General Hypochondriasis in Diabetes Mellitus Type-II (DM-II): Implications for Clinicians

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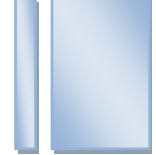**Asst. Director (Unani), CCRUM**
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ABSTRACT

Background   Relatively little is known about the epidemiology of hypochondriasis, especially in Diabetes Mellitus Type-II (DM-II) patients, though hypochondriasis is considered to be of high relevance in the healthcare sector, especially in chronic diseases. The aims of this study were to study the prevalence of general hypochondriasis in DM-II patients and to explore some of the possible aggravating factors.

Methods The data was collected by interview and observation method with Illness Behaviour Questionnaire and Temperament Assessment Format.

Results Hypochondriasis was found to be most prevalent in subjects having *Saudavi* temperament (75.55%) followed by those having *Balghami* temperament (56.81%). The patients having elevated blood sugar and those on injectable hypoglycemics also demonstrated a higher prevalence of hypochondriasis.

Conclusion The results indicate that hypochondriasis is quite prevalent in DM-II patients; and, in addition to the severity of disease, it may also be influenced by the medication and patient's temperament.

Keywords: Hypochondriasis, Temperament, Diabetes Mellitus-II, *mizaj*

INTRODUCTION
General Hypochondriasis: In classical medicine, hypochondria denoted the soft part of the body below the ribs (literally, below cartilage). This region was identified as the source of black bile that, when excessive, was believed to cause diseases of the mind and body. Among these diseases was hypochondriasis, which was termed hypochondriasis when pathological, and melancholia. Since hypochondriasis originated in the blood and humours, such factors as excessive study or an inappropriate diet could allow "gross, melancholy humours" to rise up from the abdomen and corrupt the brain [16]

The core feature of hypochondriasis according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition is preoccupation with

fears of, or the idea that one has a serious disease based on a misinterpretation of bodily symptoms. Another criterion is the persistence of this preoccupation despite appropriate medical evaluation and reassurance. These symptoms cause clinically significant distress or impairment in important areas of functioning. Hypochondriasis is grouped with the somatoform disorders, which share the general feature of symptoms that cannot be fully explained by a general medical condition, although a coexisting general medical condition may be present[11,12]

Temperament and behavioral changes
The doctrine of temperament embodies the presence of four different temperaments; within

those temperaments, there are infinite variations which are unique for every individual. It is a well accepted fact that this unique temperament not only determines the physical functioning of the body, but also gives rise to certain personality features which make up the general demeanor of a person. It may also be mentioned here that temperament of a person is not a static entity, but keeps on changing from time to time with age, health conditions and certain other factors[10].

The concept of temperament is very interesting when applied to the nature of a man, to the human mental behaviour; temperament, in which man manifests himself as sanguine, choleric, phlegmatic and melancholic. It is obvious that any disease which leads to any type of temperament change will ultimately lead to behavioural changes; likewise, among several patients suffering from a single ailment, not all will respond in the same manner to the diagnosis and management. That is, a patient cannot be treated merely as a cocktail of bio-chemical abnormalities, especially in case of lifestyle and chronic diseases. In reality, improvements in medical care, such as intensive insulin regimens, require more patient counseling, education, and support than simpler regimens. Developments in biology, genetics, pharmacology, and medicine do not diminish but rather expand the importance of behavioural sciences[7].

Behavioural aspects of DM-II
Disease involves not only the body, but it also affects one's relationships, self-image and behaviour. The social aspects of the disease may be related to the patho-physiological changes that are occurring, but may be independent of them as well. The very act of diagnosing a condition as an illness has consequences far beyond the pathology involved[14].

Diabetes treatment is predominantly behavioural (involving daily medication-taking, glucose testing, exercise, and dietary modification) and is at heart a self-management issue. In diabetes, it is the patient who must implement the treatment on a daily basis, and therefore, the practitioner should focus his attention on the patient. However, most of the physicians direct their attention towards the disease and view the patient as an intervening factor[2,3]. For chronic illness such as diabetes,

patients' perception of their condition and its management are generally believed to be important factors in determining successful adjustment to and self-care of the disease condition[9].

The overriding goals of diabetes self-management education are to empower individuals to avoid the short-term risks and long-term complications associated with the disease as well as to maintain/improve quality of life. However, the diabetes-specific health behaviours that compose up to 99% of disease treatment are difficult to maintain over time. This may be because individuals often make health care decisions on the basis of regimen difficulty and current symptoms rather than long-term benefits of behaviour. These findings suggest a need to better understand factors underlying both quality of life and the performance of diabetes-specific health behaviors[20].

