

Effectiveness of Self Instructional Module on Knowledge Regarding Hypoglycemia and It's Management among Diabetic Clients

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How to cite this article:

Bhagyashree Ganeshrao Gaikwad, David Pascaline John, Lata Vinay Sukare/Effectiveness of Self Instructional Module on knowledge Regarding Hypoglycemia and It's Management among Diabetic Clients/Int J Practical Nurs. 2021;9(3):87-96.

Abstract

Background: Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces. Diabetes is an important public health problem, one of four priorities non communicable diseases (NCDs) targeted for action by world leaders. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. Diabetes mellitus is a major public health problem and is emerging as a pandemic. The number of diabetic patients in the world is estimated to reach more than 25 cores in 2010. India leads the world today with the largest number of diabetics followed by China and USA. It is the second most common chronic disease in children and accounts for 5-10% of all diagnosed cases of diabetes mellitus. India has an incidence of 10.6 cases/year/1, 00,000. Every fifth adult in Indian urban area is a diabetic.

Objectives: To assess the pre test knowledge regarding hypoglycemia and its management among diabetic clients and to associate the knowledge score with selected demographic variables.

Methodology: A pre experimental one group pre post test design was adopted for the study. It was conducted over 60 Diabetic client's selected by using non probability purposive sampling technique pre test was done using self structured questionnaire for knowledge after pre test researcher administered self instructional module on hypoglycemia and its management post test was done after seven days and analysis reveals that post test mean knowledge after administering self instructional module. The analysis reveals that post test mean knowledge score was higher 17.20 with SD of ± 3.74 when compared with pre test mean knowledge score value which was 9.45 with SD of ± 3.63 . The calculated t value 25.25 is greater than table value 2.00 at 0.05 level of significance. The calculated value are greater than table value at 0.05 level of significance, hence it is statistically interpreted that the self instructional module on knowledge regarding hypoglycemia among diabetic clients was found to be effective. Thus the H_1 is accepted and H_0 is rejected.

Analysis reveals that there is association of knowledge score with occupational status of the diabetic client while there was no association found between age, gender, area of residence, educational status, religion, known case of diabetes, taking medicines for diabetes, aware of hypoglycemia, source of information.

Conclusion: Analysis reveals that there is association of knowledge score with occupational status of the diabetic client while there was no association found between age, gender, area of residence, educational status, religion, known case of diabetes, taking medicines for diabetes, aware of hypoglycemia, source of information.

Keywords: Assess; Effectiveness; Self instructional module; Knowledge; Hypoglycemia; Diabetic clients.

Introduction

When you know a thing, to hold that you know it; and when you do not know a thing, to allow that you do not know it this is knowledge".

Diabetes mellitus is a chronic, progressive disease characterized by the body's inability to metabolize carbohydrates, fats, and proteins, leading to hyperglycemia. Diabetes mellitus is sometimes referred to as "high sugars" by both clients and health care providers. The notion of associating sugar with diabetes mellitus is appropriate because the passage of large amount of sugar laden urine is characteristic of poorly controlled diabetes mellitus. While hyperglycemia plays an important role in development of diabetes related complications. High levels of blood glucose are only one component of the pathologic process and clinical manifestations associated with diabetes mellitus.¹

Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves.² Type I results from the pancreas's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause is unknown. Type 2 DM begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The most common cause is excessive body weight and not enough exercise. Gestational diabetes is the third main form and occurs when pregnant women without a previous history of diabetes develop high blood sugar levels.³

Background and Need of the Study

E Andreoulakis, T Hyphantis, D Kandylis, and A Iacovides (2012) studied that, the prevalence in general, in patients with diabetes mellitus is regarded to be comparable to the general population, an increased prevalence of depressive disorders, often comorbid with anxiety, has been reported in patients with diabetes mellitus. The cooccurrence of depression in diabetes is attributed to a variety of factors, including the psychological and psychosocial impact of the disease, a potential common genetic susceptibility and common pathophysiological abnormalities involving neuroimmunological and neuroendocrinological pathways, as well as microvascular brain lesions due

to diabetes mellitus. However, issues concerning pathogenesis and causality of this high co-occurrence are not fully determined yet. Still, the presence of depression in patients with diabetes mellitus is of vast importance, as it is usually associated with poor disease control, adverse health outcomes and quality of life impairment. This article aims to provide a comprehensive review of epidemiological findings, clinical considerations and management strategies concerning depression in patients with diabetes mellitus.²⁵

