



FOOD FOR THOUGHT: EATING DISORDERS AND THE COVID-19 LOCKDOWN- A QUESTIONNAIRE BASED SURVEY

Dr. Rose Mary Jacob Vatakencherry	MBBS, MD, PGDFM (CMC, Vellore) Clinical Assistant Professor, Department Of Physiology, Amrita School Of Medicine, Amrita Institute Of Medical Sciences, Amrita Vishwa Vidyapeetham, Ponekkara P.O, Kochi, Kerala, Pin: 682041, India
R Bhadra*	2 nd Year MBBS Student, Amrita School Of Medicine, Amrita Institute Of Medical Sciences, Amrita Vishwa Vidyapeetham *Corresponding Author
Niharika B	2 nd Year MBBS Student, Amrita School of Medicine, Amrita Institute of Medical Sciences, Amrita Vishwa Vidyapeetham
Dr (Col) Vishal Marwaha	Amrita School Of Medicine, Amrita Institute Of Medical Sciences, Amrita Vishwa Vidyapeetham
Anusree M	Research Scholar, Amrita School Of Arts And Sciences, Kochi, Amrita Vishwa Vidyapeetham

ABSTRACT

BACKGROUND: Anyone whose eating behaviours tend to cause disruptions and inconveniences in their day-to-day life could possibly have an eating disorder (ED). The coronavirus pandemic and the ensuing lockdown resulted in young people being confined to their homes for months on end. This may have led to the adoption of unhealthy eating behaviours and the consequent development of eating disorders.

The objective of this study is to assess the prevalence of eating disorders among healthcare students of South India during the COVID-19 pandemic lockdown.

METHODS This study was conducted for a period of two weeks among healthcare students of South India during the COVID-19 lockdown. The study tools were two pretested and self-administered questionnaires. Analysis was done using IBM Statistics 25 and SPSS.

RESULTS The total number of respondents whose SCOFF score was greater than or equal to 2 is 367 (38.3%), which indicates possible cases of anorexia or bulimia.

The total number of respondents whose EAT-26 score is higher than 20 in this study are 153 (14.3%), which indicates that they must be referred to a qualified professional to determine if they meet the diagnostic criteria for an eating disorder.

This indicates that there was an increased prevalence of eating disorders in the students during the pandemic lockdown.

CONCLUSIONS As expected, there was definitely an increased prevalence of eating disorders among the students during the COVID-19 lockdown. Awareness about these disorders must be created via seminars, webinars and workshops.

KEYWORDS : Eating disorders, SCOFF, EAT-26, COVID-19 lockdown

INTRODUCTION

The earliest cases of COVID-19 were first identified in the Wuhan district of China in December of 2019. Since then, the disease spread rapidly across the world, forcing countries into containment measures like quarantine, curfews, and lockdowns. A lockdown is an emergency protocol that makes people stay confined to a certain area. A nationwide lockdown was implemented in India on the 23rd of March, 2020, and many more followed.^[1] Lockdowns during the COVID-19 pandemic have led to a drop in physical activity among the different sections of the population. People were asked to work from home, educational institutions were closed down, and most outdoor activities came to a standstill. This led to a life of virtually no exercise for most people, and snacking and gorging on comfort foods high in calories (also termed as emotional eating), stimulated by stress because of the ongoing pandemic, became favourite pastimes of many.^[2] This sedentary behavior and the new lifestyle might have led to consequent prevalence of different lifestyle diseases and eating disorders like anorexia, bulimia, binge eating disorder etc.^[3]

Earlier studies indicated that undergraduate students showed an increase in weight during the lockdown and reported eating more quantity of food than before.^[3] Students of the health sciences tend to be more knowledgeable about eating disorders than the general public, so it is important to study their prevalence in this group, despite this awareness.^[4] Health science students tend to have high workloads and hectic schedules, which may lead to unhealthy eating habits like skipping meals, snacking and binge eating. The popular culture of our age places high value on conventional standards of beauty, especially your weight and the shape of your body. Today's youth is very much exposed to these standards as social media is at their fingertips. This can lead to warped perceptions of body image, and placing a lot of pressure on themselves to maintain an "ideal" figure and weight, which in most cases are not realistic at all. This also puts them at high risk to

behaviours like starving themselves, purging tendencies (forced vomiting, taking laxatives unnecessarily etc.) and diet culture. All these factors play into the development of eating disorders.^[4]

We can infer that a person has an eating disorder by looking for the following three characteristics

- An unequivocal disruption of eating habits or behaviour related to weight control
- Clinical impairment of physical or psychosocial wellbeing of the person due to this disruption of eating habits or weight control behaviour, or associated behaviours.
- This disruption should not be secondary to any other disorder be it medical or psychiatric.