MATERIALS AND METHODS
Study design and data collection
The data presented here is part of a larger cross-sectional, descriptive study undertaken to assess the illness behaviour and temperament of DM-II patients undergoing oral/injectable hypoglycemic therapy. The patients were recruited from Medicine OPD of Majeedia Hospital, New Delhi. Patients aged between 30-60 years were included in the study after informed consent, excluding those who had any co-morbidity (e.g. hypertension, thyroid disorder etc.) or severe complication (e.g. ketoacidosis, Diabetic foot etc.). The data was collected by interview and observation method. Subjects fulfilling the inclusion criteria were informed about the nature of the study and informed consent was taken. The Illness Behaviour Questionnaire was translated into the local language (Hindi). The questions were read aloud by the researcher exactly as written in the questionnaire, and the answers were marked based on the subjects' response. The temperament of each subject was assessed with the help of Temperament Assessment Format which is developed by Central Council for Research in Unani Medicine.

The fasting blood glucose level of the subjects was also recorded from their investigation report which
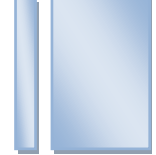
was taken on the same day at Majeedia Hospital (now renamed as HAHC Hospital) laboratory. For the purpose of better assessment of hypochondriasis in relation to diabetes, the subjects were divided into three groups according to their levels of fasting blood sugar. Subjects having fasting blood sugar level between 90-130 mg/dl were labeled as Group-I; the subjects having fasting blood sugar level between 131-200 mg/dl were labeled as Group-II; similarly, the subjects having fasting blood sugar level ≥ 201 mg/dl were labeled as Group-III.

Instruments used in the study

a. KUPPUSWAMY'S SOCIO-ECONOMIC STATUS SCALE

Kuppuswamy's socioeconomic status scale (urban) is an important tool in hospital and community based research in India. It was first proposed in 1976 by B. Kuppuswamy. This scale takes account of education, occupation and income of the family to classify study groups into high, middle and low socioeconomic status. It was revised in 1998 using the base year 1982[15]. Later, it was again modified in 2007 by ICMR using the base year 2001. This final version has been used in the current study for the determination of the socio-economic status of the participants[13].

b. ILLNESS BEHAVIOUR QUESTIONNAIRE (IBQ)

Illness behaviour of the subjects was assessed using the Illness Behaviour Questionnaire (IBQ) which was first developed by I. Pilowsky and N. D. Spence[6]. It is a 62 item pencil and paper questionnaire with a yes/no format designed to measure a respondent's attitudes, ideas, affects and attributions in relation to illness[1]. It was originally developed as the 14-item Whiteley Index of hypochondriasis, and later expanded to the present 62-item questionnaire[17]. The IBQ is written in easily understood language, is easily scored, and translations in several languages are available. The IBQ is a useful instrument for studying illness behavior as well as identifying physical complaints that are manifestations of a psychiatric disorder[6].

c. TEMPERAMENT ASSESSMENT FORMAT

Temperament Assessment Format is a 17-point observation and examination format which was developed on the basis of *Ajnas-e-Ashra* (ten characteristics) described in the classical Unani texts. This format was developed and authenticated by Central Council for Research in Unani Medicine, New Delhi, an autonomous organization under the Ministry of Health and Family Welfare, Govt. of India, the pioneer research organization of Unani Medicine in India. This format contains 17 factors for the diagnosis of temperament of a person.

A detailed examination and assessment is made of the physical factors, vitals, and some physiological processes. On the basis of these, the temperament of a person is diagnosed. The Temperament Assessment Format has been developed after years of research and extensive studies.

RESULTS

Sample characteristics

A total of 100 DM-II patients were recruited in the current study from the Medicine OPD of Majeedia Hospital, New Delhi. 61% of the subjects were females and the rest were males. 21% of the subjects belonged to the age-group of 30-39 years, 39% of the subjects belonged to the age-group of 40-49 years and 40% of the subjects were aged between 50-60 years. Most of the subjects were Hindu by religion (67 %). Most of the diabetics (79 %) were 40 years and above in age. 90 % of the subjects were married. Most of the subjects (95.45 %) were educated up to or below matriculation. Maximum of these (45.45 %) were illiterate. Most of the subjects (76 %) were semi-skilled workers, unskilled workers or unemployed. 81.81 % of the subjects belonged to lower socioeconomic status (Middle/ Lower Middle or lower). Temperament of the subjects was classified into four groups according to the basic concept of *mizaj* in Unani medicine. Most of the subjects were of *Balghami* temperament (53%), followed by *Safravi* (28%), *Damvi* (14%) and *Saudavi* (5%).

