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A CROSS SECTIONAL STUDY ON DIABETES RELATED DISTRESS (DRD), ITS IMPACT ON SELF CARE BEHAVIOURS AND HEALTH RELATED QUALITY OF LIFE (HR-QoL) IN TYPE II DIABETES MELLITUS PATIENTS IN A SOUTH INDIAN TERTIARY CARE HOSPITAL

Introduction

Diabetes has become a rising global hazard with population growth, aging, and urbanization. According to the Global Burden of Metabolic Risk Factors of Chronic Diseases Collaborating Group's survey, conducted in 199 countries, found an increase in people affected from diabetes from 153 million in 1980 to 347 million in 2008.[1] It is estimated that diabetes will affect 592 million worldwide by 2035.[2] India is home to the 2nd highest diabetic population with estimated 72 million diabetic cases in 2017 and the number is expected to soar to 123 million by 2040.[3] Prevalence estimates of diabetes in India ranges from 5.6% to 12.4% in urban areas and 2.4% to 2.7% in rural area.[4]

Diabetes is one of the most common and costly chronic diseases. Complications as overweight and obesity rates rise. Individuals with diabetes are at greater risk than other similar adults for many common problems, including coronary heart disease, stroke, hypertension, depression, pain, poly-pharmacy, and functional disability.[5] Given the lifelong expenditure associated with diabetes and it's complications, individuals, families and the society are unable to cope with the economic, emotional and social burden due to diabetes.[6] In 2016, the global cost of diabetes was estimated to be $825 billion with the largest cost to individual countries being in China ($170 billion), the US ($105 billion), & India ($72 billion). [7]

Diabetes is a complex chronic disease that not only affects a person's physical well being but can also have a profound impact on the individual's mental health as well.[8] Self-care is regarded as a cornerstone of diabetes management which includes daily decisions that encompasses diet, exercise, self monitoring of blood glucose and adherence to DM medications (Insulin/OHA), foot care. [9] T2DM patients need to perform life long self care to prevent or delay it's short- and long-term complications thereby improving overall quality of life and economic burden.[10] Substantial burden of impaired functioning and self management can contribute to poor mental well being and psychological difficulties. Mental health problems such as depression and diabetes related distress remains widespread.[11] It has been documented recently that diabetes specific distress remains unrecognized in patients with diabetes due to chronic course of illness.[12]

Diabetes related distress is defined as the patient's concerns about disease management, support, emotional burden and access to care.[13] It is persistent over time, distinct from depressive disorder and deserves more attention. Diabetes distress is a disease-specific problem encountered among diabetic patients and related to diabetes outcomes.[12, 13]
This study points out the awareness gap that still remains among the people with DM regarding the disease and the self-management strategies which necessitate the need of a self-

management education and support that can provide the foundation to help people with diabetes to navigate these decisions and activities shown to improve health outcomes

Objective

To assess of the Impact of Diabetes Related Distress (DRD) on self-care activities and Health Related Quality of Life (HRQoL) in type II DM patients.

Materials and methods

This cross -sectional study was conducted for 6 months, enrolled 300 type II diabetes mellitus patients who visited the IP/OP departments of various specialties. Patients were selected based on the following inclusion and exclusion criteria.

Inclusion Criteria

- Patients those who were willing to participate in the study
- All patients, clinically diagnosed with Type II DM (≥1 yr) and did frequent clinical visits.
- Age category between 35 -80 years.

Exclusion Criteria

- Patient < 35 years of age and >80 years of age
- Patients having renal, neurological or cardiovascular dysfunction, required immediate hospitalization for serious illness
- Patients were terminally ill.
- Patients on corticosteroids & Psychiatric patients
- Patients who are unwilling to take part in the study

Data Collection

Study participants were interviewed by using a structured data entry form and validated questionnaires. The questionnaires were originally developed in English translated into local language (Malayalam)

Patient Background Variables

The survey included socio-demographic characteristics: age, gender, marital status, religion status, educational status, residence, employment status and total duration of illness, past medical and medication history, family history of illness.

Diabetes Distress Screening

Diabetes distress screening scale - 2 items

- Feeling overwhelmed with the demands of living with diabetes.
- Feeling that I am often failing with my diabetes routine.

Diabetes Distress Scale (DDS-17)

DDS is a 17-item measure (DDS17) that uses a Likert scale with each item scored from 1 (no distress) to 6 (serious distress) concerning distress experienced over the last month. A mean item score of ≥2 (moderate distress) was used to distinguish high from low distress for each item, for the mean of the 17 items (DDS17), and for selected composites of potential screening items.