A 2011 review looked at studies where they either examined how much vitamin D people were getting by measuring their vitamin D blood level or by administering a vitamin D supplement and then followed participants to see if they got T2D later in life. They found that people with higher vitamin D blood levels had a decreased chance of getting T2D later in life compared to those with the lowest levels in a 2012 review; researchers looked at studies examining how much vitamin D people were getting by measuring their vitamin D blood level. The researchers then followed participants to see if they got T2D later in life. People with the highest vitamin D blood levels had a 19% decreased chance of developing T2D compared to those with the lowest levels. In a 2013 review, researchers combined studies where they examined how much vitamin D people were getting by measuring their vitamin D blood level and then followed participants to see if they got T2D later in life. Participants with the highest vitamin D levels had a decreased risk of diabetes compared to those with the lowest vitamin D levels.²⁶

Mark wj, Strachan, Mrcp ianj. Deary, Phfiona m.e. Ewing, Mrcp Brian m. Frier md. (1997) et al. conducted retrospective study associated with type II diabetes cognitive dysfunction. The studies vary widely with respect to the nature of the diabetic populations studied and the psychological tests used. Thirteen studies demonstrated that the diabetic individuals performed more poorly in at least one aspect of cognitive function. The most commonly affected cognitive ability was verbal memory. Psychomotor ability and frontal lobe function were affected less consistently. The remaining six studies showed no difference in cognitive ability between subjects with type II diabetes and no diabetic control subjects, but none had adequate statistical power to detect a between group difference in cognitive ability of 0.5 of a standard deviation. These findings are consistent with type II diabetes being associated with an increased risk of cognitive dysfunction. However, the widespread differences in methodology between the studies should lead to a cautious interpretation of their conclusions. The etiology of any

cognitive decrement in type II diabetes is likely to result from an interaction between metabolic abnormalities intrinsic to diabetes, diabetes specific complications, and other diabetes related disorders.²⁷

Britta galling, md, Alexandra roldán, md, René e, Nielsen, md, phd (2016), studied that Antipsychotics used .Thirteen studies were included in the meta-analysis, including youth exposed to antipsychotics. Psychiatric controls, antipsychotic-exposed youth had significantly higher cumulative T2DM risk. And IRR. In multivariable meta-regression analyses of 10 studies, greater cumulative T2DM risk was associated with longer follow up. olanzapine prescription, and male sex. Greater T2DM incidence was associated with second generation antipsychotic prescription and less autism spectrum disorder diagnosis Although T2DM seems rare in antipsychotic exposed youth, cumulative risk and exposure-adjusted incidences and IRRs were significantly higher than in healthy controls and psychiatric controls. Olanzapine treatment and antipsychotic exposure time were the main modifiable risk factors for T2DM development in antipsychotic-exposed youth. Antipsychotics should be used judiciously and for the shortest necessary duration, and their efficacy and safety should be monitored proactively.²⁸

N Kumar and PK Sharma (2015), have conducted a community based cross sectional study in rural and urban slum areas of Delhi selecting a total of 98 diabetic patients diagnosed during the two community surveys and interviewed using pretested and predesigned questionnaire. In both urban and rural areas, majority were Hindu, married, literate and unemployed. Significantly more subjects in urban slum area than rural areas reported that they we are not taking any treatment for DM. In urban area patients told that it is a burden on their family while in rural area of the patients told that they have to squeeze money from the family expenditure to afford drugs.patients need to be made aware of the asymptomatic phase of DM. At the same time, efforts should be made to sensitize them about the importance of taking regular treatment and management.²⁹

Statement of the Problem

“A study to assess the effectiveness of self instructional module on knowledge regarding hypoglycemia and it's management among diabetic clients residing in selected areas of the city.”

Objectives

1. To assess the pre test knowledge regarding hypoglycemia and its management among

diabetic clients.

2. To assess post test knowledge regarding hypoglycemia and its management among diabetic clients.
3. To assess the effectiveness of self instructional module on knowledge regarding hypoglycemia and its management among diabetic clients.
4. To associate the knowledge score with selected demographic variables.

