



Study of Patients' awareness and their perspective about diabetic disorder in T2DM patients: A descriptive study

Raj Kumar Bhardwaj ¹, H L Kazal ², Kamlesh Kohli ¹, KMDS Panag ³, Kavita Paul ²

¹ Deptt. of Pharmacology, GGS Medical College and Hospital (Baba Farid University of Health Sciences), Faridkot (Punjab)

² Deptt. of Medicine, PIMS, Jalandhar- Punjab-India

³ Deptt. of Biochemistry, GGS Medical College and Hospital (Baba Farid University of Health and Sciences), Faridkot, Punjab-India

ABSTRACT

Introduction: Type 2 Diabetes mellitus, a metabolic disorder is mostly related to the sedentary life style of subjects. Awareness of diabetes disorder among diabetics plays a crucial role in its management.

Aims & Objectives: To study the awareness of diabetes disorder, its complications and management among T2DM patients.

Materials and Methods: This was a cross-sectional and descriptive study done among T2DM patients who visited the OPD of department of Medicine at GGS Hospital, Faridkot (in a rural area of Punjab-India). A pretested proforma contained questionnaire related to the awareness/knowledge to diabetic disorders, its complications and management was distributed among 300 subjects and their response was analyzed.

Results: 235 patients responded (78.33%) to the pretested proforma. Males and females were 48.08% and 51.92% respectively. 25.53% subjects were illiterate. Lack of knowledge about diabetic disorders in 79.57%, duration of treatment in 73.61%, their complications in 74.89%, modification of diet in 40%, their body care/cleanliness in 62.55% and leaving of medication in 76.17% were seen. A habit of taking other indigenous / complimentary medicines was also seen in 40.43% of cases along with conventional antidiabetic therapy.

Conclusion: Most of the diabetic patients had lack of knowledge about diabetic disorders, its complications and management. They also left the medicine in midway of treatment and had developed signs & symptoms of hyperglycemia. A good number of patients also took indigenous products to treat their disease. They also didn't follow the life style modification measures appropriately. Therefore, adequate awareness/knowledge should be provided to all the diabetic patients to manage diabetic disorder in a better way.

Keywords: Knowledge, Perspectives, Complications, Life style modification, Complementary & Alternative medicine (CAM), Medication compliance & Adherence.

Article Info: Received 02 May 2019; Review Completed 05 June 2019; Accepted 08 June 2019; Available online 15 June 2019



Cite this article as:

Bhardwaj RK, Kazal HL, Kohli K, Panag KMDS, Paul K, Study of Patients' awareness and their perspective about diabetic disorder in T2DM patients: A descriptive study, Journal of Drug Delivery and Therapeutics. 2019; 9(3-s):467-471 <http://dx.doi.org/10.22270/jddt.v9i3-s.3068>

*Address for Correspondence:

Dr. Raj Kumar, MD. Professor, Deptt. of Pharmacology, GGS Medical College and Hospital (Baba Farid University of Health Sciences), Faridkot (Punjab)

INTRODUCTION

Diabetic disorder is a metabolic disorder and its incidence rising worldwide. The prevalence of this disease across the world was estimated to be 2.8% in 2000 and may rise to 4.4 % in 2030¹. Patients require a long term treatment, regular follow up and change in life style to keep their blood glucose in normal range. However, various studies have shown that the knowledge and awareness of diabetes patients related to diabetic disorder are inadequate and variables from 16% to 72%^{2,3}. Deepa et al. observed that knowledge and awareness about diabetes disorder was 63.4% among diabetic patients and only 72.7% knew about its complications in a survey of India². It has been also found that 16% of diabetic patients did not know even about the risk factors of diabetes and also its complications (25.8%)⁴.

Zhuang et al. observed that knowledge about lifestyle intervention was insufficient as weight control (28.4%), increase physical activity (41.9%) and dietary modification (35.1%)⁵.

