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IMPACTS OF BASIC PSYCHOLOGICAL NEEDS ON MENTAL HEALTH WITH MEDIATING EFFECT OF PSYCHOLOGICAL DISTRESS IN CARDIAC PATIENTS

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ABSTRACT

This study desired to check a mediation model that measured the relationship between basic psychological needs and mental health by employing psychological distress as a mediating factor in cardiac patients. Total 313 Hospitalized Cardiac patients were chosen from Nishtar Hospital, Multan Pakistan through a purposive sampling technique and they completed a booklet of instruments targeted to measure study variables. Basic Psychological Needs Scale, an 18-item self-report Mental Health Inventory (MHI-18), and Kessler Psychological Distress Scale (K10) were used to study the target variables included in the model. A significant relationship is found in basic psychological needs, psychological distress, and mental health in cardiac patients. Results of the mediation model revealed that the relationship between basic psychological needs and anxiety, depression, behavioral control, and positive affect was significantly mediated by psychological distress. The results of the comparison of sub-scales of mental health between male and female cardiac patients reveal a significant difference in the subscales except for depression. The results are on the same track as previous research but the novelty of this research lies in its unique model tested with cardiac patients.

Disciplinary: Psychology and Mental Health, Medicine and Cardiology (Cardiovascular Health and Disease).

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1 INTRODUCTION

Psychological condition in which need something to fulfill the basic requirements necessary for life is considered as basic psychological needs. Albert Maslow was the first person who reported the concept of psychological needs in the theory of human motivation. Basic psychological needs theory is considered as part of the human motivation macro-theory known as Self-Determination Theory (Ryan, & Deci, 2000). Needs factors for psychological needs? Unpleasant feelings or emotion which disturb functional activity level is known as Psychological distress. Psychological distress (specifically, depression) is known as the major threat and risk factor of disability in the world reported by the World Health Organization (2009).

Numbers of factors are associated with psychological distress like personality traits, family, occupational, economic stress, and health-related stress (Matthews, 2013; Ghaffari, et.al, 2018). Such issues cause a serious disturbance which highly affects the human vascular system (Whooley, & Wong, 2013), resulted in different disorders including acute coronary syndrome (ACS) or stroke.

The significance and relation of accurate mental and physical health are evident and well-documented in previous reports (Keyes, 2005, 2007). Heart and brain functional activity related issues have been reported by different researchers since the 17th century. However, in the 1970s the relationship between cardiovascular diseases and the psychological situation was established through scientific manners. This link began through the investigations of cardiovascular disease and “type A” personality (Dembroski, 1978). Numbers of reports have been documented which depicted the relationship of psychological stress conditions with the cardiac disorder. (Mozaffarian, et.al, 2015).

This theory states that completion of requirements for relatedness and competence is really challenging for the development and satisfaction regarding a health point of view (Milyavskaya, & Koestner, 2011). Broadly speaking, the need for autonomy described as the need to experience one's behavior as volitional and self-endorsed rather than endorsed by others. The said factor is the basic signal that provides a valuable relationship between health and satisfaction status as self-regulation is viewed as a “structural organized system that is highly associated with someone's behavior and are considered as a pillar for autonomy and self-confidence” (Shogren et, al., 2015). Such a need for relatedness clearly states the care and benefits for others not only circulating around their own corner. The functional applications of these satisfactions not only localized to one factor but also provide fruitful effects for all types of fields including, culture, education, sports, health, and parents' children close relationships (Milyavskaya, & Koestner, 2011).

Self Determination Theory (Deci & Ryan, 1985, 2002) has suggested that the basic needs of any individual should be fulfilled which are beneficial to perform various activities in life at a broad level (Ryan & Deci, 2006).

A choice of behavior that describes someone itself condition is referred to as autonomy. Autonomy is to be fulfilled when some have the opportunity to make his decision based on his behavior (Deci & Ryan, 2000). However, many external factors including, deadlines, guilt, and supervision put a negative impact on the autonomy parameter to fulfill the needs (Deci & Ryan, 2000). The relationship of someone with others at a strong level is referred to as relatedness (Ryan & Deci, 2006). Kipp et al (2008) state that relatedness is basically “an individual's desire to have

satisfying and consistent involvement with others" (p. 110).

