

Knowledge of and attitudes toward eating disorders among psychiatry residents

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ABSTRACT

Eating disorders (EDs) are associated with a significant risk of comorbid psychiatric conditions and medical complications along with high mortality rate and suicide risk. This study aimed to assess psychiatry residents' knowledge and attitudes toward eating disorders. This descriptive cross-sectional study was conducted among psychiatric residents in Saudi Arabia. A self-administered questionnaire was distributed electronically to psychiatric residents through the Saudi Commission for Health Specialties database. The questionnaire collected demographic information (e.g., age, sex, and nationality), previous experience with eating disorders, and assessment of knowledge of and attitudes toward eating disorders. Fifty-two psychiatric residents (65.4% men, 34.6% women) were included in this study. Most participants (65.4%) belonged to the 20–30-year age group, and 46.2% of all participants were service residents. Knowledge of eating disorders was poor among 63.5% of residents and good among 36.5% of residents. There was a positive attitude toward eating disorders among 76.9% of residents, while 21.3% showed a negative attitude. The younger age group (age <35 years) showed significantly better knowledge, Saudi nationals, training residents, and those with ≤4 years in psychiatric practice; however, there was no difference in their attitudes. While psychiatric residents had an optimistic attitude toward eating disorders, they lacked knowledge of eating disorders. Among all participants, young Saudi trainee residents who were at an early stage of their career had better knowledge than those in the other groups.



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1. Introduction

According to the American Psychiatric Association (APA) Diagnostic and Statistical Manual of Mental Disorders 5th version (DSM-5), feeding and eating disorders (EDs) are characterized by persistent disturbance of eating or eating-related behavior resulting in altered consumption or absorption of food and significant impairment of physical health or psychosocial functioning. These disorders are divided into anorexia nervosa (AN), bulimia nervosa (BN), and binge ED (BED) [1].

AN and BN are marked by the thin ideal and weight control behaviors, with body image playing an

important role in self-perception. Conversely, BED patients do not exhibit body image concerns. EDs manifest across broad age ranges; AN is more common in childhood and adolescence, while BN and BED are not common at young ages [2].

EDs are considered a significant cause of physical and psychosocial morbidities in adolescents and young adults [3]. In a systematic review, individuals with AN were more likely to have depression, anxiety, and obsessive-compulsive disorders, in addition to having a high risk of mortality and suicide [4], as well as alcohol and substance use [5]. However, EDs increase the risk of other medical conditions. For instance, AN is associated with conditions involving most organs and can include leukopenia, increased cholesterol, osteopenia, endocrinal abnormalities, prolonged QT, and arrhythmias. BN and BED involve similar risks, in addition to gastric or duodenal ulcers, pancreatitis, dental erosions, and renal injury [5].

EDs can have severe consequences for the patients, including psychiatric and medical morbidities. Primary caregivers, especially parents, have the vital responsibility of identifying the disorders as promptly as possible. The process includes annual visits for ED screening and participation in standard care conducted by pediatricians. Primary caregivers have the responsibility of detecting EDs at an early age but might lack sufficient knowledge.

Among the main barriers in the care giving process to individuals with EDs is poor comprehension of the condition and the discomfort arising from treating such patients [2]. The symptoms are only clear to healthcare experts. Research indicates that healthcare practitioners prefer to avoid treating patients with EDs, as they often demonstrate pessimistic beliefs regarding the results. Less experience among practitioners leads to negative attitudes toward ED patients [6]. Resident physicians often exhibit frustration, anger, and helplessness toward ED patients. Knowledge is power, and practitioners should seek accumulating knowledge and experience to better assist ED patients.

Information on how therapists manage this type of patients has been accumulating through medical research. One study highlighted that almost a third of inexperienced therapists preferred treating patients other than those with EDs. There is limited information on the attitudes and knowledge of EDs among unspecialized physicians. Available information is outdated and from countries other than Saudi Arabia [5]. Information on EDs is accumulating rapidly, as various psychiatric and cultural dynamics are being adopted, and it is essential for various stakeholders to remain updated on this topic. During training and early career stages, physicians should develop knowledge of and positive attitude toward the management of ED patients. The physicians' understanding of EDs and their attitudes toward the patients constitute the basis to managing these conditions, according to emerging statistics. Attitudes involve confidence while managing ED patients, and knowledge varies with the practitioner's experience, specialty, and continued medical education such as participating in ED lectures [5]. Physicians may have a strong positive or negative effect on the prognosis of ED conditions.

