ORIGINAL ARTICLE

Eating Disorders in Healthcare Professionals : Prevalence of High-Risk Cases and Associated Factors

Troubles du comportement alimentaire chez les professionnels de la santé : prévalence des cas à haut risque et facteurs associés

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Abstract

Introduction: Eating disorders (EDs) are a growing concern among healthcare professionals, a population often exposed to high levels of stress. Despite their role in promoting health, the well-being of healthcare professionals themselves is sometimes overlooked. This study aimed to estimate the prevalence of healthcare professionals at high risk of EDs and to identify the associated factors.

Methods: A cross-sectional study was conducted among HCPs working at Hedi Chaker University Hospital in Sfax, Tunisia. To screen for HCPs at high risk of EDs, we used the validated French version of the Eating Attitude Test (EAT-26).

Results: Among the 370 HCPs included, females represented 74.6% of the sample (n=276). The median age was 30 years. The mean Body Mass Index (BMI) was 24.79±3.74 kg/m², and 151 cases (40.8%) were overweight or obese. The median EAT-26 score was 10, and 91 participants (24.6%) were at high risk of EDs. Multivariate analysis showed that factors independently associated with EDs were paramedical profession (Adjusted Odds Ratio (AOR) = 3.02; p<0.001), personal history of chronic illness (AOR = 2.17; p = 0.015), abnormal perception of body image (AOR = 1.99; p = 0.012), and exercising more than 60 minutes per day to control body shape (AOR = 5.69; p < 0.001).

Conclusion: These findings highlight the importance of identifying high-risk professionals. Early preventive measures should be established at the workplace to prevent EDs such as promoting work-life balance and reducing job-related stress, implementing training programs to raise awareness about eating disorders and encouraging physical activity and healthy eating habits in the workplace.

Keywords: healthcare professionals, eating disorders, associated factors, epidemiology

Résumé

Introduction : Les troubles du comportement alimentaire (TCA) sont des comportements alimentaires pathologiques de plus en plus fréquents dans le monde. Nos objectifs étaient d'estimer la prévalence des professionnels de la santé à haut risque de TCA et d'identifier les facteurs associés au risque de TCA chez notre population d'étude.

Méthodes : Étude transversale, réalisée durant la période Août–Novembre 2022, auprès des professionnels de santé (PS) exerçant au centre hospitalo-universitaire (CHU) Hedi Chaker de Sfax." Pour dépister les PS à haut risque de développer des TCA, nous avons opté pour le questionnaire Eating attitude test (EAT-26) dans sa version française validée.

Résultat : La médiane d'âge était de 30 ans (Intervalle interquartile (IQR)= [26-40]). Les femmes représentaient 74,6% de l'échantillon (n=276). La médiane du score EAT-26 calculé était de 10 (IQR= [5-19]) et 91 participants (24,6%) étaient à haut risque de développer des TCA.

Après une analyse multivariée par régression logistique binaire, les facteurs indépendamment associés aux TCA chez les PS étaient la profession paramédicale (Odds ratio ajusté (ORa=3,02 ; p <0,001), les antécédents personnels de maladie chronique (ORa=2,17 ; p=0,015), la perception anormale de l'image corporelle (ORa=2 ; p=0,012), ainsi que la pratique d'un exercice physique de plus de 60 minutes par jour dans le but de perdre du poids ou de contrôler sa silhouette (ORa = 5,69 ; p < 0,001).

Conclusion : L'étude a révélé une proportion préoccupante de sujets présentant un haut risque de troubles du comportement alimentaire, justifiant l'instauration de mesures préventives efficaces et précoces en milieu de travail afin d'en éviter les conséquences délétères notamment la promotion de l'équilibre entre vie professionnelle et vie personnelle, la réduction du stress lié au travail, la mise en place des programmes de sensibilisation aux troubles du comportement alimentaire et l'encouragement de l'activité physique ainsi que des habitudes alimentaires saines sur le lieu de travail."

Mots clés : professionnels de la santé, troubles du comportement alimentaire, facteurs associés, épidémiologie

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LA TUNISIE MEDICALE-2025; Vol 103 (11): 1649-1654 DOI: 10.62438/tunismed.v103i11.5516

Introduction

Eating disorders (EDs) represent a major concern as they lead to many psychiatric and somatic health complications that have a huge impact on the quality of life and increase mortality because of metabolic disorders and suicide (1,2). EDs are highly prevalent worldwide but unfortunately still under-estimated as persons affected by EDs symptoms are often unlikely to seek treatment (3). According to a systematic review examining data from 2000 to 2018 , the prevalence of all eating disorders in the general population was 8.4% in women and 2.2% in men (4). According to a study conducted in 2022 in Lebanon among students and health professionals of both sexes, the percentage of EDs was 22.5% (5). Available data are limited in Tunisia and the majority of studies have focused on medical students. According to a recent study carried out in Monastir, South East of Tunisia by Zrafi et al (1) evaluating Eds among medical students, the prevalence reached 48%.

