IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Effectiveness Of Mobile-Based Education On Knowledge And Practices Regarding Self- Care Activities Among Senior Citizen With Diabetes Mellitus Residing In Selected Rural Area."

1Sable Tushar Ravidas, 2DR. YOGITA P. AUTADE, 3Amol shelke

1M.sc Nursing Student, 2Professor & HOD Cum Vice-Principal Dept Of Community Health Nursing, 3Nursing Officer

2Government Medical College and Hospital Baramati

Objectives

1. To compare posttest knowledge and practice regarding self-care activities among between among senior citizens with diabetic mellitus in control and experimental group.
2. To determine the effectiveness of mobile based education on knowledge and practice regarding self-care activities among senior citizens with diabetic mellitus.
3. To find out the association between post-test knowledge and practice with their selected demographic variables.

Hypothesis:

1. **H1:** There will be significant differences between control and experimental group, post-test knowledge and practice regarding self-care activities among senior citizens with diabetic mellitus.
2. **H01:** There will be no significant difference between control and experimental group, post-test knowledge and practice regarding self-care activities among senior citizens with diabetic mellitus.
3. **H2:** There will be significant association between post-test knowledge and practice with their selected demographic variables.

4. **H02:** There will be no significant association between post-test knowledge and practice with their selected demographic variables.

Introduction

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels, which, if not managed properly, can lead to severe complications such as cardiovascular diseases, nephropathy, neuropathy, and retinopathy. Among senior citizens, the burden of diabetes is particularly high due to age-related physiological changes, multiple comorbidities, and decreased functional capacity. Effective self-care practices are essential to prevent complications and improve the quality of life in older adults with diabetes.1 Self-care activities for diabetes management include regular blood glucose monitoring, adherence to prescribed medications, maintaining a healthy diet, engaging in physical activity, and routine foot care. These activities are crucial in maintaining glycaemic control and reducing the risk of diabetes-related complications. However, adherence to self-care practices among senior citizens is often influenced by factors such as cognitive decline, physical limitations, and socio-economic status.2

Dietary management is a cornerstone of diabetes self-care, as proper nutrition helps regulate blood glucose levels and prevent fluctuations that can lead to complications. Older adults with diabetes are encouraged to follow a balanced diet rich in fiber, lean proteins, and healthy fats while limiting refined carbohydrates and sugary foods. However, age-related changes in appetite, dental problems, and limited access to nutritious food can pose significant challenges to dietary adherence.

Need for Study

Diabetes is a significant public health concern in India, affecting approximately 77 million adults, making the country the second-largest contributor to global diabetes prevalence.[8] Among the elderly population, the prevalence of diabetes is steadily increasing, with estimates suggesting that nearly 25% of adults over the age of 60 in India suffer from the condition). In Maharashtra, the prevalence of diabetes among senior citizens is notably high, with a reported rate of approximately 18% in urban areas and 10% in rural regions. Given these statistics, understanding and improving self-care practices among elderly diabetic patients is crucial for reducing morbidity and enhancing quality of life.[9]

Self-care activities play a critical role in diabetes management, yet adherence among elderly individuals remains suboptimal. A study conducted in Maharashtra found that nearly 40% of elderly diabetic patients failed to adhere to their prescribed medication regimen, leading to poor glycaemic control and an increased risk of complications. Additionally, dietary management poses a challenge, as traditional eating habits and limited nutritional knowledge often hinder adherence to a diabetes- friendly diet. These findings highlight the need for targeted educational interventions to improve self-care behaviours among senior citizens.[10]

MATERIALS AND METHODS

Research Approach: The approach used for the study was quantitative and evaluative approach.
Research Design: The researcher adopted True experimental study with control and experimental group, post-test only design.
Variables:

Demographic Variables: Age, Gender, Education, Occupation, Monthly income of the family, Type of family, Duration of diabetes, Current status of diabetes treatment, Co-morbidities.

Research Variables

Independent variables: Mobile based education on knowledge and practice regarding self- care activities among senior citizens with diabetes mellitus.

Dependent variables: Knowledge and practice regarding self-care activities among senior citizens with diabetes mellitus.

Setting of the study: The present study was conducted at selected rural area.

Population: The population for the study was the senior citizens with diabetes mellitus residing at selected rural area.

Sample: The sample for the study was the senior citizens with diabetes mellitus residing at selected rural areas.

Sample size: Sample size was round off into 140 patients, 70 in each group.