There exist various knowledge gaps among practitioners treating EDs. Healthcare practitioners with more experience in treating ED patients have a higher knowledge level than others. Researchers have stated that such knowledge includes information on AN complications and diagnostic criteria. Frequent interactions with ED patients could lead to a high confidence level [5]. In contrast, another study reported a nonexistent relationship between attitudes and knowledge gaps [6]. The knowledge gap has resulted in a limited number of physicians who can effectively identify psychotherapeutic treatments for BN and AN [2]. A major reason for the lack of knowledge on EDs is the rarity of their appearance in clinical practice compared to other conditions. Physician training would be necessary to compensate for information deficiency on EDs, which

can favor the early identification of such conditions. Experience is a vital determinant on how physicians respond to ED patients.

Previous studies that have examined this information gap had various limitations. Some, for example, have used small sample sizes with limited distribution. A large sample size would be necessary to determine the trends impacting training location and would allow comparisons among sub-specialties. The latter limitation has greatly hindered the generalizability of the results. Future research should provide answers to various questions focusing on the knowledge gaps in relevant specialties. Another major limitation is selection bias, considering that the participation of physicians was voluntary, and that they would possibly opt not to participate if they had previous negative experiences with ED patients [7]. Yet another important factor affecting ED exposure levels is the years of experience. In addition, information is also lacking on other EDs such as BED. Researchers have indicated that a comparison between medical students and post-graduate medical faculty would be essential for investigating the development of comprehensive knowledge and comfort levels. With thorough research, there is hope that the limitations of the existing ED studies will be overcome.

Importantly, there is a need for increased familiarization and knowledge on the treatment and diagnosis of ED patients and on the attitudes toward them. Physicians who do not encounter ED patients frequently should obtain relevant, feasible, and recent treatment and diagnostic information [7]. There is need for a shift in the paradigm for managing ED patients for improving management and overcoming the barriers to adequate healthcare [2]. Although information gaps exist, there has been substantial progress in ED diagnosis and treatment strategies [5]. Concerned stakeholders should incorporate the topic of EDs in the physician's training to ensure proper care and reduce feelings of discomfort among physicians.

Clinician reactions have a marked impact on psychiatric service delivery, especially for stigmatized or treatment-resistant groups. To our knowledge, there has been no systematic review of empirical data on ED patients. Identifying negative reactions toward ED patients requires review of published empirical research for establishing relevant clinical and patient factors [7]. There is also need for studies on the effect of negative physician attitudes toward ED patients and the impact of the latter on psychiatric service delivery, using validated instruments and experimental methods as well as large samples [5]. The anticipated change in managing ED patients calls for rapid implementation of the present strategies in clinical practice.

In Saudi Arabia, EDs have a prevalence of 35.4% among university-aged female students [6] and of 25.47% among female adolescents [8]. Previous studies have shown a higher risk in women in Arab countries [9]. Previous studies have also shown that there is hesitation in diagnosing BED, and there is limited knowledge among healthcare practitioners regarding its physical consequences and treatment [10]. Additionally, there is lack of knowledge on EDs among primary care physicians [6].

To the best of our knowledge, no previous studies have investigated the knowledge and attitudes of psychiatric residents toward EDs in Saudi Arabia.

2. Materials and methods

2.1 Study design and area

This descriptive cross-sectional study was conducted among psychiatric residents across Saudi Arabia to assess their knowledge and attitudes toward EDs and related factors. Additionally, we aimed to identify the relationship between knowledge and attitudes. We also compared the knowledge and attitudes of residents

enrolled in a postgraduate program with those of psychiatry residents.

2.2 Research instrument (questionnaire) and validation

An online survey was distributed through the Saudi Commission for Health Specialties (prospective respondents were also contacted via social media, but their response rates were poor), which targeted all psychiatric residents, including service residents and residents enrolled in a program. Psychiatry residents enrolled in a psychiatry program were part of a 4-year program, in which residents received training on the management of various psychiatric disorders, including adult psychiatry, child psychiatry, emergency psychiatry, psychosomatic medicine. Psychiatry service residents were physicians who had completed their medical studies and were working in a psychiatry clinic without a specialized degree in psychiatry.

The survey comprised the following three components: demographic data (age, sex, nationality, marital status, level of training, and years of experience in psychiatry), data on previous experience with EDs (source of learning, diagnosing EDs, treating EDs, confidence in diagnosing EDs, and confidence in treating EDs), and a survey regarding knowledge and attitudes toward EDs [11]. Permission to modify and reuse the survey was obtained, and the modified version was reviewed and approved by the author of the survey.

