

Assessment of the Knowledge and Self- Care Practice on Hypoglycemia among Patients with Diabetic Mellitus Attending Medical Opd at Smch

Cecyli C^{1*}, Preethi K², Priyadarsini A³

^{1*} Department of Medical and Surgical Nursing, Saveetha College of Nursing, SIMATS, Thandalam, Chennai, Tamil Nadu, India.

² Saveetha College of Nursing, SIMATS, Chennai, India.

³ Department of Child Health Nursing, Saveetha College of Nursing, SIMATS, Thandalam, Chennai, Tamil Nadu, India.

*Corresponding Author :

cecylichandrasekaran1407@gmail.com

ABSTRACT

Introduction: Hypoglycemia is a clinical emergency that needs to be recognized and treated promptly to avoid organ damage and death. Knowledge of hypoglycemia prevention is an essential step in self-care practices due to the fact knowledgeable individuals are much more likely to practice hypoglycemia prevention. Prevention of hypoglycemia relies on adequate awareness and right self-care.

Objectives: To evaluate the level of knowledge and to self-care practice of hypoglycemia with their selected demographic variables among diabetic patients.

Methods: A cross sectional descriptive research design was adopted with hundred samples who met the inclusion criteria in the hospital setting. Self-structured questionnaire method was used to acquire the data. Data have been through descriptive and inferential statistics.

Result: Of 100 samples, 76(76%) had adequate knowledge and 63(63%) had good self-care practice on hypoglycemia. Spearman's correlation showed positive relationship between knowledge and self-care practice of hypoglycemia (r value = 0.720, $p < 0.001$). In respect to level of knowledge, there was a significant association noted among age, education, occupation, income, religion, marital status, family history and with regards to self-care practice along with all variables including gender is significant at $p < 0.05$.

Conclusion: This study result emphasized that majority of the diabetic patients had adequate knowledge and good self-care practice on hypoglycemia. Enlightening the patients further with regular self-monitoring of blood glucose level and obtain medical guidance and support may help the patients to stay fit.

Keywords

Knowledge, Self-care practice, Hypoglycemia, Diabetes mellitus, Diabetic Patients

Imprint

Cecyli C, Preethi K, Priyadarsini A. Assessment of the Knowledge and Self- Care Practice on Hypoglycemia among Patients with Diabetic Mellitus Attending Medical Opd at Smch. *Cardiometry*; Issue 23; August 2022; p. 103-110; DOI: 10.18137/cardiometry.2022.23.103110; Available from: <http://www.cardiometry.net/issues/no23-august-2022/assessment-knowledge-self-care-practice>

INTRODUCTION

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycaemia due to insufficient insulin secretion, inadequate insulin action, or both (World Health Organization [WHO], 2016) (1). According to the International Diabetes Federation, more than 382 million people (8.3%) worldwide have diabetes, which is expected to increase to more than 592 million by 2035. China and India lead the way. the world in terms of number of cases. For example, an estimated 98.4 million adults in China and 65.1 million adults in India have diabetes (2). Insufficient insulin secretion can lead to diabetes. The three most common types of diabetes are type 1 diabetes (DM1), type 2 diabetes (DM2), and gestational diabetes (1). In 2000, about 171 million people worldwide had diabetes; By 2011, that number had grown to more than 366 million people, and that number is expected to grow to more than 552 million by 2030 [1].

A systematic review and meta-analysis in patients with type II diabetes reported that the prevalence of mild, moderate, and severe hypoglycemia was 45% and 6%, respectively [3]. Another multicenter study to evaluate the incidence and predictors of hypoglycemia reported that 83.0% of type I diabetic patients and 46.5% of type II diabetic patients had hypoglycemia. [4] Hypoglycemia is defined as "abnormally low blood sugar (<70 mg/dl)" and is one of the acute complications of diabetes [2]. Symptoms of low blood sugar vary from person to person and change over time. People with low blood sugar may sweat, shiver, feel hungry and anxious at initial period. Difficulty walking, weakness, impaired vision; Personality changes, confusion, and loss of consciousness or convulsions may be observed [5].

