



# Relationship between type D personality, health behaviours and psychosomatic symptoms among young adults, during COVID -19 pandemic.

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**ABSTRACT:**Type D personality have been explored by a number of research studies all over the world.The aim of the current study was to explore the association of Type D personality with an individuals' health behaviours and psychosomatic symptoms, during COVID -19 pandemic. The study also investigated most significant predictor of health behaviours and psychosomatic symptoms among young adults. In the current cross-sectional study, a sample of 355 (229 females &126 males) participants (mean age=22 years) was selected. Type D personality was assessed with Distress Scale-14. Whereashealth behaviours and psychosomatic symptoms were measured with General PreventiveHealth Behaviours Checklist and Psychosomatic Symptoms Scale respectively. Results showedthat 69% of the participants were identified with Type D personality. A significant relationship was identified between Type D personality, health behaviours andpsychosomaticsymptoms among young adults. Furthermore, Type D personality was identified as the most significant predictor of health behaviours and psychosomatic symptoms after controlling for demographic variables. It was suggested that future studies may use longitudinal design to identify the stability of type D personality traits over longer period of time, andcausal relationship between type D personality, health behaviours, and psychosomatic symptoms during pandemic .The study has its implications for mental health professional in screening and management of type D personality traits and its adverse impact on health behaviours and psychosomatic symptoms among young adults during COVID-19 pandemic.

**Keywords:** Type D personality, health behaviours, psychosomatic symptoms, COVID -19, pandemic

## I. INTRODUCTION

This study was designed to explore the relationship of Type D personality with individuals' health behaviours and the psychosomatic symptoms they experience, during the pandemic.

Type D personality is characterized by two personality characteristics that are negative affectivity (NA) and social inhibition (SI) (Denollet et al., 1996). People who have a Type D personality type show a number of various adverse emotions which include hostility, anxiety, dysphoria and anger across different circumstances and time period (Denollet, 1998). They also experience inhibition in expressing such emotions in communal settings due to the dread of disapproval or rejection (Mols&Denollet, 2010). Research evidence (Gilmour& Williams, 2012)in the past has identified significant association of Type D personality characteristics with health behaviours.

### **Type D Personality and Health Behaviours**

Health behaviours cannot be visualized as some unidimensional phenomenon. A number of socio-demographic factors relate to it strongly such as gender, age, family dynamics, and education. Social and economic factors also impact health related behaviours. (Calnan, 1989)

A multitude of research studies have explored the link between type D personality and health behaviours. One such study found that Type D individuals engaged in lesser positive health behaviours. They stayed mostly indoors, were careless with eating, and mostly skipped regular check-ups with their medical doctors. (Williams et al., 2008)

Similarly, another study (Mommersteeg et al.,2010) also found that Type D individuals were different from the non-Type D individuals in terms of the health behaviours they enacted in their personal lives. Mommersteeg et al., (2010) found that Type D individuals tend to be make poor routine choices. Such individuals were less likely to exercise, they had a less variety of food as part of their diet, and they did not

bother much about managing the total fat in their diet as compared to non-Type D individuals. Research study has

### **Type D Personality and Psychosomatic Symptoms**

Psychosomatic means 'bodily symptoms caused by mental or emotional disturbance' (Merriam Webster). Psychosomatic symptoms are triggered by emotional stress and manifest in the body of an individual as physical pain and other symptoms. Early example of this is found in the works of Freud and Breur (1985). Roth-Isigkeit (2005) conducted a study highlighting how commonly psychosomatic symptoms occur. He reported that eighty-three percent of individuals faced pain in the last three months, with headaches, limb pain, back pain and abdominal pain as commonly occurring type of pains.