2.3 Statistical analysis

Categorical variables are presented as numbers and percentages, whereas continuous variables are summarized using the mean and standard deviation (SD). Knowledge regarding EDs was assessed using a six-item questionnaire with multiple responses. Each correct answer was coded with “1,” while an incorrect answer was coded with “0.” Items 1 and 2 had four possible answers, item 3 had seven possible answers, item 4 had five possible answers, item 5 had four possible answers, and item 6 had three possible answers, resulting in a total knowledge score of 23. The total score was divided into two groups; participants who scored 60% or less were considered to have poor knowledge, while those who scored above 60% were considered to have good knowledge. Attitudes toward EDs were assessed using 17 items, which were rated using a five-point Likert scale. Responses ranged from “strongly disagree,” which was coded as “1,” to “strongly agree,” which was coded as “5.” Negative questions were reversely recoded to avoid bias in the score. The total score had a possible range of 17 to 85 points. Similar criteria were applied to knowledge assessment, where $\leq 60\%$ was considered to indicate a negative attitude, whereas $>60\%$ was considered to indicate a positive attitude.

The total knowledge and attitude scores were analyzed in relation to the socio-demographic characteristics of residents using the Mann–Whitney Z test (non-parametric) and an independent sample t-test (parametric test). A two-sided p-value <0.05 was used to indicate statistical significance. The Shapiro–Wilk test was used to test the normality of the data (data homogeneity). The knowledge score followed a non-normal distribution, whereas the attitude score followed a normal distribution. Thus, non-parametric tests were used to analyze knowledge scores. All data analyses were performed using the Statistical Package for the Social Sciences version 26 (IBM Corp., Armonk, NY, USA.).

3. Results

A total of 52 responses were obtained. Among 52 psychiatric residents, 65.4% were men and 34.6% were women. The most common age group was 20–30 years (51.9%). Most participants (61.5%) were Saudi nationals and half (50%) practiced in the central region. Most respondents did not work in other specialties (92.3%). Nearly half (46.2%) were service residents, and 55.8% had been in practice for more than 4 years. The most common sources of information on EDs were textbooks. The proportion of residents who had

performed a diagnostic test and had treated a patient with an ED was 44.2% and 46.2%, respectively (Table 1).

Table 1. Socio-demographic characteristics of psychiatric residents (n=52)

Study variables	N (%)
Age group	
• 20 – 30 years	27 (51.9%)
• 31 – 40 years	14 (26.9%)
• 41 – 50 years	07 (13.5%)
• >50 years	04 (07.7%)
Sex	
• Male	34 (65.4%)
• Female	18 (34.6%)
Nationality	
• Saudi	32 (61.5%)
• Egyptian	08 (15.4%)
• Sudanese	08 (15.4%)
• Others	04 (07.7%)
Region of practice	
• Central	26 (50.0%)
• Eastern	06 (11.5%)
• Northern	05 (09.6%)
• Southern	02 (03.8%)
• Western	13 (25.0%)
Have you worked in other specialty before psychiatry?	
• Medicine	02 (03.8%)
• Neurology	01 (01.9%)
• Ophthalmology	01 (01.9%)
• No	48 (92.3%)
Current position in psychiatry	
• Service resident	24 (46.2%)
• Training resident level 1	04 (07.7%)
• Training resident level 2	06 (11.5%)
• Training resident level 3	05 (09.6%)
• Training resident level 4	13 (25.0%)
Years of practice in psychiatry	
• 0 – 1 year	08 (15.4%)
• >1 – 2 years	07 (13.5%)
• > 2 – 4 years	08 (15.4%)
• > 4 years	29 (55.8%)
Sources of information on eating disorders *	
• Textbooks	48 (92.3%)
• Medical journals	12 (23.1%)
• Guidelines	13 (25.0%)
• Other physicians	17 (32.7%)
• Social media	05 (09.6%)
Ever diagnosed eating disorders	
• Yes	23 (44.2%)
• No	29 (55.8%)

Ever treated eating disorders

- Yes 24 (46.2%)
- No 28 (53.8%)

* Variables with multiple response answers.

The assessment of knowledge regarding EDs is presented in Table 2. The respondents knew that the most common DSM-5 diagnostic criteria for AN were “intense fear of gaining weight or becoming fat” (88.5%) and “disturbance in the way in which one’s body weight or shape is experienced” (88.5%). Respondents were aware that the most common DSM-5 diagnostic criteria for BN were recurrent episodes of BE at least twice a week for 3 months (69.2%). They were also aware that the most common physical complications in patients with AN were electrolyte abnormalities (90.4%), anemia (75%), and hypoglycemia (61.5%). However, they were less aware that proximal myopathy is also a physical complication of AN and that the most frequent physical complications associated with BN were dental erosion (73.1%), electrolyte abnormalities (63.5%), and parotid swelling (59.6%). For treating AN, respondents were aware that cognitive behavioral therapy (CBT) was the most common treatment modality based on the APA recommendations (73.1%). For treating BN, the respondents knew that the most common therapy based on the APA recommendations was selective serotonin reuptake inhibitors (SSRIs; 71.2%), while only 38.5% of the respondents knew that interpersonal psychotherapy (IPT) was another treatment option for BN.