Operational Definition

Assess: In this study, it refers to estimate the knowledge of diabetic client's regarding hypoglycemia and its management.

Effectiveness: In this study effectiveness means improvement of knowledge of diabetic client's regarding hypoglycemia and its management.

Self instructional module: In this study it refers to systematically developed self learning material prepared by investigator to improve the knowledge of diabetic client regarding hypoglycemia and its management.

Knowledge: In this study Knowledge it refers to the information with regard to hypoglycemia and its management among diabetic client's in terms of correct responses to the items on structured knowledge questionnaire.

Hypoglycemia: Decreased blood glucose below 70mg /dl manifesting as tremor, sweating, weakness etc.

Diabetic clients: A person who is diagnosed as Diabetic.

Delimitation

This study is delimited to the clients who are diagnosed as diabetic.

Hypothesis

Hypothesis will be tested at 0.05 level of significance
H₀-There will be no significant difference between pre test and post test knowledge score regarding knowledge on hypoglycemia and its management among diabetic clients.

H₁-There will be significant difference between pre test and post test knowledge score regarding knowledge on hypoglycemia and its management among diabetic clients.

Conceptual Framework

The conceptual framework selected for the study was based on Orem's self care model.

Review of Literature

- I;** Literature related to diabetes.
- II;** Literature related to hypoglycemia and its management
- III;** Literature related to effectiveness of self instructional module.

Independent variable: The independent variable in the study is Self instructional module on hypoglycemia and its management.

Dependent variable: The dependent variable in this study is Knowledge regarding hypoglycemia and its management among diabetic client in selected areas of the city.

Methodology

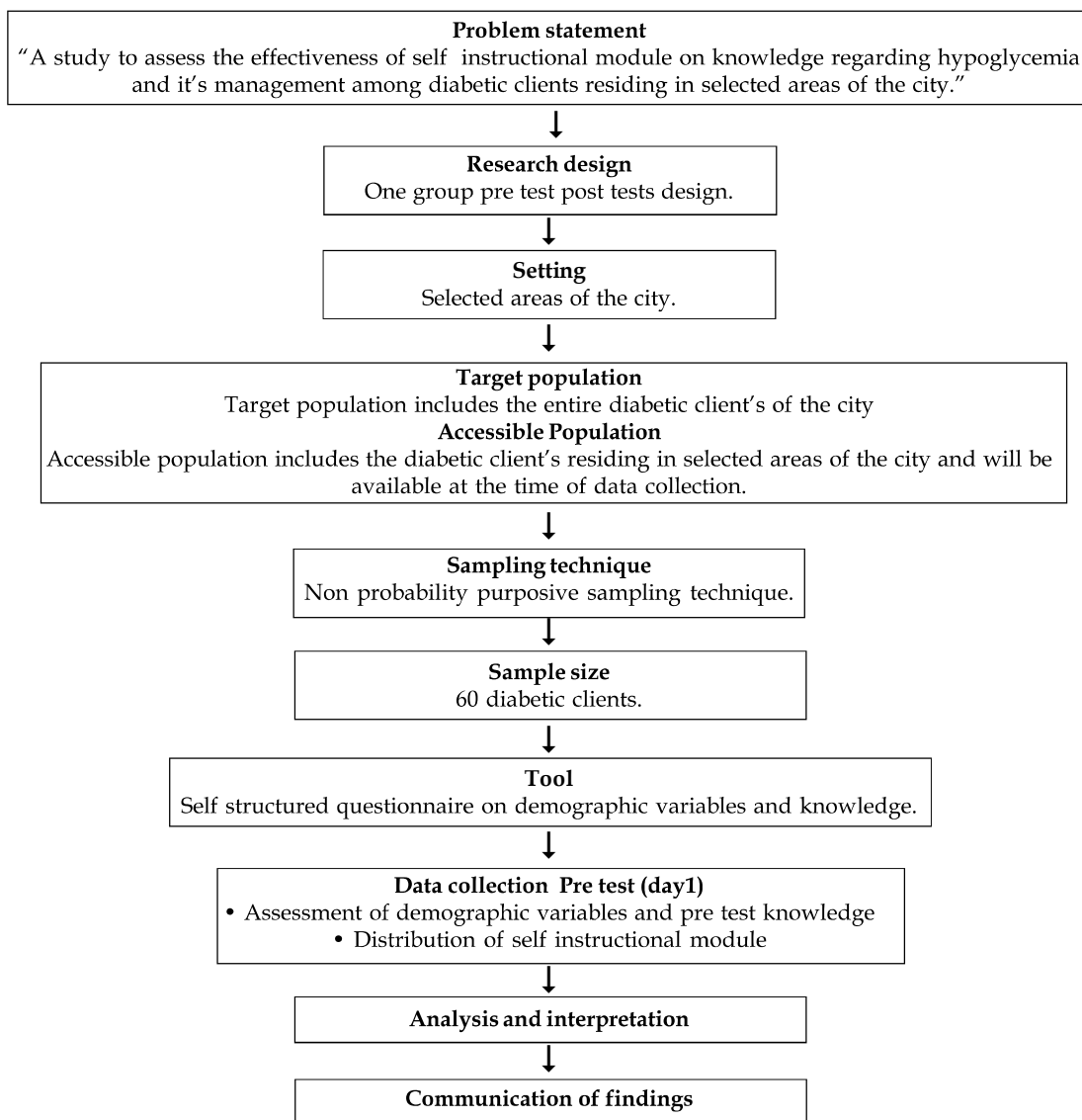
Research approach: In this study quantitative approach is used.

