

Knowledge, Attitude and Practice of Diabetes among School Teachers in Upper Siang District of Arunachal Pradesh: A Cross-sectional Study

OBANG PERME¹, OJING KOMUT², MANJIT BORUAH³

ABSTRACT

Introduction: Diabetes is a global problem and expected to affect around 300 million adults all over the world and around 57 million in India by year 2025. Studies indicate that the awareness of diabetes among general population in Arunachal Pradesh is low. School teachers form the backbone of a society and are entrusted with the work of spreading knowledge and awareness among children and youths on many topics including health. School teachers also act as community leaders and shape the public perception.

Aim: To assess the Knowledge, Attitude and Practice (KAP) of diabetes among school teachers in Upper Siang district of Arunachal Pradesh, India.

Materials and Methods: The present cross-sectional study was carried out in all the five high and higher secondary schools in headquarter region of Upper Siang district of Arunachal Pradesh, India. Data was collected from February to May 2018. In each school, 22 randomly selected teachers from staff register were interviewed regarding KAP of diabetes using predesigned questionnaire. Data was descriptively analysed in form of frequencies and percentages and presented in form of tables.

Results: A total of 110 school teachers were interviewed. Majority 108 (98.18%) had knowledge about condition called diabetes. About 96 (87.27%) thought more and more people are getting affected from diabetes. However, only 4 (3.63%) of the respondents had knowledge that diabetes can impact younger people also. According to the responses, renal 63 (57.27%) and ocular 46 (41.82%) involvement were the two most common organs involved in diabetes. Almost half of the respondents felt that family history of diabetes, 54 (49.09%) was the most important risk factor for development of diabetes. Almost one-third, 34 (30.91%) of the respondents did not feel eating healthy and regular blood sugar 103 (93.64%) checking is important in diabetes. About 44 (40%) responding negative to the practice of morning walk for diabetes control.

Conclusion: Among school teachers in Arunachal Pradesh majority had a knowledge about diabetes as an entity but there was a significant lacuna in attitude and practices towards diabetes which needs to be inculcated as a means for better education for the teachers and transition of knowledge to students.

Keywords: Diabetes mellitus, Health, High school

INTRODUCTION

Diabetes is a global problem and is expected to affect around 300 million adults all over the world and around 57 million in India by year 2025 [1,2]. India with 65.1 million people with diabetes in 2013 was the second highest burden country after China which had 98.4 million people with diabetes [3]. Increase in incidence and prevalence of diabetes has been attributed to the changes in lifestyle from more physically active to sedentary lifestyle pattern with improvement of socio-economic condition, which can be prevented by adopting healthy lifestyle [2,4]. A study done in West Bengal, reported low awareness of diabetes in both rural and urban communities [5]. Overall, in India, 43.2% of the adult population had heard about a condition called diabetes [6]. Knowledge on diabetes was reported to be low in rural areas of India [7]. Another study from Tripura, a North Eastern state reported low knowledge and awareness about diabetes among adult population [8].

The literature review for studies about the KAP on diabetes from Arunachal Pradesh revealed only a single study. In the study done in Kameng District of Arunachal Pradesh among adults aged 25 years and above, only 21% had showed awareness of diabetes [9]. Schools have been widely recognised as an important platform for delivering health promotion interventions particularly in context of non communicable diseases [10,11]. School teachers form the backbone of a society and are entrusted with the work of spreading knowledge and awareness among

children and youths on many topics including health. School teachers also act as community leaders and can shape public perception. They can play a major role in improving knowledge and awareness about diabetes among the communities they serve.

There have been no studies on KAP of diabetes among school teachers of the North Eastern state of Arunachal Pradesh. So, the aim of this study was to assess the KAP of diabetes among school teachers in Upper Siang district of Arunachal Pradesh, India.

