

A Hospital Based Cross Sectional Study Assessing the Level of Knowledge of Diabetic Patient Regarding Hypoglycaemia and its Association with Various Demographic Parameters

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Abstract

Aim: The aim of the present study was to assess the level of knowledge of diabetic patient regarding hypoglycaemia and to find out the association between the levels of knowledge of diabetic patient on hypoglycaemia with their selected demographic variable.

Methods: An institution-based, descriptive, cross-sectional study was conducted among 200 sampled diabetic patients admitted to medicine ward and visiting medicine OPD who were selected through purposive sampling technique at Nalanda Medical College & Hospital, Patna, Bihar, India.

Results: Out of 200 samples, a majority (54%) of them was in the age group above 40% years, and 52% of them were female. Regarding educational status, 48% had obtained primary level of education, remaining 7% of them had completed above secondary level of education, and most of them 35% were unemployed, majority 45% of them had an earning income between (Rs. 5000-9000). Maximum 90% of them follows Hinduism, 77% of them had have diabetes mellitus with duration between 1-10 years, with the insulin therapy contributes 10% with twice a day and 3% of them were on once a day. Regarding symptoms, nearly 72% of the sample had experienced hypoglycemia. More than half of the sample 60% had a dietary pattern of 3 times a day. More than half of the samples 53% of them had fair knowledge on hypoglycemia and 26% of them were having good knowledge and the remaining 21% of them had poor knowledge regarding hypoglycemia respectively with the overall mean and SD 34.6±15.25.

Conclusion: The study's findings highlighted the fact that most diabetes mellitus patients had a fair understanding of hypoglycemia. The health care personnel should also take time and efforts to educate patients about the sign and symptoms of hypoglycemia. So that hypoglycemic episodes and morbidity could be reduced or prevented at primordial level.

Keywords: Diabetes mellitus, Hypoglycemia, Knowledge, Insulin, Oral hypoglycemic drugs

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Introduction

Hypoglycemia is an acute medical situation that occurs when blood sugar falls below the recommended level. Individuals taking diabetic medications are at increased risk of experiencing low blood sugar. [1,2] An estimated 2-4% of people with type 1 diabetes mellitus die from hypoglycemia each year. It might explain the “dead in bed syndrome” unexplained death of a person with type 1 diabetes occurring during night time. [3] The symptoms of low blood sugar vary from person to person, and can change over time. During the early stages a person with low blood sugar level may have sweating, trembling, feeling hungry and

feeling anxious. The symptoms can become more severe, and can include difficulty of walking, weakness, visual disturbance; bizarre behavior, personality changes, confusion and unconsciousness or seizure may be observed. [4] Knowledge about these symptoms is an important step to self-care practice, because informed people are more likely to have better self-care practice. [5] It is important for patients with diabetes especially, those receiving insulin to learn about hypoglycemia, and to carry some form of simple sugar with them at all times. Self-care practice in diabetes management also includes dietary

regulation, medication, physical activity and self-monitoring of blood glucose (SMBG). [6]

The likely explanation proposed for the latter observation is hypoglycemia and its adverse effect on the cardiovascular system through the sympathoadrenal responses. There are reports of hypoglycemia being considered as a cardiovascular risk factor. [7] Further recurrent episodes of hypoglycemia result in hypoglycemia unawareness. [8] Hypoglycemic episodes, especially if severe or recurrent may result in significant psychosocial dysfunction and lower quality of life. In spite of the knowledge about the importance of hypoglycemia, it is still a relatively neglected complication in diabetes care. [9]

In a survey conducted by the American Association of Clinical Endocrinology among 2530 type 2 diabetic patients in America, it was revealed that though more than half of the study population experienced hypoglycemic episodes in the past, many patients were unaware of the precipitating factors or causes of such episodes. There was definitely a knowledge gap which needed to be addressed. [10] In a study done in Erode district in the state of Tamil Nadu in India, that blood sugar levels can drop below normal while on drugs was known to around 40% of the diabetic subjects only. [11] Hypoglycemia imposes a significant financial burden on the health care system, because of the frequent hospitalizations and costs, as well as the unnecessary ambulance utilization. As a result, patients must be aware of all signs and symptoms in order to detect them early and take appropriate action.⁵

The aim of the present study was to assess the level of knowledge of diabetic patient regarding hypoglycaemia and to find out the association between the levels of knowledge of diabetic patient on hypoglycaemia with their selected demographic variable.

Materials and Methods

An institution-based, descriptive, cross-sectional study was conducted among 200 sampled diabetic patients admitted to medicine ward and visiting medicine OPD who were selected through purposive sampling technique at Nalanda Medical College & Hospital, Patna, Bihar, India

Inclusion criteria

Patients with following criteria were included-

- (a) who has been diagnosed as diabetes mellitus
- (b) those who were willing to participate.

