

## 16 PF Profile of Type 2 Diabetes Mellitus Male and Female Patients

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**Abstract:** Diabetes type 2 is very fast growing disease nowadays; it occurs throughout the world but is more common in the more developing countries. Globally as of 2010, it is estimated that there are 285 million people diabetes with type 2 making up about 90% of the cases. Its incidence is increasing rapidly and it is estimated that by 2030, this number will almost double. Many risk factors are associated with development of type 2 diabetes mellitus like environmental factors, modern lifestyle, genetic predisposition, psychological factors and also role of personality is very important. This study examined the personality traits of both the male and female type 2 diabetes mellitus patients. The total sample of the study consists of 80 (40 male & 40 female) medically diagnosed as patients suffering from type 2 diabetes mellitus at different diabetic clinics of Raipur city, coming from age group 25 to 75 yrs. To assess personality the 16 PF questionnaires, Hindi edition 1981, developed by Kapoor and Tripathi was used. An observation of the Personality Profile of the Type 2 diabetic patients on 16PF revealed that the dominating characteristics of the patients showed higher tendency of conscientious, experimenting, outgoing, self controlled, and have concrete level thinking. The chi square results indicated that percentage of female showing dominance of shrewd characteristics was higher than male diabetics. Female were also high on self sufficient than male diabetics patients. It indicates that the people high on moralistic feeling, social, experimenting, and superficial thinking may suffer from the problem of Type 2 Diabetes.

**Keywords:** 16PF, Personality, Type 2 Diabetes Mellitus

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### I. Introduction

Diabetes is very fast growing disease nowadays; it occurs throughout the world but is more common in the more developed countries. Globally as of 2010, it is estimated that there are 285 million people diabetes with type 2 making up about 90% of the cases. Its incidence is increasing rapidly and it is estimated that by 2030, this number will almost double. Type 2 diabetes is a chronic illness resulting from problems with both insulin resistance and insulin secretion (Haffner, 1998). Many risk factors are associated with development of type 2 diabetes mellitus like environmental factors, modern lifestyle, genetic predisposition, psychological factors and also role of personality is very important. Personality is a term that includes the unique composition of a person's likes and dislikes, attitudes, thoughts, emotions and behavior. Although a person's personality may be stable over time, it is also dynamic as it characteristics everybody's unique adjustment to any given situation (Nicholas, 2003). Many studies have been done in the field of personality and type 2 diabetes mellitus. Wheeler and Wagaman (2012) examined the association between primary personality traits and adolescent adherence to prescribed diabetes management regimens. Which was measured by five factor model and reported that the significant correlation between the conscientiousness and neuroticism personality domains.

Lane et al (2000) reported that higher level of blood glucose were associated with lower scores for neuroticism and associated personality facets of anxiety, angry, hostility, depression, self consciousness and vulnerability. Sutin and Costa (2005) found that impulsivity and hostility was strongly associated with metabolic syndrome. Bradley and Cox (1978) reported a significant positive correlation between the average blood glucose level and the extraversion score on the Maudsley personality inventory. Williams et al (2002) examined the neuroticism symptom reporting relationship in patients with type 2 diabetes and result revealed that lower positive affect was more strongly related to high neuroticism individuals. Surwit et al (2002) investigated the relationship of hostility with glucose metabolism in African-Americans and Caucasians and found that hostility was significant related to fasting glucose in African-Americans and to insulin sensitivity and fasting insulin in Caucasians subjects which was measured by a subset of the Cook-Medley hostility scale (CMHOST). The validity and clinical correlates of the Type D (distressed) personality in primary care patient with type 2 diabetes studied by Nefs et al (2012) and reported that Type D women had a more sedentary lifestyle and type D patients experienced less social support and more depressed mood, anhedonia and anxiety, these differences were clinically significant. Kontoangelos et al, (2012) investigated the association of oxytocin with trait and state psychological factors in type 2 diabetes patients and found that the significant positive relationship between the levels of OXT and psychoticism in EPQ rating scale ( $p < 0.013$ ) in uncontrolled diabetic patients and significant

negative relationship between oxytocin and somatization ( $p < 0.030$ ), as well as obsessive-compulsive scores ( $p < 0.047$ ) in SCL-90 rating scale, for controlled diabetic patients. Neuroticism is related to the experience of negative effect, emotional unstableness, depressive symptomatology, obsessiveness, and anxiety-based problems; extraversion to positive affect, sociability, activeness, dominant behavior, assertiveness, expressiveness, cooperativeness, irresponsibility, and risk taking; psychoticism to antisocial behavior, impulsiveness, aggressiveness, solidarity, lack of empathy/emotional insensitivity, and nonconformity, but also to creativity; the lie scale to social desirability and socialization (Eysenck, 1991).

