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Heart diseases among males: Role of emotion and feelings

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Abstract
The current study was directed to investigate the emotional trait of males with cardiovascular diseases and males without cardiovascular diseases. There were equal number of subjects taken in both the groups (75 males with cardiovascular diseases and 75 males without cardiovascular diseases). Bar-On Emotional Quotient Inventory was used to assess emotional intelligence of all the subjects. The results indicate that males with cardiovascular diseases are self-reliant and are able to manage their feelings and thinking in accordance with reality whereas males without cardiovascular diseases have cordial relationship with their groups and have a positive outlook towards life.

Keywords: emotional, cardiovascular diseases, emotional quotient inventory, emotional intelligence

1. Introduction
Coronary heart disease (CHD) is not uncommon and it is the leading cause of death in most of the industrialized nations (WHO, 2009) [24]. It is estimated that 17.9 million people died from CVD's in 2016, representing 31% of all global deaths. Of these deaths, 85% deaths are because of heart attack and stroke. According to 2010-2013 RGI data, (RGI, 2011) [23], proportionate mortality from CVD increased to 23% of total and 32% of adult deaths in years 2010-2013. Indians are affected by CAD a decade earlier as compared to the western populations (Prabhakaran *et al.*, 2016; Joshi *et al.*, 2007; Xavier *et al.*, 2008) [9, 19, 10]. Due to the epidemiological transition, the prevalence of coronary artery disease (CAD) is rising in young adults (Gupta *et al.*, 2016) [22]. The age cut-off of 40 years was used to define "young" patients with CAD (Aggarwal *et al.*, 2016). The mortality varies from <10% in rural locations in less developed states to >35% in more developed urban locations (GBD, 2014). Regional studies have also reported that CVD is the leading cause of deaths in urban (Gajalakshmi *et al.*, 2002) [12] as well as rural populations (Joshi *et al.*, 2006) [15]. WHO predicted that 2000 to 2020, CHD in India shall double in both men and women from the central 7.7 and 5.5 million respectively (Gupta *et al.*, 2008) [14]. Raised blood pressure is a major risk factor for chronic heart diseases (Gupta & Arya, 2019) [21]. In India, out of all deaths nearly 24.8% deaths are due to cardiovascular diseases as estimated by Global Burden of Disease study (2010). Average age-standardized death rate in India due to cardiovascular disease is 272 per 100000 population (Prabhakaran, *et al.*, 2016) [9].

It is generally acknowledged that CHD is a multifunctional disease (Friedewald, 1998) [11]. Coronary heart disease is a significant public health issue, due to its high prevalence and mortality rate (national Heart, Lung and Blood Institute, 2012) [2]. In recent years, a wide variety of Psycho-social factors such as anxiety, depression, negative emotions has been associated with the incidence and progression of CHD. A number of clinical and experimental studies indicate that strong emotions, especially negative emotions, such as hostility, anger, depression and anxiety, precipitate coronary heart disease (Gouni-Berthold, *et al.*, 2009) [13].

Goleman (1995) in his bestselling book "Emotional Intelligence" has explained the concept of Emotional Intelligence (EI) but failed to provide a universally accepted model of EI. Salovey and Mayer (1990) defined emotional intelligence as a subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions (Mayer & Salovey 1997).