The stage of life where such needs are fulfilled is considered as needs satisfaction which ultimately influences someone's life regarding mental, physical, and psychological development (Hodge, Danish, & Martin, 2013; Weiss &Amorose, 2008). In other aspects, needs are not fulfilled to create a negative impact on one's behavior and health status (Bartholomew, et.al, 2011).

Collectively, depression is considered as a major factor for disturbing heart normal function which consequently badly affect someone life (Randall, et, al. 2009), which put extra pressure on hospitalization and different basic care programs (Kronish, et, al. 2006) (Barth, et al. 2004).

Due to the occurrence of cardiovascular disease (CVD), various factors potentiate numbers of negative norms including social and behavioral factors which consequently enhanced psychological distress. Huge numbers of common and physiological factors including, smoking, alcohol consumption, lack of exercise, inflammation, adiposity, and body pain are considered as a mediator to increases the CVD anomaly, which is highly associated with psychological distress (Steptoe, & Kivimaki, 2012).

Massive studies and meta-analyses revealed that high risk of coronary heart disease (CHD) occurred in perceived stress and psychological distress patients (Brumby, et.al, 2012; Ghaffari, et al., 2019; Khalid, et al., 2018). The typical symptoms of Coronary heart disease are high blood pressure, smoking, and low-density lipoproteins that are associated with perceived stress (Richardson, et, al. 2012). Depression, anxiety, and post-traumatic stress are the 3 main factors of psychological distress among patients with CVD (Cohen, et, al. 2015).

Health problems related to mentality cause disability and are considered a major part of approximately 21% of the overall global burden (Collins, et, al. 2013). Bipolar disorder schizophrenia, anxiety disorders, and dysthymia are accounted in major disability factors

Collectively, as the diseases incidence increase, ultimately increasing the level of depression which potentiates the other non-communicable diseases (NCDs). It is to be considered that depression is highly associated with patients suffering from the myocardial infarction related to the general population.

Previously, it was demonstrated that around 15-30% of patients' suffered in CVD clearly indicated the depression symptoms and prevalence rate is highly noticed in women of young age. Gehi, et, al. (2005) demonstrated that CHD patients with depressive symptoms take 3 times fewer medications as compared to CHD patients without depressive symptoms. Rieckmann, et al (2006) noticed that patients with acute myocardial infarction showed the symptoms of depression at high. Patients having mental issues cannot receive properly targeted medication that is highly associated with that disease (Lawrence and Kisely, 2010).

This study rationale was to investigate the role of dissatisfaction with basic psychological needs in enhancing psychological distress and to decrease mental health. This study identifies the association of psychological needs and psychological distress with mental health and the mediating effect of these factors in cardiac patients. The previous literature has this gap to be filled by this study.

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2 METHOD

2.1 PARTICIPANTS

This research sample included 313 hospitalized cardiac patients of both genders (170, male, and 143 females) who were chosen from Nishtar Hospital, Multan. They were admitted in the Nishtar Cardiac Ward from September-December 2017. This study utilized a non-probability, purposive sampling technique with a specific end goal to get a representative sample. The patient's age was ranged between 28-73 years.

2.2 INSTRUMENTS

In this study, three instruments were primarily used along with the demographic characteristics inquiry. Basic psychological needs were assessed by using basic needs satisfaction in the general scale developed by Deci & Ryan (2000). The scale of Basic Psychological Needs is referred to as is a family of all the scales that further have many scales. These scales include basic psychological needs satisfaction in the general domain, work domain, and relationships domain. The original scale was comprised of 21 items and it was concerned with three basic needs including relatedness, autonomy, and competence. All the 21 items measure above mentioned domains in a 7-point Likert scale ranging from 1 (Not at all true) to 7 (Very true). Autonomy is measure through the following items: 1, 4(R), 8, 11(R), 14, 17, 20(R), Competence is measured through the following items: 3(R), 5, 10, 13, 15(R), 19(R) and Relatedness is assessed through the following items: 2, 6, 7(R), 9, 12, 16(R), 18(R), 21.reverse scoring is indicated by "R", in order to reverse the scoring of an item just subtract the given item response from 8. After completing the reverse scoring, take the average scores of the items on each subscale.

To measure the psychological distress of the patients, The Kessler Psychological Distress Scale (K10) developed by Kessler and his colleagues (2002) was used. The K10 is a simple questionnaire for the assessment of patients and consisted of 10 questions about emotional states each with a five-level response scale while the response format stretches from none of the time to all of the time. The minimum score is 10 in this scale and the maximum score is 50 which represents the level of psychological distress accordingly. Scores under 20 are counted as well while Low scores above 20 represent the mild level of psychological distress and high scores represent a higher level of psychological distress.