Eating disorders can be broadly classified into three

1. Anorexia Nervosa
2. Bulimia Nervosa
3. Atypical Eating Disorders (eg. Binge Eating Disorder)

Anorexia is associated with a patient being excessively concerned about their weight. Anorexics tend to resort to means like uncontrolled exercise or even starving themselves, to achieve and maintain an unhealthy low weight. They also frequently associate self worth with the shape and size of their body. Anorexics try to maintain an unhealthy low body weight and sometimes present with amenorrhoea in postmenarcheal females who are not on any Oral Contraceptive Pills.^[5]

Bulimia is a condition in which the patient suffers from extreme preoccupation about their body image and has a burning desire to shed weight. They usually indulge in bouts of unrestrained eating followed by forced vomiting or misuse of laxatives (purging behaviours) to empty their stomach, or a long period of eating nothing. The diagnostic criteria of anorexia are not met in bulimics.^[5]

Atypical eating disorders are disorders of clinical severity that do not adhere to the diagnostic criteria for anorexia nervosa or bulimia nervosa. Binge eating is the consumption of very large amounts of food in a short span of time. It may or may not be associated with an eating disorder, but usually is.^[5] The aim of this study is to assess the prevalence of eating disorders in health science students during the COVID-19 pandemic lockdown

METHODS

A cross sectional study was conducted among all the students of Health Sciences (MBBS, BDS, Allied Health Sciences and Nursing, Pharmacy) in the various health science institutions of South India.

The questionnaire consisted of 3 sections-

- the first collected information about demographic details
- the second collected information about general eating habits and behaviour
- the third collected information about eating habits and behaviours specifically during the lockdown.

Two standardized questionnaires were used, the SCOFF^[6] and the EAT-26^[7] questionnaires. The second section consisted of the SCOFF questionnaire which consists of 5 validated questions to be answered as Yes or No. Every 'yes' answer to a question is equivalent to one point. A score of more than 2 indicates a likely case of anorexia or bulimia. The third section consisted of the EAT-26 questionnaire which includes 26 questions on dieting, bulimia and food preoccupation, and oral control. Questions 1 to 25 had a scoring scale as follows: Always=3, Usually=2, Often=1, Sometimes, Rarely, Never=0. For question 26, the scoring scale was as follows: Always, Usually, Often=0, Sometimes=1, Rarely=2, Never=3. Individuals who score higher than a 20 should be referred to a qualified professional to determine if they meet the diagnostic criteria for an eating disorder. The questions were answered with the mindset the students were in while they were at home, during the lockdown. Permission was taken from the concerned authorities to use the prevalidated SCOFF and EAT-26 questionnaires.

Based on the proportion of eating disorders in undergraduate students (9%) observed from the results of the pilot study conducted with 11 samples in UG students via online forms and with 20% relative precision and 95% confidence, the minimum sample size came to 971. For the main study, a total of 984 responses were collected out of which 27 had to be deleted because of incomplete answers. Informed consent was taken from all the participants who wished to fill out the self administered questionnaire. The questionnaire was sent via various social media platforms to students studying health science courses in South India, who were between 17 and 25 years of age. The ethical clearance was obtained from the Institutional Review Board (IRB). Data was collected for a period of 2 weeks. Sub-groups were made based on gender, age and BMI. IBM Statistics 25 and SPSS softwares were used to analyse the data. To find the correlation between the EAT-26 and SCOFF questionnaires, Pearson Correlation value was used. To find association between each of the sub-groups and the respective questionnaires, Chi square test was used. P value > 0.005 is considered for statistical significance.