The high prevalence of psychosomatic pains among adolescents, can have adverse impact on societies and individuals. It was found that Type D personality type, or more specifically its dimension NA, may be a major contributing factor in the increase of the chance of musculoskeletal pains and psychosomatic symptoms. (Condén et al., 2013)

Williams and Wingate (2012) showed that the interaction between the two dimensions of Type D personality, was highly correlated with somatic complaints of individuals. A solid link was found between somatic pains reported by individuals and poor psychological health. Complaints of stomach aches, musculoskeletal pains or headaches are highly likely to be hinting at a psychiatric disorder. Lacking physical health at a younger age might affect one's mental condition in adulthood. (Condén et al., 2013; Egger et al., 1999)

### **Impact of Pandemic on Health behaviours & Psychosomatic Symptoms**

Pandemics have a tendency to disrupt our usual behavior such as the swine flu pandemic of 2009. The outbreak instigated in Mexico and spread around the globe in more than 40 countries which included USA. It was caused by a new swine origin influenza virus A also known as H1N1. This virus was a result of a genetic re-assortment in pigs. It affected mostly young people and had symptoms that were similar to seasonal influenza symptoms. It spread through human to human contact. (Hayajneh&Mahafzah, 2009)

A research study in Belgium explored the link of the number of reports by media of swine flu outbreak of 2009 and self-diagnosis of swine flu and self-registration of symptoms of swine flu in the ER of a hospital. Rise in media reports led to an increase in case reports. (Nelissen et al., 2014)

Wheaton et al. (2011) studied public response to the pandemic panic in 2009 H1N1 influenza virus outbreak. They recognized that pandemics cause high publicity of the disease and high anxiety and increased behavioural changes. Exploring the psychological processes causing or accompanying anxiety, they found pandemic related anxiety to be common among the college students surveyed. They found that significant predictors of pandemic anxiety were fears of contracting the disease, health-related anxiety, and high sensitivity to disgust. They reported that the outbreak was excessively reported on media. Such high media coverage served both as a blessing as well as a curse. To avoid potential contagion people adopted healthy habits to decrease the risk of disease spread but public fear and mass hysteria caused increase fear of illness as media adverts of the disease was increased. Wheaton et al., (2011) also found that the anxiety produced in response to an illness can increase protective behaviour, but, excessive anxiety causes needless distress in addition to avoidance behaviours, which impacts daily functioning negatively. Adoption of "excessive safety behaviours" is common such as repeatedly seeking medical advice or excessive hand washing behaviour, which can impair one's daily functioning even more. Some individuals watching the news will be convinced that they have contacted the disease and might even exhibit symptoms. These symptoms, either real or imagined, raises fear of having contracted the disease. Hence, the outbreaks, that are highly publicized produce "mass psychogenic illness," where the healthy individuals misread non-serious body sensations such as shortness of breath or dizziness, as indication that they are ill. Misdiagnosis causes hypervigilance, heightened anxiety, and increased safety behaviours that have a negative impact on the society when they often miss office or misuse medical resources.

In another study (Marinaci et al., 2020) on the association of institutional support with emotional distress and psychosomatic symptoms among frontline medical personnel revealed a significant association between psychosomatic symptoms emotional exhaustion and lack of perceived institutional support during COVID-19 pandemic. In another research on pregnant women during COVID-19, psychological wellbeing and demographic variables were identified as significant predictors of impaired health behaviours during pandemic (Pope et al., 2021).

## II. METHODS

### Study Designs and Settings

In the present study, cross-sectional research design was used to assess the relationship of type D personality with individuals' health behaviours and the psychosomatic symptoms they experienced, during the pandemic. The sample was taken from twin cities of Rawalpindi and Islamabad during COVID-19 Pandemic.

### Instruments

In the current research, a demographic sheet along with distressed scale- 14(Denollet , 2005) , General preventive health behaviors checklist (Amir , 1987) and Psychosomatic symptoms scales (Aslund et al., 2014) were used to measure Type D personality, health behaviours and psychosomatic symptoms respectively.

*Distress scale 14 (DS-14)* was developed by Denollet (2005) to measure type D personality. DS-14 was universally proved to be the most reliable instrument to measure Type D personality. It has two subscales that are, SI and NA; both of these 2 subscales consist of seven items each. The NA subscale measures individuals' tendency to feel adverse emotions, whereas SI subscale measures how much an individual inhibits showing their emotions or their behaviours during social interactions. The responses to all of the items of NA and SI scale (apart from 1 and 3) include, 'False (marked as 0)', 'Rather False (marked as 1)', 'Neutral (marked as 2)', 'Rather True (marked as 3)', and 'True (marked as 4)'. Items 1 and 3 of SI scale will be marked in reverse, in the following order, 'False (marked as 4)', 'Rather False (marked as 3)', 'Neutral (marked as 2)', 'Rather True (marked as 1)', and 'True (marked as 0)'. The DS-14 has been employed in research studies on healthy people and people with coronary heart diseases; it has been validated in many countries involving Sweden (Aslund et al, 2014; Conden et al, 2013a), Ireland and UK (Williams et al, 2008) and Netherlands (Denollet, 2005). For the current sample, alpha reliability of the complete scale of DS-14 was computed and was found to be 0.83.

