

Study On Knowledge Regarding Management And Prevention Of Type-1 Diabetes Mellitus Among Mothers Of School Going Children In Municipality Area Of Belonia, South Tripura.

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Abstract:

Background: Adequate knowledge about the Type-1 diabetes mellitus among mothers is very much crucial. Along with the adoption of primary chronic care model to manage Type-1 Diabetes Mellitus, increase the awareness about the management and prevention of diabetes mellitus may bring a huge effect in efficiency of self-management of diabetes.

Objective: The cross sectional study is aimed to understand the knowledge among mothers of school going children regarding type 1 diabetes mellitus management and prevention.

Methods: In this cross sectional study, a strategic questionnaire method was used for data collection related to knowledge aspect of type 1 diabetes mellitus definition, etiology, classification, diagnostic evaluation, complications, management and prevention. A structured knowledge questionnaire which includes closed ended questions on type 1 diabetes mellitus was developed and presented before the sample population.

Results: Knowledge of mothers on diagnostic evaluation of type 1 diabetes mellitus is below 35%. Mothers' knowledge score on management and prevention of type 1 diabetes mellitus is hardly 28.3%. Similarly knowledge on complication and diagnostic evaluation are 31.7% and 35%, respectively. The overall knowledge score is seen about 30%.

Conclusions: Study shows very poor knowledge of mothers regarding management and prevention of diabetes mellitus. Proper awareness about the effect of diabetes in health and effective measure to prevent and manage type 1 diabetes mellitus is very much required.

Keywords: non-communicable disease, diabetes mellitus, Prediabetes, Hyperglycemia, Hypoglycemia.

1. INTRODUCTION

Continuous growth of diabetes mellitus throughout the world raises concern. In the context of its epidemic, countries all around the world are agreed to set a halt in the rise of diabetes by 2025 [1]. Whereas the management and prevention of diabetes in highly populated countries like India is a big challenge. More than 422 million peoples were affected by the year 2016 due to the disease worldwide and the number is continuously increasing. Even in past decades the domination of diabetes is also observed in middle and low income level countries. Majority of cases in diabetes are mainly type 2 and occurs among adults, but the cases in children also increasing [2-3].

Though diabetes is a non-communicable disease (NCD), it brings a significant economic loss to the family of affected, health system and directly indirectly losses to the national economics. National health survey done by International Institute for population sciences in 2016 shows that one of every five Indian is affected by a

chronic NCD [4]. India is predicted to cross 69.9 million of diabetes cases by 2025 [5]. Care for chronic non-communicable diseases is greatly deserted in our traditional healthcare system. Lack of adequate healthcare professionals, monitoring systems and continuous coordination with patients brings difficulties to chronic NCD management. As a vast population is undiagnosed, preventive measures is very much required to assess the effect of diabetes along with the risk factor survey. Countries like India with diversities and wide population often lacks in resources and access to well trained professional [6-7]. In such adverse conditions propagation of knowledge about the prevention and management of chronic NCD like diabetes among the common people is one of the key factors of self-management. Along with the adoption of primary chronic care model design recommended by WHO [8], roll of the health care and community workers need to be redefined in resource-constrained system [9-10]. Structured teaching program to increase the awareness about the management and prevention of diabetes mellitus may bring a huge effect in efficiency of self-management of diabetes.

In this paper, we presented an evaluation of the knowledge level of management and prevention of Type-1 diabetes mellitus among mothers of school going children in a suburban area. As mothers are the builders of a nation, they are the most suitable candidate to be enlightened first about the chronic NCD diabetes mellitus so that the wisdom can be passed thereafter. As studies shows cases of diabetes in young age increases and Type-1 diabetes mellitus is dominant in child and young adult, knowledge about the Type-1 diabetes mellitus among mothers is very much crucial. This study is focused to understand the requirement of structured teaching program to enhance their knowledge about the Type-1 diabetes mellitus. Additionally the study also takes an exemplification of in-depth knowledge of mothers regarding the diabetes mellitus definition, classification, management and prevention. Though socioeconomic based study on prevalence of diabetes done in 2012 to 2015 in Tripura along with other states [11-13], the study did not implicate about the knowledge of Type 1 diabetes. Further assessment of the present status of the knowledge about Type 1 diabetes is also reasonably essential [14].