Research design: In this study the design used is pre experimental one group pre test post test research design.

Setting of the study: Selected areas of the city.

Demographic variable: Demographic variables includes, age, gender, area of residence, educational status, religion, occupational status, known case of diabetes since, taking medicines for diabetes, types of medications, aware of hypoglycemia, sources of information.

Fig. III 2: Schematic Presentation of Research Process.



Population

Target population

In this study the target population includes the entire diabetic client's of the city.

Accessible population

In this study the accessible population includes the diabetic client's residing in selected areas of the city and will be available at the time of data collection.

Sampling

Sample

In this study sample consisted of 60 Diabetic client's residing in selected areas of the city who were available during the period of data collection.

Sample size: 60

Sampling technique: Non probability purposive sampling technique was used

Sampling Criteria

Inclusive criteria

In this study inclusion criteria are; Diabetic clients who will be,

- 1 Available at the time of data collection.
- 2 Willing to participate in the study.
- 3 Able to understand and read English, Hindi, and Marathi language.

Exclusive criteria

In this study exclusive criteria were, Diabetic client's who,

- 1 Are in medical profession.
- 2 Are illiterate.

Description of Tools

Section A – Demographic variables

Section B – Self structured knowledge questionnaire

Section C– Preparation of self instructional module

Validity

Content and construct validity of tool was determined by 25 experts including medical surgical nursing subjects experts, medical professor, diabetologist, statisticians etc.

Reliability

Karl pearson correlation coefficient formula used The correlation coefficient 'r' of the questionnaire was 0.82, Hence the questionnaire was found to be reliable.

Pilot Study: Pilot Study was conducted from 15/11/16 to 22/11/16 for a period of 7 days The pilot study was feasible in terms of time, money, material and resources.

Data Collection

The main study data was gathered from 28th November 2016 to 26th December 2016. Permission was obtained from concerned authority. The samples were approached in small groups on a daily basis. Before giving the questionnaire self introduction was given by the investigator and the purpose of the study mentioned. Consent of the samples were taken. The pre test questionnaires were distributed to the samples and collected back after 36 minutes. After the pre test, the investigator administered the treatment (self instructional module on hypoglycemia and its management) after 7 days post test was taken.

Result

The analysis and interpretation is given in the following sections:

Section I

Table No. IV 1:Table showing frequency and Percentage wise distribution of diabetic clients according to their demographic variables.

Demographic Variables	Frequency (f)	Percentage(%)
Age in years		
18-30	1	1.7
31-43	5	8.3
44-56	22	36.7
57-69	23	38.3
70 and above	9	15
Gender		
Male	32	53.3
Female	28	46.7
Area of residence		
Urban	0	0
Rural	19	31.7
Semiurban	41	68.3
Educational Status		
Primary	16	26.7
Secondary	26	43.3
Higher Secondary	4	6.7
Graduate	12	20
Post Graduates	2	3.3
Others	0	0
Religion		
Hindu	48	80
Muslim	0	0
Christian	0	0
Buddhist	5	8.3
Others	7	11.7
Occupational Status		
Govt. Service	9	15

Table to be cont....

