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A descriptive study to assess the knowledge on prevention of hypoglycemia among diabetic patients in Guwahati, Assam

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Abstract
Background: Hypoglycemia is a traumatic dilemma that has a critical impact on patient's life and on their family members also. Improving patient's awareness on hypoglycemia and its prevention is crucial to avoid serious implications like loss of consciousness and even end of life. Comprehensive patient's education is required to provide the patient with self-management skills necessary to achieve good glycemic control. Epidemiologic data indicate that a large number of patients do not receive the proper care or education which is necessary to develop such management abilities.
Aim: The aim of the study was to assess the knowledge on prevention of hypoglycemia among diabetic patients with a view to provide health education.
Material and Methods: The study was a descriptive study conducted in a private hospital in Guwahati, Assam among 110 diabetic patients who were taking treatment their and were selected by using purposive sampling techniques. The subjects were assessed for knowledge on prevention of hypoglycemia. The collected data was analyzed by using statistical software SPSS 20 version.
Results: The findings of the study revealed that 58% of the participants have moderate knowledge on hypoglycemia and its prevention followed by 37% participants have inadequate knowledge and only 5% participants have adequate knowledge. There was a significant association between knowledge on hypoglycemia and its prevention with selected demographic variables i.e., age (p value = 0.00), educational status (p value = 0.003) and duration of diabetes illness (p value = 0.035).
Conclusion: The study concluded that majority of the diabetic patients has moderate knowledge on hypoglycemia and its prevention.

Keywords: Diabetes mellitus, knowledge, prevention, hypoglycemia

Introduction

Diabetes Mellitus is called as "Mother of all the diseases". It is a group of metabolic disorders which leads to medical and socioeconomic consequences [1]. In Ayurveda it is known as "Madhumeha" [2]. it is a chronic condition, which lasts for lifetime but can be well controlled by using medicines, and with proper treatment.

Recent studies of geographical and ethical influences should that people of Indian origin are highly prone to diabetes it is expected to increase three folds from 19.4 million in 2005 to 57.2 million in 2025 and it is expected to cross 100 million mark by 2050 [3].

Good diabetes management on daily basis can help in reducing the risk of further complications like stroke, blindness, kidney damage, amputation which leads to disabilities and Hypoglycaemia. There are two phases of diabetes mellitus i.e., Hyperglycemia and Hypoglycemia. Hypoglycemia means low blood sugar level i.e., less than 70 mg/dl. It can be defined as "mild" if episodes is self-treated; "moderate" if assisted and "severe" if hospitalized and assisted by physician. It is true emergency condition which requires immediate treatment. If not treated on time can cause significant economic and personal burden on DM patients and their family both [4]. Hypoglycemia is a more serious complication of diabetes mellitus than Hyperglycemia. Hypoglycemia not directly leads to death, but indirectly it may endanger the life of a diabetic individual and their family members, during activities like driving, swimming, sports. In India, it is one of the most neglected complication of DM and very limited numbers of studies are done in India.

People with diabetes who want to live their lives without limits needs to know a lot about their illness.

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Comprehensive patient education is required to provide the patients with self-management skills (like monitoring of blood glucose level, taking of medication on time, pattern of exercise and adjustment in their eating habits, maintenance of insulin chart and glucose monitoring chart and regular follow up) necessary to achieve good glycemic control [5].

There is a need to educate diabetic patients and their families about Hypoglycemia and its prevention of complications through self-management of the disease on daily basis, which permits the patients to live better life.

General Objective

To assess the knowledge on prevention of hypoglycemia among diabetic patients with a view to provide health education

Specific Objectives

- To assess the knowledge on hypoglycemia and its prevention among diabetic patients.
- To determine the association between the knowledge on hypoglycemia and its prevention with selected demographic variables of diabetic patients.

Hypothesis (Tested at 0.05 level of significance)

H_1: There is a significant association between the knowledge on hypoglycemia and its prevention with selected demographic variables of diabetic patients.