It is observed that many researchers have studied in personality traits with blood glucose level, diabetes management, glycemic control etc, but very few studies have been done on personality traits with type 2 diabetes mellitus patients with respect to sex. Hannan (2008) noted that diabetes affects more than 70 million women around the world. WHO reported that 55% of deaths are in women from diabetes. In present study two groups of type 2 diabetes mellitus i.e. male and female type 2 diabetes mellitus patients were assessed on 16 PF to determine and compare the first order personality traits. It was hypothesized that there will be significant difference in the personality profile of male and female type 2 diabetes mellitus patients.

## **II. Materials and methods**

**Participants:** - The total sample of the study consists of 80 (40 male & 40 female) type 2 diabetes mellitus patients at different diabetic clinics of Raipur city, coming from age group 25 to 75 yrs, medically diagnosed as patients suffering from type 2 DM.

### **Tools:-**

**Demographic Questionnaire:** It included the demographic information of the participants viz; age, sex, and education, marital status, affected years of duration. (Table 1).

**16 PF Questionnaire** - To assess personality the 16 PF questionnaire, Hindi edition 1981, developed by Kapoor and Tripathi was used. This is an objective scorable self administering test to provide the most complete coverage of personality possible in a brief time. Personality measured by 16PF questionnaire "C" form. It contains 105 items for all 16 factors. The scale has the three forced choice options and the respondent have to choose any one of the options. The 16 PF questionnaire measures 16 personality traits each personality trait has bipolar category.

**Procedure:-**The male and female type 2 diabetes patients were contacted personally in their home and some in diabetes centers. The purpose of the study was conveyed to the patients and they were requested to fill up the questionnaire. The related instructions of the questionnaires were made clear to them. The information obtained on the questionnaire was scored through the scoring key available.

## **III. Results**

The data was obtained and analyzed and are presented in Tables 1, 2 and 3. Table 1 shows demographic details of the sample.

It observed that significant percentage of the patients included in the study 84% of type2 diabetes patients were diagnosed within last 5 years. 72.5% were from married group, 45% were from educated group had completed college education. From the married category 77.50 % of the participants were males which are higher percentage in comparison to females. 60% males with high education suffered type2 diabetes mellitus where percentage of educated female is less. It is also observed that the type2 diabetes mellitus males were more in percentage in the age group 46-55 where as females in the age group 36-45 were more in percentage. The result was an eye opening for residents and health professionals of advancing state Chhattisgarh. Ekpenyong et al (2012) studied the gender and age specific prevalence and associated risk factors of type 2 diabetes mellitus in UYO metropolis south eastern Nigeria and found that the overall prevalence of type 2 DM was 10.5%, with 9.7% and 0.8% representing diagnosed and undiagnosed cases, respectively. The male and female prevalence was 9.6% and 11.2% respectively. The age and sex specific prevalence was 2.74%, 8.50%, 16.54%, and 23.70% in males aged 18-25, 26-35, 36-45 and 46-60 years, respectively. In females of the same age groups, the prevalence was 3.95%, 9.70%, 13.01% and 29.39%, respectively. It observed from the Table 1 the age and sex specific prevalence are 15.0%, 17.50%, 32.50% 20.0% and 15.0% in males aged 25-35, 36-45, 46-55, 56-65 and 66-75 years, respectively. In females of the same age groups, the prevalence is 17.50%, 35.0%, 20.0%, 22.50% and 5.0%. it showed that majority of the patients fall in the age group of 36 to 65 yrs for both males and females type 2 diabetes mellitus patients.