General Hypochondriasis in various temperaments

The mean positive response to general hypochondriasis questions was 36.51% in *Damvi* temperament, 56.81% in *Balghami*, 45.63% in *Safravi* and 75.55% in *Saudavi* temperament. The responses are tabulated as under:

Table 1 General Hypochondriasis in different temperaments

| General Hypochondriasis (Response to questions)	n=14 Damvi (Dm)		n=53 Balghami (B)		n=28 Safravi (Sf)		n=5 Saudavi (Sd)	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
If you feel ill and someone tells you that you are looking better, do you become annoyed?	06 (42.86)	08 (57.14)	21 (39.62)	32 (60.38)	11 (39.28)	17 (60.71)	05 (100.0)	Nil
Are you more sensitive to pain than other people?	03 (21.43)	11 (78.57)	30 (56.60)	23 (43.40)	11 (39.28)	17 (60.71)	03 (60.0)	02 (40.0)
Are you afraid of illness?	06 (42.86)	08 (57.14)	36 (67.92)	17 (32.07)	20 (71.43)	08 (28.57)	04 (80.0)	01 (20.0)
Do you think that you worry about your health more than most people?	06 (42.86)	08 (57.14)	31 (58.49)	22 (41.51)	12 (42.86)	16 (57.14)	03 (60.0)	02 (40.0)
Do you find that you get jealous of other people's good health?	01 (7.14)	13 (92.86)	23 (43.39)	30 (56.60)	05 (17.86)	23 (82.14)	02 (40.0)	03 (60.0)
Do you ever have silly thoughts about your health which you can't get out of your mind, no matter how hard you try?	01 (7.14)	13 (92.86)	13 (24.53)	40 (75.47)	08 (28.57)	20 (71.43)	03 (60.0)	02 (40.0)
Are you upset by the way people take your illness when you are sick?	10 (71.43)	04 (28.57)	44 (83.02)	09 (16.98)	19 (67.86)	09 (32.14)	05 (100.0)	Nil
Do you often think that you might suddenly fall ill?	05 (35.71)	09 (64.28)	35 (66.04)	18 (33.96)	11 (39.28)	17 (60.71)	04 (80.0)	01 (20.0)
If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?	08 (57.14)	06 (42.86)	38 (71.70)	15 (28.30)	18 (64.28)	10 (35.71)	05 (100.0)	Nil
$\bar{x}$	5.11 (36.51)		30.11 (56.81)		12.77 (45.63)		3.77 (75.55)	
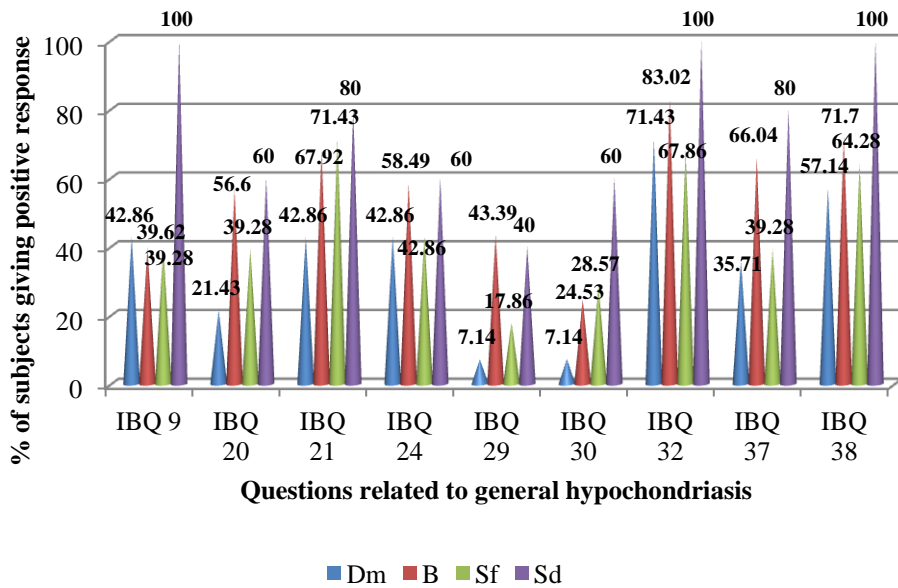
Figure 1 General hypochondriasis in various temperaments

