

ORIGINAL ARTICLE

Association of Biochemical & Anthropometric parameters with depressive disorder among adults in a Health care centre

TAYYABA BATOOL¹, MUHAMMAD AMIN KHAN², SYED AHMED MAHMUD³, QURAT-UL-AIN⁴, ANAM REHMAN⁵, NAEEM AMJAD⁶¹Assistant Professor, Department of Biochemistry, Quaid-E-Azam Medical College, Bahawalpur²Assistant Professor, Department of Psychiatry, Niazi Medical & Dental College Sargodha³Assistant Professor, Department of Behavioural Sciences, M Islam Medical College, Gujranwala⁴Associate Professor, Department of Physiology, Sharif Medical & Dental College, Lahore⁵Senior Demonstrator, Department of Biochemistry, Sharif Medical & Dental College, Lahore⁶Assistant Professor, Department of Psychiatry, Shahida Islam Medical College LodhranCorrespondence to Dr. Tayyaba Batool, Email: drtayyababatoool@yahoo.com, Cell: 0334-6489449

ABSTRACT

Background: Depression may be a common psychiatric disorder. In spite of the fact that numerous risk factors for sadness have been reported, the affiliations of biochemical and anthropometric records with depressive disorder remain unclear. Depressive disorder is a leading cause of illness around the world.

Aim: To access the association between biochemical and anthropometric parameters with depressive disorders among adults

Methods: This quantitative cross sectional study was conducted at B.V. Hospital, Bahawalpur from July 1, 2022 to December 31, 2022. A pre validated questionnaire was used. Study was carried out at outdoor patient department of Bahawal Victoria Hospital Bahawalpur. The total numbers of patients were 250 who participated after taking the informed consent. The study was done by simple random sampling technique. Detailed information was given to patient about the current research.

Results: The descriptive statistics for anthropometric measures, demographic, baseline variables and CES-D scores for all the subjects are summarized in Table 1. Total number of participants in the study was 250 in which 115 were males and 135 were females. Baseline characteristics were measured include weight, waist circumference and body mass index and others parameters include systolic and diastolic BP, blood sugar fasting, glycemic control and lipid profile was measured both in depressed and not depressed group.

Conclusion: Depression and obesity are major wellbeing issues worldwide and may increase metabolic disorders. Obesity, which is related with numerous wellbeing issues related to changes in way of life, can take after depression that happened earlier in life or in early adulthood, a vital time for implementation of health-promoting interventions.

Keywords: Depression, Biochemical parameters, Anxiety, Adults, Health Care

INTRODUCTION

Depression may be a common psychiatric disorder. In spite of the fact that numerous risk factors for sadness have been reported, the affiliations of biochemical and anthropometric records with depressive disorder remain unclear. Depression is evaluated to influence 322–350 million individuals around the world and the disorder is anticipated to be the greatest supporter to illness burden by globally. Depressive disorder is one of the foremost common psychiatric disorders and is related with feelings of blame, depressive status, expanded fatigability, uneasiness, misfortune of interest, and poor self-worth^{1,2}.

Depressive disorder is related with different conditions, such as suicide obesity hypertension and stroke, cardiovascular diseases include myocardial infarction, Alzheimer's and Parkinson's diseases and all-cause mortality in elderly men. Generally, known hazard factors for depression comprise of 4 categories. The primary category covers socioeconomic risk variables such as sex (more common among ladies), low pay scale individuals, low education level, noneconomic activity, divorce and smoking. The second category incorporates anthropometric variables related to obesity, such as body mass index (BMI), abdomen circumference, and weight. The third category covers biochemical components such as platelets, total cholesterol, triglycerides, high and low density lipoprotein etc.

The final category incorporates genetic variables. In any case, in spite of the fact that various past studies have inspected the affiliations of obesity and biochemical indices with depressive disorder, the affiliations stay far from being obviously true. Recent studies have found that mental characteristics, particularly sadness, are related with an inclination for weight gain and obesity hence sadness is considered a vital risk factor for metabolic syndrome. One of the foremost common mental health issues within the world, misery, is more predominant in women than in men³.

Patients with sadness have a higher rate of visceral weight and higher BMI than those without depression. Depression increases both the chance of weight and the occurrence of obesity. Additionally, a few studies have shown that the presence of misery can anticipate the development of metabolic disorder which discouragement may be a chance figure leading to dyslipidemia or metabolic disorders. From the viewpoint of prevention, it is critical to screen for depressed mood early in youthful grown-up females⁴.

Metabolic disorders in this way gives a unique opportunity to recognize a high-risk group in which to investigate the connections among psychological variables, obesity, and the disorder, with the extreme objective being the advancement of psychosocial interventions and prevention. In spite of the fact that past studies have investigated the relationships among mental variables, obesity, and metabolic disorder, the study populations have generally been constrained to middle-aged and elderly grown-ups, with as it were a little number counting young adult females⁵⁻⁷.