Mental Health Inventory (MHI-18) is the questionnaire established by Veit and Ware (1983) to study a population of various backgrounds. Such inventory is useful to judge the different parameters including depression, anxiety, positive affect, and behavioral control. Different factors involved to judge the mental health were assessed by this performa. This scale has good psychometric properties with Cranach's alpha of .93 and .82 with short form, along with good convergent and discriminant validity.

2.3 PROCEDURE

This research abided by the laws of international research ethical guidelines specially laid by the American psychological association. For this study ethical approval was obtained from the relevant research body. Hospital administration was briefed about the process and purpose of the study and afterward, Patients were approached in their wards. Participants' consent was taken beforehand and

patients were requested to give permission that they have the complete knowledge about the study and willing to participate in this work. The informed consent letter, assuring their entitlement to pull back anytime during completing the questionnaire process without being disadvantaged in any way, was signed by the patients. Subjects were also given the assurance that their information will not be disclosed. Participated patients were approached at hospitals to administer the study instruments and help to complete the questionnaire. The questionnaire took 15-20 min to complete. All the participants were requested to respond to questions with ratings according to the scales.

3 DATA ANALYSIS

After completing the collection of data, the scoring of the scales along with demographic variables was entered into SPSS 21 for analyzing it. To calculate the relationship between all the variables Pearson correlation coefficient was used. Mediation analysis was carried out by using an extension by Preacher and Hayes (2008) in SPSS 21. Comparisons between newly diagnosed patients and others for psychological distress, basic psychological needs, and mantel health inventory were analyzed via an independent samples t-test with corrections made for assumed variance equality.

4 RESULTS

Table 1 shows the results of the correlation between anxiety, depression, behavior control, positive affect, psychological distress, autonomy, competence, and relatedness. We can see that anxiety, depression, and psychological distress are positively correlated with each other, while negatively correlated with positive affect, autonomy, competence, and relatedness. Similarly, positive affect, autonomy, competence, and relatedness are positively correlated with each other.

Table 1: Correlation analysis between anxiety, depression, behavior control, positive affect, psychological distress, autonomy, competence, and relatedness.

Variables	Mean ± SD	1	2	3	4	5	6	7	8
Anxiety	18.741±2.083	1							
Depression	18.786±2.090	.549**	1						
Behavior Control	15.051±1.590	.420**	.063	1					
Positive Affect	15.006±1.695	-.464**	-.269**	-.589**	1				
Psychological Distress	37.435±3.706	.618**	.548**	.335**	-.159**	1			
Autonomy	26.310±2.713	-.283**	-.345**	-.360**	.124*	-.396**	1		
Competence	22.511±2.566	-.311**	-.296**	-.165**	-.184**	-.418**	.446**	1	
Relatedness	30.019±3.307	-.361**	-.305**	-.319**	-.185**	-.535**	.616**	.630**	1

Table 2: Regression analysis results, with anxiety as an outcome and psychological distress as mediator.

Predictors	Path Coefficients				axb (BC_a 95% CI)	R^2
	a	b	c	c'		
Autonomy	-0.540***	0.337***	-0.218***	-0.036	-0.182 (-0.260, -0.119)	0.384
Relatedness	-0.604***	0.332***	-0.253***	-0.052	-0.201 (-0.275, -0.131)	0.385
Competence	-0.599***	0.335***	-0.227***	-0.027	-0.201 (-0.267, -0.136)	0.383

Table 2 presents the results of the mediation effects of psychological distress in the relationship

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between anxiety and basic psychological needs satisfaction (Autonomy, Relatedness, and Competence). We can see that psychological distress fully mediate the effect of autonomy, relatedness, and competence on anxiety.

To estimate the effect size of the mediating pathway, we calculated the proportion of the total effect of the independent variable on the dependent variable (c) that was mediated by psychological distress using the formula (a × b)/c. The proportions of psychological distress mediation were 18.2% for autonomy, 20.1% for relatedness, and 20.1% for competence.

Table 3: Regression analysis results, with depression as an outcome and psychological distress as mediator.