Table 1 analyses the difference in prevalence of general hypochondriasis between various temperaments. To calculate significance among the different temperaments related to the severity of hypochondriasis we used Tukey-Kramel comparison test. It was found that for *Damvi* vs. *Balghami* $p<0.001$; for *Damvi* vs. *Saudavi* $p<0.05$; for *Damvi* vs. *Saudavi* $p>0.05$; for *Balghami* vs. *Safravi* $p<0.001$; for *Balghami* vs. *Saudavi* $p=<0.001$ and for *Safravi* vs. *Saudavi* $p<0.05$. To analyze overall significance we use one way ANOVA, we have p-value<0.0001, considered extremely significant. This indicates that the severity of general hypochondriasis increases with the severity of diabetes.

Table 2 Variation of General Hypochondriasis with severity of Diabetes

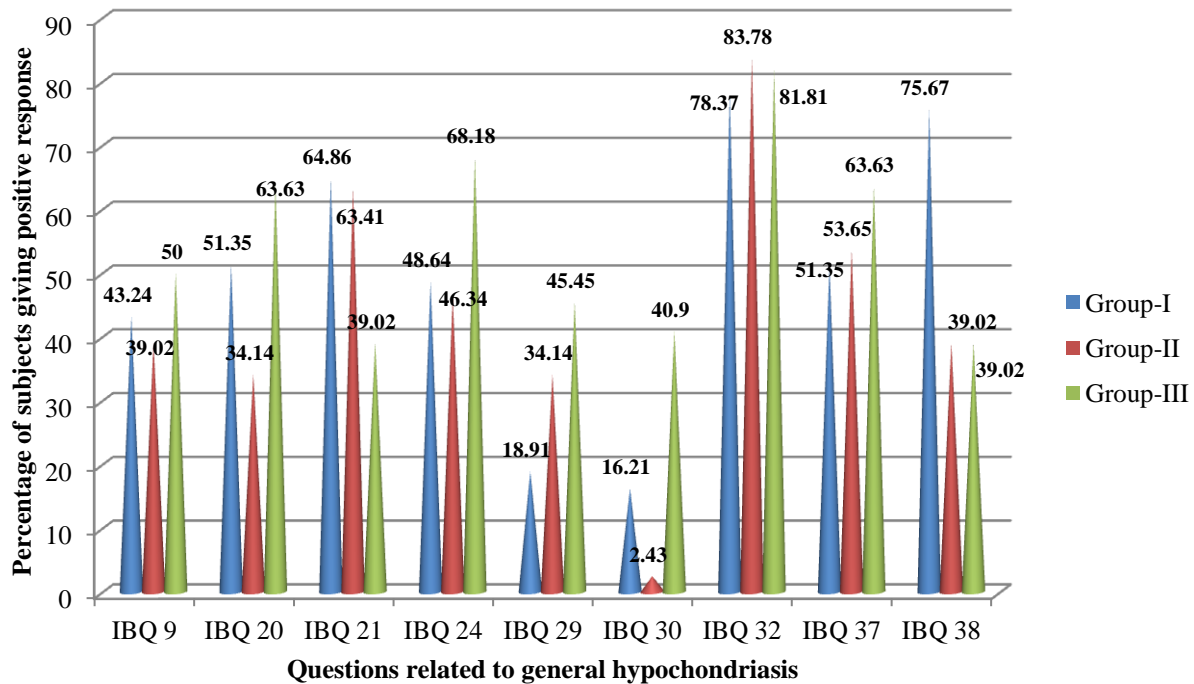| General Hypochondriasis (Response to questions)	n=37		n=41		n=22	
	Group I (FBS: 90-130 mg/dl)		**Group II (FBS: 131-200 mg/dl)**		**Group III (FBS: >201 mg/dl)**	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**
If you feel ill and someone tells you that you are looking better, do you become annoyed?	16 (43.24)	21 (56.75)	16 (39.02)	25 (60.97)	11 (50.0)	11 (50.0)
Are you more sensitive to pain than other people?	19 (51.35)	18 (48.64)	14 (34.14)	27 (65.85)	14 (63.63)	08 (36.36)
Are you afraid of illness?	24 (64.86)	13 (35.13)	26 (63.41)	15 (36.58)	16 (39.02)	06 (27.27)
Do you think that you worry about your health more than most people?	18 (48.64)	19 (51.35)	19 (46.34)	18 (43.90)	15 (68.18)	07 (31.81)
Do you find that you get jealous of other people's good health?	07 (18.91)	30 (81.08)	14 (34.14)	27 (65.85)	10 (45.45)	12 (54.54)
Do you ever have silly thoughts about your health which you can't get out of your mind, no matter how hard you try?	06 (16.21)	31 (83.78)	10 (2.43)	31 (83.78)	09 (40.9)	13 (59.09)
Are you upset by the way people take your illness when you are sick?	29 (78.37)	08 (21.62)	31 (83.78)	10 (2.43)	18 (81.81)	04 (18.18)
Do you often think that you might suddenly fall ill?	19 (51.35)	18 (48.64)	22 (53.65)	19 (46.34)	14 (63.63)	08 (36.36)
If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?	28 (75.67)	09 (24.32)	16 (39.02)	25 (60.97)	16 (39.02)	06 (27.27)
$\bar{x}$	18.44 (49.85)		18.66 (45.51)		13.99 (63.63)	