Table 2. Assessment of knowledge about eating disorders (n=52)

	Knowledge criteria	N (%)
1. DSM-5 diagnostic criteria for anorexia nervosa †		
• Intense fear of gaining weight or becoming fat *		46 (88.5%)
• Disturbance in the way in which one’s body weight or shape is experienced *		46 (88.5%)
• Weight is maintained at least 20% below the expected value (BMI <16.0 kg/m ²)		16 (30.8%)
• Absence of at least 6 consecutive menstrual cycles		05 (09.6%)
2. DSM-5 diagnostic criteria for bulimia nervosa		
• Recurrent episodes of binge eating at least twice a week for 3 months		36 (69.2%)
• Extreme weight control behavior (e.g. strict dieting, self-induced vomiting, exercising or laxative abuse) *		27 (51.9%)
• Overvaluation of shape and weight *		23 (44.2%)
• Weight is maintained above a body mass index (BMI) of 17.5 kg/m ²		06 (11.5%)
3. Physical complications were commonly seen in patients with anorexia nervosa †		
• Electrolyte abnormalities *		47 (90.4%)
• Anemia *		39 (75.0%)
• Hypoglycemia *		32 (61.5%)
• Osteoporosis *		28 (53.8%)
• Bradycardia *		25 (48.1%)
• Edema *		16 (30.8%)
• Hypocholesterolemia		15 (28.8%)
• Proximal myopathy *		09 (17.3%)
• Psoriasis		05 (09.6%)
• Migraine		04 (07.7%)
• Hypertension		04 (07.7%)
• Auto-immune disorders		02 (03.8%)
4. Physical complications commonly seen in patients with bulimia nervosa †		
• Dental erosion *		38 (73.1%)
• Electrolyte abnormalities *		33 (63.5%)

- Parotid swelling * 31 (59.6%)
 - Oligomenorrhoea * 15 (28.8%)
 - Migraine 05 (09.6%)
 - Tinnitus 04 (07.7%)
 - Vertigo 04 (07.7%)
 - Guillain-Barre Syndrome 03 (05.8%)
 - Proximal myopathy * 03 (05.8%)
 - Psoriasis 03 (05.8%)
5. APA recommendation for the treatment therapies of anorexia nervosa †
- Cognitive behavior therapy * 38 (73.1%)
 - Family interventions * 20 (38.5%)
 - Selective serotonin reuptake inhibitors (SSRIs) 18 (34.6%)
 - Interpersonal psychotherapy (IPT) * 16 (30.8%)
 - Psychodynamic therapy * 13 (25.0%)
 - Cognitive analytic therapy 07 (13.5%)
 - Eye movement desensitization and reprocessing 01 (01.9%)
6. APA recommendation for treatment therapies for bulimia nervosa †
- SSRIs * 37 (71.2%)
 - Self-help program * 24 (46.2%)
 - IPT * 20 (38.5%)
 - Tricyclic antidepressants 05 (09.6%)
 - Short-term benzodiazepines 02 (03.8%)

† Variables with multiple response answers.

* Indicates the true answer.

Regarding attitudes, highly positive attitudes were shown by the statement “Mental Health ACT should not be used more frequently in patients with AN” (strongly agreed/agreed: 75%), followed by the statement “AN represents a form of neurotic mental disorder” (strongly agreed/agreed: 67.1%) and “BN is culturally determined by a person’s role in society” (strongly agreed/agreed: 63.5%). Conversely, negative attitudes were shown by the statement “AN is essentially untreatable” (strongly disagreed/disagreed: 84.6%) and “BN is untreatable” (strongly disagreed/disagreed: 84.6%) (Table 3).

Table 3. Assessment of attitudes toward eating disorders (n=52)

Attitude statement	SD	D	N	A	SA
	N (%)	N (%)	N (%)	N (%)	N (%)
1. Anorexia nervosa is culturally determined by a person’s role in society	04 (07.7%)	08 (15.4%)	13 (25.0%)	23 (44.2%)	04 (07.7%)
2. Anorexia nervosa represents a form of neurotic mental disorder	02 (03.8%)	07 (13.5%)	10 (19.2%)	21 (40.4%)	12 (23.1%)
3. Anorexia nervosa represents abnormal behavior in the context of a weak, manipulative, or inadequate personality	11 (21.2%)	10 (19.2%)	13 (25.0%)	15 (28.8%)	03 (05.8%)
4. Anorexia is a neurophysiological disorder of unknown origin	04 (07.7%)	08 (15.4%)	13 (25.0%)	22 (42.3%)	05 (09.6%)
5. Anorexia nervosa is essentially untreatable †	23 (44.2%)	21 (40.4%)	06 (11.5%)	01 (01.9%)	01 (01.9%)
6. Bulimia nervosa is culturally determined by a person’s role in society	04 (07.7%)	09 (17.3%)	21 (40.4%)	14 (26.9%)	04 (07.7%)
7. Bulimia nervosa represents a form of	02 (03.8%)	08 (15.4%)	09 (17.3%)	21 (40.4%)	12 (23.1%)