Exclusion criteria

Patients with following criteria were excluded-

- (a) those who are not available during data collection; and
- (b) who were seriously ill and unable to communicate

Ethical considerations

Ethical clearance for the study was obtained from the Institutional ethics committee. Participation of the subjects in the study was voluntary and informed consents were obtained from all participants. Confidentiality and anonymity of information were maintained.

Data were collected semi-structured questionnaire on knowledge on hypoglycemia. Descriptive data were subjected to analyse by using percentages and frequency distribution with mean and standard deviation and inferential data was interpreted by Chi-square test in SPSS version 21 at a 0.05% level of significance, to determine the association between selected demographic variables and research variable.

Results

Table 1: Frequency and percentage distribution of diabetes mellitus patient with hypoglycemia according to demographic variables

Demographic characteristics	Frequency (N)	Percentage (%)
Age in year		
25 to 40	92	46
Above 40	108	54
Gender		
Male	96	48
Female	104	52
Other		
Educational status		
Illiterate	40	20
Primary level	96	48
Secondary level	50	25
Above higher secondary level	14	7
Occupation		
Unemployed	70	35

Labour	60	30
Farmer	20	10
Government service	18	9
Self-employed	32	16
Income in Rupees		
1000-4000/-	80	40
5000-9000/-	90	45
10000 and above	30	15
Religion		
Hindu	180	90
Muslim	14	7
Christian	0	0
Buddhist	6	3
Others	0	0
Duration of diabetes mellitus (years)		
1 to 10	150	75
11 to 20	40	20
Above 20	10	5
Treatment for diabetes mellitus		
Insulin therapy	60	30
Drug therapy	140	70
Frequency of taking medication		
Oral drug once in a day	100	50
Oral drug twice in a day	80	40
Oral drug thrice in a day	10	5
Insulin users		
Once in a day	6	3
Twice in a day	20	10
Experience any symptoms of hypoglycemia		
Yes	144	72
No	56	28
Dietary habit		
2 times in a day	72	36
3 times in a day	120	60
4 times in a day	8	4

Out of 200 samples, a majority (54%) of them were in the age group above 40% years, and 52% of them were female. Regarding educational status, 48% had obtained primary level of education, remaining 7% of them had completed above secondary level of education, and most of them 35% were unemployed, majority 45% of them had an earning income between (Rs. 5000-9000).

Maximum 90% of them follows Hinduism, 77% of them had have diabetes mellitus with duration between 1-10 years, with the insulin therapy contributes 10% with twice a day and remaining 3% of them were on once a day. Regarding symptoms, nearly 72% of the sample had experienced hypoglycemic. More than half of the sample 60% had a dietary pattern of 3 times a day.

Table 2: Frequency percentage distribution of patient according to their level of knowledge on hypoglycemia among the diabetic patient

Level of knowledge on hypoglycemia	Frequency (N)	Percentage (%)	Mean±SD
Good	52	26	34.6±15.25
Fair	106	53	
Poor	42	21	

More than half of the samples 53% of them had fair knowledge on hypoglycemia and 26% of them were having good knowledge and the remaining 21% of them had poor knowledge regarding hypoglycemia respectively with the overall mean and SD 34.6±15.25.

Table 3: Chi-square association between the knowledge of diabetic patient on hypoglycemia with the demographic characteristics

Demographic characteristics	Level of knowledge on hypoglycemia			Total	df	Chi square (χ^2)	Prevalence
	Good	Fair	Poor				
Age in year							
25-40	30	36	26	92	1	6.6453	0.032
Above 40	22	70	16	108			
Gender							
Male	28	40	28	96			
Female	24	66	14	104	1	0.970	0.625
Educational status							
Illiterate	8	18	14	40			
Primary level	28	50	18	96			
Secondary level	14	28	8	50	3	7.222	0.343
Above higher secondary level	2	10	2	14			
Occupation							
Unemployed	24	36	10	70			
Labour	10	35	15	60			
Farmer	2	12	6	20	4	6.34	0.576
Government service	2	10	6	18			
Self-employed	14	13	5	32			
Income in Rupees							
1000-4000/-	14	46	20	80			
5000-9000/-	28	42	20	90	2	12.1867	0.140
10000 and above	10	18	2	30			
Religion							
Hindu	44	100	36	180			
Muslim	6	5	3	14	2	2.180	0.75
Others	2	1	3	6			
Duration of diabetes mellitus (years)							
1 to 10	40	90	20	150			
11 to 20	8	12	20	40	2	4.334	0.36
Above 20	4	4	2	10			
Treatment for diabetes mellitus							
Insulin therapy	20	8	32	60			
Drug therapy	32	98	10	140	1	32.18	0.0001
Frequency of taking medication							
Oral drug once in a day	10	70	20	100			
Oral drug twice in a day	36	34	10	80	3	15.35	0.25
Oral drug thrice in a day	6	2	2	10			
Insulin users	6	16	4	26			