2. METHOD

The cross-sectional study was conducted on knowledge among mothers of school going children regarding type 1 diabetes mellitus. In this study mothers of school going children in Belonia, South Tripura who full fill the inclusion criteria are select as sample and the investigation was performed during the year of 2021.

Study Design:

The present study was conducted on mothers of school going children in Belonia, South Tripura. The reasons for selection of this location for the study are mainly (a) geographical proximity, (b) co-operation & availability of subjects, (c) economy in terms of time & subject. A structured knowledge questionnaire which includes closed ended questions on type 1 diabetes mellitus was developed. Questionnaires were used to assess the level of knowledge regarding type 1 diabetes mellitus.

Tools and Data Collection:

The tool and content was prepared after testing the validity and consultation. 3 nursing experts, one lecturer each from English and Bengali literature were selected as experts based on their experience, clinical practice and interest in the problem being studied. Their suggestion and opinion regarding the relevance, adequacy and

appropriateness of the items and tool were considered for necessary modifications in the study.

Questionnaire method was used for data collection. Prior to data collection the investigator was obtained permission from the authority of the area. The study includes mothers who are having school going children (6-12 years), those who are present and willing to participate at the time of data collection, mothers who can read, write and understand English/Bengali language. 60 mothers of school going children were selected as per the mentioned criteria. The investigators introduced themselves to the mothers of school going children and established a good rapport with them and explained about the purpose of the study and its usefulness. They were assured about the confidentiality of their responses, informed consent obtain from the subject indicating their willingness to participate in the study. The time allotted to each mother for questionnaires was 30 minutes.

Measurement Values:

The study was structured questionnaires related to knowledge aspect of type 1 diabetes mellitus. It focuses on the following areas:

- Introduction and definition 8 items
- Etiology and Classification 2 items
- Diagnostic evaluation 4 items
- Management and prevention 18 items
- Complications 3 items

The items were multiple choice questions with 3 options in Bengali/English. Each correct response will carry '1' and '0' for incorrect response. Level of knowledge score is marked as 'very poor' for 0-8 marks, 'Poor' for 9-16 marks, 'Average' for 17-24 marks, 'Good' for 25-32 marks, 'Excellent' for 33-40 marks.

3. RESULT AND DISCUSSION

Study was constructed to collect the data regarding age, religion, educational qualification of mother, occupation of mother, monthly family income, area of living, family history related to diabetic mellitus, no of children, previous knowledge about type 1 diabetes mellitus. As many studies have raised concern about the prevalence of diabetes in the economically underprivileged segment of the society [14-15], demographic analysis of the samples is also become essential.