Hypoglycaemic events are the most common side effects of insulin and stomach upset caused by oral hypoglycemic agents. 60.3% of patients did not adhere to routine glycemic control [6]. Multiple reports indicate that different drugs such as metformin and rosiglitazone have broad-spectrum side effects, including weight gain, hypoglycemia, and risk of coronary heart disease [7]. A good understanding of hypoglycemia is positively correlated with good hypoglycemia prevention practices [8]. The goal of self-care is to achieve optimal glycemic control and avoid complications. Regular exercise, good nutrition practices, daily foot care practices, adherence to medication regimens, and management of hypoglycemic episodes are all examples of such activities [9].

This study aimed to determine the level of understanding and practice of hypoglycemia self-management in patients with diabetes, in order to predict the latent state of knowledge and maintain the patient's ability to self-manage hypoglycemia.

METHODS AND MATERIALS

A quantitative research approach with a cross-sectional descriptive study design was used to conduct the study in medical OPD at SMCH. A sample of 100 patients was selected using convenience sampling technique. The sampling criteria were adult diabetic patients aged 45-70 years with a diagnosis of type 1 and type 2 diabetes for more than one year and the patient was being treated with hypoglycemic agents or insulin or both within the past year in OPD under medical consultation. People with mental disorders, pregnant women with gestational diabetes were excluded. The data collection phase was performed with prior authorization from the SMCH department head, and ethical permission was obtained from the Institutional ethics committee. The purpose of the study was explained to the patients and informed written consent was obtained from them. One instrument consists of part A demographic and clinical variables and part B has a self-structured knowledge assessment questionnaire consisting of 20 questions. Part C is a self-structured personal practice assessment questionnaire consisting of 20 questions that are evaluated using a rating scale with the options never = 0, sometimes = 1 and always = 2. Descriptive and inferential was used for data analysis. Spearman's correlation was used to find an association between knowledge and practice of self-care for hypoglycemia, and chi-square was used

to relate self-care knowledge and practice with selected demographic variables.

RESULT AND DISCUSSION

Section A: Distribution of demographic characteristics

The total number of participants is 100. Among every 100 people, 48% are under 51-60 years old, and 57% are women the prominent educational status is 35% of secondary education. Most of the participants are private employees (33%), and 36% of participants earn less than Rs. 5000/-. Majority of Hindu participants participated in study (52%). Among the participants, 75% were married and 77% did not eat vegetarian food. 54% of the participants had no family history of diabetes. 66% of the participants had no bad behavior. Regarding the presence of comorbidities, 85% of participants had high blood pressure, 67% of participants had type 2 diabetes, and 44% of participants had blood glucose levels below 80 mg/dl. 56% of participants had diabetes \leq 5 years. 62% of the participants followed the OHS treatment method, and 53% of the participants took the drug twice a day. 63% of the participants had a history of hypoglycemia, as shown in Table 1.

Table 2 shows the knowledge about hypoglycemia. Of 100 samples, 76 (76%) samples have adequate knowledge about hypoglycemia, 24 (24%) are inadequate and for the practice of self-care, 63 of 100 samples (63%) had a good self-care practice and 37 (37%) had poor self-care practice.

Similarly, a study by Mohammad Zeya Ansari et al. (2020) evaluated knowledge and attitudes about hypoglycemia in diabetic patients showed that 78.5% of the 130 patients had good knowledge. [10] Naif Mohammed Albaqami (2018) assessed knowledge of hypoglycemia in patients with type 2 diabetes. Of the 386 participants, 61.4% had a good knowledge of hypoglycaemia [11]. Therefore, the results of one study are consistent with those of Anthony Ejegi et al. (2016) found that most patients have a considerable or good understanding of hypoglycemia. [12] Vanishree shriraam et al. (2015) reported a similar finding that 242 (66.1%) diabetic patients had a good knowledge of hypoglycemia [13].

