Research Article

www.ijrap.net

A CROSS SECTIONAL STUDY ON HEALTH-RELATED QUALITY OF LIFE AMONG UNDERWEIGHT, OBESE AND OVERWEIGHT UNDERGRADUATE MEDICAL STUDENTS

Nivetha Kumari ¹, Mokana L ¹, Archana R ^{2*}

¹MBBS student, Saveetha Medical College, Saveetha University, Thandalam, Chennai, Tamil Nadu, India

²Professor, Department of Physiology, Saveetha Medical College, Saveetha University, Thandalam, Chennai, Tamil Nadu, India

Received on: 18/02/17 Accepted on: 29/04/17

*Corresponding author

E-mail: dr.rarchana@gmail.com

DOI: 10.7897/2277-4343.082121

ABSTRACT

The present study was undertaken to assess the influence of weight on the quality of life (QOL) of students and to compare the QOL in normal, overweight and underweight students. The study group consisted of 241 students comprising of 148 females and 93 male students. They were allocated into four groups according to their BMI. The WHOQOL-BRIEF was used to assess quality of life. We have not observed significant difference in quality of life among normal, overweight and underweight students. We recommend further detailed studies with higher sample size to understand variation of quality of life among normal, overweight, obese and underweight individuals.

Keywords: Normal weight, overweight, underweight, Quality of life.

INTRODUCTION

Obesity is quickly becoming one of the most prominent conditions affecting children and adolescents.¹ The unabated rise in the prevalence of overweight in children and adolescents is one of the most alarming public health issues facing the world today.² Overweight and obesity are risk factors for non-communicable diseases like cardiovascular diseases, hypertension, diabetes, cancers (breast, colon and endometrial), osteoarthritis and fractures and increased risk of breathing difficulties.³ A high prevalence of overweight and obesity has been observed in adolescent students.

Poor quality of life has been observed in overweight and obese students compared to normal weight students. The overall quality of life score was higher in males compared to female students.⁴ Body mass index and central obesity indices were significantly linked to abnormal eating attitude in students.⁵ Quality of life (QOL) is an important subjective measure of one's condition. QOL assesses physical ability, psychological well-being, social interactions and school or work performance domains.⁶ Quality of life is defined as overall well-being^{7,15} described by objective indicators and subjective evaluation of physical, material, social, productive, emotional and civic well-being. It can be seen as a multidimensional construct that reflects one's self-perceptions of enjoyment, satisfaction with life⁸ and general health.⁹ These areas are essential for healthy child development. Overweight and obese students had significantly poor quality of life scores in physical and social functioning along with a greater mean negative HRQOL difference associated with excess weight in the girls.¹⁰ Compared with healthy adolescents, both overweight and obese boys and girls had significantly lower health related QOL in all the domains. In girls, a greater effect of overweight and obesity on their health-related quality of life was observed.¹¹ Extensive review of literature has shown several variables to be associated with quality of life like self-image, bullying, bodily pain, quality of food intake, physical activity, screen time, parents'

educational level, and weight status. Therefore, a clear understanding of QOL is a key element important for the treatment of adolescent obesity.¹² Therefore it is highly relevant that quality of life should be evaluated among overweight, obese and underweight children to identify effective weight intervention and management strategies. In a cross sectional study done among college students it was observed that intervention for obesity should include an education component to emphasize the importance of overall sleep quality and improving eating competence.¹³ Since abnormal weight and obesity is known to affect the quality of life in students, the present study was undertaken to assess the influence of weight on the QOL of students and to compare the quality of life in normal, overweight and underweight students.

MATERIALS AND METHODS

Participants

The study group consisted of 241 students comprising of 148 female and 93 male students. They were allocated into four groups according to their BMI. The study protocol was approved by the Institutional Ethics Committee (IEC) of Saveetha Medical College & Hospital. Written informed consent was obtained from the parents or guardian of all the study participants and information sheet regarding the study was given to all the participants of the study.