neurotic mental disorder						
8.	Bulimia nervosa represents abnormal behavior in the context of a weak, manipulative or inadequate personality	07 (13.5%)	10 (19.2%)	18 (34.6%)	14 (26.9%)	03 (05.8%)
9.	Bulimia is a neurophysiological disorder of unknown origin	05 (09.6%)	12 (23.1%)	12 (23.1%)	20 (38.5%)	03 (05.8%)
10.	Bulimia nervosa is essentially untreatable †	18 (34.6%)	26 (50.0%)	06 (11.5%)	01 (01.9%)	01 (01.9%)

Use of the Mental Health Act

11.	It should not be used when patients clearly believe that the advantages of anorexia nervosa for them outweigh the disadvantages †	17 (32.7%)	15 (28.8%)	12 (23.1%)	05 (09.6%)	03 (05.8%)
12.	It is appropriate that the Mental Health Act enables compulsory refeeding of patients with anorexia nervosa	05 (09.6%)	11 (21.2%)	07 (13.5%)	16 (30.8%)	13 (25.0%)
13.	It should not be used to enforce admission to hospital for anorexia nervosa †	20 (38.5%)	18 (34.6%)	05 (09.6%)	08 (15.4%)	01 (01.9%)
14.	It should be used more frequently to protect the health and safety of patients with anorexia nervosa	04 (07.7%)	06 (11.5%)	03 (05.8%)	20 (38.5%)	19 (36.5%)
15.	I am confident in diagnosing eating disorders in my current practice	04 (07.7%)	05 (09.6%)	15 (28.8%)	19 (36.5%)	09 (17.3%)
16.	I am confident in managing eating disorders in my current practice	05 (09.6%)	07 (13.5%)	14 (26.9%)	22 (42.3%)	04 (07.7%)
17.	I am satisfied with the level of training in eating disorders I have received during my training	09 (17.3%)	16 (30.8%)	09 (17.3%)	15 (28.8%)	03 (05.8%)

SD, strongly disagree; D, disagree; N, neutral; A, agree; SA, strongly agree.

† Negative questions

Descriptive statistics for knowledge of and attitudes toward EDs are presented in Table 4. The mean knowledge score was 12 (SD=4.43), with 63.5% of the participants obtaining a poor score, and 36.5% obtaining a good score. The mean attitude score was 56.2 (SD 6.33), with negative and positive attitudes having an incidence of 23.1% and 76.9%, respectively. There was no significant correlation between knowledge and attitude scores ($r=-0.164$; $p=0.245$) (Figure 1).

Table 4. Descriptive statistics for knowledge and attitude toward eating disorders (n=52)

Variables		N (%)
Knowledge total score (mean ± SD)		12.0 ± 4.43
Level of knowledge		
• Poor		33 (63.5%)
• Good		19 (36.5%)
Attitude total score (mean ± SD)		56.2 ± 6.33
Level of attitude		
• Negative		12 (23.1%)
• Positive		40 (76.9%)