Thi Kim Cuc Ngo PharmB (2020) evaluated the knowledge, attitude and practice (KAP) of Vietnamese diabetic patients about hypoglycemia in an outpatient setting, and found that the proportions of partic-

Table 1

Distribution of sociodemographic variables of study participants

Variable	Category	Frequency	Percentage
Age	40-50 years	31	31%
	51-60 years	48	48%
	61-70years	13	13%
	More than 70 years	8	8%
Gender	Male	43	43%
	Female	57	57%
Educational	No formal Education	25	25%
	Primary Education	23	23%
	Secondary Education	35	35%
	Graduate	17	17%
Occupation	Daily Wages	30	30%
	Government Employee	22	22%
	Private Employee	33	33%
	Unemployment	15	15%
Income	below Rs. 5000	36	36%
	Rs. 5001- 10000	33	33%
	Rs. 10001-20000	19	19%
	above Rs.20001	12	12%
Religion	Hindu	44	44%
	Muslim	16	16%
	Christian	34	34%
	Other	6	6%
Residence	Urban	48	48%
	Rural	52	52%
Marital status	Married	75	75%
	Single	19	19%
	Divorced	2	2%
	Widowed	4	4%
Dietary pattern	Vegetarian	23	23%
	Non vegetarian	77	77%
Family history of diabetic mellitus	Yes	46	46%
	No	54	54%
Any substandard behaviour	Alcohol	25	25%
	Smoking	7	7%
	Drug abuse	2	2%
	Nil	66	66%
Presence of co-morbidities	Hypertension	85	85%
	Dyslipidemia	11	11%
	Renal failure	1	1%
	Heart failure	3	3%
CLINICAL PROFILE:			
Type of diabetes mellitus	Type 1 (IDM)	33	33%
	Type 2 (NIDM)	67	67%
Random blood glucose level	less than 80	44	44%
	80-130mg/dl	38	38%
	130-200mg/dl	7	7%
	more than 200	11	11%

Variable	Category	Frequency	Percentage
Diabetes mellitus- Duration	≤ 5 years	56	56%
	6-10 years	29	29%
	> 10 years	15	15%
Current mode of treatment	OHS	62	62%
	Insulin	34	34%
	both OHS and insulin	4	4%
Medication-Frequency	once a day	45	45%
	twice a day	53	53%
	thrice a day	2	2%
History of hypoglycemia	Yes	63	63%
	No	37	37%

Table 2
Frequency and percentage distribution of knowledge and self – care practice of Hypoglycemia.

Variables	Category	Frequency	Percentage
knowledge of Hypoglycemia	Adequate	76	76%
	Moderate	0	0
	Inadequate	24	24%
Self-Care practice	Good Practice	63	63%
	Average Practice	0	0
	Poor Practice	37	37%

ipants with good knowledge and good practice were 45.9% respectively and 44.6%.[14] Likewise, a study reported by Girma Nega Gezie et al. (2015)evaluated the knowledge and practice of preventing hypoglycemia and related factor in patients. Showed that 105 (25.5%) had a good knowledge of hypoglycemia, and 89 (21.4%) had a good hypoglycaemia practice. [15] Additionally, a study by Esileman Abdela Muche et al. (2020) shows out of 422 samples, most respondents have good knowledge (77.5%) and practice (93.1%) on preventing hypoglycemia.^[16] Similarly, a study by Gebrewahd Bezabh Gebremichael et al. (2018) revealed that among 272 participants, (63.2%) participants had good hypoglycemic prevention practices.[8]

The results of the study found that knowledge of hypoglycemia was positively correlated withself-care practice (r value = 0.720), p <0.001.The results of study were supported by research by Thi Kim Cuc Ngo PharmB (2020),which showed that there is a positive correlation between good patient knowledge and good practice skills (p<0.001)^[14], as shown in Table 3.

Table 3
Correlation between knowledge and self-care management among hypoglycemia patients.

Variables	Self-care practice		
	N	R	P
Knowledge	100	0.720	0.001

The demographic variables of the level of knowledge of patients with hypoglycemia found age ($\chi^2=134.522$ and $P=0.001$), education ($\chi^2=147.290$ and $p=0.001$), occupation ($\chi^2=144.981$ and $p=0.001$), income ($\chi^2=157.372$ and $p=0.001$), religion ($\chi^2=134.721$ and $p=0.001$),marital status ($\chi^2=132.783$ and $p=0.001$)and family history of diabetic mellitus ($\chi^2=156.532$ $p=0.001$) were statistically significant as shown in Table 4.