Methodology

The research approach chosen for the study was quantitative research approach. Descriptive design was used to assess the knowledge on hypoglycemia and its prevention among diabetic patients.

Sample size

The sample size is 110.

Sampling technique

Purposive sampling technique

Tool for data collection

The tool was developed after updating the theoretical knowledge and guidance from the subject experts along with literature review from different studies. Structured questionnaire was used to collect demographic information like age, gender, educational status, income per month, religion, family history, duration of illness, type of family and general information about the participants. A Structured knowledge assessment questionnaire was used to assess the knowledge on hypoglycemia and its prevention. It includes total 14 questions. For each correct answer score was 1 and for incorrect answer score was Zero. The knowledge level was categorized as, (0-33%) = Inadequate knowledge, (34%-66%) = Moderate adequate knowledge and (67%-100%) = Adequate knowledge.

Procedure for data collection

The period for data collection was 8th Feb to 6th March, 2021 before data collection, Formal permission was taken from the Medical Director of Hospital. The participants were selected by purposive sampling technique. After seeking consent from participants, the tool was administered to the participants. Instruction was given to the participants and marking was done according to their answer. After completion of tick marking health education was given to all the participants irrespective of their knowledge level. Time duration for the health education was 20 minutes.

Data analysis

Descriptive and inferential statistics were used for data analysis.

Results

Table 1: Description of demographic variables N=110

Sr. No.	Demographic Variables		Frequency (f)
1.	Age	35-45 year	29 (27%)
		46-55 year	38(33%)
		56-65 year	30(27.5%)
		66-75 year	14(12.8%)
2.	Gender	Male	68(61.8%)
		Female	42(38.2%)
3.	Educational status	Illiterate	1(0.9%)
		Primary education	8(7.3%)
		Secondary education	55(50%)
		Graduate & above	46(41.8%)
4.	Employment status	Employed	47(42.5%)
		Unemployed	18(18.2%)
		Self employed	45(40.1%)
5.	Income per month	Below Rs 10000/month	12(10.9%)
		Rs 10001-Rs 20000/month	22(20%)
		Rs 20001-Rs 30000/month	40(36.4%)
		Above Rs 30000/month	36(32.7%)
6.	Religion	Hindu	97(88.2%)
		Muslims	12(10.9%)
		Christian	1(0.9%)
		Others	0(0%)
7.	Family history of diabetes mellitus	Yes	63(57.3%)
		No	47(42.7%)
8.	Duration of diabetes illness	4-11 year	78(71%)
		12-19 year	25(23%)
		20-27 year	7(6%)

		28-35 year	0(0%)
9.	Type of family	Nuclear	76(69.1%)
		Joint	34(30.9%)

Table 2: Description on general information of diabetic patients N=110

Sr. No.	General Information		Frequency (f)
1.	Co morbidity	Yes	94(85.5%)
		No	16(14.5%)
2.	History of Smoking	Yes	66(60%)
		No	44(40%)
3.	History of alcohol Intake	Yes	67(60.9%)
		No	43(39.1%)
4.	Use of Antidiabetic Medicine	Yes	100(90.9%)
		No	10(9.1%)
5.	Type of Antidiabetic Medicines	Insulin	36(32.7%)
		Oral Antidiabetic Medicine	44(40%)
		Both	30(27.3%)
6.	Use of Natural Herbal Medication	Yes	20(18.2%)
		No	90(81.8%)
7.	History of Hypoglycemia	Yes	42(38.2%)
		No	68(61.2%)
8.	Glucometer at home	Yes	80(72.7%)
		No	30(27.3%)
9.	Daily checking of blood glucose level	Yes	24(21.8%)
		No	86(78.1%)
10.	Maintenance of record chart	Yes	25(22.7%)
		No	85(77.3%)
11.	Regular follow up	Yes	45(40.9%)
		No	65(59.1%)
12.	Basal Metabolic Index	Less than 25	34(31%)
		More than 25	77(69%)
13.	Eating Pattern of Meal	Yes	74(67.3%)
		No	36(32.7%)
14.	Skipping of Meal	Yes	69(62.7%)
		No	41(37.3%)
15.	Variation in insulin dose(Self –adjusted)	Yes	15(13.6%)
		No	95(86.4%)

Table 3: Mean, Median, standard deviation and standard error of knowledge score of patients on hypoglycemia and its prevention N=110.