MATERIALS AND METHODS

The present cross-sectional study was carried out among teachers of schools in Upper Siang district of Arunachal Pradesh, India. Study was approved by Institutional Ethical Committee (IEC) of TRIHMS Naharlagun, Arunachal Pradesh, India (No.TRIHMS/ETHICS/01/2019-20/39). All interviews were conducted after taking informed written consent. Privacy and confidentiality was maintained during the interviews. This study included teachers of high school and higher secondary schools headquarter region of the district and data was collected between February to May 2018.

Inclusion criteria: All school teachers aged above 18 years of age were included in the study.

Exclusion criteria: Those not willing or refusal for participating in the study were excluded from the study.

Sample size calculation: No previous studies on KAP of diabetes among school teachers in Arunachal Pradesh were available, so considering 50% prevalence to get maximum sample size and taking 10% error and 95% confidence interval, sample size was calculated as 96. Taking a non response rate of 5%, sample size was calculated as 101 and this was rounded off to 110 [12].

Study Procedure

There are five high school and higher secondary schools in the district headquarter region of Upper Siang district of Arunachal Pradesh, India. All five schools were included in the study. In each school 22 teachers were interviewed. The interviewers first approached the principal of the school for permission to conduct the study and explained the purpose of the study. After obtaining permission, the 22 teachers were chosen randomly from the staff register and approached at a convenient time during the day. If a chosen teacher was absent on the day of visit, another visit was made after consultation with the teacher. The data was collected by interview method using a predesigned and pretested questionnaire encompassing KAP related to diabetes. The questionnaire was prepared based on previous published studies [13,14]. The study questionnaire was prepared in English. Pilot testing of the questionnaire was done among a few teachers in the district. These interviews were not kept for analysis [Annexure].

STATISTICAL ANALYSIS

Descriptive data was expressed as numbers and percentages. All calculations were done using Microsoft excel and Statistical Package for the Social Sciences (SPSS) version 18.0.

RESULTS

The baseline characteristics of the study population is shown in [Table/Fig-1]. A 60 (54.55%) of the population were male and a majority 57 (51.82%) had an educational qualification of Bachelor of Arts (B.A). The knowledge domain of the respondents is shown in [Table/Fig-2]. Majority had a knowledge about diabetes as an entity and the rising incidence of the disease. However, only 4 (3.63%) of the respondents had knowledge that diabetes can impact younger people also. According to the responses renal 63 (57.2%) and ocular 46 (41.8%) involvement were the two most common organs involved in diabetes. Almost half the respondents felt that family history of diabetes 54 (49.09%) was the most important risk factor for development of diabetes. The [Table/Fig-3] shows the attitude domain results. Importantly almost one-third 34 (30.91%) of the respondents did not feel eating healthy and regular blood sugar checking is important in diabetes. The practice responses are shown in [Table/Fig-4] with more than one-third 41 (37.27%) reporting it is not important to regularly check blood sugar and 44 (40%) responding negative to the practice of morning walk for diabetes control. About 69 (62.73%) subjects responded that they would visit a doctor, if they ever had diabetes.

Characteristics	Frequency (n=110)	Percentage (%)
Age above 30 years	78	70.91
Males	60	54.55
Education		
Bachelor of Arts (B.A)	57	51.82
Bachelor of Science (B.Sc)	37	33.64
Master of Arts (M.A)	07	6.36
Master of Science (M.Sc)	09	8.18
History of diabetes in family of respondent	20	18.18

[Table/Fig-1]: Showing baseline demographic characteristics of the study population.