Healthcare professionals (HCPs) have higher rates of psychiatric disorders due to the chronic stress and burnout to which they are exposed (6). These two factors, stress and burnout, are early warning indicators that lead to other psychiatric disorders such as anxiety disorders, addiction, depression, EDs and suicide (7). HCPs are also exposed to prolonged sleep restriction and circadian disruption during night shifts which can promote unhealthy eating habits and have a serious impact on their wellbeing (8,9). To our knowledge, this study is the first to examine EDs among health care professionals (HCPs) in Tunisia.

In this perspective, this study aimed to estimate the prevalence of HCPs at high risk of EDs and to identify their associated factors.

Methods

Study design and settings

This was a cross-sectional study, conducted over a period of 4 months: from August 2022 to November 2022, among HCPs working at Hedi Chaker University Hospital, Sfax city, Southern Tunisia.

Sampling procedures

A representative sample of HCPs from medical and paramedical staff working at the university hospital was randomly selected proportionally to the size of each professional category. The minimum sample size calculation was based on an anticipated prevalence of 17%, published in a previous study conducted among medical students in Lebanon (10), a confidence level of 95% and a 4% margin of error, giving a sample size of 338 subjects. An additional 10% was required to allow adjustment for some missing data. Finally, from an exhaustive list of all eligible HCP, 370 participants were randomly recruited.

Study population and inclusion criteria

All HCPs including medical doctors, interns, residents, seniors, nurses, anesthetists, instrumentalists, physiotherapists, and health technicians were eligible for the study. HCP who refused to participate, those who were mentally unable to complete the questionnaires, as well as trainees and subjects with known eating disorders, whether treated or not were not included. We excluded those who did not return the questionnaire and those who gave incomplete responses or missing data.

Data collection

The study was conducted as follows: data were collected by means of a self-administered paper questionnaire, including questions on socio-demographic characteristics, personal and family history, EAT-26, exercise and sleep habits, exposure to recent stress, as well as position and number of shifts per week. An explanatory note for participants was appended to the questionnaire. We took the time to explain to the participants who agreed to take part in the survey the interest and purpose of this study and to ask them to complete a questionnaire. Each participant was then weighed and measured by the investigating doctor to calculate their body mass index (BMI). This was defined as the ratio of weight (P) in kg to the square of height (T) in meters.

We classified each participant based on their self-reported physical activity levels, using specific examples according to the international classification to define each intensity level. For low-intensity activity, examples included activities such as light walking or household chores. Moderate-intensity activities were defined as exercises like brisk walking or cycling, while high-intensity activities included vigorous exercises such as running or intense aerobic workouts.

To screen for EDs, we opted for the Eating Attitude Test (EAT-26) in its validated French version (11). EAT-26 is a self-report measure composed of 26 items and responders were asked to rate their answers on a 6-point Likert scale (always = 3, usually = 2, often = 1, sometimes, rarely, and never = 0 for items 1–25, and the reverse direction of scoring order for item 26). On the section B of the questionnaire, there were five eating behavior questions about eating binges episodes, vomiting for weight or shape control, use of laxatives, diet pills, or diuretics for weight or shape control, exercise >60 min/day for weight loss or control and loss of 20 lbs (9Kg) or more over the last 6 months

Responses to the items were added up and a score was calculated with extremes of 0 to 78. A total score of 20 or more on the EAT-26 indicated that the participant was at risk of developing an eating disorder (12,13). Participants who obtained a score of 20 or more on the EAT-26 and who selected one of the 5 additional questions on disordered eating behaviours during the last 6 months were eligible for further management by a specialist for a possible complementary assessment (13).

