

# GENDER-BASED DIFFERENCES IN THE LEVEL OF DEPRESSION AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN KARACHI-PAKISTAN

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## ABSTRACT

**OBJECTIVE:** To explore and compare the level of depression among male and female patients with type 2 Diabetes Mellitus (T2DM) in different hospitals of Karachi, Pakistan.

**METHODS:** This comparative study was carried out in diabetes centers and diabetes departments of different hospitals during 1st January, 2010 to 31st December, 2012. A purposive sample consisting of 96 adults (48 males and 48 females) patients with T2DM with age ranging from 25 to 75 years (mean=41.2±12.3 years) belonging to different socioeconomic status were selected. After taking individual's informed consent, demographic information was taken through a preformed demographic proforma. Depression was assessed through Salma Siddiqui Depression Scale (SSDS).

**RESULTS:** The findings showed that mean SSDS score was 36.63±18.63 in female T2DM patients and 28.04±19.06 in male adults with T2DM ( $t=-2.25, p<.05$ ). Moreover, prevalence rate of depression among both groups (male and female) indicates that females patients with T2DM fall under the category of mild level of depression with the ratio of 31.3%, 14.6% with moderate, and 25.0% with severe level of depression; while 25% males with T2DM fall in the category of mild, 6.3% moderate, and 18.8% in severe level of depression.

**CONCLUSION:** Female adults with T2DM have more severe level on the construct of depression.

**KEY WORDS:** Depression (MeSH), Gender (Non-MeSH), Diabetes Mellitus, Type 2 (MeSH), Salma Siddiqui Depression Scale (Non-MeSH)

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## INTRODUCTION

According to World Health Organization, diabetes mellitus has affected approximately 220 million people globally and amongst 80% belonged to developing countries with mortality rate of 5% every year.<sup>1</sup> And International Diabetes Federation has estimated its prevalence to more than 360 million individuals in 2030.<sup>2</sup> In Ethiopia pervasiveness of this disease was 800,000 in 2000 and its ratio

is likely to intensify to 1.8 million in 2030.<sup>3</sup> In Asian country like Pakistan, ratio of this metabolic disease was 5,217,000 in 2000 that is probably to be 13, 853,000 in 2030.<sup>4</sup> Another research has exposed that occurrence of diabetes in different urban areas of our country has been estimated 6% in men and 3.5% in females.<sup>5</sup>

Self-care is an important matter in the management of this life time disease and it requires full package of amenability

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towards medication, recommended diet, and healthy exercise to have balanced glycemic control<sup>6</sup> and if any of the essentials are not conceded then disturbance is evident.<sup>7,8</sup> Past data has highlighted the impact of important psychological factors that creates hindrance in managing diabetic constancy and depression is one of these factors that is associated with poor compliance to treatment<sup>9,10</sup> with poor glycemic control<sup>10</sup> and increased diabetic complications.<sup>11,12</sup> Findings of a local research<sup>13</sup> disclosed that female diabetic patients were more victimized by depression. Other researches depicted that depression was more consistent with females suffering from type 2 diabetes mellitus (T2DM), than men with T2DM<sup>11,14-16</sup> affecting their quality of life.<sup>17,18</sup> There is a need of intense care of these depressed diabetic patients by involving their family members as a support.<sup>19</sup>

A most recent research<sup>20</sup> showed consistent findings that women with diabetes have high ratio of depression 52.7% than men 36% while in Bangladesh, rates of depression in diabetic patients 28% to 34%<sup>16,21,22</sup> with marked variances in the ratio of males and female of 22% and 35% respectively.<sup>16</sup> Further research in Pakistan has exposed that depression also took place in people with T2DM in the presence of other psycho-social and demographic factors i.e.; history of diabetes and hypertension, living in a separate setup, fatness, being married, and unhealthy habit of smoking.<sup>23</sup>

The main focus of this research is to explore the difference of the level of depression among males and females with T2DM. Their perception and attitude they have about this disease

would absolutely open up new doors for mental and medical health practitioners to help such people in handling this disease by alleviating hopelessness. To explore the level of depression among male and female patients with T2DM in different hospitals of Karachi. The objective of the current study is to investigate the level of depression among male and female patients with T2DM.

On the basis of previous literature following hypothesis is generated:

- There will be a significant difference on the level of depression among males and females with T2DM.

## METHODS

### Participants:

The present study was carried out at Jinnah Postgraduate Medical Centre, Karachi, and Department of Diabetes, PNS Shifa Hospital, Karachi-Pakistan during the period of 1st January, 2010 to 31st December, 2012. Through purposive sampling, 96 adults with T2DM (male, 48 & female, 48) diagnosed by the physicians were recruited. Their age range was between 25 to 75 years. They belonged to different socioeconomic status i.e.; lower, middle and high socioeconomic status. Their level of education was at least 5th grade and their job status was categorized from retired/housewives to own business.