Measurement of Body Mass Index

Weight and height were measured using standard methods in the Department of Physiology of Saveetha Medical College. Body mass index (BMI), according to WHO is a simple index of weight-for-height that is commonly used to classify overweight, obesity and underweight in adults. BMI was calculated using the standard BMI formula - person's weight in kilograms divided by the square of height in meters (kg/m²).^{5,6}

Assessment of Quality of Life

The WHOQOL-BRIEF is an international cross-culturally comparable quality of life assessment instrument. It is available in different languages for both developed and developing countries and it is a generic QOL instrument developed by WHO, and is composed of 26 items.¹⁴ The questionnaire includes four domains: physical health, psychological health, social relations, and environment. Each item is scored on a five-point Likert scale. The response options range from 1 (very dissatisfied/very poor) to 5 (very satisfied/very good). Raw scores for each domain were calculated by the formulas provided by WHO. The raw scores were transformed into a linear scale between 0 and 100, with 0 being the least favorable and 100 being the most favorable.¹⁵

Data analysis: Group differences in the total scores of the WHOQOL Brief and each of the domains were analyzed using two way analysis of variance (ANOVA; 4 X 2). The first factor was BMI (normal, overweight, obese, underweight) and the second factor was gender (male or female). The focus of interest in the analysis was Comparison with the weight categories (main effect of BMI) with the gender x weight interactions

being secondary interest. In both the analysis, significant results were followed up with post hoc comparisons using Student's t-test.

Ethical consideration: The study is carried out as per International conference of Harmonization-Good clinical practices guidelines (ICH-GCP) or as per declaration of Helsinki guidelines.

RESULTS

There was no statistically significant difference in all four domain scores of quality of life among male and female participants. There were significant differences in weight and BMI between male and female subjects (table 2). There was no statistically significant difference in domain scores among normal and underweight, overweight, obese male and female (table 3, 4, 5, 6). There was no statistically significant difference in domain scores of quality of life among normal, underweight, overweight and obese male participants (table 7). There was no statistically significant difference in domain scores of quality of life among normal, underweight, overweight and obese female participants (table 8).

Table 1: Comparison of demographic data and quality of life domain scores in normal, underweight, overweight and obese (male and female) participants

Parameter	Males (n=93)	Females (n=148)	P value
Age (Years)	19.37±1.57	19.34±1.48	0.8992
Weight (Kg)	71.473±17.433	58.743±11.729	<0.0001***
Height (cm)	173.043±7.067	160.436±6.014	<0.0001***
BMI (kg/m ²)	23.74±5.31	22.74±4.59	0.1251
Physical Health (T1)	64.42±17.81	65.39±17.66	0.6808
Psychological (T2)	63.00±18.90	62.88±18.74	0.9611
Social relationship (T3)	52.59±22.81	49.65±19.61	0.2906
Environment (T4)	65.61±18.92	69.50±17.37	0.1036

Data was expressed as mean ± SD. One way Anova followed by Tukey HSD post hoc test. (*p<0.05, **P<0.01, ***P<0.001)

Table 2: Comparison of demographic details and quality of life domain scores among male and females

Parameter	Normal (n=85)	Underweight (n=41)	Overweight (n=66)	Obese (n=49)	P value
Age (years)	19.44±1.57	18.70±2.0	19.39±1.57	19.02±3.12	0.2152
Weight (kg)	56.20±6.35	46.63±5.02	68.81±8.58	83.87±14.33	<.0001***
Height (cm)	164.44±8.35	166.34±7.90	165.01±8.79	166.28±10.64	0.5712
BMI (kg/m ²)	20.35±2.54	16.33±2.73	24.93±1.49	29.85±5.24	<.0001***
Physical health (T1)	67.4±14.88	63.51±17.20	63.75±21.30	63.81±17.30	0.4949
Psychological (T2)	65.44±16.83	61.31±20.40	61.74±19.87	61.48±19.10	0.5005
Social relationships (T3)	49.60±22.71	48.65±20.87	49.72±22.19	52.18±19.93	0.8754
Environment (t4)	68.27±15.54	66.63±20.77	66.59±20.47	70.57±16.31	0.6486