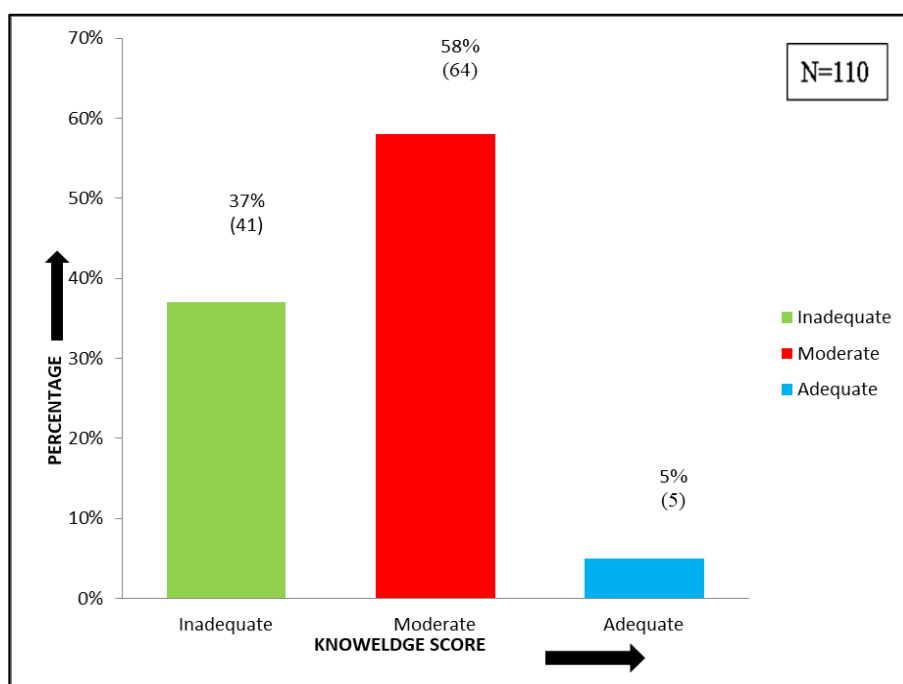| Area	Mean	Median	SD	Standard error
Knowledge	5.05	5.0	2.57	0.24

Fig 1: Frequency and percentage distribution of participants by knowledge score

Table 4: Association between knowledge on prevention of hypoglycemia with selected demographic variables

Sr. No.	Demographic variables	Knowledge score			χ^2	DF	P value
		Inadequate (0-4)	Moderate (5-9)	Adequate (10-14)			
1	Age						
	35-45 year	19	7	4	24.72	6	0.00*
	46-55 year	8	28	0			
	56-65 year	10	19	1			
	66-75 year	4	10	0			
2	Gender						
	Male	24	41	3	0.331	2	0.513[NS]
	Female	17	23	2			
3	Educational status						
	Illiterate	0	0	1	22.206	6	0.003*
	Primary education	4	4	0			
	Secondary education	19	34	2			
	Graduate & above	18	26	2			
4	Employment status						
	Employed	15	30	2	4.917	6	0.555[NS]
	Unemployed	9	9	2			
	Self employed	17	25	1			
5	Income per month						
	Below Rs 10000/ month	7	4	1	5.286	6	0.508[NS]
	Rs10001-Rs20000/month	8	12	2			
	Rs20001-Rs 30000/month	14	25	1			
	Above Rs 30000/month	12	23	1			
6	Religion						
	Hindu	38	54	5	2.611	4	0.625[NS]
	Muslim	3	9	0			
	Christian	0	1	0			
	Others	0	0	0			
7	Family history of diabetes mellitus						
	Yes	26	33	4	2.540	2	0.218[NS]
	No	15	31	1			
8	Duration of diabetes illness						
	4-11 year	22	51	5	10.37	4	0.035*
	12-19 year	15	10	0			
	20-27 year	4	3	0			
	28-35 year	0	0	0			
9	Type of family						
	Nuclear	28	45	3	0.250	2	0.882[NS]
	Joint	13	19	2			