Table 1

Private Service	8	13.3
Business	6	10
Homemaker	24	40
Unemployment	0	0
Others	13	21.7
Known case diabetes since		
<5 years	38	63.3
5-10 years	11	18.3
10 years and more	11	18.3
Taking medicines for diabetes		
		n=58
Yes	58	96.7
No	2	3.3
Type of medications		
		n=58
Tablets	58	100
Insulin Injection	0	0
Both A and B	0	0
Others	0	0
Aware of Hypoglycemia		
Yes	58	96.7
No	2	3.3
Source of information		
		n =58
Family	0	0
Friends	0	0
Relatives	0	0
Health Worker	58	100
Mass Media	0	0
Others	0	0

Section-II This section deals with pretest knowledge of diabetic client on hypoglycemia and it's management.

Table No. 2: Table No. IV 2: Table showing frequency and percentage wise distribution of pre test knowledge score of diabetic client on hypoglycemia and its management.

Level of Knowledge	Score	Frequency	Percentage
Score in Pre test	Range	(f)	(%)
Poor	0-5	11	18.33
Average	6-10	28	46.67
Good	11-15	16	26.67
Very Good	16-20	5	8.33
Excellent	21-25	0	0

Table No. IV 5: Table showing effectiveness of self instructional module on knowledge score of pre test and post test of diabetic clients regarding hypoglycemia and its management.

Overall	Mean	Sd	Mean percentage	Calculated t-value	df	Table value	P-value	Level of significance
Pre Test	9.45	3.63	37.80	25.25	59	2.00	0.0001*HS	P<0.05
Post Test	17.20	3.74	68.80				p<0.05	Significant

HS-Highly Significant n=60

Section III: This section deals with post test knowledge of diabetic client on hypoglycemia and it's management .

Table No. IV- 3: Showing frequency and percentage wise distribution of post test knowledge score of diabetic client on hypoglycemia and its management.

Level of Knowledge	Score	Frequency	Percentage
Score in Post Test	Range	(f)	(%)
Poor	0-5	0	0
Average	6-10	4	6.67
Good	11-15	15	25
Very Good	16-20	31	51.67
Excellent	21-25	10	16.67

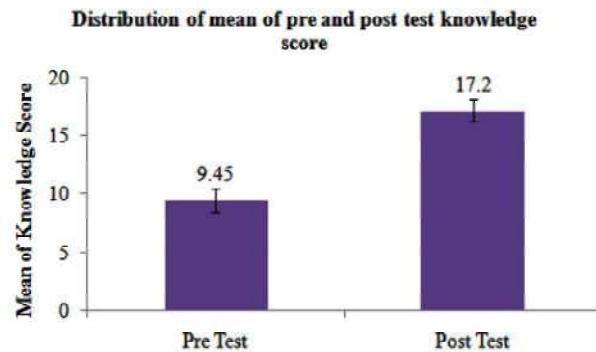
Section IV: This section deals with comparison of pre test and post test knowledge score of diabetic client on hypoglycemia and its management.

Table No. IV- 4: Table showing comparison of pre test and post test knowledge score of diabetic client on hypoglycemia and its management.

Level of knowledge Score in Post Test	Score Range	Pre Test		Post Test	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor	0-5	11	18.33	0	0
Average	6-10	28	46.67	4	6.67
Good	11-15	16	26.67	15	25
Very Good	16-20	5	8.33	31	51.67
Excellent	21-25	0	0	10	16.67

Section V: This section deals with effectiveness of self instructional module on knowledge score of pre test and post test of diabetic clients regarding hypoglycemia and its management.

Fig. No. IV-14: Bar diagram representing effectiveness of self instructional module on knowledge score of pre test and post test of diabetic clients regarding hypoglycemia and it's management.



Section -V

Association of knowledge score with selected demographic variables.