The sample size for the present study was 140 (Experimental group-70, Control group-70) senior citizens with diabetes mellitus

Sampling technique: The sampling technique used for the study was the probability, simple random sampling technique by using lottery method.

Criteria for selection of sample Inclusion criteria

The senior citizens, who are;

1. aged 60 to 70 years
2. diagnosed with diabetes mellitus
3. able to understand Marathi, Hindi and English
4. willing to participate in the study

Exclusion criteria

The senior citizens, who are;

1. unable to understand Marathi, Hindi and English
2. unable to respond to the tool
3. not willing to participate in the study

The data collected was analyzed based on objectives of the study in the following way:

Description of senior citizens according to their demographic characteristics.

n=140

Sr. No.	Demographic variables	Control		Experimental	
		F	%	F	%

1.	Age in years	60-63	29	41.43%	19	27.14%
		64-67	20	28.57%	30	42.86%
		68-70	21	30%	21	30%
2.	Gender	Male	41	58.57%	38	54.29%
		Female	29	41.43%	32	45.71%
3.	Education	Illiterate	20	42.85%	30	42.85%
		Primary/Secondary	34	48.57%	33	47.14%
		Higher secondary	6	8.57%	7	10%
		Graduation and above	0	0%	0	0%
4.	Occupation	Housewife	14	20%	12	17.14%
		Farmer	36	51.43%	24	34.29%
		Salaried	16	22.86%	23	32.86%
		Self-owned business	4	5.71%	11	15.71%
5.	Family income in rupees	<5000	0	0%	6	8.57%
		5000-9999	33	47.14%	24	34.29%
		10000-14999	23	32.86%	26	37.14%
		>14999	14	20%	14	20%
6.	Type of family	Nuclear	40	57.14%	38	54.29%
		Joint	30	42.86%	32	45.71%
7.	Duration of DM in years	00 to 03	20	28.57%	17	24.29%
		03 to 06	32	45.71%	34	48.57%
		More than 06	18	25.71%	19	27.14%
8.	Status of DM treatment	Yes	36	51.43%	44	62.86%
		No	34	48.57%	26	37.14%
9.	Co-morbidities	Hypertension	25	35.71%	14	20%
		Cardio-vascular disease	24	34.29%	28	40%
		Respiratory disease	13	18.57%	21	30%
		Other	8	11.43%	7	10%

Description of Level knowledge and practice regarding self-care practices among

senior citizens with diabetes mellitus residing in selected rural area

n=140

Group	**Control group (70)**		**Experimental group (70)**	
Level of knowledge	**Inadequate**	**Adequate**	**Inadequate**	**Adequate**
F	59	11	52	18
%	84.28%	15.71%	74.28%	25.71%

Table 4.2 shows that in the control group, 84.28% of the study participant had inadequate knowledge whereas 15.71% of the study participants had adequate knowledge before the intervention. In the experimental group, 74.28% of the study participants had inadequate knowledge whereas 25.71% of the study participants had adequate knowledge before the intervention.

The description of existing level of practice among control and experimental groups is described in two categories with frequency and percentage below.

n=140

Group	**Control group (70)**		**mental group (70)**	
Level of practice	**Good**	**Excellent**	**Good**	**Excellent**
F	48	22	49	21
%	68.57%	31.42%	70%	30%

Table 4.3 shows that in the control group, 68.57% of the study participants had good self-care practice but need improvement in some areas whereas 31.42% of the study participants had excellent self-care practice before the intervention. In the experimental group, 70% of the study participant had good self-care practice need improvement in some areas whereas 30% of the study participants had excellent self- care practice before the intervention.

To compare posttest knowledge and practice regarding self-care activities among between among senior citizens with diabetic mellitus in control and experimental group

The present study assesses the posttest knowledge and practice of the study participants regarding the self-care activities**.** The comparison of the knowledge and practice between the control and experimental group is described as follows.