*General Preventive Health Behaviors Checklist* was developed by Amir in 1987. There are two versions of this checklist. One is the full version and has 29 items whereas the other is the short version and has 8 items. Initially, it was exclusively used for elderly populations but lately it has been used for the young and healthy populations (Williams et al, 2008; Williams et al, 2016). In the present study, shorter form of this checklist was employed which has 8 items. The response options were 3 point scale ranging from, 'no, I do not (marked as 0)', 'sometimes (marked as 1)' and 'yes, always or almost always (marked as 2)'. In the current study, the alpha reliability of the scale was found to be 0.62.

*Psychosomatic Symptoms Scale* measures psychosomatic symptoms and it consists of 12 items with 3 point response options, that are, 'rarely (marked as 1)', 'several times (marked as 2)' and 'most of the time (marked as 3)'. Aslund et al. (2014), used the psychosomatic symptoms scale and computed its alpha reliability, which was  $\alpha = 0.86$ . The Cronbach's alpha of the psychosomatic symptoms scale was 0.89 in the current study.

### Sample

Sample size estimation was done with Raosoft ware (2004) sample size calculator with 5 % margin of error, 95 % confidence level 50 % response distribution and population size of more than 20,000 adults. In the current research 480 young adults were contacted for data collection. Out of 480 individuals, 355 young adults within the age range of 19 years to 35 years, were recruited as study participants. Every consecutive young adult who agreed to participate and fulfill the required criteria was included in the study sample. People with injuries, chronic pain conditions, chronic physical diseases and psychological disorders were not included in the study to control the confounding effects of these variables. Final sample (N=35) consisted of 229 female and 126 male participants (Mean age =22years, SD=3.2).

### Data Collection Procedure

In the present study young adults who provided signed informed consent, were recruited as participants. Initially 480 young adults (age = 19 years to 35 years) were approached. A total sample of 355 participants agreed to participate in the current research. The study protocols were converted into google forms and were administered on a group of 20 participants in a google meet session. The researcher explained the purpose of the study and answered all the relevant questions. They were asked to complete

the questionnaires keeping in view the current situation of COVID-19 pandemic. Participants signed the consent form and filled the questionnaire during google meet session with the researcher. Data collection was completed from June 2020 to August 2020 during COVID-19 pandemic.

### Ethical Consideration

In the current research, issues of ethical nature were seriously taken into consideration at every step of the research. Permission to conduct the research was formally taken from research review board at Fatima Jinnah Women University. Complete information was provided to the participants regarding the purpose of the study and they were also assured about the confidentiality of the information provided by them. It was also communicated to the participant that they can participate of their own free will and allowed to leave at any stage of the study. A signed informed consent was taken from the young adults who agreed to participate in the study.

### Statistical Analysis

Statistical Package for Social Sciences (SPSS 20 version 20) was employed for the statistically analyzing the data. Data was initially screened for missing values, but none were found. Descriptive as well as inferential statistics were computed. Descriptive statistics were employed for assessing the demographic variables. Categorical data was assessed by computing frequencies and categorical data. Continuous data, on the other hand, was assessed by computing the Mean and Standard Deviations. Z scores were computed (by using skewness and kurtosis values) to assess the normality of the data. Histograms and P-P plots were also computed for assessing the normality of data graphically. Since the data was normally distributed parametric tests such as Pearson correlation was used to assess the relationship between study variables. Hierarchical multiple regression analysis was also used to assess the most significant predictors of health behaviours and psychosomatic symptoms after controlling for demographic variables.