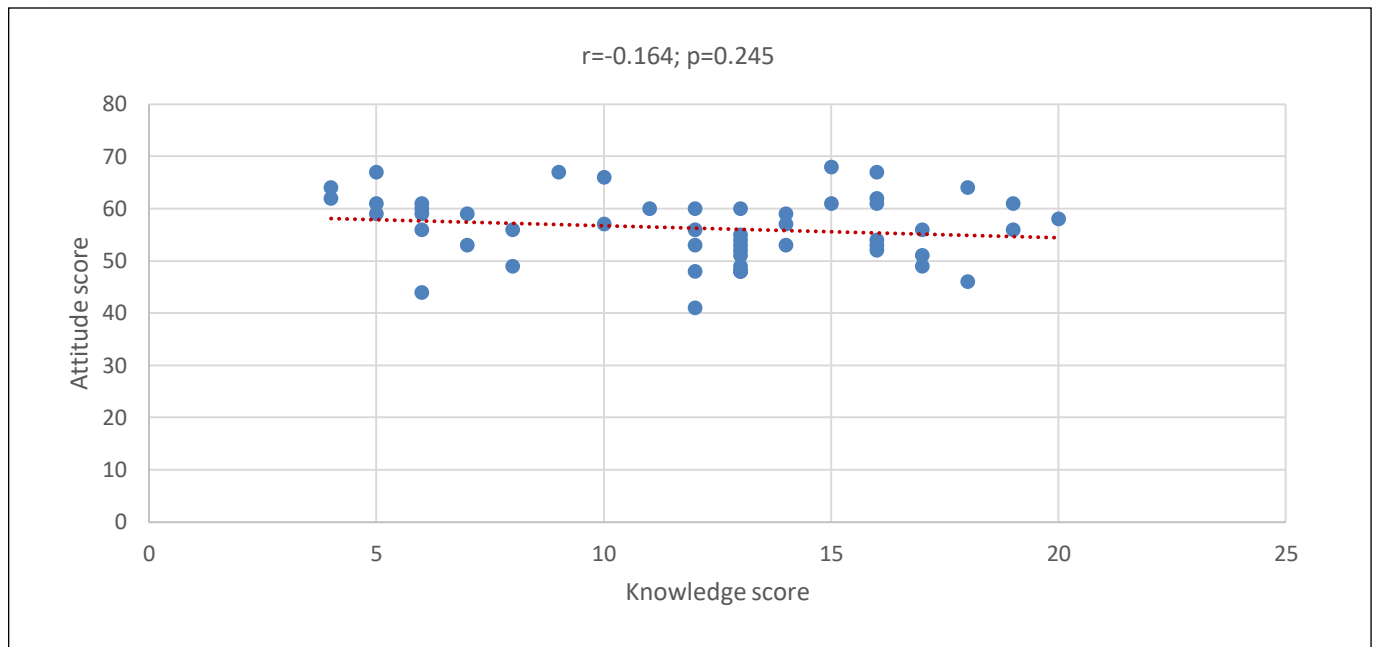


Figure 1. Correlation (Pearson’s r) between knowledge and attitude scores

As shown in Table 5, a significantly higher mean knowledge score was associated with the younger age group ($z=1.991$; $p=0.046$), Saudi nationality ($z=2.979$; $p=0.003$), training residency ($z=2.593$; $p=0.010$), and ≤ 4 years of psychiatric practice ($z=2.492$; $p=0.013$). However, there was no significant difference between attitude scores and socio-demographic characteristics of the residents, including age group, sex, nationality, region of practice, current position in psychiatry, years of practice, sources of information, having ever diagnosed an ED, and having ever treated EDs (all $p>0.05$).

Table 5. Statistical association between knowledge and attitude scores in relation to the socio-demographic characteristics of psychiatric residents (n=52)

Factor	Knowledge Score (23) Mean \pm SD	z-test; P-value \S	Attitude Score (85) Mean \pm SD	t-test; P-value \ddagger
Age group				
• <35 years	13.0 \pm 3.97	1.991;	55.9 \pm 6.35	0.514;
• ≥ 35 years	10.0 \pm 4.73	0.046 **	56.9 \pm 6.43	0.610
Sex				
• Male	12.2 \pm 4.34	0.377;	55.7 \pm 6.87	0.866;
• Female	11.7 \pm 4.70	0.706	57.3 \pm 5.18	0.391
Nationality				
• Saudi	13.6 \pm 3.48	2.979;	55.6 \pm 6.39	0.962;
• Non-Saudi	9.50 \pm 4.67	0.003 **	57.3 \pm 6.25	0.341
Region of practice				
• Inside the Central region	10.9 \pm 4.49	1.896;	55.7 \pm 6.17	0.610;
• Outside the Central region	13.1 \pm 4.17	0.058	56.8 \pm 6.56	0.545
Current position in psychiatry				
• Service resident	10.3 \pm 4.65	2.593;	56.8 \pm 6.09	0.588;
• Training resident	13.5 \pm 3.69	0.010 **	55.7 \pm 6.60	0.559
Years of practice in psychiatry				
• ≤ 4 years	13.9 \pm 3.30	2.492;	54.6 \pm 6.86	1.722;

• > 4 years	10.6 ± 4.69	0.013 **	57.6 ± 5.65	0.091
Sources of information *				
• Textbooks	12.2 ± 4.38	0.725; 0.468	56.3 ± 6.42	0.157; 0.876
• Medical journals	10.6 ± 3.89	1.387; 0.165	58.0 ± 6.86	1.160; 0.252
• Guidelines	12.0 ± 5.89	0.064; 0.949	57.0 ± 4.98	0.502; 0.618
• Other physicians	12.1 ± 3.92	1.422; 0.155	54.6 ± 7.79	1.313; 0.195
Ever diagnosed eating disorders				
• Yes	12.9 ± 4.87	1.408;	12.9 ± 4.87	1.276;
• No	11.3 ± 3.99	0.159	11.3 ± 3.99	0.208
Ever treated eating disorders				
• Yes	12.5 ± 4.45	0.858;	12.5 ± 4.45	0.756;
• No	11.6 ± 4.44	0.391	11.6 ± 4.44	0.453

[§] *P*-value was calculated using the Mann–Whitney Z test.

[‡] *P*-value was calculated using an independent sample *t*-test.

