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Relationship between BMI and Depression on Students

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ABSTRACT

The purpose of this study to investigate the relationship between Body Mass Index (BMI) and Depression on students. This is a correlation. community was 12674 students of second level of high school of the Arak , participated 130 students study. Data were collected using, DASS-21 scale, BMI was calculated by weight(kg) / height (m. m). SPSS 25 Software and Pearson correlation was used for data analysis. Data revealed a positive correlation between Body Mass Index and depression(R = 0.111, P = 0.211). As a result, was correlate between BMI with height Depression.

1. Introduction

Obesity and depression are leading health risk factors (Kokonyei et al ,2013). World Health Organization in 1997 formally recognized obesity as a global epidemic by designating obesity as a major public health problem (Mohapatra et al ,2013) . often coexisting with under nutrition in developing countries (Haththtuwa et al,2013). the incidence and prevalence of obesity is continuing to rise throughout the world, so, tripling rates of adolescent obesity (13 - 19 years) (Upadhyay et al,2018) , which is resulting in higher rates of chronic conditions such as , non - insulin- dependent diabetes mellitus , cardio vascular diseases , hypertension, hyperlipidemic , osteoarthritis ,certain cancers , and is a known cause for depression disorder (Jones , 2018). obesity is also frequently accompanied by depression and the two can trigger and influence each other (AmericanPsychologicalAssociation,2013). The relationship between obesity and depression has been considered in numerous studies.

Dietary patterns, body mass index and inflammation: Pathways to depression and mental health problems in adolescents; challenged (Wendy et al., 2018). Observational studies suggest that dietary patterns may impact mental health outcomes, although biologically plausible pathways are yet to be tested. We aimed to elucidate the longitudinal relationship between dietary patterns, adiposity, inflammation and mental health including depressive symptoms in a population-based cohort of adolescents. Data were provided from 843 adolescents participating in the Western Australian Pregnancy Cohort (Raine) Study at 14 and 17 years (y) of age, Structural equation modeling was applied to test our hypothesised models relating dietary patterns, and adiposity (body mass index) at 14 y to adiposity and the pro-inflammatory adipokin (leptin). energy intake and inflammation (high sensitivity C-reactive protein –hs-CRP) at 17 y, and these inflammatory markers to depressive symptoms (Beck Depression Inventory) and Internalising and Externalising Behavioral problems (Child Behavior Check List Youth Self- Report) at 17 y. We further tested a reverse hypothesis model, with depression at 14 y as a predictor of dietary patterns at the same time-point. The tested models provided a good fit to the data. A 'Western' dietary pattern (high intake of red meat, takeaway, refined foods, and confectionary) at 14 y was associated with higher energy intake and BMI at 14 y, and with BMI and biomarkers of inflammation at 17 y (all $p < .05$). A 'Healthy' dietary pattern (high in fruit, vegetable, fish, whole-grains) was inversely associated with BMI and inflammation at 17 y ($p < .05$). Higher BMI at 14 y was associated with higher BMI ($p < .01$), leptine ($p < .05$), hs-CRP ($p < .05$), depressive symptoms ($p < .05$) and mental health problems ($p < .05$), all at 17 y. A 'Western' dietary pattern associates with an increased risk of mental health problems including depressive symptoms in adolescents, through biologically plausible pathways of adiposity and inflammation, whereas a 'Healthy' dietary pattern appears protective in these pathways. Longitudinal modeling into adulthood is indicated to confirm the complex associations of dietary patterns, adiposity, inflammation and mental health problems, including depressive symptoms.

(Antonio et al., 2017),challenged with title: The mediating role of dichotomous thinking and emotional eating in the relationship between depression and BMI. Obesity and depression have important health implications. Although there is knowledge about the moderators of the depression-obesity