## III. RESULTS

The results section provides the results extracted from the data through statistical analysis. Firstly, descriptive statistics are computed which give a descriptive picture of the demographic variables and assessment of the outcome variable i.e. Type D personality. Additionally, descriptive statistics of continuous variables for the data are also computed and presented. Main statistical analyses techniques that are, correlation and regression are also presented.

### Socio-Demographic Characteristics of the Study Participants

**Table 1.** Demographic Variables (Gender, Age, Education & Family Structure) of Participants (N = 355)

Variables	Mean (M)	Standard Deviation (SD)	Frequency (f)	Percentage (%)
<b>Gender</b>				
Females	-	-	229	64.5
Males	-	-	126	35.5
<b>Age</b>				
	22 years	3.2		
<b>Education</b>				
Higher Secondary School	-	-	53	14.9
Bachelors	-	-	244	68.7
Masters	-	-	58	16.3
<b>Family Structure</b>				
Joint Family	-	-	127	35.8
Nuclear Family	-	-	228	64.2

Table 1 shows the computed socio-demographic data of the study participants. The number of female participants was higher (64.5 %) as compared to the male participants (35.5 %).

### Assessment of Type D Personality

Type D was measured in the current study by using the DS-14. The individuals with Type D were recognized by a basic cut-off score ( $\geq 10$ ) on NA and SI subscales of DS-14.

**Table 2.** Assessing the Type D personality in the study participants (N = 355)

Type of Personality	Frequency (f)	Percentages (%)
Type D	245	69
Non-Type D	110	31

Table 2 shows that two hundred and forty-five participants were classified as type D personality individuals (69 % of the sample) while one hundred and ten participants were identified as non-type D personality individuals (31 % of the sample).

### Relationship between Type D personality, Psychosomatic Symptoms and Health Behaviours

**Table 3.** Correlations between Type D personality, Psychosomatic Symptoms and Health Behaviours. (N=355)

Variables	1 r(p)	2 r(p)	3 r(p)
1 Type D personality	1		
2 Health Behaviours	-.318** .000	1	
3 Psychosomatic symptoms	.518** .000	-.194** .000	1

ns=non-significant \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$

Table 3 shows a statistically significant positive relationship between Type D personality and psychosomatic symptoms. The value of correlation is .518 where  $p < 0.001$ . Additionally, it shows a statistically significant inverse relationship between Type D personality and health behaviours. The value of correlation is -.318 where  $p < 0.001$ .

### Predictors of Health Behaviours and Psychosomatic Symptoms among participants during COVID-19 pandemic

**Table 4.** Hierarchical Multiple Regression Analysis of Health behaviours among participants (N = 355)

Variables	R	R <sup>2</sup>	R <sup>2</sup> Change	B	SE	B	t	Sig(p)
Model One	0.08	0.01	0.01					0.71
Age				0.03	0.05	0.03	0.51	0.61
Gender				0.20	0.30	0.04	0.65	0.52
Education				-0.08	0.31	-0.02	-0.27	0.79
Family Structure				0.42	0.31	0.08	1.37	0.17
Model Two	0.32	0.11	0.10					0.00
Age				0.01	0.05	0.01	0.22	0.82
Gender				0.05	0.29	0.01	0.20	0.88
Education				-0.04	0.29	-0.01	-0.15	0.89
Family Structure				0.37	0.29	0.07	1.27	0.21
Type D personality				-0.08	0.01	-0.32	-6.22	0.00



Note.  $R^2$  = amount of variance explained by IVs;  $R^2$  Change = additional variance in DV; B = Unstandardized coefficient;  $\beta$  = Standardized coefficient; SE = Standard Error; t = estimated coefficient.

Table 4 shows the hierarchal regression analysis of health behaviours in the study sample. Demographics (Age, gender, education & family system) were entered into the first step and they accounted for 1.0% ( $F(4, 350) = .54$ ;  $p > 0.05$ ) of the variance, which was not significant. Type D personality was introduced in the model on step 2. Model 2 accounted for 11% ( $F(1, 349) = 8.21$ ;  $p = .000$ ) of the variance. Type D personality accounted for 10 % of the variance in health behaviours and identified as significant predictor of health behaviours after controlling for demographic variables.