Figure 2 General hypochondriasis in the study sample

Table 2 analyses the differences in incidence of general hypochondriasis with the severity of diabetes. The mean positive response to general hypochondriasis questions was 49.85% in the mild group, 45.51% in the moderate group and 63.63% in the severe group. However we were interested in the positive responses of the symptom. To evaluate the overall significance we used contingency chi square test, p-value=0.8577; apart from this finding, there was no significant increased prevalence of the symptom by the severity of disease. Here we are interested to check the variation among the groups by the severity of the disease. We used Dunn's multiple comparison test. We have Friedman statistic, Fr=8.061, i.e. if the difference between rank sum means is greater than 10.160, then P-value >0.05. In a comparison group1 vs. group2 p>0.05, group1 vs. group3 p>0.05 and group2 vs. group3 we have p<0.05. The p-value is 0.0178, which is significantly greater than expected.

Table 3 Variation of General Hypochondriasis with route of medication

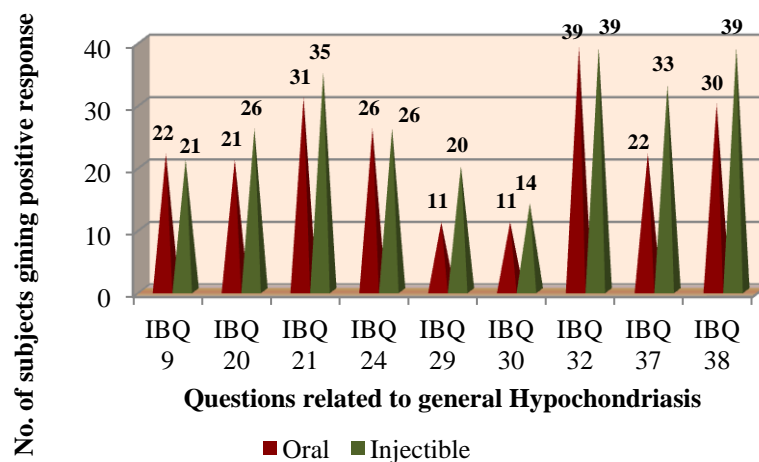| General Hypochondriasis (Response to questions)	n=50				n=50			
	ORAL				INJECTABLE			
	YES		NO		YES		NO	
	No.	%	No.	%	No.	%	No.	%
If you feel ill and someone tells you that you are looking better, do you become annoyed?	22	44	28	56	21	42	29	58
Are you more sensitive to pain than other people?	21	42	29	58	26	52	24	48
Are you afraid of illness?	31	62	19	38	35	70	15	30
Do you think that you worry about your health more than most people?	26	56	24	48	26	52	24	48
Do you find that you get jealous of other people's good health?	11	22	39	78	20	40	30	60
Do you ever have silly thoughts about your health which you can't get out of your mind, no matter how hard you try?	11	22	39	78	14	28	36	72
Are you upset by the way people take your illness when you are sick?	39	78	11	22	39	78	11	22
Do you often think that you might suddenly fall ill?	22	44	28	56	33	66	17	34
If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?	30	60	20	40	39	78	11	22
$\bar{x}$	23.66	47.33			28.11	56.22		

