**Emotional Processing Deficit, Executive Functioning, And Self-Efficacy Among People With Lifestyle Diseases**

**Introduction**

In the progressive and modern era majority of people are suffering from lifestyle diseases which are also called non-communicable diseases it includes diseases like cardiovascular diseases; hypertension, coronary heart diseases, stroke, congenital heart diseases, diabetes(type 2), obesity, and certain forms of cancer. These diseases share common risk factors related to lifestyle like unhealthy eating or diet, excessive or harmful smoking and alcohol use, physical inactivity. According to WHO non-communicable diseases kill 41 million people each year, equivalent to 71% of all deaths globally. Each year, more than 15 million people die from an NCD between the ages of 30 and 69 years; 85% of these “premature” deaths occur in low and middle-income countries. Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers 9.3 million, respiratory diseases 4.1 million, and diabetes 1.5 million. These four groups of diseases account for over 80% of all premature NCD deaths. According to world health organization projections, the total annual number of deaths from NCDs will increase to 55 million by 2030 if timely interventions are not done for prevention and control of NCDs.

In India, nearly 5.8 million people die from NCDs every year(WHO report 2015), or in other words, one in four Indians has a risk of dying from NCDs before reaching their 70es. According to a report published by the Indian Council of Medical Research in 2017, 3 of 5 leading individual causes of disease and chronic obstructive pulmonary disease as the top two causes and stroke is the fifth leading cause. The range of disease burden or DALY rate among the states in 2016 was 9-fold for ischemic heart disease, 4-fold for chronic obstructive pulmonary disease, and 6-fold for stroke, and 4-folds for diabetes across India. Of the total death from major disease groups, 62% of all deaths were caused by non-communicable diseases (Wikipedia).

Unhealthy diet, excessive or harmful smoking and drinking, physical inactivity, these are some contributing factors in lifestyle diseases which is related to the physical and environmental aspect, but there are some other things like psychological aspect con also contributing factor to it. Emotion is one of the psychological factors which is very important because our emotion and physical health are correlated to each other, whether we feel some emotions like happiness, sadness, grief our body responds physically according to our feelings, thinking, or emotion. Some findings suggest that emotion affects physical diseases, negative emotion like anxiety seemed to be an independent risk factor for incident coronary heart disease and cardiac mortality (Annelieke M. Roest, Elisabeth J. Martens, Peter de Jonge, and Johan Denollet, 2010).

**Emotion: Emotional Processing**

Emotion is a very important aspect of human life. According to Oxford Dictionaries emotion is defined as “A strong feeling deriving from one’s circumstances, mood, or relationships with others.” Emotion is a response to significant internal and external events (Schacter, Gilbert, Wegner, and Hood, 2011). According to American Psychological Association(APA), emotion is defined as “ a complex reaction pattern, involving experiential, behavioural and physiological elements.” Emotions are how individuals deal with matters or situations they find personally significant. Emotional experiences have three components: a subjective experience, a physiological response, and a behavioural or expressive response(UWA, 2019). Based on these three processes psychological theories of emotion are explained

Emotional processing the concept firstly introduced by Rachman. Ranchman defined emotional processing as a process whereby emotional disturbances are absorbed and decline to the extent that other experiences and behaviour can proceed without disruption.”(Rachman, 1980). Some researches suggested that emotional distress creates sensitivity to physical illness (Stewart-Brown, S. 1998). Both negative and positive emotions have an impact on physical health, as noted variables such as aging, cardiovascular disease, arthritis, Type 2 diabetes, functioning of the immune (Kiecolt-Glaser, McGuire, Glasser, 2002; Krantz, McCeney, 2002; Pressman, Cohen,2005).

**Executive functioning**

executive functioning is an umbrella term. Executive functioning involves cognitive processes that allow one to plan, organize, and successfully execute purposeful, goal-directed, and future-oriented actions(Cummings and Miller, 2007; Lezak, Howieson, Bigler, and Tranel, 2012; Suchy, 2015; Paula G. Williams, Ruben Tinajero, and Yana Suchy 2017). There is no specific definition which is acceptable universally various approaches have there different view (Suchy, 2015). According to Merriam Webster, executive functioning is the group of complex mental processes and cognitive abilities, such as working memory, impulse inhibition, and reasoning that control the skills such as organizing tasks, remembering details, managing time, and solving problems required for goal-directed behaviour.