Diabetes Self-Management Questionnaire (DSMQ)

A 16-item questionnaire to assess self-care activities associated with glycaemic control was developed, based on theoretical considerations and a process of empirical improvements. Four subscales, 'Glucose Management' (GM), 'Dietary Control' (DC), 'Physical Activity' (PA), and 'Health-Care Use' (HU), as well as a 'Sum Scale' (SS) as a global measure of self-care were derived.

WHOQOL-BREF Scale

The WHOQOL-100 quality of life assessment was developed by the WHOQOL Group with fifteen international field centers, simultaneously, to assess the quality of life that would be relevant cross-culturally. These included four sections for each of 24 aspects of

quality of life, and four sections relating to the overall quality of life and general health aspect. The method how these 100 items were selected was fully documented elsewhere (The WHOQOL Group). The WHOQOL-100 Field Trial Version is presently being tested in various new centers globally. The initial theoretical framework for the WHOQOL-100 suggested that the 24 facets relating to quality of life should be categorized into 6 domains. A recent analysis of available data showed that a four-domain solution much more applicable than a six-domain one. Thus the WHOQOL-BREF is based on a four-domain structure.
Statistical Analysis was done using *PASW/ SPSS IBM*

Results

DIABETES RELATED DISTRESS PATIENTS AND DEMOGRAPHICS

There exists statistical difference between the mean age of DRD group (61±1.765 years) and non DRD group (52±0.84) (t value=7.738)(p=0.001).

Table 1 : Comparison of demographics (DRD patients vs Non DRD patients)

Comparison of demographics (DRD patients vs Non DRD patients)			
Variables	**DM Patients Without DRD (n%)**	**DM Patients With DRD (n%)**	**Statistics**
Age (average)	52.84±1.690	61.00±1.765	t=7.738 p=0.001**
Sex			
Male	169(66.1%)	14(24.4%)	Chi^2=9.84 p=0.000**
Female	86(33.9%)	31(68.8%)	

Women were the predominant among all the age groups which is of statistical significance when compared to general population (Chi^2=9.84 p value = 0.001). Total number of diabetic patients affected from diabetes related distress were 45. On analyzing the Diabetes Distress distribution among genders, majority of them belonged to the age group 55-74 years.

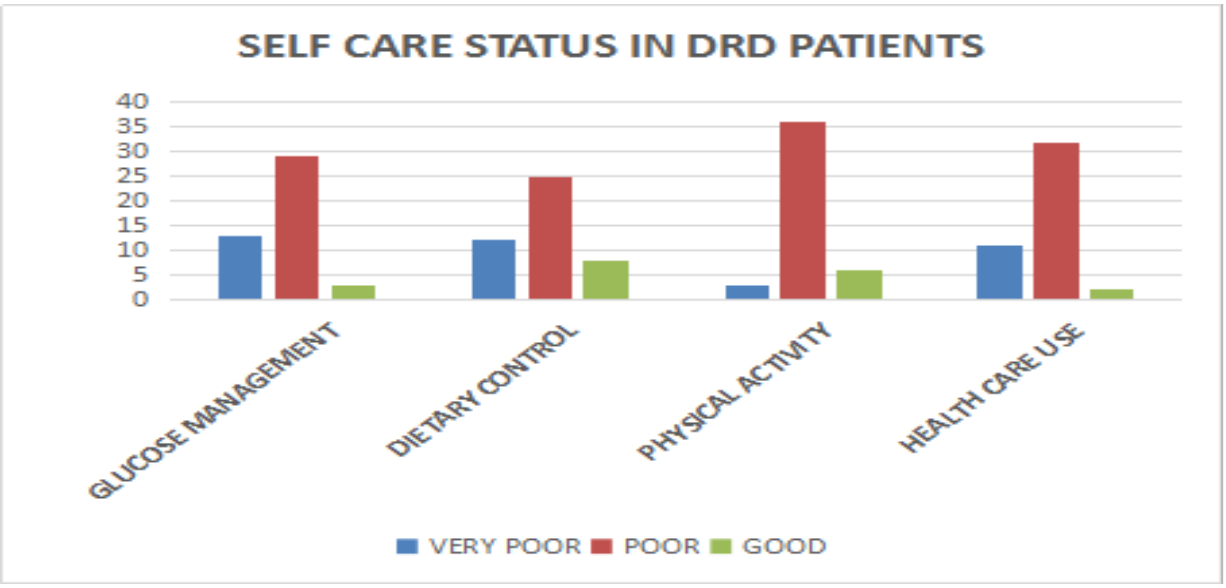
Table no 2: Diabetic Distress Distribution among gender

