The government has announced various public health measures to reduce the corona virus infection. The importance of self-care management education to cope up with twin pandemic of COVID-19 and NCDs. An attempt was also made to highlight the use of health to manage diabetes There was a less awareness regarding self-care care management. Hence, the educational intervention should contain washing of hand, use of mask; avoid unnecessary travel, patient centred care. Use of advance health technology such as telemedicine to consult the doctors.¹¹

To assess the awareness about COVID-19 and the problems being faced by young adults with T1DM amid nationwide lockdown in India. Young adults with T1DM were finding difficulty to maintain glycemic control, lack of awareness about diet and treatment regime, physical activity during pandemic COVID-19. So Researcher suggested that there is a need of increasing awareness and imparting diabetes self-management education via digital/print media is needed. Virtual clinic also can be establish.¹²

This pandemic has challenges the health care system worldwide. Traditionally Physician centred approach was followed in India which was based on routine clinical visit but due to lockdown people with comorbidity Diabetes cannot visit their physician. An educational plan on diabetes self-management that can be adopted for people with diabetes mellitus in the various countries

amid the on-going pandemic. It has also identified the barriers to diabetes self-management in the current scenario. An educational plan on diabetes self-management that can be adopted for people with diabetes mellitus in our country amid the on-going pandemic. Researcher stated that there was a need for multidisciplinary team approach for patient care during this lockdown.¹³

Conclusion

The study results indicated 56.7% of the senior citizens residing in selected old age homes had age 60-65 years, 58.3% of them were males, 41.7% of them had primary education, 31.7% of them were vegetarian, 46.7% of them had mixed diet. 45% of them had family history of diabetes mellitus. In pre-test, 73.3% of them had average knowledge regarding self-care management of Diabetes Mellitus. In post-test, 71.7% of them had good knowledge. Effectiveness of educational interventions after application of t test, Average knowledge score in pre-test was 10.2 which increased to 16.8 in post-test. T-value for this test was 15.8 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. None of the demographic variables was found to have significant association with the knowledge among senior citizens. Educational interventions were found to be significantly effective in improving the knowledge of the senior citizens residing in selected old age homes.

Implications for practice

This study proved that educational intervention significantly benefits for the senior citizens regarding Self-care management of Diabetes Mellitus. As the results suggest that educational intervention is helping to increase the knowledge score among the senior citizens. Most of the people will empower with knowledge of self-care management of diabetes mellitus during lock down period.

Conflicts of interest

There are no conflicts of interest to declare.

Ethical Clearance

The present study has undergone Dr.D.Y.Patil Vidyapeeth ethical Committee and received ethical clearance. Informed consent has been taken from each participant during data collection.

Acknowledgement

We express our sincere thanks to all senior citizens who participated and extended their support in this research study.

Funding

The authors have received funding from Dr.D.Y. Patil University, Pune.

References

1. WHO, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events>

2. [Muhammad Kafeel Ansari](#)(2020), The Environmental Impact of COVID-19 worldwide September 2020,Preprints 2(1):1-16
3. AlirezaAbdi, MiladJalilian, PegahAhmadiSarbarzeh, ZeljkoVlaisavljevic
Diabetes Res Clin Pract. 2020 Aug; 166: 108347. Published online 2020 Jul 22. doi: 10.1016/j.diabres.2020.108347PMCID: PMC7375314
4. Khaled K. Aldossari, Diabetes Mellitus Is an Important Predictor for Hospitalization and Mortality From the COVID-19 Infection: A Substantial Interface Between Two Outbreaks, Journal of Endocrinology and Metabolism, ISSN 1923-2861 print, 1923-287X online, Open Access, Volume 10, Number 3-4, August 2020, pages 74-78
5. Ranganathmuniyappa,Covid-19 pandemic corona virus and diabetes mellitus,American journal of physiology of endocrinology and metabolism,vol-318,no-5,26 april 2020
6. Lim, S., Bae, J.H., Kwon, HS. *et al.* COVID-19 and diabetes mellitus: from pathophysiology to clinical management. *Nat Rev Endocrinol* **17**, 11–30 (2021). <https://doi.org/10.1038/s41574-020-00435-4>
7. WHO,<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events>
8. Khaled K. Aldossari, Diabetes Mellitus Is an Important Predictor for Hospitalization and Mortality From the COVID-19 Infection: A Substantial Interface Between Two Outbreaks, Journal of Endocrinology and Metabolism, ISSN 1923-2861 print, 1923-287X online, Open Access, Volume 10, Number 3-4, August 2020, pages 74-78
9. Mainak Banerjee, SoumenChakraborty, RimeshPalDiabetes Metab Syndr. 2020 July-August; 14(4): 351–354. Published online 2020 Apr 13. doi: 10.1016/j.dsx.2020.04.013PMCID: PMC7194953
10. Doreen MachereraMukona, MathildaZvinavasheDiabetesMetabSyndr. 2020 November-December; 14(6): 1575–1578. Published online 2020 Aug 23. doi: 10.1016/j.dsx.2020.08.022PMCID: PMC7443206
11. Gupta SK, LakshmiP V, Kaur M, Rastogi A. Role of self-care in COVID-19 pandemic for people living with comorbidities of diabetes and hypertension. *J FamilyMed Prim Care* 2020; 9:5495-501
12. Ramesh Pal et al, awareness about COVID-19 and the problems being faced by young adults with T1DM amid nationwide lockdown in India,primary care diabetes,July 2020.
13. Mainak Banerjee, SoumenChakraborty, RimeshPalDiabetesMetabSyndr. 2020 July-August; 14(4):351–354. Published online 2020 Apr13. doi: 10.1016/j.dsx.2020.04.013PMCID: PMC7194953