Srp Arh Celok Lek. 2010 May-Jun;138(5-6):328-332
ОРИГИНАЛНИ РАД / ORIGINAL ARTICLE
DOI: 10.2298/SARH1006328K
UDC: 616.89-008.441.42-07

Presence of Different Forms of Compensatory Behaviours among Eating Disordered Patients

Olga Kontić[1], Nadja Vasiljević[1], Jagoda Jorga[1], Miroslava Jašović-Gašić[2], Aneta Lakić[2], Aleksandra Arsić[2]

[1]Nutrition Counseling Department, Institute of Hygiene and Medical Ecology, School of Medicine, University of Belgrade, Belgrade, Serbia;
[2]Institute of Psychiatry, Clinical Centre of Serbia, Belgrade, Serbia

SUMMARY

Introduction Eating disorders indicate unhealthy habits in nutrition and/or behaviour in the feeding and maintaining of body weight. The main characteristic of these diseases is changed behaviour in nutrition, either as an intentional restriction of food, namely extreme dieting or overeating, i.e. binge eating. Extreme dieting, skipping meals, self-induced vomiting, excessive exercise, and misuse of laxatives and diuretics for the purpose of maintaining or reducing body weight are the forms of compensatory behaviour.

Objective The purpose of the present research was to determine the presence of different inappropriate compensatory behaviours among eating disordered patients.

Methods The experimental group included 35 female eating disordered patients of 23.02±3.46 years on average, with anorexia or bulimia nervosa. The control group consisted of 70 girls aged 23.1±3.0 years on average. Each participant completed a "24-hour Recall Questionnaire" and the "Eating Disorder Diagnostic Scale".

Results A high statistically significant difference existed in the presence of all compensatory behaviours in the experimental and control group, regarding vomiting (χ^2=40.6; p<0.001), misuse of laxatives and diuretics (χ^2=33.7; p<0.001), extreme dieting (χ^2=23.4; p<0.001) and excessive exercising (χ^2=27.1; p<0.001).

Conclusion Eating disordered patients showed a significantly higher incidence of all evaluated forms of compensatory behaviour in comparison with the control group. This report confirms the presence of specific symptomatology of anorexia and bulimia patients.

Keywords: anorexia nervosa; bulimia nervosa; compensatory behaviour

INTRODUCTION

Eating disorders have been classified under psychiatric disorders and, are on the DSM-IV of diseases (Diagnostic and Statistical Manual of Mental Disorders) [1]. They represent unhealthy habits in nutrition and/or behaviour in feeding and maintaining body weight. Anorexia nervosa (AN) and bulimia nervosa (BN) are two best known eating disorders, which make a significant source of psychiatric morbidity and are an important social medical and economic problem, as well as urgent general health problem of the modern world [1, 2, 3].

The main characteristic of these diseases is changed behaviour in nutrition, either as an intentional restriction of food, i.e. extreme dieting or overeating, i.e. binge eating. Extreme dieting, skipping meals, self-induced vomiting, excessive exercise, and misuse of laxatives and diuretics for the purpose of maintaining or reducing body weight are the forms of compensatory behaviour.

Eating behaviour in persons with anorexia is very different. It involves the restriction of energetic input, but even 39% maintain a satisfactory quality of food selection, i.e. the nutritive input value. Among 61% of those whose nutrition is energetically and qualitatively unsatisfactory, there is the presence of a great number of different unhealthy habits, so that nutritive rehabilitation is necessary. The behaviour of persons with bulimia is characterised by „binges"i.e. overeating several times a week, which the patient cannot control, while there is a strong fear of gaining weight, so that the person tries to do everything to maintain the desired weight.

Because of the multifactoral nature of these illnesses, as well as co-morbidity with other psychiatric disorders, a detailed psychiatric observation is recommended in order to obtain an adequate strategic treatment. Early recognition of the disease and its treatment bring the best results [1-4].

OBJECTIVE

The aim of this study was to determine the presence of various inappropriate compensatory behaviours among eating disordered patients compared to healthy persons.

METHODS

The research included 105 female of average age 23.0±3.1 years. They were divided into two main

Correspondence to:
Olga KONTIĆ
Institute of Hygiene and Medical Ecology
Medical Faculty
Kneza od Semberije 2
11000 Belgrade, Serbia
okontic@ptt.rs

groups: the experimental and the control group. The experimental group consisted of 35 patients with eating disorders, treated at the Institute of Psychiatry, Clinical Centre of Serbia, Belgrade, and at the Nutrition Counseling Department, School of Medicine, University of Belgrade, in the period from 1997 to 2005. The patients from this main group were divided into two subgroups depending on psychiatric diagnosis. The first subgroup consisted of 20 AN patients and the second subgroup consisted of 15 BN patients.