INCLUSION CRITERIA

- 1) Students of Health Science courses (MBBS, BDS, Allied Health Science, Nursing, Pharmacy etc.) studying in various institutes in South India
- 2) Students should be between 17 and 25 years of age

Funding: NA

RESULTS

The answers given in response to the questionnaire emphasise the unhealthy eating behaviors of the respondents during the lockdown. They indicated instances of purging behaviours, snacking, comfort eating, a distorted body image and a general unhealthy relationship with food.

As the Pearson correlation value is (0.479), **there exists a positive correlation between EAT-24 and SCOFF.**

As the p value was greater than 0.05 (P 0.507), **there is no association between Age and SCOFF**

As the p value was less than 0.05 (P 0.000), **there is association between BMI and SCOFF**

As the p value was less than 0.05 (P 0.000), **there is association between gender and SCOFF**

As the p value is greater than 0.05 (P 0.316), **there is no association between Age and EAT-26**

As the p value is greater than 0.05 (P 0.949), **there is no association between BMI and EAT-26**

As the p value is less than 0.05 (P 0.000), **there is association between gender and EAT-26**

The total number of respondents whose SCOFF score was greater than or equal to 2 is 367 (38.3%) which indicates possible cases of anorexia or bulimia.

The total number of respondents whose EAT-26 score is higher than 20 in this study are 140 (14.3%), which indicates that they must be referred to a qualified professional to determine if they meet the diagnostic criteria for an eating disorder.

This points to an increased prevalence of eating disorders among the population studied, during the COVID-19 lockdown.

DISCUSSION

Most of the participants of the present study were healthy female students from the age group 20-22 from South Indian cities. More than half the participants (63.4) were within the normal range of BMI, and the percentage of overweight individuals (20.0%) was higher than the percentage of underweight individuals (10.2%) These findings were in line with other studies from India (RaoAroor et al. 2016; Ramaiah 2015) and elsewhere. In contrast to previous research from India (Sadhasivam et al. 2015) and elsewhere (Adderley-Kelly 2007; Andy et al. 2015) which showed higher percentages, our study showed that only 5.2% of the participants were obese according to BMI.

Distribution of participants according to gender

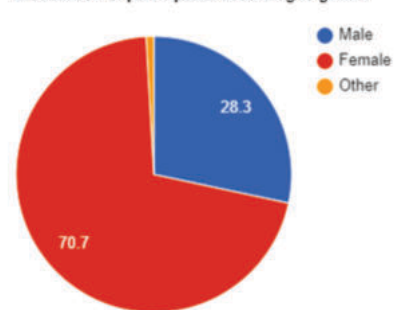


Figure 1: Distribution of participants according to gender

Distribution of participants according to age

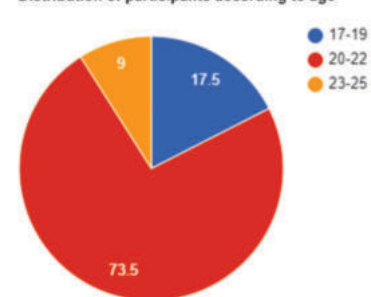


Figure 2: Distribution of participants according to age

Distribution of participants according to BMI

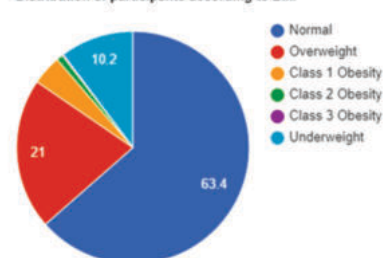


Figure 3: Distribution of participants according to BMI

23.9% of the respondents displayed tendencies of purging behaviour and said that they purposefully made themselves sick if they felt uncomfortably full. This is a possible indicator of bulimia nervosa.

31% of the respondents felt that they had lost control over how much they ate during the lockdown. 9.8% of the respondents had lost more than 6kg over a 3 month period over the course of the lockdown. This might indicate that they may have been engaging in weight loss strategies.

A striking 36.9% of respondents believe themselves to be fat when others say they are too thin. This might be a sign of distorted body image.

31.1% of the respondents said that they believe food dominates their life. This might be a sign of a toxic relationship with food and eating.

10.2% of the respondents said they are always terrified of being overweight and 27.9% said they never are. This is an indicator of the undue pressure that is placed on people to maintain an "ideal" body and weight, which is usually not realistic. 11.2% say they are usually terrified, 11.5% say they are often terrified, 25.2% say they are sometimes terrified, and 13.6% say they are rarely terrified of being overweight.

