

Original Research Article

Knowledge regarding identification and management of hypoglycemia among patients with diabetes mellitus in selected community of Bellary district

M. Vijaya Lakshmi*

Department of Community Health Nursing, O. P. Jindal College of Nursing, Toranagallu, Karnataka, India

Received: 08 February 2024

Revised: 05 April 2024

Accepted: 06 April 2024

***Correspondence:**

Dr. M. Vijaya Lakshmi,

E-mail: sreevijaya1986@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Diabetes is pandemic in both developed and developing countries. In India alone, the prevalence of diabetes is expected to increase from 31.7 million in 2000 to 79.4 million in 2030.

Methods: The approach used for this study was descriptive survey approach. Structured interview schedule consists of two sections i.e. Step-I: Socio-demographic variables and Step-II: Structured knowledge questionnaire.

Results: The present study reveals that the knowledge level regarding identification and management of hypoglycemia. Majority 68.3% (n=60) of the subjects had moderate knowledge and remaining 31.7% (n=19) had inadequate knowledge and no subjects had adequate knowledge. The mean score is 21.97 with a mean percentage of 54.92 with a standard deviation of 2.681 before providing information booklet.

Conclusions: There is an urgent need to update their knowledge on identification and management of hypoglycemia so their further complication can be prevented by identifying in early stage.

Keywords: Diabetes, Hypoglycaemia, Knowledge

INTRODUCTION

Health is an ongoing process, a way of life, through which a person develops and encourage every aspect of the body, mind and feeling to inter relate harmoniously as much as possible, perception about health varies according to an individual's previous experience, expectation of self-age and socio-culture influences.¹

The increase in non-communicable is a concern globally of all the non-communicable diseases diabetes and cardiovascular diseases lead to list. Diabetes represents a spectrum of metabolic disorders, which has become a major health challenge worldwide. The unprecedented economic development and rapid urbanization in Asian

countries, particularly in India has led to shift in health problems from communicable to non-communicable diseases.²

Diabetes is pandemic in both developed and developing countries. In 2000, there were an estimated 175 million people with diabetes worldwide and by 2030; the projected estimate of diabetes is 354 million. The greatest relative rise is predicted in the developing countries of the Middle Eastern Crescent, Sub-Saharan Africa and the Indian Subcontinent. By the year 2030, over 85 percent of the world's diabetic patients will be in developing countries. In India alone, the prevalence of diabetes is expected to increase from 31.7 million in 2000 to 79.4 million in 2030.³

Hypoglycemia is an acute syndrome that occurs when the blood glucose levels falls to below from the normal. The term hypoglycemia literally means under sweet blood. The most common forms of hypoglycemia as a complication of treatment of diabetes mellitus with insulin or oral medication and which may endanger patients' lives as well as other person lives. It is a common emergency in hospital practice.⁴

Hypoglycemia is a common feature of the patients with diabetes mellitus. The condition called hypoglycemia is literally translated as low blood sugar. Hypoglycemia occurs when blood sugar or blood glucose concentration fall below a level necessary to properly support the body's need for energy and stability throughout its cell. This may result in a variety of symptoms including clumsiness, trouble talking, and confusion, loss of consciousness, seizure or death. A feeling of hunger, sweating, shakiness and weakness may also be present. Symptoms typically common and quickly. The blood glucose level at which client have manifestation of hypoglycemia varies, but they usually do not occur until blood glucose level is less than 50-60 mg/dl.⁵

Hypoglycemia is dangerous because glucose is the primary energy substrate of the brain. Its absence produces altered function, tissue damage and death if the deficit is prolonged. The brain is vulnerable to hypoglycemia because it cannot utilize circulating free fatty acids as an energy source, in contrast to other tissues. Some common causes of hypoglycemia is an overdose of insulin or less commonly a sulfonylurea oral medication, overexertion without additional carbohydrate compensation, nutritional and fluid imbalances causes by nausea and vomiting, alcohol intake and a missing or a delayed meal.⁶

Hypoglycemia can also occur in people who do not have diabetes which are of two types, reactive hypoglycemia and fasting hypoglycemia which have similar manifestation as that of diabetic related hypoglycemia. Symptoms of hypoglycemia include hunger, sweating, shakiness, dizziness, light headedness, sleepiness, confusion, difficulty speaking, anxiety and weakness. When recognized early, hypoglycemia can be prevented with appropriate medical care.⁷

The patients who are at risk to develop hypoglycemia should be aware of controlling measures in order to prevent its complications. It can be treated quickly and easy by eating or drinking a small amount of glucose, rich food. If left untreated, hypoglycemia can get worse and cause confusion, clumsiness or fainting. Severe hypoglycemia can lead to seizures, coma and even death. The primary goals of treatment for the patients include controlling blood glucose levels and preventing acute and chronic complications. This knowledge alerts the clients to be awareness in the monitoring of blood glucose level and the clients can be develop self-care management skills.⁸

