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Family environment and risk of having health college students developing eating disorders

Ambiente familiar e risco de transtorno alimentar entre universitários da área de saúde

Abstract

Objective: Investigating the association between Health students' family environment and behaviors suggesting the risk of developing eating disorders. *Methods:* Descriptive cross-sectional study with quantitative approach. Data were collected with an instrument that was divided into three parts: anthropometric and identification data, aspects linked to eating disorders (Eating Attitudes test - Test-EAT-26) and environmental aspects (Family Environment scale). *Results:* the desire to lose weight was reported by students enrolled in all courses, although these students were healthy, according to their body mass index (22.75 kg/m²). Based on the EAT-26 distribution, 16% of the sample showed positive risk of developing eating disorders. The highest positive EAT-26 rates were recorded for Nursing students (27%), whereas the lowest rates were observed in medical students (10%). however, there was not significant difference between courses (p = 0.204). The comparative analysis between EAT-26 and family environment was a pioneer strategy adopted in this type of study and it showed that only domain "Conflict" was significantly associated with EAT-26 (p = 0.008). This outcome indicates that eating disorders are associated with conflicting families. *Conclusion:* The study highlighted the need

of including the evaluation of eating disorder behaviors and the family environment scale in health promotion actions focused on vulnerable groups at risk to develop eating disorders.

Keywords: Interpersonal Relationships. Eating Disorders. Health Science Courses. Students.

Resumo

Objetivo: Investigar, em estudantes da área de Saúde, a associação entre comportamentos sugestivos de risco para transtorno alimentar e ambiente familiar. *Métodos:* Trata-se de estudo descritivo, transversal, com abordagem quantitativa. A coleta de dados foi realizada a partir de um instrumento dividido em três partes: dados de identificação e antropométricos; aspectos ligados ao transtorno alimentar com o Teste de Atitudes Alimentares (*Eating Attitudes Test* – EAT-26) e aspectos ligados ao ambiente familiar pela Escala de Ambiente Familiar. *Resultados:* Observou-se desejo de perda de peso por parte dos estudantes de todos os cursos, apesar de estarem saudáveis, de acordo com o índice de massa corporal médio (22,75kg/m²). Na distribuição do EAT-26, 16% da amostra apresentou risco positivo para transtorno alimentar. Maiores índices de EAT-26 positivos foram encontrados nos acadêmicos da enfermagem, com 27%, enquanto os menores percentuais foram observados nos estudantes de Medicina (10%); não houve, entretanto, diferença significativa entre os cursos (p=0,204). A análise comparativa entre EAT-26 e ambiente familiar foi pioneira neste tipo de estudo e demonstrou que apenas o domínio "Conflito" foi significativamente associado ao EAT-26 (p=0.008), indicando que a presença de transtorno alimentar está associada a famílias mais conflituosas. *Conclusão:* O estudo evidenciou a necessidade de se incluir avaliação de comportamentos para transtorno alimentar e escala de ambiente familiar nas ações de promoção da saúde em grupos vulneráveis ao desenvolvimento de transtornos alimentares.

Palavras-chave: Transtorno Alimentar. Cursos em Ciências da Saúde. Estudantes.

INTRODUCTION

Eating Disorders (ED) are multifactorial etiology-psychiatric disorders characterized by extremely disturbed consumption, attitudes and eating patterns, as well as by excessive concern with body weight and shape.[1]

Groups whose professional activities are associated with excessive concern with the body, such as athletes, models, actresses and dieticians, stand out among the ones at the highest risk of developing EDs. College students enrolled in courses such as Physical Education and Nutrition deserve special attention. Abnormal eating habits also act as students' motivation for joining these courses; other scholars have already stated that first-year students are overall at higher risk of developing EDs.[2,3]

College students in the Health field are more susceptible to develop EDs. According to estimates, college students show 20% bulimia prevalence and approximately 90% of this population can show symptoms of binge eating disorder. Female college students are more likely to acquire inadequate eating habits, and to develop EDs, mainly because they present higher obesity incidence and greater desire to lose weight than men.[4]

Thus, it is essential identifying risk behaviors associated with EDs at their initial stages. These behaviors can be tracked through the adoption of validated and specific instruments such as the Eating Attitudes Test (EAT-26)[5] in order to enable the application of effective intervention and prevention strategies to the target population.

Although EDs have multifactorial etiology, family dynamics has strong impact on them.[6] According to Moos and Moos,[7] the family environment affects family members and their adaptation to different situations. Thus, the whole family environment is likely to be affected, whenever a family member experiences an emotional or behavioral disorder.