Similarly, a study by Thenmozhi et.al (2018) evaluated the level of knowledge about hypoglycemia among diabetic patients in rustic communities indicating that age is associated with a level of $p<0.05$. [18] Vanishree Shriram et al. (2015) also studied the knowledge of hypoglycemia and related factors in patients with type 2 diabetes in tertiary hospitals and the results showed that advanced age, illiteracy and low socioeconomic status are associated to the knowledge of hypoglycemia. [13] Girma Nega Gezie et al. (2015) conducted a study to assess the knowledge and practice of the prevention of hypoglycemia and related factors in diabetic patients. The results of the study showed that educational level and knowledge are positively correlated. [15]

Table 5 Found the self-care practice and the demographic variables of hypoglycemia, age ($\chi^2 = 106.146$ and $P = 0.001$), sex ($\chi^2 = 118.264$ and $p = 0.001$),

Table 4

Association between the level of knowledge on hypoglycemia and selected socio demographic variable among patients with diabetes mellitus

Variable Category		Knowledge of Hypoglycemia			Total	χ^2 / p Value
		Inadequate	Moderate	Adequate		
Age	40-50 years	11 35.49%	7 22.58%	13 41.93%	31 100%	$\chi^2=134.522$ P=0.001
	51-60 years	12 25%	22 45.84%	14 29.16%	48 100%	
	61-70 years	4 30.77%	2 15.38%	7 53.85%	13 100%	
	More than 70 years	0 0%	3 37.50%	5 62.50 %	8 100%	
Educational	No formal Education	5 20%	10 40%	10 40%	25 100%	$\chi^2=147.290$ p=0.001
	Primary Education	6 26.08%	10 43.47%	7 30.45%	23 100%	
	Secondary Education	10 28.57%	7 20%	18 51.42%	35 100%	
	Graduate	6 35.29%	9 52.94%	2 11.76%	17 100%	
Occupation	Daily Wages	8 26.66%	8 26.66%	14 46.68%	30 100%	$\chi^2=144.981$ p=0.001
	Government Employee	7 31.81%	7 31.81%	8 36.38%	22 100%	
	Private Employee	9 27.27%	9 27.27%	15 45.46%	33 100%	
	Unemployment	7 46.66%	2 13.34%	6 40%	15 100%	
Income	below Rs. 5000	8 22.24%	14 38.88%	14 38.88%	36 100%	$\chi^2=157.372$ p=0.001
	Rs. 5001- 10000	9 27.27%	12 36.38%	11 33.35%	33 100%	
	Rs. 10001-20000	3 15.78%	3 15.78%	13 68.44%	19 100%	
	above Rs.20001	6 50%	1 8.33%	5 41.66%	12 100%	
Religion	Hindu	11 25%	12 27.27%	21 47.72%	44 100%	$\chi^2=134.721$ p=0.001
	Muslim	5 31.25%	3 18.75%	8 50%	16 100%	
	Christian	8 23.53%	8 23.53%	18 52.94%	34 100%	
	Other	1 16.66%	2 33.34%	3 50%	6 100%	
Marital status	Married	18 24%	15 20%	42 56%	75 100%	$\chi^2=132.783$ p=0.001
	Single	7 36.84%	5 26.31%	7 36.84%	19 100%	
	Divorced	1 50%	1 50%	0 0%	2 100%	
	Widowed	1 25%	1 25%	2 50%	4 100%	
Family history of diabetic mellitus	Yes	12 22.22%	18 33.33%	24 44.44%	54 100%	$\chi^2=156.532$ p=0.001
	No	11 23.92%	18 39.13%	17 36.95%	46 100%	

Table 5

Association between the level of self-care on hypoglycemia and selected socio demographic variable among patients with diabetes mellitus