Various studies had shown that awareness and knowledge about diabetes, its management and complications is inadequate among diabetic patients^{6,7,8,9}. Hence, it is important to conduct study related to the awareness/knowledge, its management, to keep in mind the rising prevalence among diabetes so that adequate health facilities and appropriate information could be provided to the newer cases of diabetes patients.

METHODOLOGY

This was a cross sectional, descriptive study done among T2DM patients in a tertiary care teaching institute (GGS Medical College and Hospital, Farikdot, Punjab) located in a rural area. A pretested proforma (structured questionnaire) was distributed among diabetic patients who were already on antidiabetic therapy and gave valid written informed consent to participate in this survey. Those patients who were unable to read this proforma were interviewed. 300 of such proforma were distributed and their response was recorded.

Inclusion Criteria:

T2DM patients in the age group 30-70 years and both sex were enrolled.

Exclusion Criteria:

T1DM patients, pregnant lady & lactating mother, who were on steroids therapy, OCPs (Oral contraceptive pills), underwent recent major surgery and not willing to participate in this study.

Statistical Analysis:

Data of the study were entered into the Excel Sheet and presented as mean, percentage and proportion.

RESULTS

Patients' awareness about diabetes mellitus and its symptom and their perspectives related to its complication and management were evaluated in those patients who responded to the pretested proforma (questionnaires). 235

patients responded (78.33%) to this questionnaire out of three hundred. Males and females were 48.08% (113) and 51.92% (122) respectively. The mean $\pm$ SD age of the patients was 55.1 ± 12.05 years.

1. Duration of Diabetes Disease

21.2% were newer cases and those who diagnosed within a year, while 78.22% had history of T2DM 1-25 years. (Table I)

Table I: Duration of Diabetes Disease in patients		
Duration of Diabetes Diagnosed	No.	Percentage
Newer case	9	3.83
<1 year	41	17.45
1-5 year	78	33.19
5-10 year	62	26.38
10-15year	24	10.21
15-20 year	15	6.38
20-25 year	6	2.55
Total	235	

It was observed that 92.77% cases diagnosed by the doctors while 7.23% by the other health professionals (pharmacists/staff nurses).

2. Education status of the Patients

It was found that 25.53% illiterate while education up to five (5) standard 28.51%, 6-10 standard 31.92% and intermediate to post graduate were 14.02%, respectively. (Table II)

Table II: Education Status of the Patients				
Education	Male	Female	Total No. of patients	%age
Uneducated	19	41	60	25.53
upto 5 th standard	35	30	67	28.51
6 th -8 th standard	25	13	37	15.75
Metric	20	18	38	16.17
Intermediate	7	3	10	4.25
Graduate	6	4	10	4.25
Diploma	7	2	8	3.4
Postgraduate	4	1	5	2.12
Total	123	112	235	

3. Symptoms felt by Diabetic Patients at the time of diagnosis

Common symptoms felt by the patients were dry mouth/increased thirst, fatigue/tiredness, uneasiness, polyphagia (increased appetite), polyurea, headache, weakness and dizziness (Table III).

4. It was observed that 79.57% patients did not have knowledge about their diabetic disorder (Table IV).

5. 73.61% patients were not aware about the duration/course of treatment of their disease.

Table III: Symptoms felt by Patients at the time of diagnosis of T2DM			
Symptoms felt by Diabetic Patients	Symptom present in diabetics	% age of symptoms occurred	% age of symptoms out of total symptom
Thirst / dry mouth	201	85.53	21.20
Tiredness / fatigue	200	85.11	21.09
Uneasiness/ Not feeling well	195	82.98	20.57
Appetite increased	185	78.72	19.52
Polyurea	158	67.23	16.67
Headache	7	2.98	0.74
Weakness	1	0.43	0.10
Dizziness	1	0.43	0.10
Total symptoms seen	942		

Table IV: Awareness of different modalities in Diabetic Patients		
	Yes	%age
Awareness of Diabetes	48	20.43
Duration of treatment	62	26.39
Complications	59	25.11
Dietary Modifications	141	60
Dietary Modification followed	96	40.85
Dietary plus Other Precautions taken	182	77.45
Compliance to medications	165	70.21
Body care	89	37.87
Regular Checkup followed	135	57.45