The objective of the study was to access the association between biochemical and anthropometric parameters with depressive disorders among adults

MATERIAL AND METHODS

A pre validated questionnaire was used. Study was carried out at medical outdoor patient department of Bahawal Victoria Hospital Bahawalpur. The total numbers of patients were 250 who participated after taking the informed consent. The study was done by simple random sampling technique. Detailed information was given to patient about the current research. Confidentiality of the participants was prioritized. Inclusion criteria include (1) all the participants who included in this study must be aged between 20-50 years and diagnosis of depression by a doctor (2) secondly with no infection or any chronic disease and (3) lastly the female with no pregnancy. The individuals who excluded from the study didn't giving consent and meet the inclusion criteria.

Anthropometric and biochemical records were tested according to standardized protocols by trained professional medical staff. Blood pressure was measured employing a standard sphygmomanometer. Weight was measured with a digital scale and only light clothing was permitted. Body mass record (BMI) was calculated. An organized survey was utilized to gather information about age, smoking status, physical activity and nutritional supplement use.

Members who had never smoked cigarettes during their lifetime or had smoked during their lifetime but had ceased were classified as nonsmokers, while those who were smoking every day at the time of the study were classified as current smokers. Patients were instructed to go on an overnight fasting for at least 10 hour. The next morning, 10 mL of venous blood sample was drawn within the hospital laboratory. Tests were performed and all the readings were noted. Data entered into SPSS version 23 and analyzed for results.

Received on 13-10-2022

Accepted on 23-02-2023

RESULTS

The descriptive statistics for anthropometric measures, demographic, baseline variables and CES-D scores for all the subjects are summarized in Table 1. Total number of participants in the study was 250 in which 115 were males and 135 were females. Baseline characteristics were measured include weight, waist circumference and body mass index as showed in table 1. 16% of the participants were underweight, 56% with normal weight and 14% were overweight. 10% of the total number labeled as obese. Centre of epidemiological studies for depressive mood scale was 30%. The others parameters include systolic and diastolic blood pressure, blood sugar fasting, glycemic control and lipid profile was measured. 8% of the participants were doing regular physical activity and 2.8% of the individual used nutritional supplement.

There was slight increased in weight in the depressed group, the other parameters include waist circumference, BMI, systolic blood pressure, diastolic blood pressure, Triglycerides, LDL, Total cholesterol and fasting glucose showed remarkable increased in values and HDL might light decreaseAs shown in table 2. Mean standard deviation calculated and P value also significant.

Table 1: Demographic profile& baseline measures (n=250)

Variable	Mean±SD%
Gender	
Male	115
Female	135
Age (Years)	35.50±14.50
Weight	79.35±10.50
Waist Circumference (cm)	95.35±11.40
BMI	26.52±4.28
Underweight	40(16%)
Normal weight	150(56%)
Over weight	35(14%)
Obese	25(10%)
CES-D score for depress mood	75(30%)
Systolic BP ((mmHg)	115.40±15.60
Diastolic BP ((mmHg)	72.80±11.60
Triglycerides (mg/dl)	96.85±75.20
HDL (mg/dl)	61.30±10.60
LDL (mg/dl)	92.30±11.20
Total Cholesterol (mg/dl)	170.60±22.30
Fasting glucose (mg/dl)	85.40±18.20
Regular physical activity	20(8%)
Nutritional supplement use	7(2.8%)

Table 2: Comparison of Anthropometric measures and biochemical in depressed and not depressed groups

Variable	Not depressed	Depressed	P value
Weight (kg)	65.35± 8.50	70.30±14.40	<.001
Waist Circumference (cm)	85.35± 7.40	90.25±12.30	<.001
BMI	22.52± 3.28	25.52±2.99	<.001
Systolic BP ((mmHg)	110.40±10.20	117.40± 9.20	<.001
Diastolic BP ((mmHg)	66.70± 8.40	70.70± 11.30	<.001
Triglycerides (mg/dl)	93.45± 77.30	115.45± 82.30	.26
HDL (mg/dl)	58.30± 8.20	55.30± 4.40	.24
LDL (mg/dl)	88.30±10.20	95.30±11.20	.22
Total Cholesterol (mg/dl)	150.60± 15.30	170.60± 22.30	.20
Fasting glucose (mg/dl)	80.40±15.20	82.40± 18.30	.75

DISCUSSIONS

In this large-scale cross-sectional study regarding anthropometric indices related to obesity, our results suggested that depressive disorder group were significantly more likely to have little higher anthropometric and biochemical parameters. Abdominal obesity (waist circumference) was not associated with depression in either men or women. BMI was associated with the disorder. Regarding biochemical indices, our results showed that depression group was significantly more likely to have higher triglyceride levels and 16% of the participants were underweight, 56% with normal weight and 14% were overweight. 10% of the total number labeled as obese. Centre of epidemiological studies for depressive mood scale was 30%. The others parameters include systolic and diastolic blood pressure, blood sugar fasting, glycemic control and lipid profile was measured. 8% of the participants were doing regular physical activity and 2.8% of the individual used nutritional supplement^{8,9}.