Statistical analysis

Data entry was performed using SPSS.20 software. For continuous variables, we calculated the means and standard deviations in case of Gaussian distribution. In the case of a non-Gaussian distribution, medians and interquartile intervals (IQR) were calculated. For the categorical variables, we calculated the frequencies and the percentages. The comparison of frequencies on independent series was done by the Pearson's chi-square test or Fisher's exact test if the conditions of validity were not met. The results of the risk associated with EDs were expressed by the Crude Odds Ratio (COR) with their 95% confidence intervals using the univariate univariate logistic regression method. To compare the means for independent samples, we opted for the student's t-test for variables with a Gaussian distribution, and for non-Gaussian variables, we opted for non-parametric statistical tests. We opted for a multivariate analysis by binary logistic regression analysis (Adjusted odds ratio (AOR), 95% CI) to identify independent factors of EDs. A p value <0.05 was statistically significant.

Results

Among 370 HCPs included in this study. The sex ratio (male/female) was 0.34. The median age was 30 years (IQR= [26-40]). The mean Body Mass Index (BMI) was 24.79±3.74 kg/m^2 and 151 cases (40.8%) were overweighted or obese. Two hundred and forty-seven (66.8%) participants practiced physical activity (Table 1). The responses of the HCPs on the 5 additional eating behavior questions are summarized in Table 2.

Table 2. Distribution of HCPs based on responses to the eating behavior questions

Questions	Answers	N (%)
Eating binges episodes	Never	295 (79,7)
	≤ Once per month	34 (9,2)
	Once a week	21 (5,7)
	2–6 times a week	10 (2,7)
	≥ Once a day	10 (2,7)
Vomiting for weight or shape control	Never	335 (90,5)
	≤ Once per month	11 (3)
	Once a week	14 (3,8)
	2–6 times a week	4 (1,1)
	≥ Once a day	6 (1,6)
Use of laxatives, diet pills, or diuretics for weight or shape control	Never	338 (91,4)
	≤ Once per month	9(2,4)
	Once a week	10 (2,7)
	2–6 times a week	7 (1,9)
	≥ Once a day	6 (1,6)
Exercise >60 min/day for weight loss or control weight	Never	284 (76,8)
	≤ Once per month	27 (7,3)
	Once a week	21 (5,7)
	2–6 times a week	31 (8,4)
	≥ Once a day	7 (1,9)
Weight loss ≥20 lbs (9 kg)	Yes	359 (97)
	No	11 (3)

N: Number; **%**: percentage

Table 1. Epidemiological and clinical characteristics of HCP

		Number	%
Sex	Male	94	25.4
	Female	276	74.6
Age groups	≥ 35 years	253	68.4
	< 35 years	117	31.6
Living situation	With family	324	87.6
	Alone	28	7.6
	With friends	18	4.9
Marital status	Married	194	52.4
	Engaged	33	8.9
	Single	134	36.2
	Divorced	9	2.4
Having children		169	45.7
Professional category	Medical	164	44.3
	paramedical	206	55.7
Occupation	Interns	51	13.8
	Residents	79	21.4
	Seniors	28	7.6
	Nurses	90	24.3
	Anesthetists	14	3.8
	Instrumentalists	7	1.9
	Others*	101	27.3
Number of years of work	< 10 years	242	65.4
	≥ 10 years	128	34.6
Nightshifts	>1 nightshift/week	89	24.1
	1 nightshift/week	281	75.9
Physical activity	Low-intensity	232	62.7
	Moderate-intensity	55	14.9
	High-intensity	32	8.6
Sleep duration	<5 hours	25	6.8
	5-8 hours	325	87.8
	>8 hours	20	5.4
Presence of recent stressors Currently		191	51.6
Smoking		42	11.4
Alcohol consumption		14	3.8
Chronic disease*		63	17
Followed by psychiatrist		59	15.9
under psychiatric medication		16	4.3
family history of other mental health disease		50	13.5
Family history of eating disorders		46	12.4
Weight status	Underweight	8	2.2
	Normal	211	57
	Overweight	114	30.7
	Obese	37	10
Weight variation during adulthood	<25kg	347	93.8
	≥25kg	23	6.2
Perception	Normal	252	68.1
	Thin	28	7.6
	obese	90	24.3
Satisfaction about weight	Want to reduce weight	173	46.8
	Satisfied	165	44.6
	Want to gain weight	32	8.6

N: Number ;**%**: percentage
*Others: physiotherapists, nutritionists, pharmacists.
*Chronic disease: diabetes, hypertension, dyslipidemia, chronic arthralgia.

The median value of the calculated EAT-26 score was 10 (IQR= [5-19]) and 91 participants (24.6%) were at high risk of developing EDs. Of the HCPs who had a score of 20 or more, 35 (9.5%) participants were eligible for further

management by a specialist.