Interpersonal relationships have been used as a significant unit of analysis in human development research, because they are strongly associated with the way individuals treat and relate to other people, and with the quality of these relationships. The association of interpersonal relationships with academic success, and with psychological well-being, is translated into lack, or reduced frequency, of psychopathological indicators such as eating disorders.[8,9]

Espíndola & Blay[10] have pointed out that the interpersonal relationships of this population are remarkably distant and superficial, as well as marked by guilt and shame, and by the feeling of rejection attributed to the poor physical shape of these individuals. It is possible perceiving their discomfort in being close to people, besides their increased arguments and reduced communication. According to the aforementioned authors, fa-

mily relationships become compromised when a family member has an eating disorder because it leads to less communication among its members. The concern and difficulty faced by college students in meeting their parents' expectations is another stressor. Different instruments are used to assess family aspects; among them, one finds the Family Environment Scale (FES).[7]

According to Espíndola & Blay,[10] the dimension "Interpersonal Relationships" is quite sensitive in the lives of people with EDs. They avoid having close and intimate contact with other people; consequently, their relationships tend to be more superficial and ED symptoms are perpetuated in silence; sometimes, they even remain secret. Interpersonal difficulties faced by adolescents at a certain frequency should not be seen as merely circumstantial, or as typical aspects of their normal development process, but rather as behaviors with potential clinical significance.[8]

Thus, it is essential analyzing variables that specifically contribute to the quality of students' interpersonal relationships, since people who have difficulties in establishing, and in maintaining, interpersonal and affective relationships tend to have difficulties in social and affective interactions. These difficulties may be associated with the predisposition, perpetuation and/or maintenance of psychopathological ED conditions.

College students in the Health field are vulnerable to ED development; thus, the investigation of aspects such as risk behaviors and family environment deserves special attention. The current study investigated the association between behaviors that might suggest the risk of developing ED and the family environment of college students in the Health field, with emphasis on the dimension "Interpersonal Relationship" and on its factors contributing to behaviors that might suggest EDs.

METHODS

The current cross-sectional and quantitative study was conducted with college students regularly enrolled in Biological Sciences, Physical Education, Nursing, Medicine and Nutrition courses offered by Centro de Ciências da Saúde (Center for Health Sciences) at Itaperi campus, Universidade Estadual do Ceará – UECE – (Ceará State University). Data about 1,574 students enrolled in the aforementioned courses were collected in 2012. Students were distributed as follows: Biological Sciences (n = 384), Physical Education (n = 408), Nursing (n = 271), Nutrition (n = 272) and Medicine (n = 239).

Inclusion criteria comprised young adult[11] (18-to-30 years old) students in the Health field enrolled in the aforementioned institution, who agreed to participate in the study

and who signed the informed consent form. Exclusion criteria comprised previously diagnosed ED, pregnant women and students enrolled in the last two semesters of the course (curricular internship).

Students were approached in their respective classrooms where they were introduced to, and invited to participated in, the study. The ones who agreed to participated in the research signed the free and informed consent form and informed their e-mail address to receive the questionnaire. There was not quantitative limit of adherence to the invitation and all those who expressed interest in participating in the study were accepted.

Data were collected via internet, through a Google Docs® questionnaire, which comprised identification and anthropometric data, the Eating Attitudes Test and the Family Environment Scale. General data such as age, enrollment year and marital status were included in the study. Anthropometric data comprised self-reported current and ideal weight and height.[12]

The Eating Attitudes Test (EAT-26) - a psychometric test comprising 26 multiple-choice questions whose answers range from "never" to "always" - was used to track ED symptoms.[5]

The Portuguese version of the Family Environment Scale (FES) - translated and validated by Vianna, Silva and Souza-Formigoni[13] - comprised 90 statements distributed in 10 different domains, namely: Cohesion, Expressiveness, Conflict, Independence, Assertiveness, Cultural and intellectual orientation, Recreation, Religiosity, Organization and Control. Questions were answered based on the concept of "true" or "false". Each answer was scored "zero" or "one" to indicate the absence or presence of the evaluated item, respectively. There was not cut-off point, and results were compared based on the greater or lesser number of points.

In order to evaluate FES results, the scale was distributed into 3 dimensions: a) Interpersonal relationship, which comprises 27 questions distributed into 3 domains: 1 - Cohesion; 2 - Expressiveness; 3 - Conflict; b) Personal growth, which comprises 45 questions distributed into 5 domains: 1 - Decision-making ability; 2 - Assertiveness; 3 - Intellectual interests; 4 - Leisure; 5 - Religion; and c) System maintenance, which comprises 18 questions distributed into 2 domains: 1 – Organization; and 2 - Control. Only items included in dimension "Interpersonal Relationship" were analyzed in the present study.