Predictors	Path Coefficients				axb (BC_a 95% CI)	R^2
	a	b	c	c'		
Autonomy	-0.540***	0.275***	-0.266***	-0.118**	-0.149 (-0.217, -0.094)	0.320
Competence	-0.604***	0.290***	-0.241***	-0.067	-0.175 (-0.238, -0.117)	0.305
Relatedness	-0.599***	0.303***	-0.193***	-0.011	-0.181 (-0.245, -0.119)	0.300

Table 3 depicts the results of the mediation effect of psychological distress in the relationship between depression and basic psychological needs satisfaction (Autonomy, Relatedness, and Competence). We can see that psychological distress fully mediate the effect of relatedness and competence on depression while partially mediates the effect of autonomy on depression.

The proportions of psychological distress mediation were 14.9% for autonomy, 17.5% for competence, and 18.1% for relatedness.

Table 4: Regression analysis results, with behavior control as an outcome and psychological distress as the mediator.

Predictors	Path Coefficients				axb (BC_a 95% CI)	R^2
	a	b	c	c'		
Autonomy	-0.540***	0.098***	-0.211***	-0.158***	-0.053 (-0.091, -0.016)	0.174
Competence	-0.604***	0.138***	-0.102**	-0.019	-0.083 (-0.130, -0.046)	0.113
Relatedness	-0.599***	0.099***	-0.153***	-0.094**	-0.059 (-0.094, -0.012)	0.140

Table 4 shows the results of the mediation effect of psychological distress in the relationship between depression and basic psychological needs satisfaction (Autonomy, Relatedness, and Competence). We can see that psychological distress fully mediate the effect of relatedness on behavior control while partially mediate the effect of autonomy and relatedness on behavior control.

The proportions of psychological distress mediation were 5.3% for autonomy, 8.3% for competence, and 5.9 % for relatedness.

Table 5: Regression analysis results, with positive effect as an outcome and psychological distress as mediator.

Predictors	Path Coefficients				axb (BC_a 95% CI)	R^2
	a	b	c	c'		
Autonomy	-0.540***	-0.059***	0.078*	0.046	0.032 (0.032, 0.035)	0.030
Competence	-0.604***	-0.131***	-0.121**	-0.200	0.079 (0.043, 0.122)	0.113
Relatedness	-0.599***	-0.165***	-0.095**	-0.194***	0.099 (0.050, 0.158)	0.127

Table 5 depicts the results of the mediation effect of psychological distress in the relationship

between positive affect and basic psychological needs satisfaction (Autonomy, Relatedness, and Competence). We can see that psychological distress fully mediate the effect of autonomy and competence on positive affect while partially mediate the effect of relatedness on positive affect.

The proportions of psychological distress mediation were 3.2% for autonomy, 7.9% for competence, and 9.9% for relatedness.

Table 6 Analysis of differences in the level of anxiety, depression, behavior control, positive affect, psychological distress, autonomy, competence, and relatedness in male and female patients

	Male (n=170)		Female (n=143)		t-test	p-value
Variables	M	SD	M	SD		
Anxiety	18.44	2.06	19.10	2.07	-2.809	.005**
Depression	18.83	2.04	18.87	2.15	0.401	.689
Behavior Control	14.89	1.52	15.24	1.65	-1.985	.001**
Positive Affect	15.21	1.54	14.76	1.83	2.423	.012*
Psychological Distress	37.44	3.91	37.43	3.46	0.004	0.997
Autonomy	26.32	2.75	26.30	2.68	0.055	0.956
Competence	22.38	2.43	22.66	2.72	-0.968	0.334
Relatedness	29.81	3.46	30.27	3.11	-1.211	0.277

df = 290, *p< 0.05, **p< 0.01, ***p< 0.001

Table 6, shows the results of the comparison of anxiety, depression, behavior control, positive affect, psychological distress, autonomy, competence, and relatedness between male and female cardiac patients. Female patients report a higher level of anxiety and behavior control as compared to male patients with p-values 0.005 and 0.001 respectively. The level of positive affect is higher in male patients as compared to female patients with a p-value of 0.012. no significant differences were seen in depression, psychological distress, autonomy, competence, and relatedness between male and female patients.