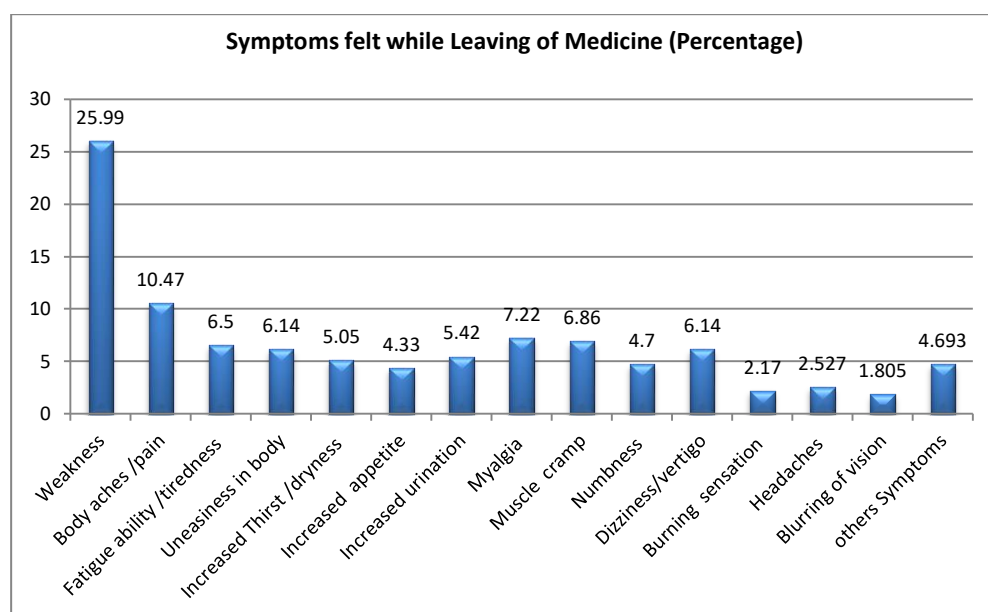


Figure 1: Symptoms felt while Leaving of Medicine (Percentage)

6. Symptoms felt by Diabetic Patients while leaving of medication

It was found that 76.17% cases (n=178) had history to leave the antidiabetic medicines during treatment course but restarted it very soon when they felt that symptoms got worsened.

On leaving the medicine(s) the common signs and symptoms felt by them were weakness (n=72), body aches/ pain (n=29), fatigue / tiredness (n=18), uneasiness (n=17), increased thirst (n=14), increased appetite (n=12), increased urination (n=15), myalgia (n=20) & muscle cramp (n=19), dizziness/vertigo (n=17), numbness (n=13), headache (n=7), burning sensation (n=6) & pin-prick sensation (n=2), blurring of vision (n=5), unable to do work (n=3) etc. (Figure 1)

7. Awareness about Complications of diabetes

It was found that 74.89 % (n=176) (Table IV) patients did not know about the complications/ consequences of the diabetic disease that might occur. Only 25.11% (n=59) had knowledge about the complications and organs/parts of body affected as CVDs (28.81%, n=17), kidneys (27.12%, n=16), eye (23.72%, n=14), infections (13.56%, n=8) and delayed wound healing (6.78%, n=4).

8. Awareness about dietary modifications

It was seen that 60% patients aware about dietary modification of their diets would be helpful to control blood sugar levels. (Table IV)

9. Dietary modifications followed by diabetic patients

It was found that 40.85% patients following the diet which a diabetic subject had to have in their meals. (Table IV)

10. Precautions to be taken other than meal to control blood sugar

It is observed that 77.45% patients know about the precautions to be taken to control the blood sugar levels other than meal (e.g Alcohol, sweet beverages, soft drinks, tea, smoking, etc.). (Table IV)

11. Awareness about body care

It was seen that 37.87% patients knew how to take personal care and clean their body parts (Table IV). It was noticed that body care followed by patients as feet 1.27%, hands & feet 1.70% and 34.89% other parts in addition to hands, feet, etc.).