The questionnaire formulated in Google Docs® has generated an automatic tabulation in Excel® spreadsheet in order to preserve participants' confidentiality at data analysis time. The spreadsheet was exported to statistical analysis via SPSS version 2.0.

The chi-square test was used to compare the EAT results between courses. Spearman's correlation coefficient was used to evaluate the correlation between FES domains and EAT; significance level was set at $p < 0.05$.

The study was designed in compliance with Resolution n. 196/96 (BRASIL, 1996), which was in force at the time it was submitted to Comitê de Ética em Pesquisa com Seres Humanos da UECE (UECE Ethics Committee on Human Research). The project was approved under protocol number 10724749-6 (Annex A). All participants signed the free and informed consent form.

RESULTS

The study counted on 246 Health-field students, mostly (32%) on Nutrition students, as shown in Table 1. A dietician was the research representative, fact that may have influenced the higher adherence of Nutrition students. Most evaluated students were women (80.1%) and unmarried individuals (94.3%).

Table 1. Student distribution based on undergraduate course. Fortaleza, CE, 2016.

Course	N	%
Biological Sciences	44	18
Physical Education	60	24
Nursing	42	17
Medicine	21	9
Nutrition	79	32
Total	**246**	**100**

Students' mean age was 21.4 years (Table 2). According to BMI measurements, students enrolled in all evaluated courses were eutrophic (22.75 kg/m²) and Nutrition students presented the lowest mean BMI (21.55 kg/m²). It was possible seeing that the current weight of most students was above their desired weight, which showed that most of them wanted to lose weight.

Table 2. Comparison between means and standard deviation of age and anthropometric data on Health students (n = 246), based on undergraduate course. Fortaleza, CE, 2016..

Course		Age (years)	Current weight (Kg)	Desired weight (Kg)	Weight difference (Kg)	Height (m)	BMI (k/m2)
Biological Sciences	Mean	20.2	62.44	58.16	4.28	1.64	23.32
	SD	2.24	11.47	8.12	3.35	0.07	3.72
Physical Education	Mean	21.9	66.95	65.63	1.02	1.67	23.75
	SD	5.89	15.91	12.56	3.35	0.09	4.57
Nursing	Mean	22.1	60.77	58.13	2.64	1.63	22.92
	SD	4.36	8.53	7.25	1.28	0.07	1.64
Medicine	Mean	21.4	65.94	64.52	1.42	1.69	22.91
	SD	2.13	14.19	11.33	2.86	0.08	3.57
Nutrition	Mean	21.3	56.52	55.26	1.26	1.62	21.55
	SD	2.9	8.6	7.1	1.5	0.07	2.61
Total	**Mean**	**21.4**	**62.52**	**60.34**	**2.12**	**1.65**	**22.75**
	SD	**0.7**	**3.8**	**4.0**	**1.2**	**0.03**	**0.9**

BMI = body mass index calculated based on the following data: (real) weight and self-reported height.

Based on results of the EAT-26 questionnaire, 16% of the evaluated students presented positive risk of developing EDs (Table 3).

Table 3. Results of the *Eating Attitudes Test* – EAT-26[5]. Fortaleza, CE, 2016.

EAT-26	N	%	Mean score
Positive-risk behavior	39	16	29
Negative-risk behavior	207	84	10.68
Total	**246**	**100**	**-**

Based on Bighetti (2003).

Table 4 shows similar values among Biological Sciences, Physical Education and Nutrition courses, whose students presented 21% positive risk of developing EDs. Nursing students presented the highest eating disorder-development index (27%), whereas Medical students presented the lowest one (10%). However, there was not significant difference in EAT diagnosis between courses ($p = 0.204$).

Tabela 4. Comparison of *Eating Attitudes Test* results – EAT-26[5] – between students, based on undergraduate course. Fortaleza, CE, 2016..

Course	Positive Risk	%	Negative Risk	%
Ciências Biológicas	8	21	36	18
Educação Física	8	21	52	25
Enfermagem	11	21	31	15
Medicina	4	10	17	8
Nutrição	8	21	71	34
Total	**39**	**100**	**206**	**100**

Based on Bighetti (2003).

Among the herein evaluated FES domains (Table 5), "Conflict" (p = 0.008) was the only one presenting significant correlation to EAT-26; Medical students recorded the highest mean for this variable.