The development of executive functioning is a gradual process and change across the lifespan of the individual and, can be improved at any time throughout a person’s life (Diamond, Adele, 2013; Goldstein, Naglieri, Princiotta and Otero, 2014). Some studies show a relation between cardiac health and executive functioning. Executive dysfunction can be a powerful stroke risk factor among cognitively normal subjects. (Oveisgharan, Hachinsli, 2015). Hypertension is also predicting factor for EF. A study of individuals with metabolic syndrome found that hypertension was the strongest predictor of cognitive damage including EF deficits (Levin, B., Llabre, M., Elkind, M., Stern, Y., Rundek, T., and Wright, C. 2014).

**Self-efficacy**

Self-efficacy firstly introduced by Albert Bandura he defined this concept as a “person’s particular set of beliefs that determine how well one can execute a plan of action in prospective situations” (Bandura, 1977). To put it in more simple terms, self-efficacy is a person’s belief in their ability to succeed in a particular situation (Gabriel Lopez-Ga). self-efficacy is beliefs in one’s capabilities to organize and execute the courses of action required to manage the approaching situation. This suggests that self-efficacy is not purely a measure of ability, rather it relates to a measure of a person’s belief or confidence in their ability to perform a particular ability (Bandura 1997).

According to Bandura, a person needs four main sources of information for forming a self-efficacy belief by interpreting information, these four sources are, Performance Accomplishment (Mastery Experiences), Vicarious Experiences (Social Role Models), Verble Persuasion or Social Persuasion, Emotional or Physiological State.

James Maddux also has influential work in self-efficacy, he suggested the existence of the fifth main source of self-efficacy: Imaginal Experiences or Visualization (Maddux and Meier, 1995). The art of visualizing yourself behaving effectively or successfully in a given situation. Imaginal experiences or visualization is someone attempting to portray their goals as achievable(Gabriel Lopez-Ga, 2020).

**Review of Literature**

Qian Zhaol, and et al. (2020). Executive Function and Diabetes: A Clinical Neuropsychology Perspective. Find in both types 1 and 2 diabetes mellitus(DM), hyperglycemia substantially impairs EF in people of all age groups and ethnicities. Hypoglycemia can similarly impair EF. Interestingly, a decline in EF contributes to DM progression. Glucose dysregulation and EF decline exacerbate each other in a vicious cycle: poor blood glucose control, impaired EF, diabetes management task failure, then back to poor blood glucose control. Many pathophysiological indexes (e.g., obesity, metabolic index, inflammatory and immune factors), neuropsychological indexes (e.g., compliance, eating habits, physical exercise, sleep, and depression), and genetic factors are changed by this pathological interaction between DM and EF. These changes can provide insight into the pathophysiological mechanism of diabetes-related EF decline.

Natalia Cristina Moraes, nad et al. (2020). Examined, the Systemic Arterial Hypertension and Cognition in Adults: Effects on Executive Functioning. The objective of this study was to investigate the relation between SAH and the components of executive function. The results suggest that patients with systemic arterial hypertension (SAH) have a significant impairment in Executive Functioning, more specifically in updating and shifting.

Forte, G., and et al. (2019). Studied the Effects of Blood Pressure on Cognitive Performance: A Systematic Review. The study aims to systematically review the effects of blood pressure on executive functioning, language, memory, attention, and processing speed. This review allows selecting fifty studies that included 107,405 participants. The results show that higher blood pressure appears to influence cognitive performance in different domains in the absence of dementia and severe cardiovascular diseases, such as strokes. results underline that higher blood pressure is associated with a higher risk of cognitive decline in people without dementia or stroke.

Jayamala A.K., and et al.(2018). Examined, the impact of hypertension on executive functions & speed of processing in geriatric subjects. The objective of the study was to compare simple and choice reaction time (SRT & CRT) and trail-making scores between hypertensives and normotensives geriatric male subjects. The cross-sectional study was conducted on 60 male hypertensive and normotensives aged >60 years, with BP >140/90 mm Hg as controls and BP >140/90 mm Hg were considered as hypertensives. Unpaired t-test showed a significant difference in the reaction time scores of normotensives and hypertensives, in addition, the executive function showed a significant difference between the executive ability of normotensives and hypertensives. It shows that hypertensive elderly males have a lower cognitive performance in comparison to age-matched normotensives.