The including criteria for the research were: gender (female) as the pathology of eating disorders is much more indicated in females [1, 2, 5, 6], age (16 to 29), aiming at covering the most vulnerable period in which disorders appear most frequently [7, 8], and the patients in the experimental group who fulfilled all DSM IV diagnostic criteria for eating disorder [1, 3, 4], and eating disorder previously diagnosed by a psychiatrist.

The excluding criteria were: age younger than 16 and older than 29, existence of any other primary illness (diabetes, cardiovascular, renal, liver, etc. diseases) considering that nature and manner of treatment could significantly influence changes of the usual behaviour and the way of nutrition; and examinees who did not fill the questionnaires in full.

The control group consisted of 70 girls aged 23.1±3.0 on average, students of the High Medical School in Belgrade and students of School of Medicine, University of Belgrade, who denied having any type of eating disorder or who never asked for help from psychologists or psychiatrists.

Examination protocol

The examination protocol included: illness history data, a "24-hour Recall Questionnaire" and the "Eating Disorder Diagnostic Scale", nutritional status assessment, data analysis and statistical processing.

The illness history data were obtained by a standard anamnestic questionnaire, in a direct contact with examinees. The retrospective method "24-hour Recall Questionnaire" was used for the assessment of nutritional intake, which was based on the memories of the examined person on the amount, type and manner of preparing food, consumed in the previous 24 hours [9]. The second instrument was the "Eating Disorder Diagnostic Scale", a most widely used instrument in the diagnosis of eating disorders, which is applied in the assessment of symptoms, behaviour and eating disorder psychopathology [1, 10, 11].

The nutritional status was defined by anthropometric examination according to the WHO recommendations. Measures taken from all participants were: body height (BH) in centimetres measured in the morning, only wearing underwear, by using an anthropometry; a body weighing scale (BW) in kilograms that measured using the medical decimal scale with a movable weighing scale (precision ±100 g). Based on these parameters the body mass index (BMI) was calculated [12].

The data analysis was performed by the SPSS program, version 17. The chi-square (χ^2) test, Pearson's correlation test and analysis of variance (ANOVA) were used. P values were determined by the Student's t-test, where $p<0.001$ indicated the presence of a highly statistically significant differences, p values <0.05 indicated the presence of statistically significant differences, and p values >0.05 indicated that there was no statistically significant difference.

RESULTS

AN and BN patients differed in BW (t=4.0; p<0,001) and BMI (t=4.5; p<0.001). The AN patients differed from the control group in BH (t=4.2; p<0.001), BW (t=6.7; p<0.001) and BMI (t=5.5; p<0.001); the greatest difference was found in BW which was lower among the AN patients by Δ=14.4 kg. The BN patients differed from the control group by BH (t=2.8; p<0.05) and BW (t=2,2; p<0.05), but not by BMI (t=1.4; p>0.05), (Table 1).

According to the "24 hour Recall Questionnaire", a high statistically significant difference was found in the total daily caloric intake between AN and BN patients (F=42.3; p<0.001), with average daily intake significantly higher among the BN patients (Δ=2314.7 kcal/day). The AN patients consumed on average Δ=558.5 less calories per day compared to the control group (F=34.5; p<0.001). The BN patients consumed on average Δ=1756.2 more calories per day compared to the control group (F= 69.7; p<0.001), (Table 2).

A high statistically significant difference existed in the presence of all compensatory behaviours between the patients in the experimental group and the control group, regarding vomiting (χ^2=40.6; p<0.001), misuse of laxatives and diuretics (χ^2= 33.7; p<0.001), extreme dieting (χ^2=23.4; p<0.001) and excessive exercising (χ^2=27.1; p<0.001). A statistically significant difference existed among AN and

Table 2. Average, minimum and maximal values of total daily caloric intake (kcal/day)

Group (subgroup)	N	$\bar{X}$	SD	Min	Max
Subgroup AN	20	1081.8	283.2	526.4	1559.7
Subgroup BN	15	3396.5	156.6	655.3	6289.3
Control group	70	1640.3	396.8	1072.8	2793.8

Table 1. Basic anthropometric and other characteristics of the two investigated groups