Data was expressed as mean ± SD. One way Anova followed by Tukey HSD post hoc test. (*p<0.05, **P<0.01, ***P<0.001)

Table 3: Demographic details and quality of life domain scores in healthy subjects

Parameter	Males (n=26)	Females (n=59)	P value
Age (years)	19.38±0.32	19.47±0.20	0.8102
Weight (kg)	60.404±5.625	54.356±5.786	<0.0001***
Height (cm)	172.462±6.782	160.917±6.309	<0.0001***
BMI (kg/m ²)	20.27±1.02	20.73±1.29	0.1209
Physical health (t1)	65.77±14.94	68.12±14.93	0.8842
Psychological (t2)	63.81±14.68	66.17±17.77	0.9609
Social relationships (t3)	55.50±25.42	50.23±18.14	0.4176
Environment (t4)	65.77±17.21	69.37±14.77	0.3275

Data was expressed as mean ± SD. Paired t test was applied. (*p<0.05, **P<0.01, ***P<0.001)

Table 4: Demographic details and quality of life domain scores in underweight subjects

Parameter	Males (n=15)	Females (n=26)	P value
Age (years)	19.00±1.20	18.92±1.32	0.7838
Weight (kg)	50.60±4.47	44.35±3.79	<0.0001***
Height (cm)	173.06±6.27	162.46±5.93	<0.0001***
BMI (kg/m ²)	16.78±1.01	16.74±0.69	0.9198
Physical health (t1)	67.13±18.08	61.42±16.68	0.5279
Psychological (t2)	63.73±23.31	59.92±18.88	0.7922
Social relationships (t3)	49.87±26.81	47.96±17.14	0.9634
Environment (t4)	65.80±24.03	67.12±19.14	0.8029

Data was expressed as mean ± SD. Paired t test was applied. (*p<0.05, **P<0.01, ***P<0.001)

Table 5: Demographic details and quality of life domain scores in over weight subjects

Parameter	Males (n=28)	Females (n=38)	P value
Age (years)	19.32±1.61	19.45±1.57	1.0000
Weight (kg)	74.268±7.70	64.789±6.850	<0.0001***
Height (cm)	172.4±7.50	159.57±4.80	<0.0001***
BMI (kg/m ²)	24.71±1.37	25.09±1.57	0.5404
Physical health (t1)	63.64±22.48	63.84±20.70	0.7482
Psychological (t2)	64.11±20.76	60.00±19.30	0.3993
Social relationships (t3)	52.46±20.61	47.71±23.36	0.5000
Environment (t4)	64.82±20.98	67.89±20.28	0.7431

Data was expressed as mean ± SD. Paired t test was applied. (*p<0.05, **P<0.01, ***P<0.001)

Table 6: Demographic details and quality of life domain scores in obese subjects

Parameter	Males (n=24)	Females (n=25)	P value
Age (years)	19.63±1.71	19.29±1.23	0.4433
Weight (kg)	93.25±13.13	74.88±8.57	<0.0001***
Height (cm)	174.41±7.54	158.49±6.54	<0.0001***
BMI (kg/m ²)	30.72±3.44	30.19±2.39	0.5025
Physical health (t1)	62.17±14.89	65.40±19.53	0.4595
Psychological (t2)	60.38±18.66	62.56±19.85	0.5435
Social relationships (t3)	51.29±20.66	53.04±19.60	0.7523
Environment (t4)	66.25±15.49	74.72±16.31	0.0568

Data was expressed as mean ± SD. Paired t test was applied. (*p<0.05, **P<0.01, ***P<0.001)