Shirali Kharamin, and et al. (2018|). Emotional Processing in patients with Ischemic Heart Disease. Using simple sampling, fifty patients were selected from people who were diagnosed as IHD in the hospital and referred for treatment after discharging care and treatment. Control group participants were selected as control group peoples, using neighborhood controls selection. The emotional processing scale was filled by all members of the two groups. Results found that there was a significant difference between the two groups on the EPS-25, total scores, as well as on emotional processing dimensions of signs of unprocessed emotion, unregulated emotion; avoidance, and impoverished. Also, there was no significant difference between the two groups in the dimension of suppression. It showed that patients with IHD are using more negative emotional processing styles.

Siamak Mohebi, and et al. (2013). Reviewed the Key Role of Self-efficacy in diabetes care. This is a narrative review study, time spectrum of the studies was supposed to be published from 1990 to be 2011. The study examines self-care situations among diabetic patients not only is unsatisfactory but also the studies’ results show that the self-efficacy rate is low among them. The findings of the studies prove that there is a direct relation between self-efficacy and self-care in the patients in a way that this construct owns the predictability power of self-care behaviour.

Amy E. Hughes, and et al. (2012). Examined that Emotional processing interacted with self-control to predict HbA1c was poorest. Also, both high emotional processing and self-control buffered negative effects of low capacity in the other in relation to HbA1c. The interaction of emotional processing self-control predicted HbA1c over diabetes-specific self-efficacy, negative affect, and adherence.

**Gapes in the existing research:**

Health psychology-related researches are getting attention nowadays but there are limited researches in the field and most of them are conducted on the foreign sample, that’s why supporting data for the study is limited. Emotional Processing Deficit, Executive Functioning, and self-efficacy all these variables are not together studied in one study. This study can be a contributor to this field. Lifestyle diseases are really common and have the most influence on mortality and other health and psychology-related issues worldwide, this study can be useful to know psychological aspects of it, it can be useful for explaining the need for prevention or management of these issues.

**Statement of the proposed problem:**

**Scope of Research work:**

With the increase in the number of people with lifestyle diseases and their impact on day-to-day life at all aspects of a person’s life at different levels. The present study focuses on the effect of lifestyle disease on emotional processing, executive functioning, and self-efficacy among diagnosed people with lifestyle disease and healthy people. The study will also cover the relationship between self-efficacy and emotional processing, and the relationship between executive functioning and self-efficacy. The scope of the study is restricted to select lifestyle diseases, specifically Cardiovascular disease, and diabetes. The study will be restricted to the Aurangabad district only. Therefore the scope of this study is limited to the Aurangabad district of Maharashtra, and more specifically to those are diagnosed with Cardiovascular disease and diabetes.

**Relavance of the stludy**

**Significance of the proposed problem:**

This study is an attempt to find out if lifestyle diseases have any impact on psychological factors like executive functioning, emotional processing, and self-efficacy.

This study can be useful to know psychological aspects of it, it can be useful for explaining the need for prevention or management of these issues.

This study can contribute to the field of health psychology in Indian studies related to the topic.

**Objective**

1. To study the emotional processing deficit, executive functioning, and self-efficacy among CVD group and healthy group.
2. To study the emotional processing deficit, executive functioning, and self-efficacy among a diabetic group and a healthy group.
3. To examine the relationship between self-efficacy and emotional processing.
4. To examine the relationship between self-efficacy and executive functioning.

**Hypotheses**

1. There will be a significant difference in emotional processing deficit among the CVD and the Healthy group.
2. There will be a significant difference in executive functioning among the CVD and the healthy group.
3. There will be a significant difference in self-efficacy among the CVD and the healthy group.
4. There will be a significant difference in emotional processing deficit among the diabetes group and healthy group.
5. There will be a significant difference in executive functioning among the diabetes group and the healthy group.
6. There will be a significant difference in self-efficacy among the diabetes and healthy group.
7. There will be a positive correlation between self-efficacy and emotional processing.
8. There will be a positive correlation between self-efficacy and executive functioning.

**Methodology**

**Sampling**

A purposive sampling method will be employed for the study. the sample will be taken from various hospitals from Aurangabad district, Maharashtra State, India and it will be 400. The age range of participants will be 30 to 65 years male and females, with illness duration of at least 3 years will be taken as a sample of the study.

Inclusion Criteria: Interested or willing to participate, Age range between 30 to 65, The qualification range is above 12th.

Excluding Criteria: Comorbidity of other physical or mental illnesses, Persons outside of the Aurangabad district, Persons who are not interested and willing to participate.