12. Awareness about Regular checkup from doctor was found in 57.45% patients who knew that routine checkup is a must for a diabetic patient. (Table IV)

13. Compliance to medications noticed in 70.21% patients found taking their antidiabetic medicine(s) regularly. (Table IV)

14. **Other indigenous/ complimentary therapy** was found in 40.43% (n=95) of cases. Indigenous /herbal

preparation were taken as Jamun, Fenugreek, Neem, Bitter gourd, Isphagula husk, Aloe vera, Amla, etc.. (Table V)

Table V: Indigenous products used by Diabetic patients		
	N	%age
Jamun (<i>Syzgium cumini</i>)	19	20
Fenugreek (<i>Trigonella foenum-graecum</i>)	16	16.84
Neem (<i>Azadirachta indica</i>)	16	16.84
Bitter guard (<i>Momordica charantia</i> Linn)	12	12.63
Isphagula husk (<i>Plantago Ovata</i> Husk)	12	12.63
Gurmar butti (<i>Gymnema sylvestre</i>)	10	10.53
Aloe vera (<i>Gwarpatha</i>)	6	6.32
Amla (<i>Phyllanthus emblica</i>)	4	4.21
Total	95	

DISCUSSION

Patients' Awareness and their perspectives about diabetes mellitus:

Patients' awareness about diabetes mellitus and its symptoms and their perspectives related to its complications and management has been playing an important role not only in the management of disease but also to deal with patient. This study has been done in a rural area of Punjab that is near to International Border (Indo-Pakistan). Moreover, this area is one of the farming/agricultural lands and majority of the population has traditional life style.

It has been seen that duration of diabetes diagnosed within a year in 21.28% cases and 33.19% between 1-5 years is more or less as compared to Shrestha et al. (21.2% and 48.5%, respectively) found in their study in Nepali diabetic patients⁷.

It is observed that 92.77% cases are diagnosed by the doctors while 7.23% by the pharmacists/staff nurses.

1. Level of education of the patients in this study is contrast to the study of Mudhaliar et al, (study done on diabetic subjects (n=100) rural area in Bathalapalli, Andhra Pradesh)¹⁰ as illiterate 25.53 % vs. 71%, literate 74.47 vs. 29%. While among literate patients, Matric 16.17% vs. 20%, intermediate 4.25% vs. 4%, graduate and postgraduate 6.38% vs 5%.
2. Common symptoms shown at time of diagnosis of diabetes by the patients are dry mouth/increased thirst, fatigue/tiredness, uneasiness, polyphagia (increased appetite) and polyurea (Table III). These symptoms are same as mentioned by the CDC (Centre for Disease control and prevention)¹¹.
3. 20.43% diabetics had knowledge about the diabetic disorder that is less as revealed by the Deepa et al. (63.4%)² and Shrestha et al. 2015 (30.3%)⁷.
4. It is noticed that 73.62% patients did not know about the course of management of their disease that is less as seen by Shrestha et al. (33.3%)⁷. This is a major cause of concern as diabetes requires lifelong management and lack of its awareness may leads to lack of adherence to antidiabetic therapy.
5. It is also found that 76.07% cases left the antidiabetic medicines during the treatment course due to lack of awareness about duration of therapy and adherence to therapy. Thus missing or leaving doses of the medicine causes the signs and symptoms frequently observed are body ache, weakness, fatigue / tiredness,

uneasiness, increased thirst, increased appetite, increased urination, dizziness/vertigo, myalgia & muscle cramp, numbness, headache, burning sensation & pin-prick sensation (Figure 1). As leaving of antidiabetic medicine(s) led to development of aforementioned signs and symptoms (and/ or worsening of these) and then patients realized that these symptoms because of increased blood sugar levels and routine intake of medicine would be better for their health.