In spite of the fact that depression was a noteworthy indicator of overweight and obesity within the present study, it was not directly related to metabolic disorder after we balanced the analysis to incorporate BMI and demographic factors. This finding is inconsistent

with those of the past studies conducted their studies among 50 year old ladies hence, the contrasts between their reports and our study may be due to the impacts of estrogenic hormones decreasing the onset of metabolic disorder in menopausal females¹⁰.

The biological components for any connections among depression, obesity, and metabolic disorder are likely to be complex and to involve inflammation as a consequence of weight. Earlier research has demonstrated that mental variables, counting depression, enhance physiological changes, especially disorders of the hypothalamus–pituitary–adrenal (HPA) axis.

On the other hand, discouragement, like ailment behavior, may promote weight gain, which in turn activates an inflammatory response including increased blend and discharge of IL-6 by adipose tissue and leptin-induced upregulation of IL-6 release by white blood cells. They may moreover involvement changed rest designs that could serve as a behavioral mediator upgrading central adiposity. All of these depression related behaviors may in turn lead to an increment in oxidative push and inflammatory markers, driving to the accumulation of body fat and an increased chance of metabolic disorder¹¹.

One restriction of the present study was its cross-sectional design that comes about in a failure to assess the chronological sequence of the advancement of depression and metabolic syndrome. An appropriately outlined longitudinal study is required to look at these time-related changes. In expansion, we did not investigate dietary habits, the concentrated level of physical activity, sleep status, oxidative stress, or related biomarkers that will correlate with depression, fat tissue, and metabolic disorder¹².

CONCLUSION

Based on our findings, we have a few practical suggestions. First, wellbeing care experts ought to be mindful of the high rate of depression among youthful grown-up students and of the potential wellbeing issues related to sadness. Moment, early detection of depression and obesity as portion of metabolic disorders is vital within the wellbeing administration of young adult to diminish the chance of cardiovascular disease and diabetes.

Conflict of interest: Nil

REFERENCES

- Lee BJ. Association of depressive disorder with biochemical and anthropometric indices in adult men and women. *Scientific Reports*. 2021;11(1):13596.
- Vanoh D, Shahar S, Yahya HM, Che Din N, Mat Ludin AF, Ajit Singh DK, et al. Dietary Supplement Intake and Its Association with Cognitive Function, Physical Fitness, Depressive Symptoms, Nutritional Status and Biochemical Indices in a 3-Year Follow-Up Among Community Dwelling Older Adults: A Longitudinal Study. *Clinical interventions in aging*. 2021;161-75.
- Kim KY, Yun J-M. Analysis of the association between health-related and work-related factors among workers and metabolic syndrome using data from the Korean National Health and Nutrition Examination Survey (2016). *Nutrition Research and Practice*. 2019;13(5):444-51.
- Xenaki N, Bacopoulou F, Kokkinos A Impact of a stress management program on weight loss, mental health and lifestyle in adults with obesity: a randomized controlled trial. *Journal of molecular biochemistry*. 2018;7(2):78.
- Heidari-Beni M, Azizi-Soleiman F, Afshar H, Khosravi-Boroujeni H, Keshteli AH, Esmailzadeh A, et al. Relationship between obesity and depression, anxiety and psychological distress among Iranian health-care staff. *Eastern Mediterranean Health Journal*. 2021;27(4):327-35.
- Liao W, Luo Z, Hou Y, Cui N, Liu X, Huo W, et al. Age and gender specific association between obesity and depressive symptoms: a large-scale cross-sectional study. *BMC Public Health*. 2020;20:1-10.
- Moussavi M, Karandish M, Movahedi A, Abbasi B. Relationship between depression, stress and anxiety with anthropometric indices using Bio-Impedance Measure, among overweight/obese and normal subjects. 2020.
- Kim S-R, Kim H-N, Song S-W. Associations between mental health, quality of life, and obesity/metabolic risk phenotypes. *Metabolic Syndrome and Related Disorders*. 2020;18(7):347-52.
- Elmaliklis I-N, Miserli E, Filipatou M, Tsikouras I, Dimou C, Koutelidakis A. Association of mediterranean diet adherence, functional food consumption and anthropometric characteristics with anxiety and depression indexes in a sample of healthy greek adults: A cross-sectional study. *Psychiatry International*. 2020;1(2):135-49.
- Rabiei S, Tabesh MR, Jahromi SR, Abolhasani M. The association between depression, obesity and body composition in Iranian women. *Clinical Nutrition Open Science*. 2023;47:44-52.
- Pérez-Ara MÁ, Gili M, Visser M, Penninx BW, Brouwer IA, Watkins E, et al. Associations of non-alcoholic beverages with major depressive disorder history and depressive symptoms clusters in a sample of overweight adults. *Nutrients*. 2020;12(10):3202.
- Perry BI, Khandaker G, Marwaha S, Thompson A, Zammit S, Singh SP, et al. Insulin resistance and obesity, and their association with depression in relatively young people: findings from a large UK birth cohort. *Psychological medicine*. 2020;50(4):556-6