S * = Significant at 0.05 level of significance NS= Not significant

Above table shows that there is significant association with respect to age, educational status and duration of diabetes illness. Thus, the research hypothesis "There is significant association between knowledge on hypoglycemia and its prevention and demographic variables of diabetic patients" is accepted with respect to the age (df = 6, p value = 0.00) of the participants, educational status (df = 6, p value = 0.003) and duration of diabetes illness (df = 4, p value= 0.03) of the participants.

Discussion
The present study assessed the level of knowledge on hypoglycemia and its prevention. Result showed that among 110 participants, 41 (37%) of the participants had inadequate knowledge, 64 (58%) had moderate knowledge and 5 (5%) had adequate knowledge.
The findings of the present study is supported by a similar study which was conducted by Prameela A (2016) on awareness on management of hypoglycemia among diabetic patients in Coimbatore, Tamil Nadu revealed that among 60 diabetic patients, 8 (13.3%%) had inadequate knowledge, 39(65%) had moderate knowledge and 13(21.6%) had adequate knowledge [6].

A study conducted by Thenmozhi P, Vijayalakshmi M (2017) on knowledge on hypoglycemia among diabetic patients in Chennai, Tamil Nadu found that among 60 participants, 38 (63.33%) had inadequate knowledge, 12 (20%) had moderate adequate knowledge and 10 (16.67%) had adequate knowledge. This support the findings of present study [7].
A similar study which was conducted by Girma G, Getahyn A et al (2015) [8] on knowledge and practice on prevention of hypoglycemia among diabetic patients in South Gondar, Northwest Ethiopia revealed that among 418 participants; 213 (51.2%) had poor knowledge on hypoglycemia and 105 (25.5%) had good knowledge. This support the findings of present study [8].
The present study findings revealed that diabetic patients had moderately adequate knowledge regarding hypoglycemia and its prevention. So the diabetic patients should be aware on hypoglycemia and its prevention by giving health education verbally or by using pamphlets which will enhance the patient's knowledge to manage the hypoglycemic episodes and further complications.
There was significant association between knowledge with demographic variable i.e., age (p value = 0.00), educational

status (p value = 0.003) and duration of diabetes illness (p value = 0.035).

A study conducted by Thenmozhi P, Vijayalakshmi M (2017) on knowledge on hypoglycemia among diabetic patients in Chennai, Tamil Nadu. This study revealed that there was an association between the knowledge levels on hypoglycemia with age. This support the findings of present study [7].

A study which was conducted by Prameela A (2016) on awareness on management of hypoglycemia among diabetic patients in Coimbatore, Tamil Nadu. The study revealed that there was statistically significant association between the levels of knowledge on hypoglycemia with age. This support the findings of present study [6].

The finding of the present study is supported by a similar study which was conducted by Girma G, Getahyn A *et al.* (2015) [8] on knowledge and practice on prevention of hypoglycemia among diabetic patients in South Gondar, Northwest Ethiopia. The study revealed that there was a association between the knowledge on hypoglycemia with educational status of the participants. Diabetic patients who have attained Primary education, Secondary education and Graduate & above had good knowledge than respondents who had no formal education [8].

In present study there was no association between the gender, employment, income per month, religion with knowledge on hypoglycemia and its prevention. These findings are supported by similar study which was conducted by William I *et al.* (2009) [9].This study revealed that statistically there was no association between knowledge on hypoglycemia with gender, income per month and religion [9].

Conclusion
Hypoglycemia is a major limiting factor in overall glycemic management of diabetes. The present study revealed that majority of the diabetic patients have moderate knowledge on hypoglycemia and its prevention. This study concluded that patients should be made aware on hypoglycemia and its prevention through educational programs and community camps.

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