Table 5. Comparison between the means recorded for domains belonging to the Interpersonal Relationship dimension of the Family Environment Scale (EAF - Escala de Ambiente Familiar)[13] of the evaluated courses, based on results of the *Eating Attitudes Test* – EAT-26[5]. Fortaleza, CE, 2016.

Course	EAT-26	Cohesiveness	Expressiveness	Conflict
Biological Sciences	1 2	6.50 6.64	4.88 5.14	2.88 2.28
Physical Education	1 2	6.00 5.94	6.13 5.12	3.13 2.69
Nursing	1 2	6.73 6.23	5.54 5.29	2.27 1.74
Medicine	1 2	4.75 6.65	3.75 5.59	5.00 1.71
Nutrition	1 2	6.86 6.33	5.29 5.00	2.71 2.38
Total	**1** **2**	**6.34*** **6.30**	**5.32**** **5.14**	**2.95***** **2.29**

1 Based on Vianna, Silva and Souza-Formigoni[13] (2007); **2** Based on Bighetti[5] (2003).
Categories: 1 = Positive risk; and 2 = Negative risk. *(p=0.397); **(p=0.633); ***(p=0.008).

DISCUSSION

The desire to lose weight was reported by the evaluated students, even by those who presented adequate weight, according to the mean BMI (22.75 kg/m²). With respect to the EAT-26 distribution, 16% of the sample presented positive risk of developing EDs. Higher values were found in the study by Caram & Lazarine,[14] whose results showed that 24% of the 119 male and female students enrolled in Physical Education, Nutrition and Psychology courses at Universidade Paulista (Paulista University) presented positive risk of developing eating disorders. Batista et al.15 recorded similar results; they found that 26.5% of the undergraduate students enrolled in the Aesthetics course of a private higher education institution, and in Physical Education and Nutrition courses of a public higher education institution in Juiz de Fora County (MG), presented positive risk of developing eating disorders.

Nursing students evaluated in the current study presented the highest risk of developing EDs (27%). This outcome corroborates the study by Camargo,[4] who evaluated 468 Nutrition, Nursing and Medicine students from Botucatu County (SP) and recorded the highest EAT-26 positive index for Nursing students (23.2%).

Lower rates were recorded for Medical students (10%), who were less likely to develop eating disorders; however, there was not significant difference between courses. Alberton[16] has found equivalent results, in which 10% of the 391 male and female students enrolled in the Medical School of Universidade do Sul de Santa Catarina (Southern Santa Catarina University) presented risk of developing EDs, based on the EAT-26.

According to the comparison between the herein evaluated students and other medical students who used EAT-26, the current study recorded lower ED-development risk than the 32.1% found by Souza et al.[17] in a study conducted with students from Universidade Federal do Ceará (Federal University of Ceará), than the 28.3% recorded by Pinto et al.[18] for first and fourth-year students from PUC São Paulo, as well as than the 19.1% recorded by Bosi et al.[19] for students from Universidade Federal do Rio de Janeiro (Federal University of Rio de Janeiro).

National surveys about the eating behavior of college students overall refer to Nutrition and Physical Education students, who tend to face stronger pressure about their body shape. In most cases, Nutrition students record higher rates of ED behaviors, as seen in the study conducted by Gonçalves et al.,[2] who evaluated 227 male and female students and found that 14.1% of Nutrition students presented positive EAT, whereas Physical Education students presented lower index (10.3%). Caram & Lazarine[14] conducted a study with 119 male and female students enrolled in the first year of undergraduate courses. Based on results of the EAT-26 questionnaire, the highest incidence of eating disorders was recor-

ded for Nutrition students (33.3%), who were followed by Psychology (28.6%) and Physical Education (12.2%) students. The present study recorded similar values for Nutrition and Physical Education students (21%).

Health students present higher ED prevalence than college students in other academic fields. Laus et al.[3] have used the EAT-26 to compare the prevalence of eating disorders between students in the Health field and students in other academic fields. Based on their results, Health students recorded significantly higher rates - Nutrition (50%) and Physical Education (24%) – than Humanities' students - Publicity and Advertising (13%) and Business Administration (18%).

Similar results were observed by Vitolo et al.,[20] who used an instrument aimed at identifying periodic eating disorders to compare students from the Health field (Nutrition, Physical Education, Nursing, Psychology, Biology) to students from fields such as Exact Sciences (Mathematics, Engineering and Architecture) and Humanities (Arts and Literature, Journalism, Philosophy and Law); these students recorded 20.7%, 18.7% and 16.4% ED prevalence, respectively.