Characteristics	Frequency (n=110)	Percentage (%)
Knowledge of condition called "diabetes"		
Yes	108	98.18
No	02	1.82
Knowledge more and more people are getting affected with diabetes		
Yes	96	87.27
No	10	9.09
Don't Know	04	3.64
Knowledge about age of occurrence of diabetes		
Younger people	04	3.63
Older people	59	53.64
No age differences	37	33.64
Don't know	10	9.09
Knowledge of any organ's affection in diabetes		
Yes	82	74.55
No	07	6.36
Don't know	21	19.09
Knowledge of specific organs affected in diabetes		
Eyes	46	41.82
Heart	13	11.82
Lungs	3	2.73
Stomach	4	3.63
Kidneys	63	57.27
Feet	11	10
Brain	2	1.82
Hands	2	1.82
Nerves	8	7.27
Don't know	24	21.82
Knowledge of the risk factors for diabetes (multiple)		
Overweight	34	30.90
High blood pressure	37	33.63
Family history of diabetes	54	49.09
Consuming more sweets	35	31.81
Lack of physical activity	39	35.45
Mental stress	18	16.36
Don't know	09	8.18
Knowledge that diabetes can be prevented		
Yes	87	79.09
No	10	9.09
Don't know	13	11.82
Knowledge of "measure to prevent diabetes" (multiple)		
Diet	57	51.81
Exercise	51	46.36
Medicine	23	20.90
Don't know	13	11.81

[Table/Fig-2]: Knowledge domains of the study population about diabetes.

Characteristics	Frequency (n=110)	Percentage (%)
Eating healthy food prevents diabetes		
Agreed	76	69.09
Disagree	34	30.91
Regular checking of blood sugar is important		
Agree	103	93.64
Disagree	06	5.45
Don't know	1	0.91
Diabetes patient should consult with physician regularly		

Yes	93	84.54
No	17	15.45
Importance of regular medicines intake		
Agree	66	60
Disagree	19	17.27
Don't know	25	22.73
Diabetes is curable		
Agree	45	40.91
Disagree	43	39.09
Don't know	22	20.0
Diabetes is a killer disease		
Agree	91	82.73
Disagree	12	10.91
Don't know	7	6.36

[Table/Fig-3]: Attitude domain of the study population about diabetes.

Characteristics	Frequency (n=110)	Percentage (%)
Regularly check blood sugar		
Yes	69	62.73
No	41	37.27
Type of caloric intake		
Low calorie food	58	52.73
High calorie food	2	1.81
Don't know+no response	25	22.73
Morning walk		
Yes	66	60
No	44	40
Frequency of morning walk		
Daily	36	32.73
Alternate day	12	10.91
Once in week	7	6.36
Rarely	47	42.73
No response	8	7.27
Action you will take if you ever have diabetes		
Pray to god	3	2.73
Visit doctor	69	62.73
Get treatment from quack who can cure the condition	9	8.18
Will try self-remedies first	29	26.36

[Table/Fig-4]: Practice domains of the study population about diabetes.

DISCUSSION

The KAP about diabetes among the population is important for prevention as well as proper treatment and control of diabetes. The current study was done to assess KAP about diabetes of school teachers of Upper Siang district of Arunachal Pradesh, India. Teachers in a community are among the educated persons and are an influential role models for students and a source of knowledge on many topics including health related issues like diabetes. Schools have been widely recognised as an important platform for delivering health promotion interventions particularly in context of non-communicable diseases [10,11]. Understanding the gap in KAP of diabetes among school teachers would help in health education activities focusing on the identified gap areas.

In this study, 108 (98.18%) of respondents had heard about condition called diabetes which was higher than earlier studies reported from other parts of India, albeit from diverse population [7,9,15]. Overall level of knowledge of diabetes was high which was expected given the background educational qualifications of the population.

Most of the respondents 103 (93.64%) agreed that getting blood sugar checked regularly was important. However, a substantial part

of the respondents did not agree that healthy eating as a preventive measure of diabetes which has also been observed in previous studies [7,9,15]. These can have important implications for future programmes aimed at raising awareness about the link between diet, healthy lifestyle and diabetes prevention among teachers of this region.