Table 7 Analysis of differences in the level of anxiety, depression, behavior control, and positive affect in newly diagnosed patients and chronic patients

	Newly Diagnose (n=170)		Chronic (n=143)		t-test	p-value
Variables	M	SD	M	SD		
Anxiety	19.14	2.31	18.45	1.86	2.945	.005**
Depression	18.54	2.43	18.96	1.80	-1.758	.080
Behavior Control	15.29	1.64	14.88	1.53	2.270	.024*
Positive Affect	14.63	1.87	15.28	1.50	-3.427	.001*
Psychological Distress	37.31	3.91	37.53	3.55	-0.523	0.602
Autonomy	26.34	2.95	26.29	2.54	0.143	0.886
Competence	22.43	2.88	22.57	2.32	-0.489	0.625
Relatedness	30.16	3.31	29.92	3.31	0.640	0.523

df = 290, *p< 0.05, **p< 0.01, ***p< 0.001

From Table 7 results, we can conclude that the patients who are newly diagnosed in cardiac disease show a higher level of anxiety and behavior control as compared to chronic patients with p-value 0.005 and 0.024 respectively. Similarly, chronic patients show a higher level of positive affect with p-values 0.001. Furthermore, no significant differences were seen in the level of depression, psychological distress, autonomy, competence, and relatedness between newly diagnosed

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patients as well as chronic patients.

5 DISCUSSION

The main aim of the present study was to estimate the mediating role of psychological distress in the satisfaction of psychological needs and mental health.

Our data suggest that psychological distress is negatively correlated with psychological needs and mental health and also play role in increasing mental health problems as well as dissatisfaction with psychological needs. Psychological distress is found 4 to 5 times more common among cardiac patients as compared to normal individuals (Chauvet-Gelinier, and Bonin. 2017; Mirza, & Jenkins, 2004). Newly diagnosed patients with cardiac diseases found to had mild to moderate psychological distress whereas patients with chronic conditions or having disease more than 1 year were found to have severe psychological distress.

Females cardiac patients tend to experience more anxiety as compared to males, similarly, low education levels and being a housewife are the factors associated with higher anxiety among females (Meneghetti, et.al, 2017; Mirza, & Jenkins, 2004; Ghaffari, et.al, 2019). Another finding of the study indicates that newly diagnosed patients showed more anxiety and behavioral control symptoms whereas chronic patients showed more depressive symptoms and less positive affect on mental health inventory. Psychological distress was associated with a higher prevalence of hypertension that partly mediated the greater risk of cardiac events.

Anxiety, anger, and depression are predictors of hypertension (AlKhathami, 2017; Mushtaq & Najam, 2014; Player & Peterson, 2011; Rutledge, 2002), and acute psychological trauma such as problems in relationships, autonomy, and competence can produce profound and sustained increases in blood pressure (Gerin, et.al, 2005). Because hypertension is a potent risk factor for cardiac diseases, it is therefore plausible that the association between psychological distress and cardiac disease is partly mediated through this risk factor.

It was not possible to assess and address all the pathophysiological and psychological mediators at one time that might be accounted for an unexplained variance. We provide compelling evidence that health care professionals are at great risk and they should keep awareness regarding disease psychosocial factors, overlapping aspects, and disease symptoms for future prospective.

It was determined that field exposure, training during jobs, and workshops in educational institutions are a potential source for awareness to address the physical and mental health issues. The integration of physical and mental health will produce professionals who can play a more prominent role in interdisciplinary teams practicing in the integrative health arenas (Vourlekis, ell, &Padgett, 2001).

The majority of the clinicians dealing with patients suffering in cardiovascular disorders with mental illness are less aware of the mental critical situation of the patients than the psychiatrists that might be able to understand the patient's current scenario in a well manner. Knowledge about the disease, disease prevention measurements, and awareness via endocrinologists, and cardiologists to the individuals suffering in mental illness might be essential therapy to reduce the risk of CVD and CVD risk-equivalent conditions like diabetes. There is a need to focus on psychological interventions

for cardiac patients as indicated by Tan & Morgan (2015); Reid et.al (2015); & Linden (2007).

6 CONCLUSION

Anxiety, depression, behavior control, positive affect, psychological distress, autonomy, competence, and relatedness are significantly correlated with each other. Our data revealed that psychological distress mediates the relationship between mental health (anxiety, depression, behavior control, and positive affect) and basic psychological needs (autonomy, competence, and relatedness). Furthermore, significant differences in the levels of anxiety, behavior control, and positive affects between male and female patients were found.

7 AVAILABILITY OF DATA AND MATERIAL

The corresponding author will be liable to provide information regarding this paper.

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