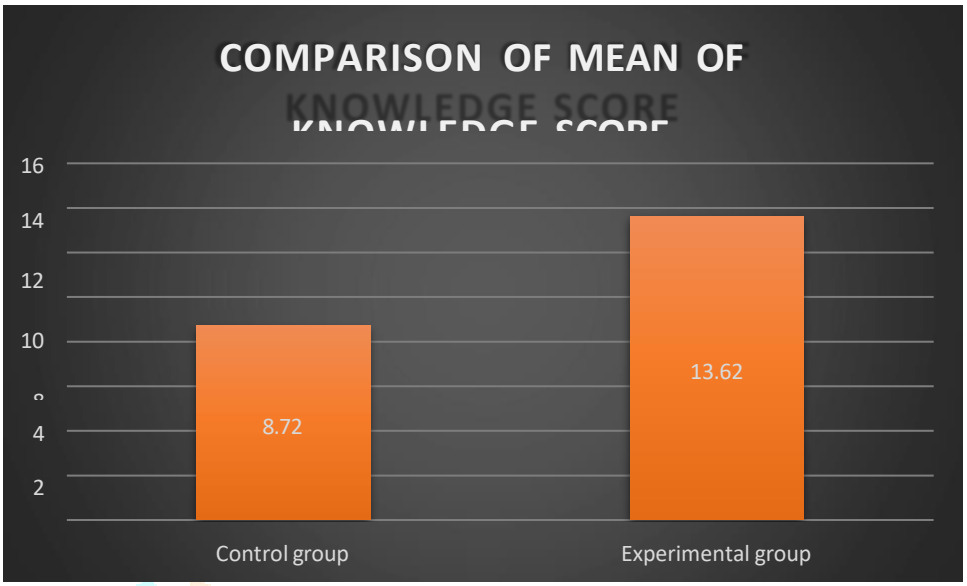

Fig. Comparison of the mean scores of the posttest knowledge among control and experimental group

Fig 4.19 shows the comparison of the mean scores of the posttest knowledge among control and experimental group**.** The mean of the knowledge score among the experimental group 13.62 is greater than that of mean of the knowledge score 8.72 among the control group.

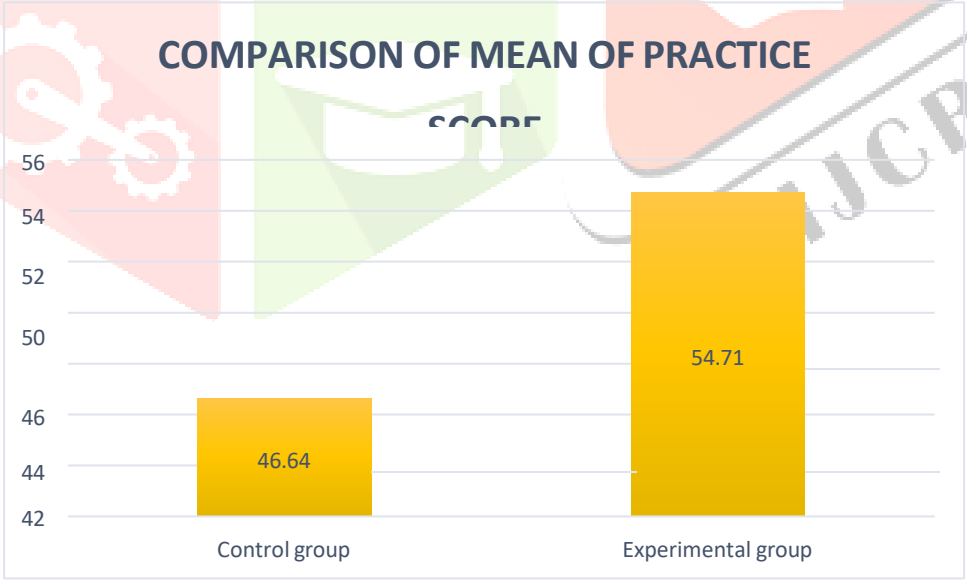

Fig 4.20. Comparison of the mean scores of the posttest practice among control and experimental group

Fig 4.20 shows the comparison of the mean scores of the posttest practice among control and experimental group**.** The mean of the knowledge score among the experimental group 54.71 is greater than that of mean of the practice score 46.64 among the control group.

Section IV

Effectiveness of mobile based education on knowledge and practice regarding self-care activities among senior citizen with diabetes mellitus residing in selected rural area

n=140

	Mean	**SD**	**Unpaired t 'test**	**'t' table Value**	**'p' value**
Control group	8.72	3.04	10.00	1.99	0.00001
Experimental group	13.62	2.74			

Table no 4.4 shows the posttest knowledge scores comparison of mean, SD of the control and the experimental group. It reveals that, mean of posttest knowledge score of control group 8.76±3.04 is less than that of mean of posttest knowledge score of experimental groups 13.62±2.74. This indicates that mobile based education was effective on the knowledge regarding self-care activities among the senior citizens with diabetes mellitus residing in selected rural area.