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association, our understanding of the potential behavioral and cognitive mediators that may explain the relationship between depression and obesity, is scarcely researched. The aim of this study is to investigate the mediating role of emotional eating and dichotomous thinking in the depression-obesity relationship. Data on 205 individuals from a community-based study conducted at Maastricht University, Netherlands were used. Self-reported data on depression, emotional eating and dichotomous thinking were collected and BMI scores were calculated in a cross-sectional research design. Correlations between variables were calculated. The primary analysis tested the hypothesis that depression has an effect on BMI through dichotomous thinking and emotional eating. A two–mediator model was used to predict the direct and indirect effects of emotional eating and dichotomous thinking on the depression-BMI relationship. Depression was positively correlated with BMI ($r = 0.21$, $p = 0.005$), emotional eating ($r = 0.38$, $p < 0.001$) and dichotomous thinking ($r = 0.49$, $p < 0.001$). Dichotomous thinking and emotional eating were positively correlated with BMI ($r = 0.35$, $p < 0.001$; and $r = 0.45$, $p < 0.001$ respectively). Both dichotomous thinking ($Z = 2.54$, $p = 0.01$, 95% confidence intervals = 0.01–0.17) and emotional eating ($Z = 3.92$ $p < 0.001$, 95% confidence intervals = 0.06–0.19) could explain the depression-BMI relationship. The assessment of emotional eating and dichotomous thinking might be useful in guiding assessment and treatment protocols for weight management. The present study adds to the existing literature on the role of dysfunctional cognitions and emotions on eating behavior , and particularly to the factors that may impede people's ability to control their eating.

The role of obesity measures in the development and persistence of major depressive disorder challenged, (Smith et al ,2016).The role of obesity with the development of major depressive disorder (MDD) requires conformation and whether obesity contributes to more chronic depression in persons with established (MDD) is unknown. This study examined the longitudinal relationship of body mass index (BMI) and waist circumference with the incidence and persistence of MDD over 2-year and 6-year periods. Data were sourced from the Netherlands Study of Depression and Anxiety. MDD was established with Composite International Diagnostic Interviews. The relationship of BMI and waist circumference with the development of depression two and six years later were estimated in the subsample with no current psychopathology at baseline. Associations with the persistence of depression was estimated in the subsample with current MDD. Results: Higher BMI at baseline, but not waist circumference, slightly increased the odds of the development of MDD after two years (odds ratio (OR) per standard deviation increase: 1.11; P=0.03), This relationship was not significant after adjustment for health and lifestyle variables. Conversely, over a 6-year period both BMI and waist circumference moderately increased the odds of developing MDD even after adjustment (OR:1.17; p=0.05, OR:1.20; p=0.05). Persistence of MDD in currently depressed subjects, is not related with BMI or waist circumference (adjusted OR:0.93; p=0.2, OR:0.91; p=0.15). Over a 6 year period, patients with higher BMI show a slightly increased risk of development of depression. However, in depressed patients there is no relationship between BMI and the persistence of depression.

(Molyneaux et al ,2016),challenged with title: Socio-economic status influences the relationship between obesity and antenatal depression: Data from a prospective cohort study. Obesity has been associated with increased risk of antenatal depression, but little is known about this relationship. This study tested whether socio-economic status (SES) influences the relationship between obesity and antenatal depression. Data were taken from the Screening for Pregnancy Endpoints (SCOPE) cohort. BMI was calculated from measured height and weight at 15±1 weeks' gestation. Underweight women were excluded. SES was indicated by self-reported household income (dichotomised around the median: low SES ≤£45,000; high SES >£45,000). Antenatal depression was defined as scoring ≥13 on the Edinburgh Postnatal Depression Scale at both 15±1 and 20±1 weeks' gestation, to identify persistently elevated symptoms of depression. Five thousand five hundred and twenty two women were included in these analyses and 5.5% had persistently elevated antenatal depression symptoms. There was a significant interaction between SES and BMI on the risk of antenatal depression (p=0.042). Among high SES women, obese women had approximately double the odds of antenatal depression than normal weight controls (AOR 2.11, 95%CI 1.16–3.83, p=0.014, adjusted for confounders). Among low SES women there was no association between obesity and antenatal depression. The interaction effect was robust to alternative indicators of SES in sensitivity analyses. Obesity was only associated with increased risk of antenatal depression among high SES women in this sample. Healthcare professionals should be aware that antenatal depression is more common among low SES women, regardless of BMI category.

The purpose of this study was to determine the relationship between body mass index and depression , and the hypothesis that there is a correlation between body mass index and depression in second high school students in Arak.