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The phenomenon has been successfully used in the educational (Academic achievement) and occupational (Job performance and Job satisfaction) domains (Mayer *et al.*, 2008) [17]. The emotional intelligence gain importance increasingly in a lot of areas about life, work such as planning, administration, management, relations (Bal & Firat, 2017) [4]. Many researchers have indicated the positive relationship between different aspects of emotions (e.g. negative emotions, emotional stability, emotional intelligence, emotional challenges, emotional responsivity etc.) and CHD (Carle *et al.*, 1999 and Kapuka *et al.*, 2002) [5, 16]. Caprara *et al.* (1995) [3] indicated that infracted subjects were more emotionally susceptible than non-infracted subjects. Pajer and Kathleen (2007) [17] also indicated that negative emotions are associated with CVD in adolescence. Kravvariti *et al.*, (2010) [20] examined the relationship between CHD and EI. 56 patients with CHD and equal member of controls who had no indications of heart disease participated in the study. The results indicated that facets of heart emotional intelligence such as decreased ability to use and regulate emotions as well as frequency of negative expressiveness are associated with incidence of CHD. The evidence strongly reported that Emotional Intelligence plays a significant role in the occurrence of CHD, (Chrisanthy P. & Katerina, 2013) [7]. Findings from (Chrisanthy *et al.*, 2018) [6], shows a positive relationship between emotional understanding and cardiovascular related diseases.

So, it is suggested that future research should focus on the implications of EI in clinical settings. The present study was performed with the following objectives:

1. To study the differences between males with cardiovascular diseases (MWCVD) and males without cardiovascular diseases (MWOCVD) on emotional intelligence.
2. To identify the distinct features that discriminate males with cardiovascular diseases (MWCVD) and males without cardiovascular diseases (MWOCVD).

2. Method
2.1 Sample
A sample of 75 males suffering from cardiovascular diseases (MWCVD) was selected from the different hospitals of district Amritsar and Jallandhar. An equal sample of males was selected from the blood relations of the patients. It was observed that samples so chosen were more or less homogeneous with regard to socio-cultural background, lifestyle, economic status etc. All the subjects were in the age range of 45 to 55 years.

2.2 Measures
Emotional Quotient Inventory (EQI, Bar-On 1997)
EQI is a self-report measure and one of the most authentic scales to measure the different types of emotions in individuals and their emotional reactions in some common situations. The scale provides scores on the 5 composite scales (Intrapersonal, Interpersonal, Stress management, Adaptability and General mood) as well as 15 subscales (self-regard, emotional self-awareness, assertiveness, independence, self-actualization, empathy, social responsibility, interpersonal relationship, stress tolerance, impulse control, reality testing, flexibility, problem solving, optimism and happiness.

There are total 129 items and subjects have taken about 45 to 60 minutes to complete the scale. The responses are recorded on 5 point scale.

The reliability coefficients of EQI were estimated by split-half method ranging from 0.52 to 0.84. Keeping in mind the conventions and small number of items representing each measure, the obtained reliability coefficients seem to be highly satisfactory.

2.3 Statistical analysis
't'-test was used to assess the significant differences between males with cardiovascular diseases (MWCVD) and the males without cardiovascular diseases (MWOCVD). The Discriminant Functional Analysis was applied to identify the distinct features of both the group.

3. Results and Discussion
3.1 Comparison of Means
Table 1 shows the Means, Standard deviation and 't'-ratios along with the level of significance (Los) for both the groups i.e. males with cardiovascular diseases and males without cardiovascular diseases (MWOCVD). On comparing the means of MWCVD & MWOCVD, a number of differences were noticed on various subscales.

MWCVD have scored higher on components of independence, flexibility and impulse control whereas MWOCVD have scored higher on interpersonal relations, social responsibility and optimism of emotional intelligence. It implies that MWCVD rely only on them, free of emotional dependency on others and adjust or control their feelings and thinking with external reality. On the other hand MWOCVD have satisfactory relationship with others, identify with their social groups and show cooperation with them and look at the brighter side of life.

Table 1: Means, standard deviation of MWCVD and MWOCVD groups on emotional intelligence along with their statistical significant difference between means.