Table 7: Comparison of demographic data and quality of life domains in normal, underweight, overweight and obese male participants

Parameter	Normal (n=26)	Underweight (n=15)	Overweight (n=28)	Obese (n=24)	P value
Age (years)	19.48±1.58	19±1.19	19.32±1.61	19.62±1.71	0.6628
Weight (kg)	60.40±5.62	50.6±4.46	74.26±7.7	93.25±13.13	<0.0001***
Height (cm)	171.76±5.88	173.06±6.27	172.4±7.50	174.41±7.54	0.5788
BMI (kg/m ²)	20.27±1.02	16.78±1.01	24.71±1.37	30.72±3.44	<0.0001***
Physical health (t1)	65.76±14.94	67.13±18.08	63.64±22.47	62.16±14.88	0.8253
Psychological (t2)	63.80±14.67	63.73±23.30	64.10±20.76	60.37±18.65	0.8961
Social relationships (t3)	55.5±25.41	49.86±26.80	52.46±20.60	51.29±20.66	0.8752
Environment (t4)	65.76±17.20	65.8±24.03	64.82±20.97	66.25±15.49	0.9929

Data was expressed as mean ± SD. One way Anova followed by Tukey HSD post hoc test. (*p<0.05, **P<0.01, ***P<0.001)

Table 8: Comparison of demographic data and quality of life domains in normal, underweight, over weight and obese female participants

Parameter	Normal (n=59)	Underweight (n=26)	Overweight (n=38)	Obese (n=25)	P value
Age (years)	19.47±1.56	18.92±1.32	19.44±1.57	19.2±1.29	0.4040
Weight (kg)	54.35±5.78	44.34±3.79	64.78±6.85	74.88±8.56	<0.0001***
Height (cm)	160.91±6.30	162.46±5.93	159.57±4.80	158.49±6.54	0.0788
BMI (kg/m ²)	20.73±1.29	16.74±0.69	25.09±1.57	30.19±2.39	<0.0001***
Physical health (t1)	68.11±14.92	61.42±16.68	63.84±20.70	65.4±19.52	0.3948
Psychological (t2)	66.16±17.77	59.92±18.88	60±19.29	62.56±19.84	0.3390
Social relationships (t3)	46.87±21.02	47.96±17.13	47.71±23.35	53.04±19.59	0.6624
Environment (t4)	69.37±14.76	67.11±19.14	67.89±20.28	74.72±16.30	0.3812

Data was expressed as mean ± SD. One way Anova followed by Tukey HSD post hoc test. (*p<0.05, **P<0.01, ***P<0.001)

DISCUSSION

The present study is taken up to study the effect of weight on quality of life in medical students. Quality of life (QOL) is an important subjective measure of one's condition. QOL encompasses several domains of subjective experience including physical ability, psychological well-being, social interactions and school or work performance.¹¹⁻¹⁴ These areas are essential for healthy child development. Overweight and obese students had significantly poor quality of life scores in physical and social functioning along with a greater mean negative HRQOL difference associated with excess weight in the girls.¹⁵⁻¹⁶ Compared with healthy adolescents, both overweight and obese boys and girls had significantly lower health related QOL in all the domains. The study showed that all four domains of quality of life-physical health (P=0.8253), psychological (P=0.8961), social relationships (P=0.8752) and environment (P=0.9929) were not significantly different among normal, obese, overweight and underweight students. Stating that, there is no change in QOL in relation to the body weight. But still certain studies stated that weight does have certain impact on the quality of life that is unseen at times. Further studies with larger sample size may give elaborative findings.

Limitations of the study

This is a small pilot study. More clarity and significant data can be obtained if a similar study is done on a larger sample size in the student population of Chennai.

CONCLUSION

We have not observed significant difference in quality of life among normal, overweight and underweight students. We recommend further detailed studies with higher sample size to understand variation of quality of life among normal, overweight, obese and underweight individuals.