Table 1: showing demographic details of sample -

VARIABLES	Group 1 female (n=40)		Group 2 male (n=40)		Total average (n=80)	
	N	%	N	%	N	%
Marital Status						
Married	27	67.50	31	77.50	58	72.5
Unmarried	3	7.50	4	10.0	7	8.75
Others	10	25.0	5	12.50	15	18.75
Education						
Primary	13	32.50	4	10.0	17	21.25
High school	15	37.50	12	30.0	27	33.75
College	12	30.0	24	60.0	36	45.0
Age of participant						
25-35	7	17.50	6	15.0	13	16.25
36-45	14	35.0	7	17.50	21	26.25
46-55	8	20.0	13	32.50	21	26.25
56-65	9	22.50	8	20.0	17	21.25
66-75	2	5.0	6	15.0	8	10.0
Affected year of diabetes						
1-5	34	85.0	33	82.5	67	83.75
6-10	4	10.0	5	12.5	9	11.25
11-15	1	2.50	1	2.50	2	2.5
16-20	1	2.50	1	2.50	2	2.5

**Personality characteristics**

Primary traits on 16 PF

Table 2 shows response percentage of the total sample at different category of responses on 16 PF. Significant percentage of response on the two extremes of the traits measured are found the factors A, B, G, Q1 and Q3. The participants’ responses are higher on the traits A (58.75%), G (73.75%), Q1 (67.5%) and Q3 (57.5%) and lower on factor B (72.5%). Significant percentage of response on the two extremes of the traits measured are found on factor A (Reserved-outgoing), B(Less intelligent-more intelligent), G (Expedient-conscientious), Q1(Conservative-experimenting) and Q3(Undisciplined self conflict- controlled). This result indicates that type 2 diabetes patients tend to be good natured, easy going, emotionally expressive, ready to cooperate, concrete in thinking, responsible, planful, conscientious, moralistic, experimenting, perfectionist.

Table 2 Percentages of the total sample on 16 PF Questionnaire.

Factor	Low No %	Moderate No%	High No%
A	8.75	32.5	58.75
B	72.5	27.5	0.0
C	13.75	41.25	45.0
E	26.25	38.75	35.0
F	10.0	37.5	52.5
G	8.75	17.5	73.75
H	5.00	40.0	55.0
I	30.0	43.75	26.25
L	13.75	48.75	37.5
M	13.75	40.0	46.25
N	25.0	43.75	31.25
O	12.5	41.25	46.25
Q1	11.25	21.25	67.5
Q2	21.25	55.0	23.75
Q3	3.75	38.75	57.5
Q4	10.0	40.0	50.0

Table 3 shows sex difference in personality traits of diabetes type2 patients. Chi square was computed and the results are presented in table 3. Scores of each patient on 16 PF were categorized in low (1-4), moderate or average (5-6) and high (7-10) range and compared. Finding suggests significant difference between both the group on factor “N” (Forthright-Shrewd) and factor “Q2” (Group dependent- Self sufficient).

That is the female diabetes patients tend to be shrewd and self sufficient in comparison to male type 2 diabetes patients.

(N) Forthright- Shrewd

A significant difference ( $p < 0.05$ ) was present on factor “N” between both the groups. Maximum number of patients of both group scored in different level. Female patients show high on moderate level and male show high on low level. It means that female patients show dominance on shrewd trait which means that the person tend to be polished, experienced and shrewd, and male show dominance on forthright trait, which means that the person tend to be let of natural warmth and a genuine liking for people.

(Q2) Group dependent-Self sufficient

A significant difference ( $p < 0.05$ ) was present on factor “Q2” between both the groups. Maximum number of patients of both groups scored in moderate range. It suggest that type2 diabetes patients tend to be self reliant, solitary, resourceful, individualistic and self sufficient, making decisions and taking action on their own. They do not dislike people, but simply do not need their agreement or support.

Table 3 Comparison of Type 2 diabetes mellitus male and female patients on the 16 PF