Figure 3 General Hypochondriasis in the study sample

Table 3 analyses the difference in the incidence of general hypochondriasis between subjects being treated on oral and injectable hypoglycemic drugs. The mean positive response to general hypochondriasis questions was 47.33% in the oral group and 56.22% in the injectable group. On statistical analysis, we found that there was no significance in the incidence of hypochondriasis between subjects on oral and injectable drugs. The two tailed p-value is 0.43113, considered not significant, t=1.046 with 16 degree of freedom, mean difference=4.44. The 95% confidence interval of the difference: -4.567 to 13.456. However, the higher number of positive responses to general hypochondriasis questions does indicate that route of administration of medication affects the patient's psychology.
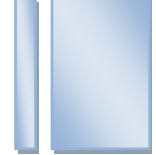
DISCUSSION

Non-communicable diseases such as diabetes have been identified as a major public health challenge by the World Bank and WHO SEARO and affect people from all backgrounds[18]. The burden of diabetes may be measured in terms of national or regional prevalence, or comparative prevalence[5]. It was estimated in 2008 that diabetes resulted in 3.8 million deaths globally (6% of world mortality), the same figure as HIV/AIDS. It was also estimated in the same year that of all chronic non-communicable diseases, diabetes is associated with the highest co-morbidities and complications[18]. The total number of diabetics in India is expected to rise from the present 50.8 million to 87 million by 2030[4]. According to Dr. Luis G. Sambo, WHO Regional Director for Africa, Type-2 represents 90% of the people with diabetes[19].

The study is the first of its kind as it takes into account the behavioural aspects of Diabetes Mellitus while simultaneously giving consideration to the temperament of the patient. Based on the classical Unani literature, we hypothesized that behavioural responses may not be affected by the disease or its severity only but also individual reactions to the same situation may have certain differences which may be determined by the temperament of the patient. We also aimed to explore certain other factors which may be influential in shaping the patient's responses to diabetes and its management. The results largely reflected our views that the temperamental variations are responsible in determining behavioural changes which may also affect adherence to therapy as well as the outcome of disease. It was found that patients having *saudavi* temperament had more prevalence of hypochondriasis, followed by those having *balghami* temperament. The results were also supported significantly by statistical tests (**Table 1**). Also, as expected, there was a higher prevalence of general hypochondriasis in the DM-II patients having higher levels of blood sugar (**Table 2**). If viewed from a broader perspective, this may also be an indication that hypochondriasis itself may be a cause of uncontrolled diabetes in these patients. The prevalence of hypochondriasis was also found to be higher in patients taking injectable medicine (**Table 3**).

For chronic illness such as diabetes, patients' perception of their condition and its management are generally believed to be important factors in determining successful adjustment to and self-care of the disease condition[9]. The overriding goals of diabetes self-management education are to empower individuals to avoid the short-term risks and long-term complications associated with the disease as well as to maintain/improve quality of life. However, the diabetes-specific health behaviours that compose up to 99% of disease treatment are difficult to maintain over time. This may be because individuals often make health care decisions on the basis of regimen difficulty and current symptoms rather than long-term benefits of behavior[20]. Thinking about behavior, biology, and health has tended to reflect a dualism in which behavior and biology are viewed from an either- or perspective and, usually, from the perspective that biological advances will obviate behaviour. In sharp contrast, we assert that biology and behaviour are complementary in their roles in health, disease, and illness. Behavioral science has contributed substantially and shows promise of even more impressive contributions to the prevention and care

of diabetes. The most compelling evidence of the complementarity of behavioral science and biology is the observation that clinical advances, such as intensive therapy, islet transplantation, or genetic testing and engineering, raise rather than eliminate behavioral and psychological questions and needs[8].

CONCLUSION

The study focused on two objectives: (1) To study the prevalence of general hypochondriasis in DM-II patients, and (2) To explore some of the possible reasons behind it with a view to improve health care delivery. The results supported our hypothesis that general hypochondriasis in DM-II may be related not only to the severity of disease and treatment pattern; but certain individual reactions may have their root in the inherent temperament of the patient, which also necessitates individualized management. The behavioural theory in chronic diseases including DM-II needs to

be explored further. Nevertheless, generalizing these findings warrants caution because our study population consisted of a relatively small number of patients and further studies with a larger sample needs to be taken into account before embarking upon possible interventions.

Future opportunities for behavioral science are enormous. As more efficacious interventions are identified (be they medical, technological, genetic, pharmacologic, or organizational), the potential importance of behavioral science in all diseases, including diabetes increases. As we develop more efficacious treatments, behavioral issues become increasingly important in determining how, to whom, and under what conditions and settings these treatments are optimally delivered[8].

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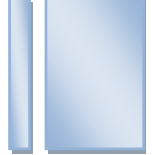
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