The comparison between EAT-26 results and FES data was a pioneering procedure adopted in the present study, since this direct association had not been previously investigated, fact that demonstrates the lack of studies associating the two scales.

Domains such as "Cohesion" and "Expressiveness" recorded the highest scores among the assessed students, and they were correlated to positive family aspects. The first domain was linked to greater help and mutual support among family members, whereas the second one was linked to the expression of feelings. Based on the FES validation study, Brazilian families showed stronger cohesion than functional families evaluated in 5 different international studies, which may be explained by cultural differences.[13]

"Conflict" referred to the degree of aggressiveness and open conflicts among family members. The incidence of issues was indicated by high scores in this domain and by low scores in the others. The present study recorded low scores for this domain. According to Vianna, Silva and Souza-Formigoni,[13] the low score shown by the "Conflict" domain recorded for Brazilian families, in comparison to families evaluated in international studies, can also derive from Brazilian cultural features. According to the aforementioned authors, the Brazilian social organization was strongly influenced by a hierarchical structure centered on an authoritarian paternal figure, until the mid-twentieth century. This profile could characterize a relatively repressive social environment, which may have contributed to inhibit aggressive behaviors and to avoid conflicts.

However, Medical students recorded high scores in this domain; their scores were higher than those of other students. This outcome showed that their families were more

conflicting. Medical students often face many hours of study, which includes several evaluations and a large number of complex subjects. Moreover, they have their practical activities in hospitals and health units, fact that puts them in contact with different diseases and with death. All these factors make students put aside their social life.[15]

The family life of these students may be affected, mainly in terms of affective communication, of the expression of positive and negative feelings and of conflict resolution. These college students often live far from their family members, consume considerable amounts of alcohol and cigarettes, do not follow healthy diets, do not exercise much, and present rapid emotional, physical and body image changes typical of this stage of life - all these factors could explain their higher exposure to health issues. Thus, it is worth emphasizing the impacts of college environment on students' lifestyle and, consequently, on the development of some diseases, such as eating disorders, in this stage of life.[4,21]

Only "Conflict" showed significant association with EAT-26 among the herein evaluated domains, and it was correlated to the incidence of EDs. Such significant association indicates that family members of Health students do not have good relationships to each other; thus, these families were mostly categorized as conflicting.

Adrian et al.[22] have highlighted the key role played by family in students' interpersonal problems and emotional dysregulation. Parents are the first socializing agents modulating children's emotional path; thus, individuals raised in harsh environments and in conflicting families have a range of emotional skill deficits. Based on results found by the aforementioned authors, "Conflict" was associated with non-suicidal self-injurious behavior in adolescent psychiatric hospital patients.

Cance et al.[23] have conducted a study with 848 students from Texas (USA); they applied FES to adolescents and to their mothers, and found that positive family relationships were inversely correlated to disordered eating attitudes, whereas family conflict and maternal psychological control generated attitudes associated with eating disorders in their children. It is worth highlighting that "Conflict" was also associated with family issues in the Brazilian validation study5, which corroborates the association in the present sample.

According to Kluck,[24] family environment plays a key role in preventing eating disorders and body dissatisfaction in women. She conducted a study with 268 female college students and found that daughters raised in families strongly concerned about physical appearance presented increased dissatisfaction with body image and bulimic symptoms.

The domain "Cohesion" presented the highest scores. Cohesive families can positively influence students' cognitive and emotional development. Overall, family functioning includes factors such as cohesion, harmony and the ability to deal with conflicting issues. These

factors can have strong impacts on children's experiences and life path, since they play a key role in their emotional development.[25]

CONCLUSION

The present study has shown significant association between family environment and behaviors linked to the risk of developing EDs. In addition, it has emphasized the importance of conducting this type of evaluation and further investigations with Health students in order to plan preventive actions and to minimize both the impacts on the health of students at risk of developing EDs and impacts associated with the professional practice of such individuals, since they can lead to disorders in the population treated by these future professionals.

The correlation between eating disorders and family environment has shown that students at positive risk of developing Eds were mostly raised in conflicting families. Thus, the current study has evidenced the need of including the assessment of eating disorder-development risks, and of family environment, in health promotion actions focused on these groups, since they are vulnerable to eating disorders. Such assessment would not only help better training these future professionals, but also encourage the development of preventive actions to help students accept their own body image.

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Contributors

Sampaio HAC participated in the study design, as well as in the writing of the manuscript and of its last version; Silva IA participated in the writing of the manuscript and of its last version; Parente NA participated in all stages of the study - from its design to the revision of the last version of the manuscript. Carioca AAF participated in data analysis and interpretation processes.

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