Diabetes is a global public health problem, a chronic disease and is now growing as an epidemic in both developed and developing countries. Around 150 million people suffer from diabetes in the world, out of which 35 million are Indians; India leads the world today, with the largest number of cases of diabetes in any given country. The World Health Organization (WHO) estimated that 19.4 million individuals were affected by this disease in India; it is likely to go up to 57.2 million by the year 2025.⁹

Diabetes is fast becoming the epidemic of the 21st century. Over the past 30 years, the status of diabetes has changed from being considered as a mild disorder of the elderly to one of the major causes of morbidity and mortality affecting the youth and middle-aged people. It is estimated that 20% of global burden of diabetes is in South East Asian Region (SEAR), which will triple to 228 million by the year 2025 from the current 84 million.¹⁰ The present study was conducted to assess knowledge regarding identification and management of hypoglycemia among patients with diabetes mellitus in selected community of Bellary district.

METHODS

An non experimental descriptive design was used to assess the knowledge regarding identification and management of hypoglycemia among patients with diabetes mellitus in selected hospital of Bellary district, among 60 samples chosen using a non-probability purposive sampling procedure. Data collection went up to one from 14th November to December 18th 2023. The research variable of the study is knowledge of diabetes mellitus patients regarding identification and management of hypoglycemia and demographic variables such as age, gender, religion, type of family, marital status, educational status, occupation, income, dietary pattern, habit, suffering from diabetes mellitus, and sources of information. Structured interview schedule consists of two sections i.e. Step-I: Socio-demographic variables of the diabetes mellitus patients. Step-II: Structured knowledge questionnaire consists of the questionnaire with 40 items related to general concept, causes and risk factors, signs and symptoms, diagnosis and complication, identification of hypoglycemia, and management of hypoglycemia and the data obtained was analyzed using descriptive and inferential statistics. The study was approved by the Institutional Ethics Committee of Jindal College of Nursing, Toranagallu.

Inclusion criteria

Diabetes mellitus patients who are willing to participate in the study, diabetes mellitus patients who are available at the time of data collection, and diabetes mellitus patients who are able to communicate in English and Kannada were included.

Exclusion criteria

Diabetes mellitus patients who are critically ill, and diabetes mellitus patients who are unconscious were excluded.

RESULTS

The demographic characteristics of diabetes mellitus patients

The distribution of the subjects by age majority of diabetes mellitus patients (35%) belongs to 55-65 years and >65 years of age respectively and only (11.7%) belongs to 35-44 years (Figure 1).

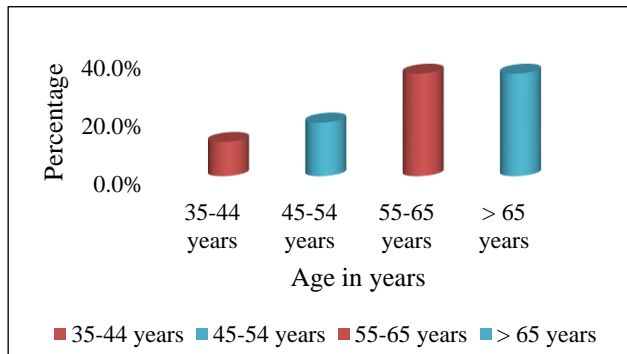


Figure 1: Percentage distribution of diabetes mellitus patients by age.

The distribution of the subjects by gender shows that (50%) of diabetes mellitus patients were males and (50%) were females.

Majority of diabetes mellitus patients (31.7%) belongs to Christian religion and only (15%) belongs to other religion.

Majority of diabetes mellitus patients (41.3%) belongs to nuclear family and only (30%) belongs to extended family.

The distribution of the subjects by marital status shows majority of diabetes mellitus patients (86.7%) were married and only (1.7%) were divorcee.

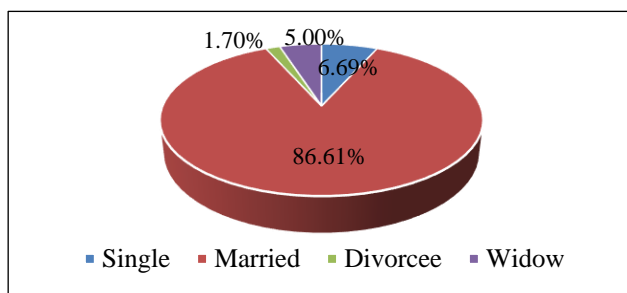


Figure 2: Percentage distribution of diabetes mellitus patients according to marital status.

Majority of diabetes mellitus patients (40%) were completed secondary education and only (6.7%) were illiterate.