### Inclusion and Exclusion Criteria for male and female diabetic sample

Following criteria was set for the diabetic participants for inclusion and exclusion in this study:

- Who were within the age range of 25 to 75 years.
- Who had 5th grade and above level of education were selected. Because of the understanding level of the scale persons with less than 5th grade was excluded.
- People with diabetes having hypertension were included in the study as hypertension is usually comorbid with diabetes.

d) People with chronic medical illness like; cancer, HIV-AIDS, and myocardial infarction etc. were excluded from the study.

e) The duration of illness was at least one year.

f) Only those participants were included who have never gone through any psychological or psychiatric treatment.

### Measures

#### Demographic data sheet

It consisted of age, gender, marital status, level of education, job status, family status, residence, type of disease, duration of disease, duration of treatment, comorbidity of any other physical illness, any psychological pressure or tension due to diabetes etc.

#### Siddique Shah Depression Scale<sup>24</sup>

It is a self-report; four point Likert scale that possesses thirty-six items. All the items were categorized on the basis severity level with equal ratio of 12 items in each domain of mild and moderate depression and severe depression for clinical and normal sadness. It has its response ranges from 0 (never) to 3 (every time). The highest score on the scale indicates the presence of the symptoms of depression. It concurs well with other measures of depression and is significantly reliable and internally consistent.

### Procedure

For data collection permission was taken from "Institutional Review Board Committee" of Department of Medicine, Jinnah Postgraduate Medical Centre, Karachi, and Department of Diabetes, PNS Shifa Hospital, Karachi. To collect data, the entire diabetic sample of 96 adults with age range 25 to 75 was selected. After getting the permission from the authorities, participants were approached. After establishing rapport they were required to fill in the informed consent form and information regarding demographic variables was taken

through self-developed demographic sheet and later Salma Siddiqui Depression Scale as administered. Further for statistical analysis, descriptive statistics and t-test for independent mean were calculated to explore the differences of scores on the variable undertaken through Statistical Packages of Social Sciences (SPSS, 21).

### Ethical Consideration

Initially the synopsis of the research was approved by the Board of Advanced Studies and Research (BASR) University of Karachi, as a partial requirement of M.Phil. Then the permission was taken from the authors of the scales. The permission from Ethical Research Committee for the research at Jinnah Post Graduate Medical Centre was taken and the same permission letter was utilized at Pakistan Navy, Shifa Hospital Karachi. Participant's respect, dignity, right and welfare were ethically protected in this study. Information was taken according to the consent of the participants and they were assured confidentiality regarding their information and opinions. They were told that they have a right to withdraw from the study during any stage of study. At the end of the study all the authorities of different departments, authors of the scales and participants were acknowledged for their cooperation in the research.

### Operational Definition of the variable:

#### Depression

According to American Psychiatric Association<sup>25</sup> depression is defined as a state of depress mood, obvious loss of interest in pleasurable activities, significant weight loss or weight gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feeling of worthlessness or inappropriate guilt, diminished ability to think or concentrate or indecisiveness, recurrent thought of death, suicide ideation or attempt without any plan.

## RESULTS

Table I depicts that female lied between 5th grade to Intermediate level of education with maximum ratio of 83.3% than male adults. Ratio of being married was high among males 91.7% than females 85.4%, more female adults lived in joint set up 56.4% and more male adults lived in nuclear family set up 56.4%, more female adults were with high blood pressure (77.1%) than male adults (66.7%) and females suffered from more psychological tension and stress of having this disease 72.9% than male adults 70.8%.

Table II, shows that majority (43.8%) of patients were in age group of 46-55 years.

Table III highlighted significant gender difference on the variable of depression ( $t = -2.231$ ,  $p < .05$ ) and female diabetic adults have higher mean score than male diabetic adults.

Table IV, depicted levels of depression

was high in female adults with diabetes than male adults with ratio of 29.2% normal, 31.3% mild, 14.6% moderate, and 25.0% severe in females, while 50% normal, 25% mild, 6.3% moderate, and 18.8% severe was in male adults with diabetes.

## DISCUSSION

The aim and major focus of the present study was to find out the difference between male and female adults with diabetes on the variable of depression. The overall findings of this study have shown significant gender difference on the variable of depression. Findings further revealed that female patients with diabetes have high mean score than male diabetic patients (Table III).

During clinical practice and informal interview before data it was observed that both male and female with diabetes have worry, constant tension and apprehension for daily life stressors. They adopt unhealthy response towards

stress, distorting and pessimistic thought pattern and attitude towards this long term disease. This let them toward hopelessness and ultimately towards depression. Findings of many previous researches have highlighted that depression is more obvious in females,<sup>16</sup> which are consistent with findings of our current study as shown in Table IV which indicates different ranges of mild to severe depression in both gender.