Variable	$\bar{X}$±SD			p		
	Subgroup AN	Subgroup BN	Control group	Subgroup AN/ control group	Subgroup BN/ control group	Subgroup AN/ subgroup BN
Age (years)	22.6±3.4	23.3±6.5	23.1±3.0	>0.05	>0.05	>0.05
Body height (cm)	162.5±6.6	163.4±6.5	168.2±5.8	<0.001	<0.05	>0.05
Body weight (kg)	44.0 ± 3.4	53.8±10.3	58.5±6.7	<0.001	<0.05	<0.001
BMI (kg/m^2)	16.8 ± 0.8	19.8±2.7	20.7±2.2	<0.001	>0.05	<0.001

Table 3. Frequency distribution of compensatory behaviour during a week in AN and BN subgroups (number of patients)

Compensatory behaviour	Subgroup	Frequency (times a week)					p
		0	1-3	4-5	6-9	10-14	
Vomiting	AN	15 (75.0%)	3 (15.0%)	1 (5.0%)	0	1 (5.0%)	0.002
	BN	3 (20.0%)	5 (33.3%)	3 (20.0%)	1 (6.7%)	3 (20.0%)	
Laxatives and diuretics	AN	14 (70.0%)	5 (25.0%)	1 (5.0%)	0	0	0.044
	BN	5 (33.3%)	6 (40.0%)	3 (20.0%)	1 (6.7%)	0	
Extreme dieting	AN	6 (30.0%)	7 (35.0%)	3 (15.0%)	3 (15.0%)	1 (5.0%)	0.486
	BN	7 (46.6%)	4 (26.6%)	2 (13.3%)	1 (6.6%)	1 (6.6%)	
Excessive exercise	AN	5 (25.0%)	11 (55.0%)	2 (10.0%)	2 (10.0%)	0	0.019
	BN	10 (66.6%)	4 (26.6%)	1 (6.6%)	0	0	

BN patients in the number of those who were vomiting and those who were not (χ^2=10.4; p<0.05), in the misuse of laxatives and diuretics (χ^2=4.5; p<0.05), excessive exercises (χ^2=0.5; p<0.05), but not in extreme dieting (χ^2=6.1; p>0.05). In the AN subgroup, the most frequent form of compensatory behaviour was excessive exercising done by 75.0% of patients, usually once to three times a week. The next most common compensatory behaviour was extreme dieting which occurred in 70% of AN patients, usually once to three times a week (Table 3).

Among the BN patients, the most frequent forms of compensatory behaviour were vomiting (80%) and misuse of laxatives and diuretics (66.7%) most frequently used once to three times a week. The analysis of the frequency of compensatory behaviours during a week showed that all compensatory behaviours emerged usually once to three times a week notwithstanding the diagnosis (Table 3).

There was no a statistically significant difference among AN and BN patients in the prevalence of associated forms of compensatory behaviour (χ^2=1.0; p>0.05). Sixty-five percent of AN patients and 73.3 % of BN patients stated using at least two to maximum four different associated forms of compensatory behaviour (Table 4).

The majority (55%) of AN patients engaged in excessive exercise and extreme dieting as two most frequent forms of compensatory behaviour, which usually occurred once to three times a week. The majority (60%) of BN patients reported 3-4 different associated inappropriate compensatory behaviours, usually self-induced vomiting, misuse of laxatives and diuretics and extreme dieting (Tables 3 and 4).

The Pearson's correlation test showed that in our sample there was not a statistically significant linear correlation between BMI and the frequency of any form of compensatory behaviour. There was no correlation between vomiting and BMI (r=0.7; p>0.05), between misuse of laxatives and diuretics and BMI (r=0.4; p>0.05), between extreme dieting and BMI (r=0.5; p>0.05), and between excessive exercise and BMI (r=0.8; p>0.05).

Table 4. Prevalence of different associated compensatory behaviours (number of patients)

Number of established forms of compensatory behaviour	Subgroup AN	Subgroup BN
1	7 (35.0%)	4 (26.7%)
2	4 (20.0%)	2 (13.3%)
3	4 (20.0%)	5 (33.3%)
4	5 (25.0%)	4 (26.7%)

DISCUSSION

Numerous investigations have shown that AN patients obtain considerably less calories daily compared to the healthy persons in the control group [1, 13, 14, 15]. This kind of energetic deficiency is caused by the fear of gaining weight, which is the basic characteristic of this disease. The results of the present study showed that AN patients had an average daily intake of 1081.5 kcal, i.e. 558.5 kcal less than the persons in the control group, which corresponded to the results of other investigators [14].

Beside lower caloric intake, AN patients often state the occurrence of many other compensatory behaviours in order to maintain or reduce weight. Our study showed that extreme dieting with or without excessive exercise was the dominant type of compensatory behaviour, though 30% of patients stated misuse of laxatives and diuretics and 25% the use of all examined compensatory behaviours.