Among the study participants practice of taking low calorie diets was observed in only 58 (52.73%). Such a practice again hints at the overall lack of information diet and diabetes interactions among respondents from this region. Another important aspect was that around half of the respondents were not agreeing on the importance of practice of morning walk for diabetes prevention. World Health Organisation (WHO) has revised its recommendations on physical activity in 2020 and stated that adults should undertake 150-300 minutes of moderate-intensity, or 75-150 minutes of vigorous-intensity physical activity, or some equivalent combination of moderate-intensity and vigorous-intensity aerobic physical activity, per week [16]. While multiple reasons like inherently active nature of the local community without a diurnal preference of activity may influence this practice, there needs to be further impetus on the encouragement towards an increased physical activity among teachers with the ultimate goal of percolating the knowledge to students.

This study forms the first study from Arunachal Pradesh as well as from the region focussed on school teachers and highlights further need of spreading education about diabetes among school teachers.

Limitation(s)

The study findings are based on the memory of the respondent and are subjected to recall bias. Practices of the respondent were not observed.

CONCLUSION(S)

Among school teachers in Arunachal Pradesh majority had knowledge about diabetes as an entity but there was significant lacuna in attitude and practices towards diabetes which emphasises the need for increasing diabetes awareness activities among school teachers which will in turn increase diabetes knowledge among students.

REFERENCES

- [1] Ramachandran A, Snehalatha C, Kapur A, Vijay V, Mohan V, Das AK, et al. High prevalence of diabetes and impaired glucose tolerance in India: National Urban Diabetes Survey. *Diabetologia*. 2001;44(9):1094-01.
- [2] Ranasinghe P, Jayawardena R, Gamage N, Sivanandam N, Misra A. Prevalence and trends of the diabetes epidemic in urban and rural India: A pooled systematic review and meta-analysis of 1.7 million adults. *Ann Epidemiol*. 2021;58:128-48.
- [3] Guariguata L, Whiting D, Hambleton I, Beagley J, Linnenkamp U, Shaw J, et al. Global estimates of diabetes prevalence for 2013 and projections for 2035. *Diabetes Res Clin Prac*. 2014;103(2):137-49.
- [4] Reis JP, Loria CM, Sorlie PD, Park Y, Hollenbeck A, Schatzkin A, et al. Lifestyle factors and risk for new-onset diabetes: A population-based cohort study. *Ann Int Med*. 2011;155(5):292-99.
- [5] Mukherjee PS, Ghosh S, Mukhopadhyay P, Das K, Das D Kr, Sarkar P, et al. A diabetes perception study among rural and urban individuals of West Bengal, India: Are we ready for the pandemic? *International Journal of Diabetes in Developing Countries*. 2020;40(4):612-18.
- [6] Deepa M, Bhansali A, Anjana RM, Pradeepa R, Joshi SR, Joshi PP, et al. Knowledge and awareness of diabetes in urban and rural India: The Indian Council of Medical Research India diabetes study (phase I): Indian Council of Medical Research India diabetes 4. *Indian J Endocrinol Metab*. 2014;(3):379-85.
- [7] Muninarayana C, Balachandra G, Hiremath S, Iyengar K, Anil NS. Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar. *Int J Diabetes Dev Ctries*. 2010;30(1):18-21.
- [8] Lau SL, Debarm R, Thomas N, Asha HS, Vasan KS, Alex RG, et al. Healthcare planning in North-East India: A survey on diabetes awareness, risk factors and health attitudes in a rural community. *J Assoc Physicians India*. 2009;57:305-09.
- [9] Singh A, Milton PE, Nanaiah A, Samuel P, Thomas N. Awareness and attitude toward diabetes in the rural population of Arunachal Pradesh, Northeast India. *Indian J Endocrinol Metab*. 2012;(Suppl1):S83-S86.
- [10] Singh A, Bassi S, Nazar GP, Saluja K, Park M, Kinra S, et al. Impact of school policies on non-communicable disease risk factors - A systematic review. *BMC Public Health*. 2017;17(1):292.
- [11] Bassi S, Gupta VK, Chopra I, Ranjani H, Saligram N, Arora M, et al. Novel school-based health intervention program-A step toward early diabetes prevention. *Int J Diabetes Dev Ctries*. 2015;35(4):460-68.