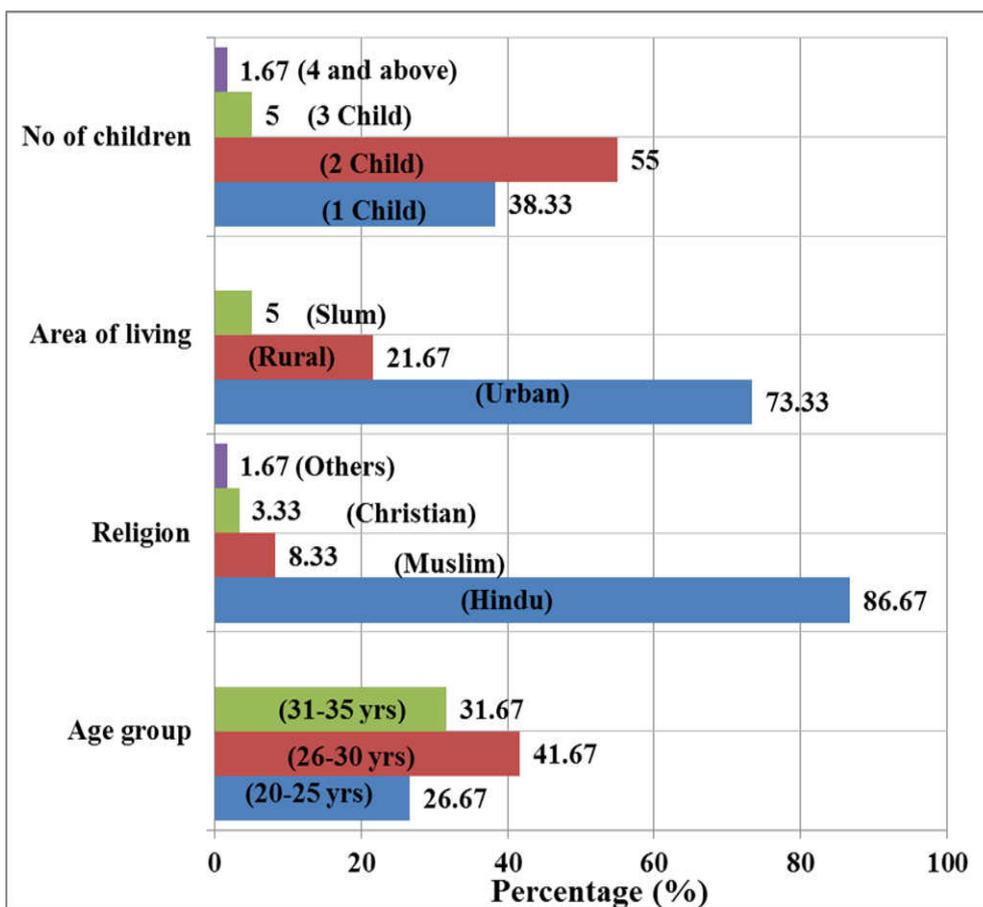


Figure 1. Bar diagram representing the percentage distribution of demographic variables of mothers of school going children.

The demographic data presented on Figure 1 reveals that the majority (25) 41.67% of the mothers of school going children belong to age group 26-30yrs. (19) 31.67% of the mothers of school going children belong to the age group 31-35yrs. (16) 26.67% of the mothers of school going children belong to the age group 20-25 yrs. (0) 0% of the mothers of school going children belong to the age group 36yrs& above. Religion based data presented on Figure 1 reveals that the majority of mothers were belongs to Hindu 52 (86.67%), whereas 5 (8.33%) of mothers belongs to Muslim, 2 (3.33%) of mothers belongs to Christian and 1 (1.67%) belongs to others. It also reveals that majority 44 (73.33%) mothers were live in urban area, whereas 13(21.67%) mothers were live in rural area and 3(5%) mothers were live in slum area. Majority 33 (55%) mothers had 2 children, whereas 23(38.33%) mothers had 1 child, and 3(5%) mothers had 3 children, 1(1.67%) had 4& above children.

Education related data of mothers of school going children is presented in the Figure 2. It reveals that majority 23(38.33%) mothers had secondary education whereas mothers with graduation & above education were 16(26.67%). Further, 15(25%) of them had intermediate education, and 6(10%) had primary education. The majority mothers 20(43.33%) were housewife. 17(28.33%) of them were govt. employee, 10(16.67%) mothers had business and, 7(11.67%) were private/corporate employee. The data reveals that majority mothers 18(30%) had Rs.30,000-40,000 monthly family income whereas 9(15%) mothers had Rs.20,000-30,000 monthly family income and 7(11.67%) mother had 40,000-70,000 monthly family income. The data presented in the Figure 2 reveals that majority 23(38.33%) mothers had sources of knowledge from family & friends, whereas

8(13.33%) mothers had sources of knowledge from print & electronics and 5(8.33%) mothers had sources of knowledge from mass media.