Univariate analysis showed that the prevalence of EDs among HCPs was significantly associated with age, paramedical profession, number of working years ≥ 10, the use of psychiatric medication, personal history of chronic illness, family history of Eds, being overweighted or obese, as well as weight variation during adulthood >25 Kg and abnormal perception of body image. These results are summarized in Table 3.

Table 3. Association of epidemiological and clinical characteristics with eating disorders in health-care professionals

Variable		Low risk N (%) N=279	High risk N (%) N=91	COR (95% CI)	p value
Age group	≥ 35 years	200 (79.1%)	53 (20.9%)	1	***0.018***
	< 35 years	79 (67.5%)	38 (32.5%)	1.8 (1.1-2.9)	
Professional category	Medical	140 (85.4%)	24 (14.6%)	1	***<0.001***
	Paramedical	139 (67.5%)	67 (32.5%)	2.8 (1.6-4.7)	
Number of	< 10 years	193 (79.8%)	49 (20.2%)	1	***0.008***
years of work	≥ 10 years	86 (67.2%)	42 (32.8%)	1.9 (1.2-3.1)	
under psychiatric medication		8 (50%)	8 (50%)	3.2 (1.2-8.9)	***0.032***
Chronic disease		38 (60.3%)	25 (39.7%)	2.4 (1.3-4.3)	***0.003***
Family history of eating disorders		29 (63%)	17 (37%)	1.9 (1.1-3.8)	***0.047***
Weight status	Overweight or obese	98 (75.0%)	2 (25.0%)	2.6 (1.6-4.2)	***<0.001***
Weight variation	< 25 kg	266 (76.7%)	81 (23.3%)	1	***0.041***
during adulthood	≥ 25 Kilogrammes kg	13 (56.5%)	10 (43.5%)	2.5 (1.06-5.9)	
Perception	Normal	200 (79.4%)	52 (20.6%)	1	***0.011***
	Thin or obese	79 (66.9%)	39 (33.1%)	1.9 (1.2-3.1)	

N: Number ;**n** : Number ; **COR**: Crude Odds Ratio; **95% CI**: 95% confidence interval;

However, gender, origin, marital status, the presence of children, living alone, night work and the number of shifts per week were not factors associated with high risk of Eds in our study population with values of p =0.75; p=0.96; p=0,43; p=0,55; p=0,61; p=0;43 and p=0,26 respectively.

Similarly, smoking, alcohol consumption, being followed by a psychiatrist, family history of other mental health disease, satisfaction about weight, physical activity, sleep duration, exposure to recent stress, were not associated with a higher risk to develop EDs in HCPs according to our study with values of p=0.8; p=0.75; p=0.25; p=0.34; p=0,1; p=0.56; p=0.99 and p=0,99.

In addition, the risk of EDs was significantly associated with the following disordered behaviors: purging behavior, vomiting for weight or shape control, use of laxatives, diet pills, or diuretics for weight or shape control and exercise >60 min/day for weight loss or control weight (Table 4).

Table 4. Association between disordered behaviors in the last six months and eating disorders in health-care professionals

Questions	Low risk n (%) N=279	High risk n (%) N=91	COR (95% CI)	P value
Vomiting for weight or shape Control	19 (54.3%)	16 (45.7%)	2.9 (1.4-5.9)	***0.004***
Use of laxatives, diet pills, or diuretics for weight or shape control	18 (56.2%)	14 (43.8%)	2.6 (1.2-5.5)	***0.013***
Exercise >60 min/day for weight loss or control weight	13 (44.7%)	21 (55.3%)	4,6 (2.4- 10.7)	***<0.001***
Weight loss ≥20 lbs (9 kg)	8 (72.7%)	3 (27.3%)	1.1 (0.3-4.4)	0.735

N: Number; **n**: Number; **COR**: Crude Odds Ratio; **95% CI**: 95% confidence interval;

Multivariate analysis showed that factors independently associated with the prevalence of EDs were paramedical profession (AOR=3.02; p<0.001), personal history of chronic illness (AOR=2.17; p=0.015), abnormal perception of body image (AOR=1.99; p=0.012) and exercising more than 60 minutes per day to lose or control the body shape (AOR =5.69; p<0.001) (Table 5).