* Variables with multiple responses

4. Discussion

This study evaluated the level of knowledge and attitudes of psychiatric residents toward EDs. Few studies on this topic have been conducted in Saudi Arabia. To our knowledge, our study is the first to present findings on the perceptions of psychiatric residents toward EDs. The findings of this study showed that the level of knowledge of EDs is deficient. Nearly two-thirds (63.5%) of the participants considered their knowledge to be poor and only 36.5% had a good knowledge level. Several studies have indicated gaps in the knowledge of EDs among healthcare providers. For example, in Australia [9], researchers reported that the knowledge of Australian healthcare providers toward BED was limited, and thus, many practitioners were reluctant to diagnose patients with BED because their knowledge on the physical complications of BED was inadequate. Similarly, substantial knowledge gaps among primary care physicians and psychiatrists have been reported in the United Kingdom [10], [11], where the need for extensive education regarding the diagnosis and management of EDs has been markedly emphasized. A study conducted in Saudi Arabia [12] showed that although 40% of dentists expressed uncertainty regarding their capability to diagnose a patient with an ED, and more than 60% reported that they had no experience in managing patients with this type of disorder, over 45% of the respondents rated their knowledge as adequate. Despite the satisfactory knowledge among the respondents, the author concluded that continuing education and training among dentists is needed because of the lack of clinical exposure to EDs.

The results of this study showed that age had an influence on the knowledge of EDs, and younger residents (age group <35 years) were more likely to have better knowledge of EDs than older residents (age group ≥35 years). This is inconsistent with findings reported by [13]. Based on their assessment, age, sex, ethnicity, and clinical seniority were not relevant factors for knowledge. Similarly, we noted that the knowledge of training residents was significantly better than that of service residents ($p=0.010$). This finding is better than that reported by [11]. These researchers documented that, although psychiatrists who were members of the Royal College of Psychiatrists achieved a better knowledge score, the overall difference of the results was not significant ($p=0.09$), and only 14.9% of the psychiatrists were confident in managing ED patients in their current practice. These results indicate a generalized dissatisfaction with the level of training that the participants received during their clinical practice.

Years of experience was another factor related to knowledge of EDs, and resident psychiatrists with less experience were estimated to have better knowledge than those with more experience. This is an interesting

finding, but it could be because these participants had received more updated education regarding EDs in medical school. However, further assessments are needed because of the limitations of the sample population. [14] provided conflicting reports regarding experiences related to EDs. They reported that psychiatric discipline, experience with EDs, and having 4 years or more of ED-related continuing medical education credits predicted better knowledge of AN, but these parameters were less likely to predict better knowledge of BN.

Psychiatry resident knowledge of the specific criteria to diagnose AN and BN was adequate. In line with the DSM-5 guidelines, most of them (88.5%) were aware that “intense fear of becoming fat” and the “worrisome feeling about body shape” were diagnostic criteria for AN, while “binge eating recurrence at least two times per week for at least 3 months” was believed to be a diagnostic criterion for BN. These results are consistent with those of [11], [13], [15].

Psychiatrists must understand ED complications to achieve better therapeutic outcomes. In our results, most respondents (90.4%) were aware that electrolyte abnormalities were well-known physical complications of AN, followed by anemia (75%), hypoglycemia (61.5%), osteoporosis (53.8%), and bradycardia (48.1%); however, only 17.3% believed that proximal myopathy was also a complication of AN. However, their knowledge of the physical complications related to BN was lower. Our results revealed that 73.1% of the respondents knew that dental erosion was the most common physical complication of BN, followed by electrolyte abnormalities (63.5%), and parotid swelling (59.6%). Few residents (28.8% and 5.8%, respectively) were aware that oligomenorrhea and proximal myopathy were also physical complications of BN. These findings are in agreement with reported results from the United Kingdom [11], [13].

Based on the APA recommendations for the treatment of patients with AN and BN, resident psychiatrists believed that CBT was the best treatment option for patients with AN. Other APA therapeutic recommendations, such as family interventions (38.5%), IPT (30.8%), and psychodynamic therapy (25%), were not preferred by the residents. For patients with BN, based on the APA recommendation, SSRIs were considered the best alternative (71.2%), followed by self-help programs (46.2%) and IPT (38.5%). In a study by [14], residents and fellows at a large urban academic medical center in the United States indicated that CBT was the best method for treating both AN and BN. Respondents also endorsed family-based treatment, but to a lesser extent because it is more applicable to adolescent patients [16], [17].

In our study, the participants had generally positive attitudes toward EDs, but they lacked sufficient knowledge on these conditions. Approximately 77% of residents exhibited an optimistic attitude toward EDs, and only 23.1% were considered to have negative attitudes. However, similar to [13], we found no relevant factors associated with attitude and none that had a direct correlation with knowledge. However, [11] showed a significant difference in attitudes toward AN in relation to grade. They stated that more non-consultants than consultants viewed AN as essentially untreatable, while there was a significant variation in attitudes toward BN related to seniority, with more junior psychiatrists than psychiatrists with higher seniority viewing BN as an abnormal behavior in the context of a weak, manipulative, or inadequate personality.