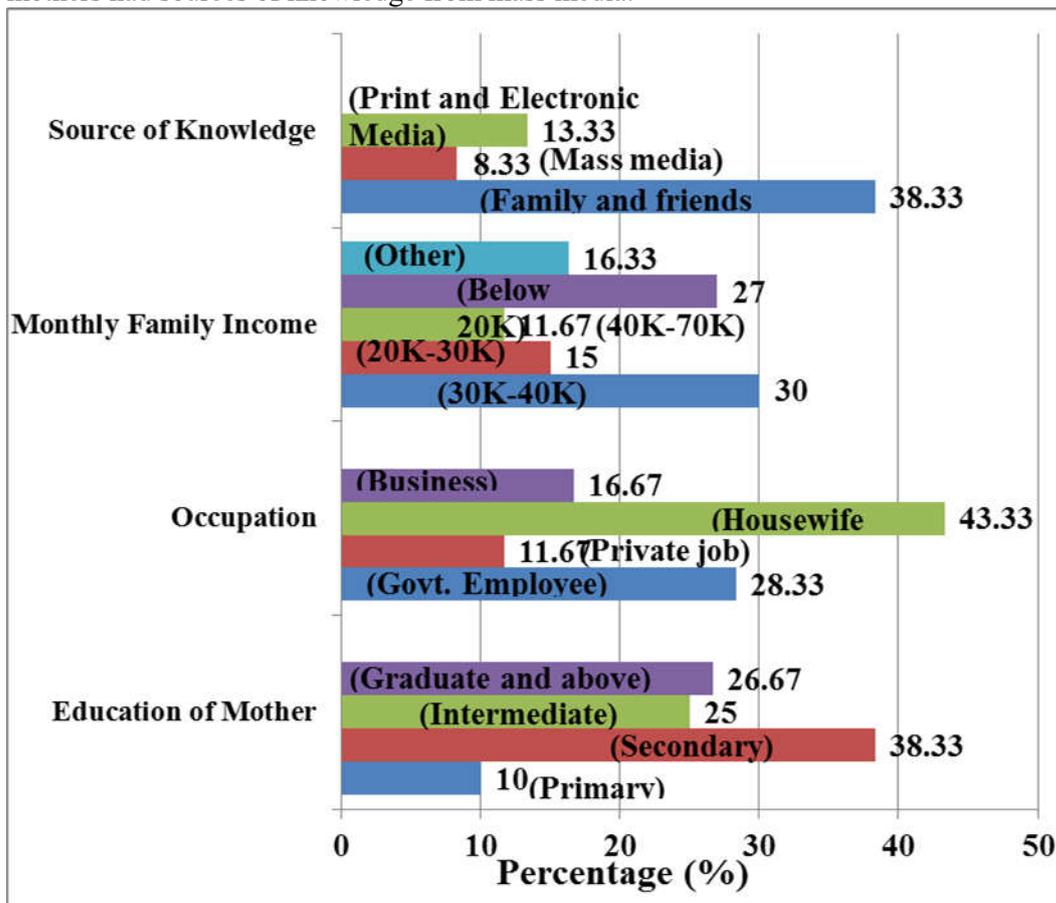


Figure 2. Percentage distribution of mothers of school going children according to their education, occupation, family income, and source of knowledge.

The study reveals that majority 54 (90%) mothers had no family health history, whereas 6(10%) mothers had family health history of diabetes. The majority 36(60%) mothers had previous knowledge, whereas 24(40%) mothers not had any previous knowledge of diabetes. It can be inferred that majority of the mothers of school going children belong to the age group 26-30 years. Majority of the mothers had at least secondary education. The majority of the mothers had sources of knowledge from family & friends.