Table 5. Multivariate analysis of factors associated with eating disorders among health-care professionals

Variable		AOR	95% CI	P value
Professional category	Medical			***<0.001***
	Paramedical	3.02	1.71-5.33	
Chronic disease		2.17	1.16-4.05	***0.015***
Perception	Normal			***0.012***
	Thin or obese	1.99	1.17-3.41	
Exercise >60 min/ day for weight loss or control weight		5.69	2.66-12.15	***<0.001***

N: Number ; **n** : Number ; **AOR**: Adjusted Odds Ratio; **95% CI**: 95% confidence interval;

Discussion

In our study, 24.6% of participants were identified as being at high risk for developing EDs, while 9.5% responded affirmatively to one of five additional questions regarding disordered eating behaviors in the past six months, suggesting they should be referred to a specialist. These results are similar to those found in the Lebanese (5),

Tunisian (14) and Bangladeshi (15) studies. We suggest that variations in prevalence rates are due to differences in the study methods used to screen for Eds which may lead to heterogeneity in results. The variety of societies and cultural context may also have a direct impact on the risk of EDs in the population.

In our study, there was a significant association between the paramedic profession and the risk of EDs. Similarly, other studies (5,16) found that the paramedical profession was more affected by this disorder. In a study (5) of 1000 students and health professionals in Lebanon, the medical profession was less affected by EDs compared to nutritionists and students in nutrition who were the most affected by this disorder (17.8% Versus 40.9%). This was explained in the study conducted by Hayes JF and al (17) by the fact that personal experiences with obesity and EDs were the main motivation for choosing a profession in the field of nutrition.

We found that the presence of a personal history of chronic illness was an independent factor associated with the risk of EDs. This result was well confirmed by the study of Avila JT and al (18). Indeed, people with chronic illnesses are very likely to develop Eds. Studies have shown a close relation between EDs and chronic diseases. Individuals with suspected EDs should be screened for coeliac disease, inflammatory diseases, diabetes, and thyroid disease, especially when symptoms are not typical. The coexistence of an EDs and a chronic illness can present a real challenge in terms of diagnosis and therapeutic management. Recent data showed that EDs and chronic illnesses can coexist and may even share genetic susceptibilities suggesting the existence of common molecular pathways (19,20).

In our study, abnormal body image perception was an independent factor associated with EDs. This result is confirmed by other studies (21,22). In fact, EDs is usually associated with severe disturbances in the perception of body shape and weight, as well as a desire to become thinner and obsessive fears of becoming fat (23). A negative body image increases the risk of inappropriate dieting and eating disorders (24). Overestimation of body size, feelings and thoughts of being too fat can lead to highly restrictive weight loss behaviors. This confirms that abnormal body image perception is a well-established risk factor for the development of Eds (25).

We didn't find a significant association between female gender and prevalence of EDs. This result was similar to the result found by Al-Jumayan A and al (13) conducted in Saudi Arabia in 2021. In contrast, several studies (26–28) have shown that the prevalence of EDs was significantly higher in women. This vulnerability of women to develop EDs has been well explained in previous studies (29,30). by the dissatisfaction with body image common in women and the exaggerated feelings of guilt experienced after eating fatty or sweet foods. This heterogeneity of the results can be explained by the difference in the tools used to screen for EDs.

In our study, overweight and obesity were associated with a high risk of Eds without being an independent factor after multivariant analysis. The results of other studies (31-33) suggest that high BMI is significantly associated with high risk of EDs.

To our knowledge, our study provides the first data on the prevalence of Eds among HCPs in Tunisia. However, our study it has some limits: The cross-sectional approach of this study limits the interpretation of causality of the risk factors studied, and the data for this study were collected from a self-report measure, which may lead participants to intentionally under- or overestimate their eating attitudes and behaviors, potentially introducing bias in the interpretation of responses. Additionally, physical activity was not assessed using a validated questionnaire, which may limit the accuracy of the data related to physical activity levels.

Conclusions

Our study has allowed to highlight an undervalued issue. Eating disorders have complex and inter-linked etiologies and risk factors and it is associated with a high mortality rate. These results are not negligible, effective, and early preventive measures must be established in the workplace to prevent EDs and avoid its deleterious consequences. Therefore, it is recommended to promote work-life balance and reducing job-related stress, implement training programs to raise awareness about eating disorders and encourage physical activity and healthy eating habits in the workplace. Screening for EDs particularly at vulnerable patients and referring them to a qualified specialist for further evaluation is crucial.

Finally, it is important to note that our results need to be confirmed by further studies focused on determining the prevalence of eating disorders based on DSM-5 criteria, as well as identifying the associated risk factors. Such studies would allow for more precise recommendations to be made.

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