6. Regarding awareness of complications of diabetes disease (25.11 %) (Table IV) are very less in comparison to other studies by Deepa et al. 2014 (72.7%)², Muninarayana et al. 2010 (74.2%)⁴ and Shrestha et al. (2015)⁷. Knowledge about the organs/parts of body affected, heart (28.81%), kidney (27.12%), eye (23.72%), in this study is less in comparison to Deep et al. (45.1%, 47.9% and 73.5%)² and Muninarayana et al. (45.2%, 41.9% and 54.8%)⁴.
7. Delay in wound healing (6.78%) disclosed in this study is less in comparison to Shrestha et al. (90.9%)⁷.
8. Infections (13.56%) found in this study while Deepa et al. (61.3%)² and Muninarayana et al, (74.2%)⁴ mentioned about diabetic foot in their study.
9. Dietary restriction/modification followed by 40.85% cases (Table IV) which is less as reported by Muninarayana et al. in a survey 87%⁴.
10. It is observed that 77.45% patients also know about the other precautions to be kept in mind to control the blood sugar levels (other than meal) (Table IV). However, other precautions applied to control the blood sugar levels (other than meal are alcohol, beverages, smoking, sweet beverages, etc.) is more as disclosed by Muninarayana et al. (67.7%)⁴.
11. Care and cleanliness of the foot seen in 37.87% cases (Table VI) is less as revealed by Kaur et al. (63.3%, study done in Chandigarh)¹² and Muninarayana et al.(87.1%)⁴
12. It has been seen that 37.87% patients knew how to take care and clean their body parts (viz. feet 1.27%, hands & feet 1.70% and 34.89% other parts in addition to hands & feet.), while Shrestha et al. found extra care taken while cutting of their nails by 78.8% in diabetic subjects⁷.
13. It has been found that regular routine checkup (57.45%) (IV) is same as seen by Shrestha et al. (57%)⁷ and more as disclosed by Muninarayana et al. (9.7%)⁴.

14. It has been observed that 60% patients are aware about dietary modification of their diets (Table IV) that is less as revealed by Muninarayana et al. (93.5%)⁴ but more as seen by Shrestha et al. (12.1%)⁷
15. Antidiabetic medicine regularly (70.21%) taken by patients is more as disclosed by Kaur et al. 1998 (62.9%) but less as compared to Muninarayana et al. 100%⁴.
16. Other indigenous/ complimentary therapy was found in 40.43% of cases. These preparation same as mentioned by Grossman LD et al.¹³

From the above discussion it is very much clear that in this rural region of India, diabetic patients have lack of awareness about diabetes disorder, its treatment, adherence to therapy and its complications. All these cause serious consequences in diabetic patients in the form of hyperglycaemia, diabetic ketoacidosis, cardiovascular events, etc. that required hospitalization of the patients that put an extra burden on the health system for a disease which can be easily treated by just taking antidiabetic medicines and improving follow up/checkup.

These patients have also taken indigenous complimentary medicines in addition to their antidiabetic therapy or left the antidiabetic medicines on start of such therapy. This kind of practice may produce antidiabetic and indigenous agent interactions some time¹³. All the above issues are very relevant in the present scenario with respect to the management of diabetes disorder. Therefore an appropriate step has to be taken to create awareness about the diabetes and other modalities related to it, so that we can treat such patients in a better way.

Limitations

Our study had a few limitations. The diabetes patients with serious comorbid conditions (CHF, AMI, stroke, CKD, etc.) admitted in the hospital were not included in the study. The diabetic patients who underwent surgery recently and paediatric diabetic patients and pregnancy induced diabetic patients and type 1 DM were also excluded. Moreover, our study was done for a short period of time for small number of patients. Follow up study on large number of diabetic patients is needed to be done to check the adherence to diet and medications to prevent diabetic related problems.