Majority of diabetes mellitus patients (33.3%) were doing private job and only (13.3%) were housewife.

Majority of diabetes mellitus patients (55%) income was above Rs. 15000 and only (5%) income was below Rs. 5000.

Majority of diabetes mellitus patients (68%) were non vegetarian and only (31.7%) were vegetarian.

Majority of diabetes mellitus patients (65%) were not having any habits and only (11.7%) were having alcohol, smoking and chewing tobacco habits respectively.

Majority of diabetes mellitus patients (33.3%) were suffering from 5-10 years and only (20%) were suffering from 15 years and above from diabetes mellitus.

The distribution of the subjects by source of information majority of diabetes mellitus patients (45%) was having other sources of information and only (10.0%) were having information from magazines.

Knowledge level of diabetes mellitus patients

Table 1 reveals the distribution of diabetes mellitus patients according to the knowledge level regarding identification and management of hypoglycemia. Majority 68.3% (n=41) of the subjects had moderate knowledge and remaining 31.7% (n=19) had inadequate knowledge and no subjects had adequate knowledge.

Table 1: Knowledge level of diabetes mellitus patients (n=60).

Knowledge level	Frequency	Percentage
Inadequate knowledge	19	31.7
Moderate knowledge	41	68.3
Adequate knowledge	0	0.0
Total	60	100

Table 2 reveals the assessment of knowledge among diabetes mellitus patients in terms of knowledge scores regarding identification and management of hypoglycemia. In general information the mean score is 5.93 with a mean percentage of 74.12% and a standard deviation of 1.163. In the aspect of causes and risk factors the mean score is 4.13 with a mean percentage of 82.6% and a standard deviation of 0.747. In signs and symptoms, the mean score is 4.73 with a mean percentage of 67.57% and a standard deviation of 1.023. In the aspect of diagnosis and complication the mean score is 6.48 with a mean percentage of 81% and a standard deviation of 0.567. In identification of hypoglycemia aspect the mean score is 4.58 with a mean percentage of 76.33% and a

standard deviation of 0.850. In management of hypoglycemia aspect the mean score is 3.55 with a mean

percentage of 59.4% and a standard deviation of 0.594.

Table 2: Mean, mean percentage and standard deviation on knowledge of diabetes mellitus patients (n=60).

Knowledge aspects	No. of items	Mean	SD	Mean %
General information	8	5.93	1.163	74.12
Causes and risk factors	5	4.13	0.747	82.6
Signs and symptoms	7	4.73	1.023	67.57
Diagnosis and complication	8	6.48	0.567	81
Identification of hypoglycemia	6	4.58	0.850	76.33
Management of hypoglycemia	6	3.55	0.594	59.16

Table 3 reveals the diabetes mellitus patient's overall knowledge on identification and management of hypoglycemia. The mean score is 21.97 with a mean percentage of 54.92 with a standard deviation of 2.681 before providing information booklet.

Table 3: Overall knowledge scores on identification and management of hypoglycemia.

Questions	Mean	SD	Mean %
Overall knowledge	21.97	2.681	54.92

Association of the knowledge scores of diabetes mellitus patients with the selected demographic variables

It is evident that the obtained χ^2 value is greater than the table value at 0.05 levels of significance. Therefore, there is significant association between selected demographic variables such as religion, education and income with knowledge scores of diabetes mellitus patients.

It is evident that the obtained χ^2 value is less than the table value at 0.05 levels of significance. Therefore, there is no significant association between selected demographic variables such as age, gender, occupation, type of family, marital status, dietary pattern, habits duration of diabetes mellitus, and source of information with knowledge scores of diabetes mellitus patients.

DISCUSSION

Diabetes mellitus patient's majority 68.3% (n=41) of the subjects had moderate knowledge and remaining 31.7% (n=19) had inadequate knowledge and no subjects had adequate knowledge. These findings were similar to the study conducted by Hussaini, (2023) knowledge regarding hypoglycemia and its management among patients with insulin-requiring diabetes mellitus in Al-Ahsa, Saudi Arabia.¹¹ Study participants have excellent knowledge about hypoglycemia, and this can be attributed to the participants' high level of education and reliance on doctors, social media, and booklets or pamphlets as the main sources of information about hypoglycemia. Nevertheless, some information about hypoglycemia complications and management is deficient among our

participants. This issue should be addressed and improved in our daily practice.

These results were in line with research by Shriram et al (2015), which found that patients with type 2 diabetes mellitus at a South Indian tertiary care hospital had similar knowledge of hypoglycemia and its contributing variables.¹² Research indicated the type 2 diabetic patients in the study had good knowledge of the symptoms, preventative measures, and management of hypoglycemic episodes; however, there were gaps in their understanding of critical concepts such as precipitating factors, target levels, etc., which healthcare professionals should address through routine educational initiatives.