Diabetic Distress Distribution among gender			
Age	Sex		Total
	Male	Female	
18-34	0	0	0
	0%	0%	0%
35-54	3	8	11
	27.2%	72.7%	24.4%
55-74	10	22	32
	31.25%	68.75%	71.11%
75-80	1	1	2
	0.5%	0.5%	4.4%
Total	14	31	45
	31.11%	68%	100.00%

ASSESSMENT OF SELF CARE BEHAVIOURS OF DIABETES DISTRESS PATIENTS

Assessment of self-care using DSMQ questionnaire revealed the level of glucose management, dietary control, physical Activity and the health care among the DRD patients. A major portion of the DRD population had poor/very poor self-management for all parameters - glucose management (n=41), dietary control (n=36), physical Activity (n=38), health care use (n=32).

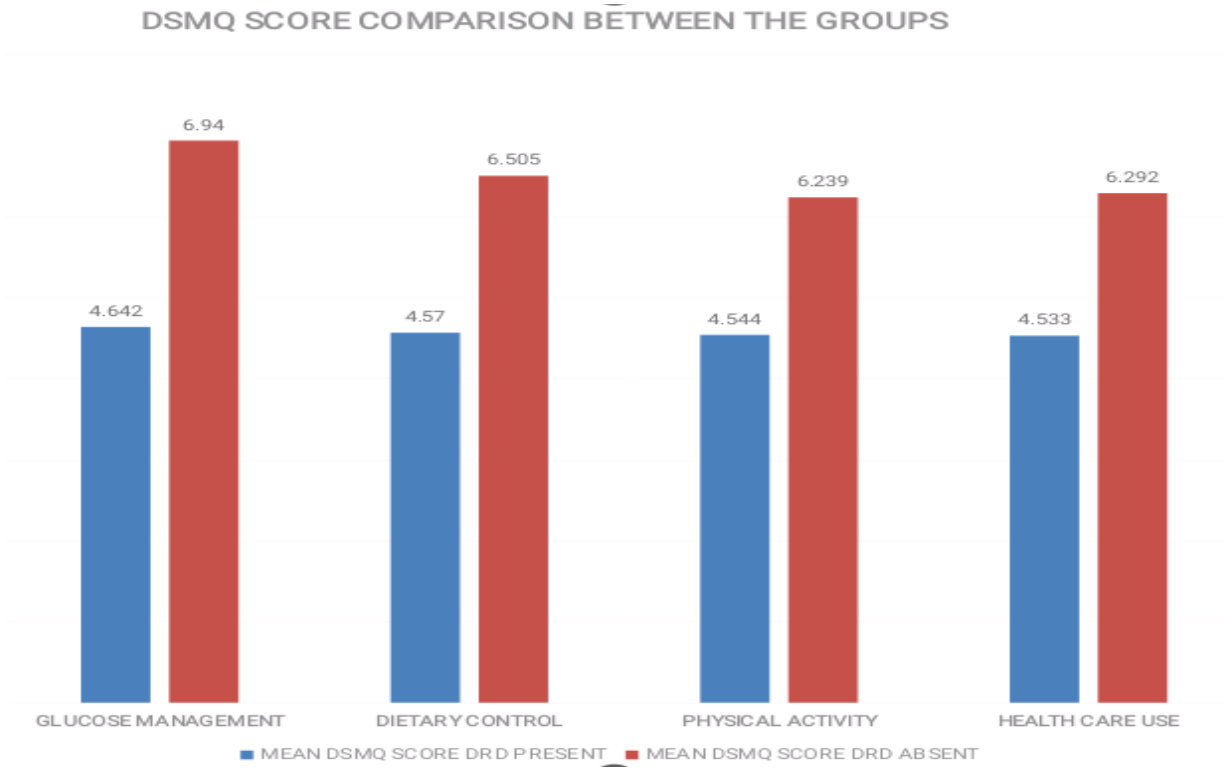
Fig no 1: Self care status in DRD patients



DSMQ SCORE COMPARISON OF PATEINTS WITH DIABETES DISTRESS TO PATIENT WITHOUT DIABETES DISTRESS

The mean scores of 4 items of DSMQ were low in DRD patients. Glucose management (4.642), Dietary control (4.57), Physical activity (4.544) and Health care use (4.533)) compared to patients without DRD) (p value =0.001). The statistical relevance of the comparison of DSMQ Scores between the groups was established by independent sample t test.