[12] Lwanga SK, Lemeshow S. Sample size determination In health studies: A Practical Manual. Geneva; World Health Organization. 1991:01-02.

[13] Fatema K, Hossain S, Natasha K, Chowdhury HA, Akter J, Khan T, et al. Knowledge attitude and practice regarding diabetes mellitus among Nondiabetic and diabetic study participants in Bangladesh. BMC Public Health. 2017;17:364.

[14] Islam FMA, Chakrabarti R, Dirani M, Islam MT, Ormsby G, Wahab M, et al. Knowledge, attitudes and practice of diabetes in rural Bangladesh: The Bangladesh Population Based Diabetes and Eye Study (BPDES). PLoS ONE. 2014;9(10):e110368.

[15] Mounica B, Nalluri KK, Prakash SA, Lohith MN, Venkataramarao N. Study of knowledge, attitude, and practice of general population of Guntur toward silent killer diseases: Hypertension and diabetes. Asian J Pharm Clin Res. 2015;74-78.

[16] Bull FC, Al-Ansari SS, Biddle S, Borodulin K, Buman MP, Cardon G, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. Br J Sports Med. 2020;54(24):1451-62.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of General Medicine, TRIHMS, Naharlagun, Arunachal Pradesh, India.
2. Assistant Professor, Department of General Surgery, TRIHMS, Naharlagun, Arunachal Pradesh, India.
3. Assistant Professor, Department of Community Medicine, Assam Medical College, Dibrugarh Assam, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Obang Perme,
J Kena Apartment, E sector, Naharlagun-791100, Arunachal Pradesh, India.
E-mail: oobang2003@gmail.com

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- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

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Annexure: Study Proforma	
Name:	
Age:	
Sex:	
Name of School	
Address:	
Education Qualification:	B.A/B.Sc./M.A/M.Sc.
History of diabetes in family:	Yes/
	No
Knowledge Questions	
1. Have you heard of a condition called diabetes?	Yes/
	No
2. Do you think in general more and more people are getting affected with diabetes nowadays?	Yes/
	No/
	Don't know
3. Which age groups diabetes affect more:	Younger people/
	older people/
	no age difference/
	don't know
4. Do you think diabetes can affect any organs?	Yes/
	No/
	Don't know
5. If yes, which organs? (multiple options can be selected)	Eyes/Heart/Lungs/Stomach/Kidneys/Feet/Brain/Hands/Nerves/Don't know
6. What are the risk factors for diabetes? (multiple options can be selected)	Overweight/High blood pressure/Family history of diabetes/Consuming more sweets/Lack of physical activity/Mental stress/ Don't know
7. Can diabetes be prevented?	Yes/
	No/
	Don't know
8. If yes, how can it be prevented? (multiple options can be selected)	Diet/Exercise/Medicine/don't know
Attitude	
1. We should eat healthy food to prevent diabetes	Agree
	Disagree
	Don't know

2. Regular checking of blood sugar is important	Agree
	Disagree
	Don't know
3. Diabetes patient should consult with physician regularly	Agree
	Disagree
	Don't know
4. Regular medication is important in diabetes	Agree
	Disagree
	Don't know
5. Diabetes is curable	Agree
	Disagree
	Don't know
6. Diabetes is a killer disease	Agree
	Disagree
	Don't know
Practice	
1. Did you regularly check blood sugar?	Yes/
	No
2. What you do to get healthy life?	low calorie food/
	high calorie food/
	don't know
3. Do you go to morning walk?	Yes/
	No
4. How often you go for morning walk.	Daily/
	alternate day/
	once in week/
	rarely
5. If you ever had diabetes then what will you do?	a. Pray to God
	b. Visit doctor
	c. Get treatment from Quack who can cure the condition
	d. Will try self-remedies first