Other factors are also vital as socioeconomic conditions, family system, marital status, duration of disease and treatment, level of education are also stress factors for both males and females diabetic adults. As in current study, 56.3% females are living in joint family system and 85.4% are married while ratio of male patients is of 43.7% and 91%. To manage huge family with this chronic disease becomes difficult for a female with multiple role fulfilling many demands within this poor life style disease. Diabetes exerts its physiological impact

**TABLE I: SUMMARY OF SOCIO-DEMOGRAPHIC CHARACTERISTICS OF FEMALE AND MALE DIABETIC ADULTS**

	Category	Female Adults (n=48)		Female Adults (n=48)	
		Frequency	%	Frequency	%
Education	Primary-Inter	40	83.3	37	77.1
	Graduate	4	8.3	10	20.8
	>Graduate	4	8.3	1	2.1
Marital Status	Unmarried	7	14.6	4	8.3
	Married	41	85.4	44	91.7
Job Status	Business	0	0.0	8	16.7
	Govt. Job	4	8.3	16	33.3
	Pvt. Job	6	12.5	14	29.2
	Housewife/retired	38	79.2	10	20.8
Socioeconomic status	14-30,000	16	33.3	18	37.5
	30,000-50,000	23	47.9	19	39.6
	>50,000	9	18.8	11	22.9
Family Status	Joint	27	56.3	21	43.8
	Nuclear	21	43.8	27	56.3
Other Diseases	Hypertension	37	77.1	32	66.7
	Poor Eyesight/arthritis	11	22.9	16	33.3
Tension/ Distress	Yes	35	72.9	34	70.8
	No	13	27.1	14	29.2

**TABLE II: SUMMARY OF DEMOGRAPHIC VARIABLE OF AGE GROUPS OF CURRENT SAMPLE (N=96)**

Age groups (in years)	Frequency	Percent
25-35	10	10.4
36-45	20	20.8
46-55	42	43.8
56-65	21	21.9
66-75	3	3.1

**TABLE III: MEAN SCORES OF MALE AND FEMALE INDIVIDUALS WITH DIABETES ON SIDDIQUE SHAH DEPRESSION SCALE**

Groups	N	Mean Score	SD	df	T	Sig
Male	48	28.04	19.06	94	-2.231	.028
Female	48	36.63	18.63			

**TABLE IV: SUMMARY OF PERCENTAGES OF LEVEL OF DEPRESSION (RAW SCORES) IN FEMALE AND MALE WITH DIABETES**

Ranges of Depression	Female (N=48)		Male (N=48)	
	Frequency	%	Frequency	%
Mild Depression	15	31.3	12	25.0
Moderate Depression	7	14.6	3	6.3
Severe Depression	12	25.0	9	18.8

in the form of low energy and fatigue that slow down their functioning and they feel more hopeless and incapable of not performing any task effectively. A study in Pakistan depicts that depression also exists in people with type 2 diabetes along with other psycho social and demographic factors i.e; history of diabetes and blood pressure, living in a separate setup, fatness, being married, and unhealthy habit of smoking.<sup>23</sup> Economic condition is an important factor to meet the expenditure of whole family; failing to manage the demands of basic needs; this stress may result in sleep problems, hypertension, diabetes, heart diseases, and other psychological problems such as suicide, irritability, anxiety, tiredness, low self-esteem.<sup>26</sup> Another contributing factor is the level of education that is related to the awareness and effective management of diabetes and findings of the present study revealed that 83% female adults having education level of less than Intermediates and 77% male adults with diabetes fall in this range and

this is supported by a previous research where ratio of female for low level of education is high as compared to males i.e. 20.1% and 17,2% respectively.<sup>27</sup> Unfortunately females are at greater risk by this psychological pressure and constant tension than males.<sup>28</sup> However, other psychosocial factors are also evident like being housewives, economic condition of family, support from social circle, and the coping style itself are the contributing significant particles of enhancing stress in females.<sup>29,30,31</sup>

According to cognitive model of depression, pessimistic thinking style towards illness was common and females are seen to have more emotional coping by ignoring their disease, showing helplessness as highlighted by other studies in Pakistan.<sup>31,32</sup>

## CONCLUSION

On the basis of our findings it is concluded that female with T2DM had higher and more severe level of depression than male with T2DM. There is an

immense need for mental and medical health services to alleviate hopelessness, and helplessness in managing this disease and to improve their approach towards healthy life style. However, current study has few limitations such as the minimum level of education that was 5th grade; and thus, we could not select liberate population due to the reading and understanding level of the scale. Moreover, in the current study we selected individuals over 25 years of age and from rural areas, Therefore, it is recommended that these demographical categories must be addressed for future research and for measuring depression in less than 5th graders.

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**CONFLICT OF INTEREST**

Authors declared no conflict of interest

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**AUTHOR'S CONTRIBUTION**

Following authors have made substantial contributions to the manuscript as under:

**UR:** Acquisition analysis and interpretation of data, drafting the manuscript, final approval of the version to be published

**UA:** Concept & study design, Drafting the manuscript, critical revision, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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