2. Material and Method

The research was presented by descriptive method and correlation design.

The statistical population of the study consisted of 12674 students (with thin, normal and obese body mass index at age 15- 18 years) who were enrolled in the second high school of Arak in school years 2017- 2018 . Using the sample bulk table, and mediation determining the level of correlation required based on past studies or through a preliminary survey at level 0/01% , the sample size for the present study was 130 obese students. the sampling method was purposive non - random sampling .

Body Mass Index: Quetelets index or body mass index is valid criterion for assessing nutritional status. BMI calculates differences in body composition by defining the amount of adipose tissue based on weight -to- length ratio, so it is independent of body size. BMI is calculated by one of formulas:1) Metric formula Body Mass Index : weight (kilogram) divided into length(square meters). 2) English formula Body Mass Index : {weight(pound) divided into (length(inch) divided into length (inch) |} - 703.by body mass index standards at 2000 years : an body mass index of (< 18/5) as low weight , (18/5 - 24/9) as normal and these people are healthy, and obesity classifies to level 3: level(1): (25 - 29/9) , level (2): (30 - 40) and level(3):(> 40).

DASS (depression, anxiety, stress scale): depression , anxiety and stress are a set of three self - report scales , to assess negative emotional states in depression , anxiety, stress . Anthony et al , analyzed factor or scaling, the results showed , special value of factors stress, depression, anxiety was respectively 9/07 , 2/89 & 1/23 and Alpha coefficient for these factors 0/97 , 0/92 & 0/95 . also was correlation coefficient between factors depression and stress 0/48 , correlation coefficient between factors anxiety and stress 0/53, and correlation coefficient between factors anxiety and depression 0/28 . in assessing the validity of this scale were used statistical method of confirmatory factor analysis and principal components method . numeric value of index X2 , 0/9012 and a test Krwit Bartlet was the numeric value of index KMO, 3092/2 at was significant at level 0/0001, and evidence of the adequacy

of the sample and variables selected for factor analysis.illative and descriptive statistics were used to analyze the research , in the descriptive section of collecting information , drawing graphs, arrows, calculate the mean , median , mode , variance , std .deviation , and in the illative section Pearson correlation coefficient and SPSS 25 software was used .

3. Finding

Table1. Descriptive statistics of variables study

		body mass index	depression
N	Valid	130	130
	Missing	0	0
Mean		30.2154	20.48
Median		30.0000	20.00
Mode		30.00	20
Std. Deviation		3.13516	10.566
Variance		9.829	111.647
Skewness		.498	.078
Std. Error of Skewness		.212	.212
Kurtosis		-.162	-.588
Std. Error of Kurtosis		.422	.422
Range		15.00	42
Minimum		25.00	0
Maximum		40.00	42
Percentiles	25	28.0000	12.00
	50	30.0000	20.00
	75	32.0000	28.00

Table2. Frequency distribution of body mass index .v

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25.00	5	3.8	3.8	3.8
	26.00	10	7.7	7.7	11.5
	27.00	14	10.8	10.8	22.3
	28.00	14	10.8	10.8	33.1
	29.00	11	8.5	8.5	41.5
	30.00	20	15.4	15.4	56.9
	31.00	18	13.8	13.8	70.8
	32.00	11	8.5	8.5	79.2
	33.00	6	4.6	4.6	83.8
	34.00	5	3.8	3.8	87.7
	35.00	6	4.6	4.6	92.3
	36.00	7	5.4	5.4	97.7
	37.00	2	1.5	1.5	99.2
	40.00	1	.8	.8	100.0
	Total	130	100.0	100.0	