7.1% of the respondents were always aware of the number of calories in the food they ate. 28.7% of them were never aware of this. 8.9% are usually aware, 9.5% are often aware, 23.9% are sometimes aware and 21.7% are rarely aware of the number of calories in the food they eat.

Only 2.5% of the population said that they have started to eat diet foods always, 6% said usually, 9.5% said often. While 22% of the population said that they sometimes eat diet foods and 22.3% said that they never. This is in line with the findings related to the engagement in dieting behavior where 2.5% have started to engage in dieting behavior and 34.6% never did.

3.3% of the respondents said that they always felt extremely guilty after a meal but 52.3% of them never felt this. 4.3% say they usually felt guilty, 6.3% said they often felt guilty, 16.2% say they sometimes felt guilty, and 17.2% said they rarely felt guilty after a meal.

13.3% of the respondents said they are always preoccupied with a desire to be thinner. This is another indication of the pressure of popular notions of an "attractive body" and distorted body image. However 28.5% of them never felt this. 9.9% said they are usually preoccupied, 11.7% said they are often preoccupied, 22.5% say they are sometimes preoccupied, and 13.7% said that they are rarely preoccupied with a desire to be thinner.

8.9% of the respondents said that others always think they are too thin while 41.4% of them said others never think this. 6% said others usually think this, 8.6% said others often think this, 15.8% said others sometimes think this, and 18.6% said others rarely think they are too thin.

Only 2.3% of the population felt that they always liked their stomach to be empty, 4% usually felt that, 7.3% often felt that, 23% of the respondents sometimes felt that, while 18.7% rarely felt that and 43.6% of them never felt that.

Only 2% of the respondents go on eating binges where they feel like they are not able to stop, whereas 40.8% of them never do this. 4.7% usually go on eating binges, 8.8% often go on eating binges, 19.4% sometimes go on eating binges and 24.1% rarely go on eating binges where they feel like they are not able to stop.

A reassuring 78.3% of the respondents never started to vomit after they had eaten. Nobody said they always felt the need to do so. 5.1% said they sometimes did this and 13.6% said they rarely did this.

Table I- SCOFF Score

Score	Frequency	Percentage
.00	279	29.2
1.00	311	32.5
2.00	198	20.7
3.00	112	11.7
4.00	50	5.2
5.00	7	.7
Total	957	100.0

The total number of respondents whose SCOFF score was greater than or equal to 2 is 367 (38.3%) which indicates possible cases of anorexia or bulimia.

Table II -EAT-24 Score

Particulars	Frequency	Percentage
0-20	817	85.7
21-40	126	12.9
41-60	12	1.2
61-80	2	0.2
Total	957	100

The total number of respondents whose EAT-26 score is higher than 20 in this study are 140 (14.3%), which indicates that they must be referred to a qualified professional to determine if they meet the diagnostic criteria for an eating disorder.

In the current study we observed that there was association between BMI and SCOFF, in line with a study from Karnataka (Vijayalakshmi et al. 2018) but observed no association between BMI and EAT, in contrast to the same study.

Widely published literature (Memon et al. 2012; Sánchez-Armass et al. 2012; Striegel-Moore et al. 2009) reported that females are at high-risk of eating disorders as compared to males. Our study also confirms association between gender and SCOFF and also between gender and EAT-26. Further research must be done to explore this disparity in the prevalence of eating disorders according to gender.

Our study showed that there was association between age and SCOFF but no association between age and EAT-26. Studies like Vijayalakshmi et al. 2018; Goyal et al. 2010; Swanson et al. 2011; Palma-Coca et al. 2011 found that the majority of the students aged between 18 and 20 years were at the risk of eating disorders. It must be kept in consideration that the majority of these studies were conducted on female adolescents while analysing these results. This could also be due to the fact that young girls are exposed to a more rigid standard of typical beauty than young boys through media, and generally, more importance is placed on their appearance than boys'.