ACKNOWLEDGEMENT

Our sincere thanks to The World Health Organization for granting permission to use the questionnaire in the study.

REFERENCES

- Chen, Chou, & Yang, 2005; Cook, Wetzman, Auinger, & Barlow, 2005
- Weiss R, Caprio S. The metabolic consequences of childhood obesity. *Best Pract Res Clin Endocrinol Metab.* 2005;19:405-19.
- Obesity & overweight, Fact sheet updated March 2013. Available at: <http://www.who.int/mediacentre/factsheets/fs311/en/> accessed on 11.4.14. accessed on 2nd Jan 2017.
- Jalali-Farahani S, Chin YS, Amiri P, Mohd Taib MN. Body mass index (BMI)-for-age and health-related quality of life (HRQOL) among high school students in Tehran. *Child Care Health Dev.* 2014;40(5):731-9.
- Tohid Rouzitalab, Bahram Pourghassem Gargari, Ramin Amirasan, Mohammad Asghari Jafarabadi, Alireza Farsad Naeimi, and Meisam Sanoobar. The Relationship of Disordered Eating Attitudes With Body Composition and Anthropometric Indices in Physical Education Students. *Iran Red Crescent Med J.* 2015; 17(11): e20727.
- Al-Akour NA, Khader YS, Khassawneh MY, Bawadi H. Child Care Health Dev. Health-related quality of life of adolescents with overweight or obesity in the north of Jordan. 2012; 38(2):237-43.
- Buttitta M¹, Iliescu C, Rousseau A, Guerrien A. Quality of life in overweight and obese children and adolescents: a literature review. *Qual Life Res.* 2014;23(4):1117-39.
- Quick V, Byrd-Bredbenner C, White AA, Brown O, Colby S, Shoff S, Lohse B, Horacek T, Kidd T, Greene G. Eat, sleep, work, play: associations of weight status and health-related behaviours among young adult college students. *Am J Health Promot.* 2014 ;29(2):e64-72.
- Naughton MJ, Shumaker SA. The case for domains of function in quality of life assessment. *Qual Life Res.* 2003; 12: 73–80.
- Nedjat S, Montazeri A, Halakouie K, Mohammad K, Majdzadeh R. psychometric properties of the Iranian interview- administered version of the World Health Organization 'S Quality Of Life Questionnaire (WHOQOL-BREF): a population- based study. *BMC Health Serv Res.* 2008; 8: 61-68.
- Varri JW, Burnwinkle TM, Seid M: The PedsQL 4.0 As a school population health measure: feasibility, reliability, and validity. *Qual Life Res.* 2006; 15:203–215.
- Zhang L, Fos PJ, Johnson WD, Kamali V, Cox RG, Zuniga MA, Kittle T: Bodymass index and health related quality of life in elementary schoolchildren: a pilot study. *Health Qual Life Outcomes.* 2008; 6:77.
- Catherine L keating, Marjory L Moodie, Boyd A swin burn. The health-related quality of life of overweight and obese adolescents – a study measuring body mass index and adolescent-reported perception. *Int J Pediatr Obes.* 2011; 6(5-6):434-41.
- The WHOQOL Group. Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psycho med.* 1998; 28: 551-558.
- Felce D, Perry J: Quality of life: its definition and measurement. *Res Dev Disabil.* 1995; 16:51–74.
- Lobstein T. Track 3: From healthy weight to weight-related pathologies. *Obes Rev.* 2014 Mar 1;15:53–97.

Cite this article as:

Nivetha Kumari et al. A cross sectional study on health-related quality of life among underweight, obese and overweight undergraduate medical students. *Int. J. Res. Ayurveda Pharm.* 2017;8(Suppl 2):248-251 <http://dx.doi.org/10.7897/2277-4343.082121>

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAP is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAP cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of IJRAP editor or editorial board members.