FACTOR	TRAITS	Group	Low No%	Moderate No%	High No%	Chi square
A	Reserved-outgoing	Group1	5(12.5)	14(35.0)	21(52.5)	1.980
		Group2	2(5.0)	12(30.0)	26(65.0)	
B	Less intelligent-more intelligent	Group1	32(80.0)	8(20.0)	0(0.0)	2.256
		Group2	26(65.0)	14(35.0)	0(0.0)	
C	Affected by feeling-emotionally stable	Group1	6(15.0)	18(45.0)	16(40.0)	0.806
		Group2	5(12.5)	15(37.5)	20(50.0)	
E	Humble – assertive	Group1	13(32.5)	13(32.5)	14(35.0)	1.996
		Group2	8(20.0)	18(45.0)	14(35.0)	
F	Sober-happy go lucky	Group1	5(12.5)	16(40.0)	19(47.5)	1.012
		Group2	3(7.50)	14(35.0)	23(57.5)	
G	Expedient-conscientious	Group1	4(10.0)	6(15.0)	30(75.0)	0.445
		Group2	3(7.50)	8(20.0)	29(72.5)	
H	Shy- venturesome	Group1	4(10.0)	17(42.5)	19(47.5)	4.943
		Group2	0(0.0)	15(37.5)	25(62.5)	
I	Tough minded-tender minded	Group1	11(27.5)	21(52.5)	8(20.0)	2.756
		Group2	13(32.5)	14(35.0)	13(32.5)	
L	Trusting- suspicious	Group1	8(20.0)	20(50.0)	12(30.0)	3.497
		Group2	3(7.50)	19(47.5)	18(45.0)	
M	Practical- imaginative	Group1	6(15.0)	14(35.0)	20(50.0)	0.834
		Group2	5(12.5)	18(45.0)	17(42.5)	
N	Forthright- shrewd	Group1	4(10.0)	22(55.0)	14(35.0)	9.876*
		Group2	16(40.0)	13(32.5)	11(27.5)	
O	Placid- apprehensive	Group1	3(7.50)	17(42.5)	20(50.0)	1.872
		Group2	7(17.5)	16(40.0)	17(42.5)	
Q1	Conservative-experimenting	Group1	4(10.0)	9(22.5)	27(67.5)	0.168
		Group2	5(12.5)	8(20.0)	27(67.5)	
Q2	Group dependent-self sufficient	Group1	6(15.0)	22(55.0)	12(30.0)	40.00*
		Group2	11(27.5)	22(55.0)	7(17.5)	
Q3	Undisciplined self conflict- controlled	Group1	2(5.0)	17(42.5)	21(52.5)	0.978
		Group2	1(2.50)	14(35.0)	25(62.5)	
Q4	Relaxed- tense	Group1	1(2.50)	17(42.5)	22(55.0)	5.025
		Group2	7(17.5)	15(37.5)	18(45.0)	

\*significant at .05 level

Group 1 = female type 2 diabetes mellitus patients

Group 2 = male type 2 diabetes mellitus patients

#### IV. Discussion

The findings of the study indicate that the dominant personality factors of type 2 diabetes patients are measured on the basis of 16 PF questionnaire are A, B, G, Q1 and Q3. 73.75% responses of the patients of type 2 DM are on higher pole of the factor ‘G’. The higher pole of the factor “G” describes the characteristics of conscientious level, which denote in characteristic behaviors such as being efficient, organized, neat, and systematic. It includes such elements as self-discipline, carefulness, thoroughness, self-organization, deliberation (the tendency to think carefully before acting), and need for achievement. It is an aspect of what has traditionally been called character. Conscientious individuals are generally hard working and reliable. When taken to an extreme, they may also be "workaholics", perfectionists, and compulsive in their behavior. People who are low on conscientiousness are not necessarily lazy or immoral, but they tend to be more laid back, less goal-oriented, and less driven by success.

Factor “B” with 72.5% and high on concrete thinking. Concrete thinking means Thinking characterized by a predominance of actual objects and events and the absence of concepts and generalizations.

Factor Q1 high on experimenting level with 67.5% and the person tend to be interested in intellectual matters and to have doubts on fundamental issues. And more tolerant of inconvenience and change. Maximum numbers of both groups were in high range (58.75%) on factor “A” and it shows on outgoing trait. It suggests that type2 diabetes patients tend to be more stiff, cool, skeptical and aloof. They like things alone and avoid compromises of viewpoints.

The findings of the present study are in coherence with findings. Which state that high level of hostility, extraversion (Smith and Mackenzie, 2006) personality type A (Yancura et al, 2006), are the risk factors in development of type2 diabetes mellitus. Although the findings of the study are not in support of the findings of the studies which state that passive and type B personality are at risk of development of type 2 DM (Boersma et al, 2011).

In the present study the female patients show dominance on shrewd trait which means that the person tends to be polished, experienced and shrewd. And male show dominance on forthright trait. This means that the person tends to be let of natural warmth and a genuine liking for people. Maximum number of patients of both groups scored in moderate range on factor “Q2”. It suggest that type2 diabetes patients tend to be self reliant, solitary, resourceful, individualistic and self sufficient, making decisions and taking action on their own. They do not dislike people, but simply do not need their agreement or support. The study reveals that some of the dominating personality characteristics, i.e. being solitary individualistic and being little concern for others agreement may play role in development of diabetes type 2. When a person don’t involves other for many of his decision may feel responsible himself for his success and failures. The study has been conducted on small sample and shows a trend related to the personality characteristics of diabetes type 2. A study on type 2 DM with large sample may shows significant role of the personality traits in development of diabetes type 2.

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