Further, t' value is calculated to check whether the difference between control and experimental group knowledge score was significant. Tabulated 't' value was 1.99 at 0.05 level of significance and degree of freedom 69. The 'p' value was 0.0001 and calculated 't' value 10.00 was greater than the tabulated 't' value at a level of significance 0.05. Therefore, it proves statistically that mobile based education was effective on the knowledge regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area.

The effectiveness of the mobile based education on practice regarding the self- care activities among senior citizens with diabetes mellitus residing in selected rural area is described with mean, SD and 't' value is as follows,

Mean, SD and 't' value of posttest practice scores regarding self-care activities among senior citizen with diabetes mellitus.

n=140

	Mean	**SD**	**Unpaired 't' test**	**'t' table Value**	**'p' value**
Control group	46.64	4.33	11.82	1.99	0.00001
Experimental group	54.71	3.72			

This table shows the posttest practice scores comparison of mean, SD of the control and the experimental group. It reveals that, mean of posttest practice score of control group 46.64±4.33 is less than that of mean of posttest practice score of experimental group 54.71±3.72. This indicates that the mobile based education was effective on the practice regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area.

Further 't' value is calculated to check that whether the difference between control and experimental group practice score was significant. Tabulated 't' value was 1.99 at 0.05 level of significance and degree of freedom 69. The 'p' value was 0.0001 and calculated 't' value 11.82 was greater than the tabulated 't' value at a level of significance 0.05. Therefore, it proves statistically that the mobile based education was effective on the practice regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area.

Association between post-test knowledge and practice scores with selected demographic variables

n=70

S. N.	Demographic variables		Level of knowledge		Chi-square	'P' value	Infer e nce
			Inadequate	Adequate			
1.	Age in years	60-63	23	6	0.55	0.75	NS
		64-67	16	4			
		68-70	15	6			
2.	Gender	Male	34	7	1.87	0.17	NS
		Female	20	9			
3.	Education	Illiterate	25	5	4.6	0.2	NS
		Primary/Secondary	24	10			
		Higher secondary	4	2			
		Graduation and above	0	0			
4.	Occupation	Housewife	11	3	0.27	0.96	NS
		Farmer	27	9			
		Salaried	13	3			
		Self-owned business	3	1			
5.	Family income in rupees	<5000	0	0	5.33	0.14	NS
		5000-9999	22	11			
		10000-14999	21	2			
		>14999	11	3			
6.	Type of family	Nuclear	30	10	0.24	0.62	NS
		Joint	24	6			
		00- 03	15	5			

7.	Duration of DM in years	03 to 06	26	6	0.6	0.73	NS
		More than 06	13	5			
8.	Current status of DM treatment	Yes	26	10	1.01	0.31	NS
		No	28	6			
9.	Co-morbidities	Hypertension	20	5	1.12	0.77	NS
		Cardio-vascular disease	18	6			
		Respiratory disease	9	4			
		Other	7	1			

Table 4.6 shows that there was no significant association of posttest knowledge scores of the study participants with their selected demographic variables. Calculated chi-square value for age 0.55 and ‘p’ value 0.75 shows non-significant association. Calculated chi-square value for gender 1.87 and ‘p’ value 0.17 shows non-significant association. Calculated chi-square value for education 4.6 and ‘p’ value 0.2 shows non- significant association. Calculated chi-square value for occupation 0.27 and ‘p’ value

0.96 shows non-significant association. Calculated chi- square value for family income in rupees 5.22 and ‘p’ value 0.14 shows non-significant association. Calculated chi- square value for type of family 0.24 and ‘p’ value 0.62 shows non- significant association. Calculated chi-square value for duration of DM 0.6 and ‘p’ value 0.73 shows non-significant association. Calculated chi-square value for current status of DM treatment 1.01 and ‘p’ value 0.31 shows non-significant association. Calculated chi-square value for co-morbidities 1.12 and ‘p’ value 0.77 shows non-significant association.