**Research design**

**Variables**

**Independent Variable**

* Lifestyle disease: I. cardiovascular disease II. diabetes.
* Gender: I. male II. Female

**Dependent Variable**

* Emotional Processing Deficit
* Executive Functioning
* Self-Efficacy

**Operational definition of variables**

Emotonal Processing Deficit

Emotional processing is a process whereby emotional disturbances are absorbed and decline to the extent that other experiences and behaviour can proceed without disruption. The emotional Processing Scale-25 will be used for measuring emotional processing deficit.

Executive Functioning

Executive functioning is the group of complex mental processes and cognitive abilities, such as working memory, impulse inhibition, and reasoning that control the skills such as organizing tasks, remembering details, managing time, and solving problems required for goal-directed behaviour. The Behaviour Rating Inventory for the Executive Fucnining will be used to measure executive functioning.

Self-Efficacy

Self-efficacy is a person’s particular set of beliefs that determine how well one can execute a plan of action in prospective situations. The General Self-efficacy Scale will be used for measuring self-efficacy.

Lifestyle diseases: It is an umbrella term that includes various types of illness here researcher focus on Cardiovascular disease and diabetes.

A cardiovascular disease is a group of diseases that include the heart, the blood vessels comprising of arteries as well as veins.

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces.

**Measures**

Three standardized psychometric tests will be used for the study. The details of the measures that will be used in the study are discussed below.

1. emotional processing scale (2010):

The emotional processing scale-25 was developed by Roger Baker, Peter Thomas, Sarah Thomas, Mariaelisa Santonastaso, and Eimear Corrigan. This scale is suitable for a person who is above 18. The scale consists of 25 statements that measure emotional processing styles and deficits it takes approximately five to ten minutes to complete. Participants required to rate the extent to which each of the statements applies to the way they felt or acted during the last week. This scale is a ten-point Likert scale with response ranging from completely disagree (0) to completely agree (9). The EPS uses five subscales of five items each to generate a total emotional processing score the subscales, are I. Suppression, II. Signs of unprocessed emotion, III. Controllability of emotion, IV. Avoidance, and V. emotional experience. Internal consistency (Cronbach’s alpha) for 25 items of the EPS across the EPS data samples: .945, mean inter-item correlation:.41, split half: .90, test-retest coefficient for the entire scale was .74(p<.001), coefficients for the different subscales ranged from .55-.84.

2. Behaviour Rating Inventory of Executive Function(BRIEF-A) (2005)

Behaviour rating inventory of executive function Adult version was developed by Peter K, Isquith, Robert M. Roth, and Gerard A. Gioia. The standardized rating scale was developed to provide a window into everyday behaviours associated with specific domains of the executive functions in adults ages 18 to 90 years. BRIEF-A consists of equivalent self-report and informant report forms, each having 75 items in nine non-overlapping scales, as well as two summary index scales and a scale reflecting overall functioning (Globel Executive Composite[GEC]) based on theoretical and statistical considerations. The Behavioural Regulation Index (BRI) is composed of four scales: Inhibit, Shift, Emotional Control, and Self-Monitor. The Metacognition Index (MI) is composed of five scales: Initiate, Working Memory, Plan/Organize, Task Monitor, and Organization of materials. There also are three validity scales: Negativity, Infrequency, and Inconsistency. Internal consistency was moderate to high for the Self-Report normative sample (alpha range=.73-.90 for clinical scales; .93-.96 for indexes and GEC).

3. General Self-Efficacy Scale (GSE)(1995)

General Self-Efficacy Scale was originally developed in German by Ralf Schwarzer and Matthias Jerusalem in 1981. The scale is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. The scale consists of 10 items, rated on a four-point scale ranging from not at all true(1) to exactly true(4). The total score is calculated by finding the sum of all items. For the GES, the total score ranges between 10 and 40, with a higher score indicating more self-efficacy.

**Procedure**

Permission will be taken from the doctors and after the doctor's suggestion diagnosed persons with CVD and Diabetes will be taken as a participant for the study. The respondent will be contacted individually or in a small group and, they will be explained the purpose of the study and kindly requested to participate as a respondent for the fulfillment of the purpose of the study. The respondent will ensure that information they are giving is only for the study and identity and other information will be confidential. They will be requested to ask any question or any query regarded to study or tools. After that researcher gives instruction related to the tests and requests the respondent to complete the scales.

**Statistical analysis**

Data will be analyzed with the help of SPSS. Descriptive statistics; Mean, SD, Two-way ANOVA, and correlation will be used in the study.

**Result and discussion**

The results will be drawn based on statistical treatment of the data and, later it will be discussed.

**Summary and conclusion**

Results will be summarized and conclusion will be drawn and few suggestions will be given.

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