Table No. IV-6: Table showing association of post knowledge score regarding hypoglycemia and its management in relation to demographic variables. n=60

Demographic variables	Calculated values			Df	Table value	Level of P<0.05	Significance
	t value	f value	p value				
Age in yrs	—	2.19	0.08	4,55	2.53	p> 0.05	NS
Gender	0.72	—	0.46	58	2.00	p> 0.05	NS
Area of residence	0.13	—	0.89	58	2.00	p> 0.05	NS
Educational Status	—	2.04	0.10	4,55	2.53	p> 0.05	NS
Religion	—	1.42	0.24	2,57	3.15	p> 0.05	NS
Occupational status	—	3.57	0.012	4,55	2.53	P<0.05	S
Known case of diabetes	1.23	—	0.22	58	2.00	p> 0.05	NS
Medications taken for diabetes	1.23	—	—	58	2.00	p> 0.05	NS
Awareness of hypoglycemia	0.45	—	0.64	58	2.00	p> 0.05	NS
Source of information	—	0.28	0.75	2,57	3.15	p> 0.05	NS

KeyS: Significant NS: Not significant

Above table reveals that there is association of knowledge with occupation of diabetic client and none of the other demographic variables were associated with knowledge score.

Discussion

A study was conducted in Bangalore to assess the effectiveness of self instruction module on the knowledge of 30 purposively selected diabetic patients regarding management of hypoglycemia. The significance of difference between the mean pre-test and post-test knowledge score was computed. It showed that the obtained 't' value [8.1] was significant at 0.05 level. The findings of the study revealed that the mean post-test knowledge score [23.56] was apparently higher than the mean pre-test score [17.33] indicating that the SIM was effective.⁶²

Present study reveals that many of the diabetic clients was in age group of 44-69. And almost all 60

samples were on oral hypoglycemic tablets. More ever out of 60 samples, 58% were aware of hypoglycemia. also it is found that self instructional module was effective in improving knowledge of diabetic client regarding hypoglycemia and it's management. In present study there was association found between occupation and knowledge score of diabetic clients however no similar study was found in literature.

Implication of the Study

The findings of the study have implications for nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice

- When professional liability is recognized, it defines the parameters of the profession and the standards of professional conduct, nurses should therefore enhance their professional knowledge.

- The self instructional module can be used for imparting knowledge regarding various aspects of hypoglycemia and it's management .
- Self instructional module would serve as a ready reference material for the health team members. The information is particularly useful for the nurses for educating the patients about the hypoglycemia and it's management.
- The study will help the nurses for coordinating health care services to health care professionals.
- The tool and technique used has added to the body of knowledge and can be used for further references.

Limitation

- 1 This study was limited to the clients who are diagnosed as diabetic.
- 2 The sample size was small to generalized the findings of the study.
- 3 The study was limited to measure the knowledge of the diabetic clients about hypoglycemia and it's management.
- 4 The tool for data collection was prepared by investigator herself. The standardized tool was not used.

Nursing Education

- Nurse who are up to date with the knowledge about hypoglycemia and it's management are the better person to impart the knowledge to the nursing student which will ultimately update the knowledge about hypoglycemia and it's management.
- Now a days, much emphasis is given on comprehensive care in the nursing curriculum. So this study can be used by nursing teachers as an informative illustrations for nursing students.
- Self instructional module could help educators to use it as a tool for teaching.
- Students must be given clinical field assignment, in which they must be given opportunity to interact with people and create awareness regarding hypoglycemia and it's management among diabetic client.

Recommendations

- 1 A similar study can be replicated on a larger population.
- 2 A study may be conducted to evaluate the effectiveness of planned teaching programme on hypoglycemia and it's management .
- 3 A Comparative study can be done to assess the knowledge of diabetic client regarding hypoglycemia and its management in rural and urban area.
- 4 A description study can be conducted on the awareness of hypoglycemia and it's management among nursing students.
- 5 A study may be conducted to evaluate the effectiveness of video assisted teaching programme on hypoglycemia and it's management among diabetic client.

Nursing Administration

- Findings of the study can be used by the nursing administrator to identify the policies and plans for providing education to the staff nurses and health professionals.
- It would help the nursing administrator to be plan and organize in giving continuing education to the nurses and others to update and apply the knowledge of hypoglycemia and it's management.
- The result of the study contributes to the body of knowledge of nursing .

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Nursing Research

- The finding of the study have added to the existing body of the knowledge on hypoglycemia and it's management. Which will enhance the knowledge and would help to keep updated.
- Others researchers must utilize the suggestions and recommendations for conducting further study.

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