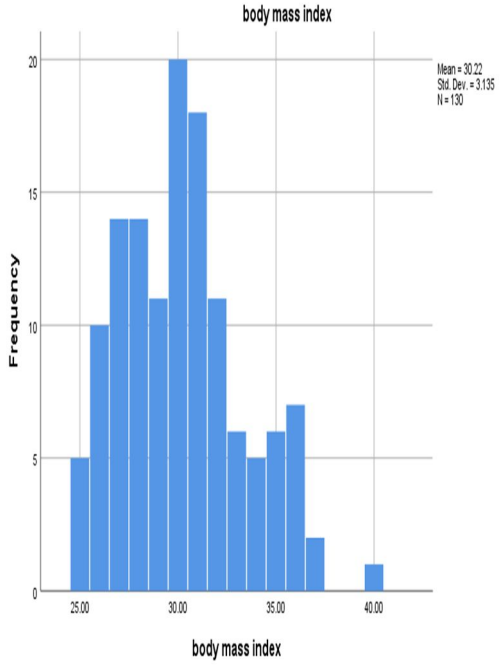

Chart1. Frequency distribution of body mass index .v

Table4. Frequency distribution of depression .v

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	3.1	3.1	3.1
	2	3	2.3	2.3	5.4
	4	2	1.5	1.5	6.9
	6	8	6.2	6.2	13.1
	8	3	2.3	2.3	15.4
	10	5	3.8	3.8	19.2
	12	10	7.7	7.7	26.9
	14	5	3.8	3.8	30.8
	16	4	3.1	3.1	33.8
	18	12	9.2	9.2	43.1
	20	15	11.5	11.5	54.6
	22	8	6.2	6.2	60.8
	24	10	7.7	7.7	68.5
	26	7	5.4	5.4	73.8
	28	3	2.3	2.3	76.2
	30	11	8.5	8.5	84.6
	31	1	.8	.8	85.4
	32	2	1.5	1.5	86.9
	34	3	2.3	2.3	89.2
	36	3	2.3	2.3	91.5
	38	2	1.5	1.5	93.1
	40	7	5.4	5.4	98.5
	42	2	1.5	1.5	100.0
	Total	130	100.0	100.0	

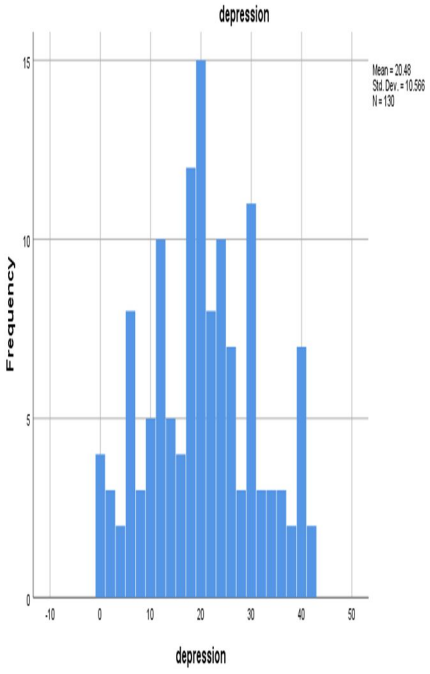

Chart5. Frequency distribution of depression .v

Table6. Correlation of body mass index with depression in student

		body mass index	depression
body mass index	Pearson Correlation	1	.111
	Sig. (2-tailed)		.211
	N	130	130
depression	Pearson Correlation	.111	1
	Sig. (2-tailed)	.211	
	N	130	130

According to table 6 , there is little correlation between body mass index and depression in secondary high school students in Arak, and indicates that there is a direct relationship between the two variables, since the significance level 0/211, research hypotheses is rejected and the hypothesis zero is accepted.

4. Discussion and conclusion

According to table 6 , there was a positive correlation between body mass index and depression , but since there is P > 0/05 , Ha is rejected and H0 is accepted , this conclusion , in line with the (Antonio et al., 2017) results, reported the results with a positive correlation between body mass index and depression. (Molyneaux et al, 2016), (Smith et al, 2016), did not report a significant association between BMI and depression. (Wendy et al., 2018), reported a significant relationship between these variables. Based, Beck cognitiv approach of obese adolescents have negative thoughts about self, and measures him/her self unworthy and any event that badly happens in him/his life, such as failing in sports or him/his schooling, she/he finds very unfortunate and abandoning efforts to improve performances. consequently, is a positive correlation between increase body mass index and increase depression(Busby& Seif, 2013) .

Recommended that in light of the statistical findings obtained, necessary actions to reduce body mass index and depression can have desirable consequences for physical and mental health in Arak city, doing this research with the purpose population of young girls is likely to provide luminous results to other researchers.

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