5. Limitations of the study

This study had some limitations. Although our sample size was moderate, a higher sample size would further confirm our findings and allow a finer analysis to elucidate related aspects.

6. Conclusion

While psychiatric residents had an optimistic attitude toward EDs, their knowledge on these conditions was limited. Among all residents, Saudi trainee residents who were young and at an early stage of their careers seemed to have better knowledge than those in the other groups. Having access to adequate information regarding EDs had a positive effect on the treatment outcomes of patients with ED. Thus, there is a need to improve the level of knowledge among psychiatric residents. More education and training on how to diagnose and manage patients with EDs are needed to ensure that appropriate actions are taken during clinical rotations. Further research is needed to validate the level of knowledge and attitudes toward EDs among psychiatric residents in this region.

7. REFERENCES

- [1] American Psychiatric Association (2013). The diagnostic and statistical manual of mental disorders, fifth edition.
- [2] Hay, P. (2020). Current approach to eating disorders: a clinical update. *Intern Med J*, 50(1), 24-29.
- [3] Fairburn, C.G.; Harrison, P.J. (2003). Eating disorders. *Lancet*, 361(9355), 407-416.
- [4] Berkman, N.D.; Lohr, K.N.; Bulik, C.M. (2007). Outcomes of eating disorders: a systematic review of the literature. *Int J Eat Disord*, 40(4), 293-309.
- [5] Treasure, J.; Duarte, T.A.; Schmidt, U. (2020). Eating disorders. *Lancet*, 395(10227), 899-911.
- [6] Currin, L.; Waller, G.; Schmidt, U. (2009). Primary care physicians' knowledge of and attitudes toward the eating disorders: do they affect clinical actions. *Int J Eat Disord*, 42(5), 453-458.
- [7] Abd El-Azeem Taha, A.A.; Abu-Zaid, H.A.; El-Sayed Desouky, D. (2018). Eating disorders among female students of Taif University, Saudi Arabia. *Arch Iran Med*, 21(3), 111-117.
- [8] Fatima, W.; Ahmad, L.M. (2018). Prevalence of disordered eating attitudes among adolescent girls in Arar City, Kingdom of Saudi Arabia. *Health Psychol Res*, 6(1), 7444.
- [9] Jawed, A.; Harrison, A.; Dimitriou, D. (2020). The Presentation of eating disorders in Saudi Arabia. *Front Psychol*, 11, 586706.
- [10] Cain, B.; Buck, K.; Fuller-Tyszkiewicz, M.; Krug, I. (2017). Australian healthcare professionals' knowledge of and attitudes toward binge eating disorder. *Front Psychol*, 8, 1291.
- [11] Jones, W.R.; Saeidi, S.; Morgan, J.F. (2013). Knowledge and attitudes of psychiatrists towards eating disorders. *Eur Eat Disord Rev* 21(1), 84-88.
- [12] Khanagar, S.B.; Aldhibi, R.; Alkattab, S.; Alosail, L.; Alaqail, H.; Almotairi, A.; Almikhem, R. (2021). Knowledge, attitude, management, and clinical experience of dentists regarding patients with eating disorders in Saudi Arabia. *Indo Am. J. P. Sci*, 08(03).
- [13] Riaz, H.; Jones, WR.; Donnellan, C.; Masood M.; Saeidi S. (2017). Knowledge and attitudes of gastroenterologists towards eating disorders. *ARC Journal of Psychiatry*, 2(4), 29-40.

- [14] Anderson, K.; Accurso, E.C.; Kinasz, K.R.; Le Grange, D. (2017). Residents' and Fellows' Knowledge and attitudes about eating disorders at an academic medical center. *Acad Psychiatry*, 41(3), 381-384.
- [15] Raveneau, G.; Feinstein, R.; Rosen, L.M.; Fisher, M. (2014). Attitudes and knowledge levels of nurses and residents caring for adolescents with an eating disorder. *Int J Adolesc Med Health*, 26(1), 131-136.
- [16] le Grange, D.; Crosby, R.D.; Rathouz, P.J.; Leventhal, B.L. (2007). A randomized controlled comparison of family-based treatment and supportive psychotherapy for adolescent bulimia nervosa. *Arch Gen Psychiatry*, 64(9), 1049-1056.
- [17] Lock, J.; Le Grange, D.; Agras, W.S.; Moyer, A.; Bryson, S.W.; Jo, B. (2010). Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. *Arch Gen Psychiatry*, 67(10), 1025-1032.