Variable Category		Self-care Practice of Hypoglycemia			Total	χ^2 / p Value
		Poor	average	Good		
Age	40-50 years	9 29.03%	6 19.35%	16 51.62%	31 100%	$\chi^2=106.146$ P=0.001
	51-60 years	14 29.16%	16 33.33%	18 37.51%	48 100%	
	61-70 years	1 7.69%	4 30.77%	8 61.54%	13 100%	
	More than 70 years	1 12.50%	3 37.50 %	4 50%	8 100%	
Gender	Male	12 27.90%	9 20.93%	22 51.17%	43 100%	$\chi^2=118.264$ p=0.001
	Female	7 12.29%	8 14.03%	42 73.68%	57 100%	
Educational	No formal Education	5 20%	8 32%	12 48%	25 100%	$\chi^2=104.190$ p=0.001
	Primary Education	6 26.08%	7 30.45%	10 43.47%	23 100%	
	Secondary Education	9 25.71%	6 17.15%	20 57.14%	35 100%	
	Graduate	5 29.42%	4 23.53%	8 47.05%	17 100%	
Occupation	Daily Wages	7 23.33%	7 23.33%	16 53.34%	30 100%	$\chi^2=112.347$ p=0.001
	Government Employee	2 9.10%	8 36.36%	12 54.54%	22 100%	
	Private Employee	7 21.22%	9 27.27%	17 51.51%	33 100%	
	Unemployment	2 13.33%	4 26.67%	9 60%	15 100%	
Income	below Rs. 5000	8 22.22%	10 27.78%	18 50%	36 100%	$\chi^2=114.605$ p=0.001
	Rs. 5001- 10000	11 33.35%	9 27.27%	12 36.38%	33 100%	
	Rs. 10001-20000	5 26.31%	4 21.05%	10 52.64.%	19 100%	
	above Rs.20001	1 8.34%	5 41.66%	6 50%	12 100%	
Religion	Hindu	10 22.72%	11 25%	23 52.28%	44 100%	$\chi^2=128.410$ p=0.001
	Muslim	3 18.75%	9 56.25%	4 25%	16 100%	
	Christian	10 29.42%	8 23.53%	16 47.05%	34 100%	
	Other	1 16.66%	3 50%	2 33.34%	6 100%	
Residence	Urban	11 22.92%	14 29.16%	23 47.92%	48 100%	$\chi^2=7.648$ p=0.129
	Rural	15 28.84%	10 19.23	27 51.92%	52 100%	

Variable Category		Self-care Practice of Hypoglycemia			Total	χ^2 / p Value
		Poor	average	Good		
Marital status	Married	20 26.67%	17 22.67%	38 50.66%	75 100%	$\chi^2=107.315$ $p=0.001$
	Single	7 36.84%	5 26.31%	7 36.84%	19 100%	
	Divorced	1 50%	0 0%	1 50%	2 100%	
	Widowed	1 25%	1 25%	2 50%	4 100%	
Family history of diabetic mellitus	Yes	10 18.52%	16 29.63%	28 51.85%	54 100%	$\chi^2=119.865$ $p=0.001$
	No	9 19.56%	16 34.79%	21 45.65%	46 100%	

education ($\chi^2 = 104.190$ and $p = 0.001$), occupation ($\chi^2 = 112.347$, $p = 0.001$), income ($\chi^2 = 114.605$, $p = 0.001$), religion ($\chi^2 = 125.410$ and $p = 0.001$), marital status ($\chi^2 = 107.315$, $p = 0.001$) and family history of diabetes ($\chi^2 = 119.865$, $p = 0.001$) turned out to be statistically significant.

CONCLUSION

One of the difficulties with tight control of blood glucose levels is that such attempts may result in hypoglycemia, which causes far more serious complications than an increased level of blood glucose. Hypoglycemia, is a key limiting factor and a frequently overlooked complication of diabetes treatment, has far-reaching clinical consequences. Blood glucose management must be tailored to each individual's unique characteristics while maintaining a certain level of safety. Healthcare professionals play a key role in educating diabetic clients about the risk factors of hypoglycemia, recognizing the symptoms of hypoglycemia, the first step to hypoglycemia, monitoring blood glucose, and choosing right treatment options and conducting proper education programmes using an information booklet/ Pamphlets for diabetic patients in preventing potential hypoglycemia complications. Effective patient education and Counseling is critical for reducing the risk and consequences of hypoglycemia. As a result, we recommend that patients receive hypoglycemia counseling during their visit to the diabetic clinic in hospitals.

References

1. Atlas, D. (2015). International diabetes federation. IDF Diabetes Atlas, 7th edn. Brussels, Belgium: International Diabetes Federation.