S. No.	Variables	MWCVD		MWOCVD		t-ratio	Los
		M	SD	M	SD		
1.	Emotional Self- Awareness	29.77	4.54	27.17	6.23	2.91**	.01
2.	Assertiveness	21.34	5.20	21.90	5.45	.628	NS
3.	Self-Regard	29.76	5.54	32.10	6.23	2.43	.05
4.	Self-Actualization	27.79	4.60	26.40	5.58	1.65	NS
5.	Independence	16.32	6.10	17.70	6.80	1.31	NS
6.	Empathy	31.32	4.48	29.52	4.96	2.32	.05
7.	Interpersonal Relations	39.99	6.50	39.98	6.83	.00	NS
8.	Social Responsibility	34.56	4.46	33.94	6.34	.685	NS
9.	Problem Solving	31.44	4.49	31.00	5.58	.532	NS
10.	Reality Testing	29.90	6.20	30.68	7.76	.674	NS
11.	Flexibility	27.34	5.04	25.09	5.34	2.65	.01
12.	Stress-Tolerance	30.69	3.79	30.04	5.58	.838	NS

13.	Internal Control	19.86	9.26	19.29	8.20	.401	NS
14.	Happiness	26.60	4.33	29.26	5.33	3.36	.01
15.	Optimism	29.53	4.59	30.12	5.97	.674	NS

*t-ratio significant at .05 level =
**t-ratio significant at .01 level =

3.2 Discriminant Functional Analysis

The major purpose of Discriminant Function Analysis is to predict the group membership on the basis of different types of predictor variables i.e. best combination of predictor variables to maximize differences among groups.

Discriminant functional analysis was applied to two male groups i.e. MWCVD and MWOCVD. The analysis was done with the dual purpose of examining the discriminant coefficients of all the variables so as to identify the groups which are best predicted by the different variables under study and also to see the accuracy of classifying subjects into two groups on the basis of obtained results. The results of classification on the basis of discriminant analysis are reported in table 2. To ascertain the predictive accuracy of the discriminant function analysis, proportional chance criteria (50%) to be verified through hit-ratio. The hit-ratio gives the proportion of all individuals who were correctly classified. The value of Box's M is 41.02 and this value is significant at .01 level. Also the value of Wilk's Lamda is 0.60 which is significant at .000 level. Since the hit ratio 83.3% exceeds the proportional chance criterion, it can be concluded that discriminant functional analysis is an appropriate technique for the analysis of data.

Table 2: Summary of classification results of MWCVD & MWOCVD

Data Type	Predicted Group Membership		Total
	MWCVD	MWOCVD	
MWCVD	60	15	75
MWOCVD	16	59	75
% MWCVD	80.0	20.0	100
MWOCVD	21.3	78.7	100

79.3% of original groups were classified correctly.

Table 3 indicates the results of discriminant functional analysis. The results clearly indicated that independence, flexibility and impulse control are distinguishing features of MWCVD whereas optimism, interpersonal relationship and social responsibility are distinguishing features of MWOCVD. It implies that MWCVD are self-reliant and free of emotional dependency on others, adjust their feelings and thinking according to external reality and try to control their emotions effectively and constructively. On the other hand, MWOCVD identify with their social groups and cooperate with them, establish mutually satisfying relationship with others and always look at the brighter side of life.

Kravvariti et al., (2010) [20] also examined the relationship between CHD and EI and indicated that facets of trait emotional intelligence such as decreased ability to use and regulate emotions as well as frequency of negative expressiveness are associated with incidence of CHD.

Table 3: Discriminant analysis for MWCVD and MWOCVD

MWCVD		MWOCVD	
Variables	Discriminant Coefficient	Variables	Discriminant Coefficient
Independence	0.149	Optimism	0.588
Flexibility	0.326	Interpersonal Relationship	0.300
Impulse Control	0.235	Social Responsibility	0.259

The purpose of the study was to identify the emotional characteristics of males with and without cardiovascular diseases. It has been found that emotional characteristics of both the groups are quite different from each other. Instead of expressing their emotions MWCVD try to control and adjust their emotions according to the external reality. It implies that we should not always perform social activities keeping in mind the feelings of other people but we must be aware about our emotions and react accordingly.

To live with our community with satisfactory relationships could be a protective measure against cardiac events. Instead of all odds in life, one should look at the brighter side of life.

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