Our study reported that 38.3% (n = 397) of the participants showed disturbed eating behaviors scoring above threshold (≥ 2) on SCOFF questionnaire, while 14.3% (n = 153) were at risk for eating disorders (cutoff scores ≥ 20) on EAT-26 questionnaire. These findings differed to findings of a study among medical students that found 22.7% of the scoring above the threshold for EAT-26 questionnaire while and 17% scoring above the threshold for SCOFF questionnaire (Memon et al. 2012). Another study from Pakistan among a sample of N = 1134 of adolescents that identified 64.9% scored two or higher on the SCOFF scale (Shaikh and Kayani 2014). Studies from India among adolescents identified scores of 12.7% (Vetri Selvan et al. 2015) and 26.7% (Upadhyah et al. 2014) above the threshold for EAT-26. Interestingly, in line with previous research (Memon et al. 2012), SCOFF diagnosed more than twice the number of individuals expected to have eating disorders than on the EAT-26 scale.

The aim of the study was to assess the prevalence of eating disorders in health science students during the COVID-19 pandemic lockdown. It was a cross sectional study. The study was inexpensive and quick to conduct. The data was collected all at once therefore no long periods of follow up is required.

This study was conducted only among students in the healthcare field, so the results cannot be extrapolated on to the general public who have different lifestyles and schedules. It should be taken into account that some participants who were born in and belong to other parts of India may have moved to and settled in South India. This causes an inherent bias in the study as these students are not really South Indians. Only people with access to smartphones or computers and internet facilities could access the forms as they were distributed via social media platforms. Only people who knew English could respond to the form. The study was conducted over two weeks, which is a short duration of time, and responses were collected from 986 people, so we cannot assume the same results for the general population. The number of people who responded were considerably more females, and people between the ages of 20 and 22. Since the self administered questionnaires were circulated through social media, the response rate could not be calculated.