It was evident that, there was a significant association between the level of knowledge of diabetic clients on hypoglycemia with their selected demographic variable in terms of age, income, treatment, frequency of taking medicine, experience of symptoms of hypoglycemia and dietary habit.

Discussion

Diabetes is well recognized as a global health burden of the 21st century. The number of patients with DM has continued to rise over the last few decades. In India, more than 62 million people have diabetes. The management of diabetes is frequently made more difficult, despite the availability of

numerous effective anti-diabetic medications and regimens. [12] One of the most important effects of diabetes mellitus is hypoglycemia, which happens when the blood sugar level drops below the ideal range. [13-15] Hypoglycemia is the rate limiting complication in the achievement of strict glycaemic control in diabetes management. Significant episodes of hypoglycemia and its attendant counter-regulatory hormonal response lead to poor glycaemic control. The former may also be associated with cardiovascular and cerebrovascular morbidities. [16] Large trials (action to control cardiovascular risk in diabetes, Veterans affairs diabetes trial) have shown that there were was a higher mortality in the group that had

hypoglycemia (intensively treated arm). [17,18] Hence, the American Diabetes Association (ADA) guidelines emphasize on individualizing targets and reducing risk of hypoglycemia in patients with long duration of diabetes and comorbidities. [19]

Out of 200 samples, a majority (54%) of them was in the age group above 40 years, and 52% of them were female. Regarding educational status, 48% had obtained primary level of education, remaining 7% of them had completed above secondary level of education, and most of them 35% were unemployed, majority 45% of them had an earning income between (Rs. 5000-9000). Maximum 90% of them follows Hinduism, 77% of them had have diabetes mellitus with duration between 1-10 years, with the insulin therapy contributes 10% with twice a day and remaining 3% of them were on once a day. Regarding symptoms, nearly 72% of the sample had experienced hypoglycemic. More than half of the sample 60% had a dietary pattern of 3 times a day. More than half of the samples 53% of them had fair knowledge on hypoglycemia and 26% of them were having good knowledge and the remaining 21% of them had poor knowledge regarding hypoglycemia respectively with the overall mean and SD 34.6 ± 15.25 . This finding was higher than the study conducted in South Gondar, Ethiopia shows that 25.5% of the participants had good knowledge on hypoglycaemia. [20] Similarly, in a study carried out among patients with diabetes mellitus by Sharma et al who stated that overall (64.4%) diabetic patients had good knowledge of hypoglycaemia. [21] Another study conducted in Nepal revealed that among them 27% of participants has inadequate knowledge, remaining 23% has adequate knowledge. [22] A lower level of awareness was reported in the study conducted by Thenmozhi et al who found that (20%) of the participants had moderately adequate knowledge, and 16.67% of them had adequate knowledge. [23]

It was evident that, there was a significant association between the level of knowledge of diabetic clients on hypoglycemia with their selected demographic variable in terms of age, income, treatment, frequency of taking medicine, experience of symptoms of hypoglycemia and dietary habit. Study conducted in Tamil Nadu revealed that there is a significant association with type of treatment at the level of $p < 0.05$ with the level of knowledge. The findings are consistent with the study conducted by Shriram et al and found that 66.1% of diabetic patients had good knowledge on hypoglycemia, however, use of medicine of the client is associated with the level of knowledge ($p < 0.05$). [24] Study conducted by Suzy et al hope showed the findings that the knowledge on the symptoms of hypoglycemia were significantly associated with the advancement of

age. [25] A study was conducted in Saudi Arabia depicted the significant association seen among monthly income, patient having previous hypoglycemia experience ($p < 0.05$). [26]

Conclusion

Hypoglycemia is quite prevalent amongst people with type 2 diabetes on treatment particularly those on insulin. The study findings concluded that the participants had fair level of knowledge on hypoglycemia among patients with diabetes mellitus. Health-care professionals have a major role in educating clients with diabetes mellitus about hypoglycemia risk factors, recognition of symptoms of hypoglycemia, first aid measures of hypoglycemia, blood glucose monitoring, and selection of appropriate regimens, thereby minimize the risk of hypoglycemia, and prevent the potential complications of hypoglycemia at primordial level.

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