Association of posttest practice scores regrading self-care activities among senior citizen with selected demographic variables (control group)

n=70

S. N.	Demographic variables		Level of practice		Chi-square	'P' value	Inference
			Good	Excel lent			
1.	Age in years	60-63	22	7	2.5	0.28	NS
		64-67	12	8			
		68-70	17	4			
2.	Gender	Male	32	9	1.34	0.24	NS
		Female	19	10			
3.	Education	Illiterate	22	8	4.63	0.2	NS
		Primary/Secondary	24	10			
		Higher secondary	5	1			
		Graduation and above	0	0			
4.	Occupation	Housewife	6	8	11.92	0.007	S
		Farmer	32	4			
		Salaried	10	6			
		Self-owned business	3	1			
5.	Family income in rupees	<5000	0	0	9.52	0.02	S
		5000-9999	26	7			
		10000-14999	16	21			
		>14999	9	5			
6.	Type of family	Nuclear	29	11	0.006	0.93	NS
		Joint	22	8			
7.	Duration of DM in	00- 03	15	5	0.06	0.96	NS

	years	03 to 06	23	9			
		More than 06	13	5			
8.	Current status of DM treatment	Yes	27	9	0.17	0.67	NS
		No	24	10			
9.	Co-morbidities	Hypertension	16	9	2.25	0.52	NS
		Cardio-vascular disease	19	5			
		Respiratory disease	8	5			
		Other	1	0			

Table 4.7 shows that there was no significant association of posttest practice scores of the study participants with their selected demographic variables, except occupation and family income in rupees. Calculated chi-square value for age 2.5 and ‘p’ value 0.28 shows non-significant association. Calculated chi-square value for gender 1.34 and ‘p’ value 0.24 shows non- significant association. Calculated chi- square value for education 4.63 and ‘p’ value 0.2 shows non-significant association. Calculated chi-square value for type of family 0.006 and ‘p’ value 0.93 shows non- significant association. Calculated chi-square value for duration of DM 0.06 and ‘p’ value 0.96 shows non-significant association. Calculated chi-square value for current status of DM treatment 0.17 and ‘p’ value 0.67 shows non-significant association. Calculated chi-square value for co-morbidities 2.25 and ‘p’ value 0.52 shows non- significant association whereas calculated chi-square value for occupation 11.92 and ‘p’ value 0.007 shows significant association and calculated chi-square value for family income in rupees 9.52 and ‘p’ value 0.02 shows significant association.

Association of posttest knowledge scores regrading self-care activities among senior citizen with selected demographic variables (experimental group)

n=70

S. N.	Demographic variables		Level of knowledge		Chi-square	'P' value	Inference
			Inadequate	Adequate			
1.	Age in years	60-63	3	16	0.14	0.93	NS
		64-67	6	24			
		68-70	4	17			
2.	Gender	Male	8	30	0.33	0.56	NS
		Female	5	27			
3.	Education	Illiterate	5	25	1.16	0.76	NS
		Primary/Secondary	6	27			
		Higher secondary	2	5			
		Graduation and above	0	0			
4.	Occupation	Housewife	2	10	2.71	0.43	NS
		Farmer	6	18			
		Salaried	2	21			
		Self-owned business	3	8			
5.	Family income in rupees	<5000	1	5	1.53	0.67	NS
		5000-9999	3	21			
		10000-14999	5	21			
		>14999	4	10			
6.	Type of family	Nuclear	9	29	1.43	0.23	NS
		Joint	4	28			
		00- 03	5	12			

7.	Duration of DM in years	03 to 06	5	29	1.75	0.41	NS
		More than 06	3	16			
8.	Current status of DM treatment	Yes	9	35	0.27	0.59	NS
		No	4	22			
9.	Co-morbidities	Hypertension	1	13	2.69	0.44	NS
		Cardio-vascular disease	7	21			
		Respiratory disease	3	18			
		Other	2	5			

Table 4.8 shows that there was no significant association of posttest knowledge scores of the study participants with their selected demographic variables. Calculated chi-square value for age 0.14 and 'p' value 0.93 shows non-significant association. Calculated chi-square value for gender 0.33 and 'p' value 0.56 shows non-significant association. Calculated chi-square value for education 1.16 and 'p' value 0.76 shows non-significant association. Calculated chi-square value for occupation 2.71 and 'p' value 0.43 shows non-significant association. Calculated chi- square value for family income in rupees 1.53 and 'p' value 0.67 shows non-significant association. Calculated chi-square value for type of family 1.43 and 'p' value 0.23 shows non- significant association. Calculated chi-square value for duration of DM 1.75 and 'p' value 0.41 shows non-significant association. Calculated chi-square value for current status of DM treatment 0.27 and 'p' value 0.59 shows non-significant association. Calculated chi- square value for co-morbidities 2.69 and 'p' value 0.44 shows non-significant association.