The mean score of diabetes mellitus patients is 21.97 with a mean percentage of 54.92 with a standard deviation of 2.681 before providing information booklet. These findings were similar to the study conducted by Thenmozhi et al, (2018) knowledge on hypoglycemia among patients with diabetes mellitus.¹³ Study findings emphasized that majority of the patients with diabetes mellitus do not have the knowledge on hypoglycemia. The health-care professional has an important role in educating diabetics on hypoglycemia so that hypoglycemic episodes and morbidity could be reduced or prevented. The research by Sakyi et al (2023), "Factors associated with knowledge and hypoglycemia experience among patients with diabetes mellitus in Ghana: A cross-sectional study," produced results that were comparable to these.¹⁴ According to the study's findings, over half (52.7%) of the participants knew very little about hypoglycemia. In addition, 52.9% of diabetics reported having hypoglycemia. Individuals who fell into the 55-64 and 65-80 age categories, were retired, had been diagnosed with diabetes for more than 20 years or for at least 11-20 years, drank alcohol, and had sufficient knowledge were all independent predictors of hypoglycemia.

This study has few limitations. Study was conducted in specific geographic area imposes limits on generalization. The findings could be generalized only to the population which fulfilled the criteria in the study. The study limited to assessment of Knowledge. The sample was limited to

60 only. Long-term follow-up could not be carried out due to time constraints.

CONCLUSION

The present study concludes that diabetes mellitus patients lack in recognizing the signs of hypoglycemia and there is a need to update their knowledge on managing hypoglycemia in their home setting so that getting into hypoglycemia coma can be prevented.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Freibothe I. Acute hypoglycemia. *MMW Fortschr Med.* 2022;164(9):44-7.
2. Moheet A, Chan CL, Granados A, Ode KL, Moran A, Battezzati A. Hypoglycemia in cystic fibrosis: Prevalence, impact and treatment. *J Cyst Fibros.* 2019;18(Suppl 2):S19-24.
3. Amiel SA. The consequences of hypoglycaemia. *Diabetologia.* 202;64(5):963-70.
4. Amiel SA, Aschner P, Childs B, Cryer PE, de Galan BE, Frier BM, et al. Hypoglycaemia, cardiovascular disease, and mortality in diabetes: epidemiology, pathogenesis, and management. *Lancet Diabet Endocrinol.* 2019;7(5):385-96.
5. Svalastog AL, Donev D, Kristoffersen NJ, Gajović S. Concepts and definitions of health and health-related values in the knowledge landscapes of the digital society. *Croat Medi J.* 2017;58(6):431.
6. Broz J, Brozova K. Hypoglycemia communication in primary care. *J Gen Intern Med.* 2021;36(8):2473.
7. Pilla SJ. Hypoglycemia communication in primary care. *J Gen Intern Med.* 2021;36(8):2474.
8. Criner KE, Kim HN, Ali H, Kumar SJ, Kanter JE, Wang L, et al. Hypoglycemia symptoms are reduced in hospitalized patients with diabetes. *J Diab Complicat.* 2021;35(10):107976.
9. Porcaro L. Hypoglycemia: identification, prevention, and treatment. *Home Healthc Now.* 2023;41(6):338-40.
10. Muneer M. Hypoglycaemia. *Adv Exp Med Biol.* 2021;1307:43-69.
11. Al Hussaini H, Alismael A, Alquraini M, Alhabdan T, Alramadan H, Alqattan J, et al. Knowledge regarding hypoglycemia and its management among patients with insulin-requiring diabetes mellitus in Al-Ahsa, Saudi Arabia. *Cureus.* 2023;15(10):e47257.
12. Shriiraam V, Mahadevan S, Anitharani M, Jagadeesh NS, Kurup SB, Vidya TA, et al. Knowledge of hypoglycemia and its associated factors among type 2 diabetes mellitus patients in a Tertiary Care Hospital in South India. *Ind J Endocrinol Metabol.* 2015;19(3):378-82.
13. Thenmozhi P, Vijayalakshmi M. Knowledge on hypoglycemia among patients with diabetes mellitus. *As J Pharmac Clin Res.* 2018;11(1):236-9.
14. Sakyi SA, Opoku S, Senu E, Korsah EE, Effah A, Baidoo BT, et al. Factors associated with knowledge and hypoglycemia experience among patients with diabetes mellitus in Ghana: A cross-sectional study. *Publ Heal Challen.* 2023;2(4):e130.

Cite this article as: Lakshmi MV. Knowledge regarding identification and management of hypoglycemia among patients with diabetes mellitus in selected community of Bellary district. *Int J Community Med Public Health* 2024;11:xxx-xx.