2. Roglic, G. (2016). WHO Global report on diabetes: A summary. International Journal of Noncommunicable Diseases, 1(1), 3.
3. Moradi M, Mousavi S. Drug use evaluation of diabetes mellitus in non-hospitalized patients. Int J Pharm pharm Sci 2016;8:337-41.7
4. Kalsi A, Singh S, Taneja N, Kukal S, Mani S. Current treatments for Type 2 diabetes, their side effects and possible complementary treatments. Int J Pharm Pharm Sci 2015;7:13-8.
5. Espeland, M. A., Glick, H. A., Bertoni, A., Brancati, F. L., Bray, G. A., Clark, J. M., & Zhang, P. (2014). Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with type 2 diabetes: the action for health in diabetes. Diabetes care, 37(9), 2548-2556.
6. Edridge, C.L., Dunkley, A.J., Bodicoat, D.H., Rose, T.C., Gray, L.J., Davies, M.J. and Khunti, K., 2015. Prevalence and incidence of hypoglycaemia in 532,542 people with type 2 diabetes on oral therapies and insulin: a systematic review and meta-analysis of population based studies. PloS one, 10(6), p.e0126427.
7. Khunti, K., Alsifri, S., Aronson, R., Cigrovski Berković, M., Enters-Weijnen, C., Forsén, T., ... & HAT Investigator Group. (2016). Rates and predictors of hypoglycaemia in 27 585 people from 24 countries with insulin-treated type 1 and type 2 diabetes: the global HAT study. Diabetes, obesity and metabolism, 18(9), 907-915.
8. Gebremichael, G. B., & Mariye Zemicheal, T. (2020). Hypoglycemia Prevention Practice and Associated Factors among Diabetic Patients on Follow-Up at Public Hospitals of Central Zone, Tigray, Ethiopia, 2018. International journal of endocrinology, 2020.

9. American Diabetes Association. Standards of medical care in diabetes-2013. *Diabetes Care*. 2013; 36(Suppl 1):S11–66.
10. Mohammad Zeya Ansari ,Bijaya Mohanty, Ashok Sunder (2020, September). A Tertiary Care Hospital Based Study on Knowledge and Attitude of Diabetic Patients Towards Hypoglycaemia. *IOSR Journal of Dental and Medical Sciences*, Volume 19(Issue 9). <https://doi.org/10.9790/0853-1909033944>
11. Albaqami, N. M. (2018). Knowledge of hypoglycemia and its associated risk factors among type 2 diabetes mellitus patients in diabetes Centre, Security Forces Hospital, Riyadh, Saudi Arabia. *J Med Sci Clin Res*, 6(10), 1-8.
12. Ejegi, A., Ross, A. J., & Naidoo, K. (2016). Knowledge of symptoms and self-management of hypoglycaemia amongst patients attending a diabetic clinic at a regional hospital in KwaZulu-Natal. *African Journal of Primary Health Care and Family Medicine*, 8(1), 1-6.
13. Shriraam, V., Mahadevan, S., Anitharani, M., Jagadeesh, N. S., Kurup, S. B., Vidya, T. A., & Seshadri, K. G. (2015). Knowledge of hypoglycemia and its associated factors among type 2 diabetes mellitus patients in a Tertiary Care Hospital in South India. *Indian journal of endocrinology and metabolism*, 19(3), 378.
14. Ngo, T. K. C., Vo, T. H., & Le, C. (2021). Knowledge, attitude, and practice concerning hypoglycemia, insulin use, and insulin pens in Vietnamese diabetic outpatients: Prevalence and impact on safety and disease control. *Journal of Evaluation in Clinical Practice*, 27(2), 404-413.
15. Gezie, G. N., Alemie, G. A., & Ayele, T. A. (2015). Knowledge and practice on prevention of hypoglycemia among diabetic patients in South Gondar, Northwest Ethiopia: institution based cross-sectional study. *Integr Obes Diabetes*, 1(3), 56-60.
16. Muche, E. A., & Mekonen, B. T. (2020). Hypoglycemia prevention practice and its associated factors among diabetes patients at university teaching hospital in Ethiopia: Cross-sectional study. *PloS one*, 15(8), e0238094..
17. Thenmozhi, P., & Vijayalakshmi, M. (2018). KNOWLEDGE ON HYPOGLYCEMIA AMONG PATIENTS WITH DIABETES MELLITUS. *Asian Journal of Pharmaceutical and Clinical Research*, 236-239.