Table 1. Item wise knowledge scores for correct response on introduction and definition of type 1 diabetes mellitus

SL. NO	ITEM	Frequency	% (X)
1.	Diabetes is a metabolic disorder	29	48.33%
2.	Other name of type 1 diabetes is juvenile diabetes	24	40%
3.	0-14 yrs age groups are at highest risk for type 1 diabetes mellitus	19	31.7%
4.	Diabetes mellitus are affected when your body can't use blood sugar the way it should be.	9	15%
5.	fasting blood glucose=140mg/dl is confirmed values meet the diagnostic threshold for diabetes	13	21.7%

6.	Hyperglycemia is high blood sugar level	18	30%
7.	Hypoglycemia is low blood sugar level	15	25%
8.	Pancreas secretes insulin	21	35%

Table 1 shows item wise knowledge score for correct response on introduction and definition of type 1 diabetes mellitus. It shows that only 48.33% of the mothers responded correctly for the items “Diabetes is a metabolic disorder”. Knowledge of mothers about “other name of type 1 diabetes is juvenile diabetes, and Pancreas secretes insulin” were 40% and 35%. 31% mothers responded correctly for the items “0-14 years age groups are at highest risk for type 1 diabetes mellitus” and 21.7% mothers responded correctly for the items “fasting blood glucose=140mg/dl is confirmed values meet the diagnostic threshold for diabetes”. 15% mothers correctly responded for the items “Diabetes mellitus are affected when your body can’t use blood sugar the way it should be”. The correctness of knowledge is 30% and 25% respectively for items “Hyperglycemia is high blood sugar level, Hypoglycemia is low blood sugar level”. Table 2 shows items wise knowledge score of mothers for correct response on classification of type 1 diabetes mellitus. It shows 38.3% of the mothers respond correctly for the items “Diabetes is newly classified related to etiology”. 46.7% of the mothers respond correctly for the items, “Type 1 diabetes is identified for children”. Thus the study indicates that structured teaching programme can be effective for increase of knowledge about introduction and definition of type 1 diabetes mellitus among mothers.

Table 2. Item wise knowledge scores for correct response on etiology & classification of type 1 diabetes mellitus

SL. No.	ITEM	Frequency	% (X)
1.	Diabetes is newly classified related to etiology	23	38.3%
2.	Type 1 diabetes is identified for children	28	46.7%

Table 3 shows items wise knowledge score for correct response on classification of type 1 diabetes mellitus. It shows that 23.3% of the mothers respond correctly for the items “Prediabetes mean fasting glucose of 100-125mg/dl. The 53% of the mothers respond correctly for the items, “More than 126 mg/dl fasting glucose concentration is required for diagnosis of diabetes mellitus.

Table 3 Item wise knowledge scores for correct response on diagnostic evaluation of type 1 diabetes mellitus

SL. NO	ITEM	Frequency	% (X)
1.	More than 126 mg/dl fasting glucose concentration is required for diagnosis of diabetes mellitus.	32	53.3%
2.	Greater than 200mg/dl is the level of random glucose concentration for diagnosis of diabetes.	13	21.7%
3.	Prediabetes means fasting glucose of 100-125mg/dl	14	23.3%
4.	4.1%-5.4% is the normal level of HbA1C	23	38.3%

Table 4 shows items wise knowledge score for correct response on management and prevention of type 1 diabetes mellitus. It shows that mothers are very less aware about the management of the diabetes. Knowledge of mothers about the proper diet for diabetes control and prevention was quite low. In this section highest correct answer 38% is shown about the importance of exercise to prevent and manage diabetes. Most of the cases the knowledge score is seen below 30%. Proper awareness about the effect of diabetes in health and effective measure to prevent and manage type 1 diabetes mellitus is very much required.

Table 4. Item wise knowledge scores for correct response on management and prevention of type 1 diabetes mellitus.