CONCLUSION

It has been noticed that there is a lack of awareness among diabetic patients regarding diabetes disorder, its complication and its duration of management, compliance to medicine (s) and to follow dietary modifications /other precautions to be taken to manage diabetes disorder and self body care. A good number of patients also took indigenous medicines some time along with allopathic antidiabetic medicines. It is noteworthy that these patients require proper education and information related to diabetic disorder time to time. So that these patients could be managed by all aspects.

Conflict of Interests: None to declare

Ethical Approval: Ethical approval of this study has been obtained from IEC.

REFERENCES

1. Wild S, Roglic, G, Green A, Sicree R, King H. Global Prevalence of Diabetes: Estimates for the year 2000 and projections for 2030, *Diabetes Care*, 2004 27; 5:1047-1053. Viewed 14 Feb. 2018 <
<http://care.diabetesjournals.org/content/27/5/1047.long>>
2. 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 journal of endocrinology and metabolism*, 2014; 18:3: 379-85.
3. Al-Sarihin KK, Bani-Khaled MH, Haddad FH, Althwabia II. Diabetes Knowledge among Patients with Diabetes Mellitus at King Hussein Hospital, *JOURNAL OF THE ROYAL MEDICAL SERVICES*, 2012; 19(1):72-77.
4. Muninarayana C, Balachandra G, Hiremath SG, Iyengar K, Anil NS. Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar, *International journal of diabetes in developing countries*, 2010, 30; 1: 18-21.
5. Zhuang Q, Wu L, Lu Y, Du J, Guo G. Awareness and intervention status of prediabetes among Chinese adults: implications from a community-based investigation, *International Journal of Clinical Experiment Medicine*, 2015; 8; 3:4480-4486.
6. Yalamala, S, Suh, EE. The Level of Diabetes Knowledge and Related Factors among Patients with Diabetes Mellitus in Hyderabad, India, *Korean Journal Adult Nursing*. 2018, 30; 4: 447-454. Viewed 12 Dec. 2018. <
<https://synapse.koreamed.org/DOLx.php?id=10.7475/kjan.2018.30.4.447>>
7. Shrestha N, Yadav SB, Joshi AM, Patel BDP, Shrestha J, Bharkher DL. Diabetes knowledge and associated factors among diabetes patients in Central Nepal, *International Journal of Collaborative Research on Internal Medicine & Public Health*, 2015, 7; 5: 82-89.
8. AL-Thani Al-Anoud, Farghaly A, Akram H, Khalifa SE, Vinodson B, Loares A, Abou-Samra AB. Knowledge and Perception of Diabetes and Available Services among Diabetic Patients in the State of Qatar, *Central Asian Journal of Global Health*, 2019; 8;1:1-14. viewed 29 January 2019 <
<https://cajgh.pitt.edu/ojs/index.php/cajgh/article/view/333>>
9. Benil V, Dheepan, Nayagam BD. Awareness and knowledge of diabetes mellitus among diabetic patients in Puducherry, India. *International Journal of Basic & Clinical Pharmacology*, 2017, 6;5: 1211-1214. Viewed on 29 January <
<http://dx.doi.org/10.18203/2319-2003.ijbcp20171678>>
10. Mudhaliar MR, Ghouse ISM, Uppara V, Yesupogu M, Asavadi D, Chinnakotla V, Suneel Babu CHV. Association between socioeconomic status and diabetes in rural settings of India. *International Journal of Green Pharmacy*, Jan-Mar 2017 (Suppl), 11;1: S144-148
11. Centre for disease Control and Prevention, Diabetes & Mental Health, viewed 29 September 2018, https://cdc.gov/diabetes/library/spotlights/diabetes_and_kidneys.html.>
12. Kaur K, Singh MM, Kumar, Walia I. Knowledge and self-care practices of diabetics in a resettlement colony of Chandigarh. *Indian J Med Sci*, 1998; 52:341-7.
13. Grossman, Loren D. Roscoe R, Shack AR. 'Complementary and Alternative Medicine for Diabetes', *Canadian Journal of Diabetes*, 2018, 42; 1: S154 - S161.