Fig no 2: DSMQ Score comparison between the groups



WHO-BREF QOL DOMAIN MEAN SCORE COMPARISON

The mean QOL scores for various WHO QOL BREF domains were calculated and interpreted for both DRD patients and patients without DRD. Patients without DRD had a better QOL profile comparing the DRD group. Comparison of Domain QOL scores was done between the 2 groups which showed much lower quality of life among DRD patients compared to Non DRD patients. The individual domain scores in DRD patients are as follows: Physical Domain (38.6), Psychological Domain (39.11), Social relationship Domain (36.97) and Environmental domain (49.57).

Table 3: QOL Domain Mean Score Comparison between the groups

QOL DOMAIN MEAN SCORE COMPARISON		
Domains	Without DRD	DRD
Physical QOL	51	38.6
Psychological QOL	48.21	39.11
Social Relationships QOL	45.1	36.97
Environmental QOL	56	49.57

ASSOCIATION OF RISK FACTORS ON DIABETES RELATED DISTRESS

From all the risk factors noted, (duration of illness, Abnormal BMI, Number of complications and the treatment modalities) showed a positive correlation with DRD scores among which the duration of illness, number of complications, and the treatment modalities showed a strong positive association with Regimen related distress. The association was statistically established using Pearson correlation test.

Table 4: Association of risk factors on diabetes related distress

Association of risk factors on diabetes related distress				
RISK FACTOR	EMOTIONAL BURDEN	PHYSICIAN RELATED DISTRESS	REGIMEN RELATED DISTRESS	INTERPERSONAL DISTRESS
Duration of illness	0.231*	0.012	0.329**	0.012
BMI	0.221	0.212	0.212	0.244
Complications	0.246*	0.142	0.393**	0.241
Treatment Modalities	0.323	0.301	0.324**	0.234

** p value <.001

Discussion

In this study, 300 diabetic patients who met the inclusion and exclusion criteria were included out of which, 45 patients were found to be affected from DRD. They were enrolled into the study based on DDS screening score with mild to moderate distress.
DDS17 administration provided a clear picture of the various types of DRD, the population was affected from. The prevalence rate of DRD was 15% and the major predictors of DRD were found to be duration of illness, abnormal BMI, HbA1c level, number of complications, while in the study conducted by Gahlan D, Rajput R et al (2018), showed a prevalence of 18% and female gender, abnormal BMI, and complications resulted in poor psychological wellbeing of the patients.[13]

Patient's level of self-management was assessed using Diabetes Self-Management Questionnaire (DSMQ) which categorized the DRD population into good, poor and very poor self-care practicers. Major portion of the population with distress had poor adherence to diabetes self-management routine comparing to the population without DRD. The overall mean DSMQ score calculation revealed the poor self-care behavior in the Diabetic study population both in DRD and non DRD patients. However, the level of self-care behavior was comparatively low in DRD patients than patients without distress. A cross sectional study conducted in Kollam, South India by V. Nelson, C. Prabhakumari et al (2016) that enrolled 300 diabetic patients provided a perspective from a community based sample regarding the Diabetes self-care practices and revealed the adherence to medications, exercise, and foot care were very low and foot care seemed to be the neglected area on clinicians advice.[14]

DSMQ examined the patient's level of glucose management, physical activity, dietary control, and Health care use and were categorized into various divisions based on individual scoring of the domain. Results showed reduced/lack of physical activity and inappropriate health care use remained as a main contributor to diabetes related distress compared to the other 2 domains namely glucose management and dietary control. Evaluation and validation study of the DSMQ by Schmitt et al. (2013), pointed out the problem areas in diabetes self-management that needs to be focused to improve the overall quality of life in diabetic patients namely the self-monitoring of blood glucose practice, physical activity self-care practice, dietary intake.[15]

The third objective of the study was to study the impact of DRD on health related quality of life of Patients. The WHO QOL-BREF addressed the problems in their physical, psychological, social relationships as well as environment relationships. The mean QoL scores of the DRD patients were calculated in comparison to patients without DRD which showed comparatively poor quality of life in DRD patients than patients without distress. Chew et al. (2015), conducted a study which showed the negative impact of the Diabetes related distress on Health related quality of life in Diabetic population.[16] Diabetes being a chronic disease itself remains a cause for poor quality of life among the population. Related distress even may worsen the quality of living, causing indirect influence.

Limitation of study

- Since the study was conducted in a tertiary center, the results obtained may not be generalizable to all patients in the community.
- Large follow up period required.

- The study duration was small.
- As the data collection was also based on patient interviewing, chances of bias exist.

Conclusion

Diabetes is a complex and burdensome disease that requires the person with diabetes to make multitude of decisions and perform complex care activities. Adequate self-care improves metabolic control and quality of life and reduces disease related complications and related hospitalizations. There exists a dire need of self management education in clinics to eliminate the awareness gaps.

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