SL. NO	ITEM	Frequency	% (X)
1.	Hourly glucose level to be monitor in case of DKA	17	28.3%
2.	55% carbohydrate are required for preventing diabetes	13	21.7%
3.	Wheat wheat is the good carbohydrate food for diabetic child.	24	36.7%
4.	Sugar is restricted in type 1 diabetes diet	20	33.3%
5.	Beans are healthiest proteins for a type 1 diabetes diet	15	25%
6.	Chicken is the good animal sources of protein for type 1 diabetes.	19	31.7%
7.	Cheese is to avoid for diabetic child.	13	21.7%
8.	During exercise in case of diabetic child avoid exercising during insulin peak.	20	33.3%
9.	Insulin helps blood sugar to enter your cells	11	18.3%
10.	Exercise lowers the blood sugar that's why healthy diet and regular exercise so important.	23	38.3%
11.	Diet and exercise is the primary treatment of type 1 diabetes.	15	25%
12.	Eliminating all carbohydrates from the diet does not help to prevent diabetes complications	11	18.3%
13.	Memory loss can occur in brain due to type 1 diabetes	20	33.3%
14.	Fungal infection can be affected in skin by type 1 diabetes.	18	30%
15.	Retinopathy is the most common eye complication due to type 1 diabetes.	17	28.3%
16.	Heart attack can occur in cardiovascular system due to type 1 diabetes.	20	33.3%
17.	Neuropathy can occur in nervous system due to type 1 diabetes.	13	21.7%
18.	Numbness , tingling sensation in limbs are the sign and symptoms of neuropathy	18	30%

Table 5. Item wise knowledge scores for correct response on complications of type 1 diabetes mellitus

SL. NO	ITEM	Frequency	% (X)
1.	Heart disease is higher risk for diabetic people	31	51.7%
2.	Kidney disease will happen if you are not treating diabetes	24	40%
3.	Diabetic foot is the complications of diabetes mellitus which may require amputations.	2	3.33%

Table 5 shows items wise knowledge score for correct response on classification of type 1 diabetes mellitus. It shows that 51.7% of the mothers respond correctly for the items “Kidney disease will happen if you are not treating diabetes”. Thought 40% of the mothers responded correctly for the item “Kidney disease will happen if you are not treating diabetes”, lowest correct response is shown for the items, “Diabetic foot is the complications of diabetes mellitus which may require amputations”. Thus it is very clear that structured teaching programme is very relevant for all knowledge related to complications of type 1 diabetes mellitus.

Table 6. Area wise distribution of mean, standard deviation, mean percentage of knowledge scores of mothers of school going children regarding management and prevention of type 1 diabetes mellitus.

SL. NO.	AREA	MEAN	SD	MEAN% (X)
1.	Introduction & definition	2.5	1	31.25%
2.	Classification	0.85	0.6	42.5%
3.	Etiology & clinical manifestation	1.6	0.7	32%
4.	Diagnostic evaluation	1.4	0.6	35%
5.	Management and prevention	5.1	1.5	28.33%
6.	Complication	0.95	0.5	31.7%
	Over all	12.3	2.34	30.75

Area wise comparison of mean, SD and mean percentage knowledge scores of mothers of school going children regarding management and prevention of type 1 diabetes mellitus reveals that the highest score is 5.1 ± 1.5 which is 28.33% for the area “management and prevention”. The lowest mean score is 0.85 ± 0.6 which is 42.5% for the area “classification”. The overall mean score is 12.3 ± 2.34 which is 30.75%.

4. CONCLUSION

The cross-sectional study shows the knowledge among mothers of school going children regarding type 1 diabetes mellitus. The findings of the present study conclude that improvement in knowledge of mothers regarding management and prevention of type 1

diabetes mellitus is very much required. Instead of good demographic background the mothers of the selected area, knowledge regarding diabetes definition, classification, management and prevention is very much poor. Other than the classification types in no case the measured knowledge is more than 35%. Study also shows very poor knowledge of mothers regarding management and prevention of diabetes mellitus. Well propagation of awareness messages and structured teaching programme regarding the type 1 diabetes mellitus among mothers are very much warranted to ensure the healthy life of the public.

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