**Table 5.** Hierarchal Multiple Regression Analysis of Psychosomatic Symptoms among participants ( $N = 355$ )

Variables	R	$R^2$	$R^2$ Change	B	SE	$\beta$	T	Sig(p)
Model One	0.16	0.02	0.02					0.11
Age				-0.32	0.16	-0.13	-1.95	0.05
Gender				-1.40	0.94	-0.08	-1.48	0.14
Education				1.06	0.95	0.07	1.11	0.27
Family Structure				0.46	0.96	0.03	0.47	0.64
Model Two	0.53	0.28	0.26					0.00
Age				-0.24	0.14	-0.10	-1.70	0.09
Gender				-0.64	0.81	-0.04	-0.78	0.44
Education				0.85	0.82	0.06	1.04	0.30
Family Structure				0.71	0.83	0.04	0.85	0.39
Type D personality				0.42	0.04	0.51	11.19	0.00

Note.  $R^2$  = amount of variance explained by IVs;  $R^2$  Change = additional variance in DV; B = Unstandardized coefficient;  $\beta$  = Standardized coefficient; SE = Standard Error; t = estimated coefficient.

Table 5 shows the hierarchal regression analysis of psychosomatic symptoms in the study sample. Demographics (Age, gender, education & family system) were entered into the first step and they accounted for 0.2% ( $F(4, 350) = 1.90$ ;  $p > .05$ ) of the variance, which was not significant. Type D personality was introduced in the model on step 2. Model 2 accounted for 28 % ( $F(1, 349) = 27.12$ ;  $p = .000$ ) of the variance, which was statistically significant. Thus, type D personality was identified as the most significant predictor of psychosomatic symptoms after controlling for demographic variables.

#### IV. DISCUSSION

The present study was designed to assess the relationship of Type D personality with health behaviours and psychosomatic symptoms among young adults during COVID-19 pandemic. The study further identified most significant predictor of impaired health behaviours and high level of psychosomatic symptoms during COVID-19 pandemic.

Current research showed that 69 % of the study participants were identified with Type D personality. This percentage is significantly higher than that of other research studies previously conducted to assess Type D personality in various populations around the globe. Conden et al. (2013) in their Sweden based study found that every tenth adolescent had a Type D personality i.e. 12.5 % of the whole population. Another study on sample of 1012 participants from Ireland and UK found that 39 percent of the total study sample consisted of Type D individuals (Williams et al, 2008). Gilmour and Williams (2012), in a Scottish sample of 200 university students found that 34.5 percent individuals had Type D personality. Svansdottir et al. (2013) conducted a study on a random sample of 4753 individuals from Iceland and found 22% of individuals from the study were Type D individuals. In another study, with a sample of 217 participants, 69 % were identified with type D personality characteristics. Furthermore, a study on individuals of Australian origin was conducted where 207 participants had chronic illnesses and 182 participants were healthy. Participants with comorbid conditions were excluded from the study. Rate of Type D was found to be 53 % in chronic illness group and 39 % in healthy individuals (Horwood et al,

2016). This high percentage (69%) of Type D personality among young personality adults during COVID - 19 pandemic may be attributed to the fact that young adults experienced high level of negative affectivity and social inhibition due to COVID related psychosocial stressors such as psychological distress, social isolation, death anxiety, and financial pressures. The diverse cultural, social, physical and psychological factors associated with pandemic further exacerbated type D personality traits.

Results in the current study also revealed a significant inverse relationship between Type D personality and health behaviours. Furthermore, Type D personality was identified as most significant predictor of health behaviours after controlling for demographic variables. This is consistent with results from other studies which explored the relationship between these variables. Several studies in various countries have been conducted to explore the link between type D personality and health behaviours. One study with participants from United Kingdom and Ireland found that Type D individuals were found to perform lesser positive health behaviours than non-Type D individuals. They also spent less time outdoors, ate less sensibly, and were less likely to have regular medical check-ups as compared to non-Type D individuals (Williams et al, 2008). Similarly, another study conducted on 200 healthy adults of a Scottish university found that Type D individuals showed significant differences from non-Type D individuals in terms of health behaviours. Type D participants were more likely to be involved in unhealthy eating patterns, smoke excessively and exercise less as compared to non-Type D individuals (Gilmour & Williams, 2012).