REFERENCES

- 1) Gettleman, Jeffrey; Schultz, Kai (24 March 2020). "Modi Orders 3-Week Total Lockdown for All 1.3 Billion Indians". *The New York Times*. ISSN 0362-4331
- 2) Di Renzo L, Gualtieri P, Pivari F, Soldati L, Attinà A, Cinelli G, Leggeri C, Caparelllo G, Barrea L, Scerbo F, Esposito E. Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey. *Journal of Translational Medicine*. 2020 Dec;18(1):1-5.
- 3) Changes in lifestyle during Covid-19 pandemic lockdown among undergraduate students in India: A questionnaire based survey Amrita Institute of Medical Sciences
- 4) Eating Attitudes, Weight Control Behaviors, Body Image Satisfaction and Depression Level Among Indian Medical and Nursing Undergraduate Students Poreddi Vijayalakshmi¹ · Rohini Thimmaiah² · Sailaxmi Gandhi³ · Suresh BadaMath⁴ Received: 28 November 2016 / Accepted: 27 August 2018
- 5) [Fairburn CG, Harrison PJ. Eating disorders. *Lancet*. 2003 Feb 1;361(9355):407-16. doi: 10.1016/S0140-6736(03)12378-1. PMID: 12573387.]
- 6) Morgan JF, Reid F, Lacey JH. The SCOFF questionnaire: a new screening tool for eating disorders. *West J Med*. 2000;172(3):164-165. doi:10.1136/ewjm.172.3.164
- 7) Garner, D., Olmsted, M., Bohr, Y., & Garfinkel, P. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*, 12(4), 871-878. doi:10.1017/S0033291700049163
- 8) Rao Aroor, A., Santhosh, T. S., Oommen, R. A., & Raj, B. (2016). Assessment of nutritional status and screening for eating disorders among female adolescents. *IJSR*, 5(5), 183–185.
- 9) Ramaiah, R. R. (2015). Eating disorders among medical students of a rural teaching hospital: A cross-sectional study. *International Journal of Community Medicine and Public Health*, 2(1), 25–28.
- 10) Sadhasivam, M., Anarajan, B., Selvakumar, J., & Kausarbanu, K. (2015). Prevalence of overweight and obesity: A study among first year engineering students in Tamilnadu. *IJHSR*, 5(10), 114–117.
- 11) Adderley-Kelly, B. (2007). The prevalence of overweight and obesity among undergraduate health sciences students. *The ABNF Journal*, 18(2), 46–50.
- 12) Andy, E., Oyedele, E. A., Gimba, S. M., Goshit, J. D., Gaji, L. D., & Dashen, N. (2015). Prevalence of overweight and obesity among undergraduate nursing students in Nigeria. *International Journal of Nursing and Health Science*, 2(5), 56–59.
- 13) Memon, A. A., Adil, S. E. R., Siddiqui, E. U., Naem, S. S., Ali, S. A., & Mehmood, K. (2012). Eating disorders in medical students of Karachi, Pakistan-a cross-sectional study. *BMC Research Notes*, 5, 84.
- 14) Sánchez-Armass, O., Drumond-Andrade, F. C., Wiley, A. R., Raffaelli, M., & Aradillas-García, C. (2012). Evaluation of the psychometric performance of the SCOFF questionnaire in a Mexican young adult sample. *Salud Pública de México*, 54, 375–382.
- 15) Striegel-Moore, R. H., Rosselli, F., Perrin, N., DeBar, L., Wilson, G. T., May, A., & Kraemer, H. C. (2009). Gender difference in the prevalence of eating disorder symptoms. *The International journal of eating disorders*, 42(5), 471–474.
- 16) Goyal, R. K., Shah, V. N., Saboo, B. D., Phatak, S. R., Shah, N. N., & Gohel, M. C., et al. (2010). Prevalence of overweight and obesity in Indian adolescent school going children: Its relationship with socioeconomic status and associated lifestyle factors. *The Journal of Association of Physicians India*, 58, 151–158.
- 17) Swanson, S. A., Crow, S. J., Le Grange, D., Swendsen, J., & Merikangas, K. R. (2011). Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry*, 68(7), 714–723.
- 18) Palma-Coca, O., Hernández-Serrato, M. I., Villalobos-Hernández, A., Unikel-Santoncini, C., Olaiz-Fernández, G., & Bojorquez-Chapela, I. (2011). Association of socioeconomic status, problem behaviors, and disordered eating in Mexican adolescents: Results of the Mexican National Health and Nutrition Survey 2006. *Journal of Adolescent Health*, 49(4), 400–406.
- 19) Shaikh, M. A., & Kayani, A. (2014). Detection of eating disorders in 16–20 year old female students—perspective from Islamabad, Pakistan. *Journal of Pakistan Medical Association*, 64(3), 334–336.
- 20) Vetri Selvan, T., Lalitha, D., Hiremath, C. H., & Ghattargi, J. B. (2015). A cross sectional study on eating disorders among college students in Bagalkot city. *Medica Innovativa*, 4(1), 1–8.
- 21) Upadhyah, A., Misra, R., Parchwani, D., & Maheria (2014). Prevalence and risk factors for eating disorders in Indian adolescent females. *National Journal of Physiology, Pharmacy and Pharmacology*, 4, 143–147.
- 22) Erzegovesi S, Bellodi L. Eating disorders. *CNS Spectr*. 2016 Aug;21(4):304-9. doi: 10.1017/S1092852916000304. Epub 2016 Jun 20. PMID: 27319605.
- 23) Guerdjikova AI, Mori N, Casuto LS, McElroy SL. Binge Eating Disorder. *Psychiatr Clin North Am*. 2017 Jun;40(2):255-266. doi: 10.1016/j.psc.2017.01.003. Epub 2017 Mar 6. PMID: 28477651.
- 24) Gravina G, Milano W, Nebbiai G, Piccione C, Capasso A. Medical Complications in Anorexia and Bulimia Nervosa. *Endocr Metab Immune Disord Drug Targets*. 2018;18(5):477-488. doi: 10.2174/1871530318666180531094508. PMID: 29848283.
- 25) Vaidyanathan S, Kuppli PP, Menon V. Eating Disorders: An Overview of Indian Research. *Indian J Psychol Med*. 2019 Jul-Aug;41(4):311-317. doi: 10.4103/IJPSYM.IJPSYM_461_18. PMID: 31391662; PMCID: PMC6657488.
- 26) Noma S, Nakai Y, Hamagaki S, Uehara M, Hayashi A, Hayashi T. Comparison between the SCOFF Questionnaire and the Eating Attitudes Test in patients with eating disorders. *Int J Psychiatry Clin Pract*. 2006;10(1):27-32. doi: 10.1080/13651500500305275. PMID: 24926765.
- 27) Garner, D., & Garfinkel, P. (1979). The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, 9(2), 273-279. doi:10.1017/S0033291700030762