Such a result confirms the claim of other investigators who noticed that 8% to 62% patients primarily diagnosed with AN obtained bulimic symptoms in the first 5 years of illness [15].

International references quote the misuse of laxatives in about 30–50% of patients with eating disorders regardless of the type of disease [16, 17] which was confirmed in the present sample as well.

Bulimia is associated with chaotic behaviour in nutrition and the most evident behaviour is binge eating. According to the DSM-IV diagnostic criteria for BN, binges followed by compensatory behaviour which occurs on average minimally twice a week over the last three months [1, 3, 4]. They are characterized by the loss of control which is followed by anxiety and great quantities of food consumption [1-4, 18]. Bulimia patients consumed more calories daily i.e. during a binge in comparison to the persons in the control group. The measure of binges differs from extremely small, a few hundred calories to several thousand calories. According to the American Psychiatric Association it is considered that the average binge consists of about 1500 kcal responding to the quantity of two meals [1], while the binges followed by the loss of control and high disinhibition can be much higher, approximately 3400-4800 calories per episode, which is shown in the present sample as well [1, 19, 20].

The bulimia patients had the average daily intake in considerably more calories than the persons in the control group (Δ= 1756.2 kcal /daily). Sixty percent of BN patients

doi: 10.2298/SARH1006328K

had a daily intake of more than 3000 kcal and most of them (80%) stated vomiting as the most frequent form of compensatory behaviour after binges. Vomiting usually occurred once to three times a week, though 46.7% vomited more often and 20% vomited twice a day.

BN patients often show a variety of much different associated bizarre behaviour for the purpose of reducing or maintaining weight. The combination of two or more compensatory behaviours, observed in our sample too, is the characteristic of severe forms of this disease, associated with serious psychopathological comorbidities when psychiatric treatment is necessary [1, 3, 4, 21, 22, 23].

CONCLUSION

In our study the eating disordered patients showed a significantly higher incidence of all examined forms of compensatory behaviour in comparison with the control group. This report confirms the presence of specific symptomatology of anorexia and bulimia patients.

ACKNOWLEDGEMENT

This article is a part of a wider research project that formed the basis of a master's thesis (Olga Kontić, 2007).

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Учесталост различитих облика компензаторног понашања међу особама оболелим од поремећаја исхране

Олга Контић[1], Нађа Васиљевић[1], Јагода Јорга[1], Мирослава Јашовић-Гашић[2], Анета Лакић[2], Александра Арсић[2]

[1]Саветовалиште за исхрану, Институт за хигијену и медицинску екологију, Медицински факултет, Универзитет у Београду, Београд, Србија;
[2]Институт за психијатрију, Клинички центар Србије, Београд, Србија

КРАТАК САДРЖАЈ

Увод Поремећаји исхране означавају нездраве навике и понашања у исхрани и одржавању телесне тежине. Главна одлика ових болести је измењено понашање у исхрани, било као намерна рестрикција хране (гладовање) или као преједање (бингови). Гладовање, „прескакање" оброка, самопровоцирано повраћање, претерано вежбање и злоупотреба лаксатива и диуретика ради одржавања или смањења телесне тежине чине компензаторне облике понашања.

Циљ рада Циљ рада је био да се испита учесталост различитих облика компензаторног понашања међу особама оболелим од поремећаја исхране.

Методе рада Експерименталну групу је чинило 35 особа женског пола просечног узраста од 23,02±3,46 година оболелим од поремећаја исхране, анорексије или булимије нервозе. Контролну групу је чинило 70 жена просечне старости од 23,10±3,04 године. За процену исхране примењена је двадесетчетворочасовна Анкета исхране, а за процену психопатологије поремећаја исхране коришћена је Дијагностичка скала поремећаја исхране.

Резултати Високо статистички значајна разлика између експерименталне и контролне групе забележена је за све испитиване облике компензаторног понашања: повраћања (χ^2=40,6; p<0,001), злоупотребе лаксатива и диуретика (χ^2=33,7; p<0,001), гладовања (χ^2=23,4; p<0,001) и претераног вежбања (χ^2=27,1; p<0,001).

Закључак Код испитаница оболелих од поремећаја исхране била је значајно већа учесталост свих испитиваних компензаторних облика понашања у поређењу с испитаницама контролне групе. Овај рад потврђује да се код особа оболелих од анорексије и булимије нервозе јављају специфични симптоми обољења.

Кључне речи: анорексија; булимија; компензаторни облици понашања

Примљен • Received: 21/04/2009 **Прихваћен • Accepted:** 20/07/2009

doi: 10.2298/SARH1006328K