Mommersteeg et al. (2010) also explored the association between Type D and health behaviours in a Dutch population and found that Type D individuals made poor lifestyle choices. Such individuals observed less physical activity, had a lesser variety in their diet, and were less likely to manage their fat intake as compared to their non-Type D counterparts. Svansdottir et al. (2013) conducted a study on a random sample of 4753 individuals from Iceland to explore the relationship between health behaviours and Type D personality. They studied past and present health behaviours of individuals, including physical activity and smoking. They found that Type D personality individuals had a higher incidence of current and past smoking behaviours, they had lesser physical activity, and had a higher BMI as compared to non-Type D individuals. In another study with 217 participants, it was found that individuals scoring high on the dimensional constructs of Type D (NA & SI) are significantly negatively correlated to health behaviours (Williams et al, 2016). Kupper et al. (2013) conducted a cross-cultural analysis taking a sample from 22 countries and found that Type D individuals smoked more and were less likely to be part of any recreational or physical activities than their non-Type D counterparts. Additionally, Ginting et al., (2014) in a sample of Indonesian people found that Type D individuals are more likely to engage in negative and less healthy health behaviours. Current Research evidence (Zvolensky, et al., 2020) during COVID-19 reiterated the importance of identifying the diverse mechanism of association between COVID-19 related psychological distress, addictive and health behaviours. Research study has also shown that contrary to social inhibition which is a component of type D personality, individuals with prosocial behaviour are more likely to be engaged in healthy behaviour patterns such as wearing masks and other guidelines during COVID-19. Prosociality was identified as significant predictor of health behaviours during pandemic (Campos-Mercade, et al., 2021)

In the present research, analysis revealed a significant relationship between type D personality and psychosomatic symptoms among young adults during COVID-19 pandemic. Moreover, type D personality was identified as significant predictor of psychosomatic symptoms after controlling for demographic variables. The results of current study were supported by research evidence

(Conden et al., 2013) which identified a significant association between psychosomatic symptoms and type D personality among adolescents. Conden et al., (2013) found that, Type D personality (or more specifically its dimension NA) may be a significant factor in the increase of the risk of psychosomatic symptoms and musculoskeletal pains among adolescents. Another study also found that the interaction between the two dimensions of Type D personality (NA and SI), was positively correlated with somatic complaints of individuals (Williams and Wingate, 2012). Williams et al. (2016) found that Type D was significantly associated with physical symptoms. Mols and Denollet (2010) also found that Type D personality has a negative impact on physical health status as well as mental health status. Such individuals suffer from more psychosomatic symptoms. Merlijn (2003) found that individuals with chronic somatic complaints had a higher score on the dimension of neuroticism (a scale that resembles Type D personality). In the current research, Zidkova et al., (2021) explored the relationship between COVID-19 pandemic and various psychosomatic symptoms in a sample of 1431 Czech adults. The findings indicated a significant relationship between negative affect, psychosomatic complaints and COVID -19 pandemic.

Several factors such as female gender, young age, and student status were identified as significant predictors of high level of psychosomatic symptoms. These findings support the high prevalence of psychosomatic symptoms and its association with negative affect among young adults during COVID 19.

## V. CONCLUSION

The current study highlighted the importance of type D personality and its association with health behaviours and psychosomatic symptoms among young Pakistani adults during COVID-19 pandemic. The study also reported that 69% of participants were identified with type D personality. This is significantly high percentage of Type D individuals among young adults and warrant the need for screening and management of type D personality traits in general population especially young adults. Type D personality was also identified as significant predictor of health behaviours and psychosomatic symptoms among young adults after controlling for demographic variables.

Future studies should be designed to assess the relationship between type D personality and other psychosocial factors such as COVID-19 related distress, social support, post-traumatic stress symptoms and addictive behaviour. This was a cross sectional study, therefore causal inferences cannot be drawn. Future studies should use longitudinal design to identify the stability of type D personality traits over longer period of time. Longitudinal studies would also be helpful in identifying the causal relationship between these variables and long term impact of COVID -19 pandemic on type D personality , health behaviours and psychosomatic symptoms.

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