FINDINGS, DISCUSSION, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

The present study assesses the effectiveness of mobile based education on knowledge and practice regrading self-care activities among senior citizen with diabetes mellitus before implementation of interventions.

In the control group, 84.28% of the study participant had inadequate knowledge whereas 15.71% of the study participants had adequate knowledge before the intervention.

In the experimental group, 74.28% of the study participants had inadequate knowledge whereas 25.71% of the study participants had adequate knowledge before the intervention.

In the control group, 68.57% of the study participant had good self-care practice whereas 31.42% of the study participants had excellent self-care practice before the intervention.

In the experimental group, 70% of the study participant had good self-care practice whereas 30% of the study participants had excellent self-care practice before the intervention.

The study findings regarding comparison of the posttest mean of knowledge and practice among the control and experimental group revealed that, the mean of the knowledge score among the experimental group 13.62 is greater than that of mean of

the knowledge score 8.72 among the control group. The mean of the Practice score among the experimental group 54.71 is greater than that of mean of the practice score

46.64 among the control group.

Effectiveness of mobile based education on knowledge and practice regrading self-care activities among senior citizen with diabetes mellitus residing in selected rural area.

The present study reveals that, mean of posttest knowledge score of control group 8.76±3.04 was less than that of mean of posttest knowledge score of experimental groups 13.62±2.74. This indicates that the mobile based education was effective on the knowledge regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area.

Further tabulated 't' value was 1.99 at 0.05 level of significance and degree of freedom 69. The 'p' value was 0.0001 and calculated 't' value 10.00 was greater than the tabulated 't' value at a level of significance 0.05. Therefore, it proves statistically that the mobile based education was effective on the knowledge regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area. Further study findings revealed that, mean of posttest practice score of control group

46.64±4.33 is less than that of mean of posttest practice score of experimental group 54.71±3.72. This indicates that the mobile based education was effective on the practice regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area.

Further tabulated 't' value was 1.99 at 0.05 level of significance and degree of freedom 69. The 'p' value was 0.0001 and calculated 't' value 11.82 was greater than the tabulated 't' value at a level of significance 0.05. Therefore, it proves statistically that the mobile based education was effective on the practice regarding self-care activities among the senior citizen with diabetes mellitus residing in selected rural area. Hence the alternate hypothesis **H1: "**There was significant difference between control and experimental group, post-test knowledge and practice regarding self-care

activities among senior citizens with diabetic mellitus." was accepted.

Recommendations

- Replication of the study could be done with larger samples to validate and generalize the findings.
- A similar study can be done in another setting.
- The similar study can be replicated using quasi-experimental research design.
- A similar study can be replicated with other intervention to evaluate effectiveness on self-care activities.

Nursing Implication

Nursing Education

The mobile based education was found to be effective on the knowledge and practice regarding self-care activities among the senior citizens with the diabetes mellitus. Nurse educators need to have adequate knowledge regarding effective self-

care of diabetes mellitus and its management. The nurse educator must motivate the staff nurses and nursing students to teach patients regarding self-care of diabetes mellitus and its management.

Conclusion

The mobile based education was found effective in increasing and enhancing senior citizen's knowledge and practice regarding self-care activities. It can be used in hospital or home settings for patients teaching by nurses and nursing students.

1. American Diabetes Association. Standards of medical care in diabetes—2022. Diabetes Care. 2022;45(Suppl 1): S1–S264.
2. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. J Diabetes Metab Disord. 2013;12(1):14.
3. Franz MJ, Boucher JL, Rutten-Ramos S, VanWormer JJ. Lifestyle weight-loss intervention outcomes in overweight and obese adults with type 2 diabetes: a systematic review and meta- analysis of randomized clinical trials. J Acad Nutr Diet. 2017;115(9):1447-63.
4. Nelson ME, Rejeski WJ, Blair SN, et al. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. Med Sci Sports Exerc. 2007;39(8):1435-45.
5. Polonsky WH, Henry RR. Poor medication adherence in type 2 diabetes: recognizing the scope of the problem and its key contributors. Patient Prefer Adherence. 2016; 10:1299-307.
6. Bailey CJ, Aschner P, Del Prato S, et al. Individualized glycaemic targets and

pharmacotherapy in type 2 diabetes. Diab Vasc Dis Res. 2015;12(2):90-100.

7. Armstrong DG, Boulton AJ, Bus SA. Diabetic foot ulcers and their recurrence. N Engl J Med. 2017;376(24):2367-75.
8. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels: IDF; 2021.