Review Paper

Prevalence of Eating Disorders in Iran From Preschool to Old Age: A Systematic Review and Meta-analysis

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ABSTRACT

Background: Eating disorders are among the deadliest psychiatric diseases that have become increasingly prevalent in different societies in recent years. Various biological, social, and psychological factors are involved in the emergence of different types of eating disorders. Several studies have been conducted by medical and non-medical researchers in Iran to estimate the prevalence of this disorder and its subcategories, which have been associated with different epidemiological methodologies and instruments and inconsistent results.

Objectives: This study aims to statistically analyze all available findings to determine the total estimate of the prevalence of eating disorders in the general population of Iran and to investigate the reasons for the heterogenous results in previous studies.

Methods: The articles were collected by searching the following databases: SID, Magiran, Irandoc, Iran Medex, PubMed, and Google Scholar. All studies evaluating the prevalence of eating disorders in any region of Iran from 1990 to the end of 2021 were included in the study. Meanwhile, articles that were irrelevant in terms of subject or methodology were excluded. Three researchers independently extracted the data from the articles based on a pre-prepared list that included the author's name, study title, year of publication, journal name, city and study population, sample size, study instruments, and eating disorder prevalence.

Results: The estimated point prevalence of any eating disorder in Iran was 22% (95% CI, 7%-38%). The estimated lifetime prevalence of eating disorder, anorexia nervosa, and bulimia nervosa was 1% (95% CI, 1%-2%), 1% (95% CI, 0%-1%), and 1% (95% CI, 0%-1%), respectively.

Conclusions: The prevalence of eating disorders and its subcategories is much lower in Iran compared to high-income and developed countries. The available data are insufficient to determine the exact prevalence of this disorder in the general population, especially among Iranian men.

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1. Context

Eating disorders are among the psychiatric disorders that may be associated with risky consequences, such as decreased quality of life and increased mortality and suicide (1, 2). After drug overdose, eating disorders have been reported to be one of the deadliest mental illnesses (2). Estimates show that more than 3.3 million healthy years of life are lost annually worldwide because of eating disorders (1). Unlike other mental disorders, years lived with disability (YLD) have increased in anorexia nervosa (AN) and bulimia nervosa (BN) (1).

According to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), in which eating disorder is coded as "feeding and eating disorders," at least 3 categories of eating disorders have been described. The first category is AN which is characterized by deliberate starvation, incessant desire to lose weight, and signs and symptoms of hunger. This category is receiving medical attention because of various metabolic complications, including changes in vital and endocrine symptoms, such as amenorrhea. Sometimes, cardiovascular complications bring about the risk of death in this type of disorder. The second category is BN which is characterized by overeating episodes along with inappropriate ways to stop weight gain. After overeating, they resort to intentional vomiting, laxative and diuretic abuse, or vomiting drugs, and some of these patients resort to excessive exercise or strict diets to prevent weight gain. And the third category is binge eating disorder (BED) which is characterized by recurrent overeating episodes that, unlike BN, are not followed by compensatory behaviors (3).

Currently, biological, social, psychological, and psychodynamic factors are involved in the emergence of various eating disorders (3). Epidemiological findings show that the prevalence of AN in women is 10 times higher than in men and often begins in adolescence. BN is also more common in women; however, the onset age is later than AN (3).

According to a report by the Academy for Eating Disorders in the United States, published in 2020, the prevalence of lifelong eating disorders in this country is estimated at 9% (4). Although these disorders were considered to be specific to developed and high-income societies for years, recent epidemiological findings indicate their increasing prevalence in Arab and Asian countries (5).

According to some theorists, the increase in eating disorders in recent years has been due to the emphasis on weight loss and its appreciation in Western societies, which is a result of cultural conflicts and the phenomenon of globalization; the frequency of these disorders has also increased in Asian countries (5-7). On the other hand, many experts believe that the increase in the incidence of this disorder in the Iranian population is probably because of the impact of Western cultural values through social media and the high number of adolescents and young people in the Iranian population (6).

Given the nature of the disorder and its various socio-cultural contexts, many studies have been conducted in Iran to estimate the prevalence of eating disorders and its subcategories in different populations of Iranian society by medical researchers (8-11), humanities (6), and physical education (12) with diverse goals, methodologies, and epidemiological instruments, and different results have been achieved (13). According to some studies, including the study by Nobakht & Dezhkam (14), the prevalence of eating disorders in Iran was close to Western countries and even higher than in other non-Western countries; however, on the other hand, some studies, such as the study by Mohammadi et al. (13), have reported the prevalence of this disorder to be lower than developed and high-income countries.

Objectives

Considering the lack of systematic review studies, this study aims to statistically analyze all the available findings to determine the prevalence of eating disorders in Iran and to investigate the reasons for the heterogeneity in the results of previous studies. In addition, an accurate picture of the epidemiology of the disease will help in its etiology and macro-policies in the field of health care.

Data sources

The flowchart in Figure 1 shows the process of identifying and selecting the articles. These articles were collected by searching the following databases: SID, Magiran, Irandoc, Iran Medex, PubMed, and Google Scholar.

In the Iranian database (SID, Magiran, Irandoc, Iran Medex), given the relative limitations of advanced

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search options, the keywords "eating disorder," "anorexia nervosa," "bulimia nervosa," "binge eating disorder," and "prevalence" were entered (in Persian and English). In the international database, in addition to the items mentioned above, other standard MeSH keywords, such as "feeding disorder" OR "appetite disorder" OR "feeding addiction" AND keywords of "prevalence" OR "epidemiology" AND "Iran" were used as the search strategy.

All studies evaluating the prevalence of eating disorders in any region of Iran from January 1990 to December 31, 2021, were included in the search. Duplicate records were removed using the EndNote software, version 20.2. Then, the titles and abstracts were reviewed separately by the 3 authors, and articles that met the inclusion criteria were identified. In the next step, the same authors extracted the full text of the selected articles and assessed their quality after re-checking. The Newcastle-Ottawa quality assessment scale (adapted for cross-sectional studies) was used to evaluate the quality of the studies. Based on the checklist, studies that scored at least 3 stars on the selection item were included in the analysis (Table 1).

Study selection

The inclusion criteria comprised the following items: all epidemiological studies that examined the prevalence of eating disorders or its major subcategories (AN, BN, BED) in the general population or any region of Iran from 1990 to the end of 2021. The exclusion criteria were studies that were irrelevant in terms of subject or methodology and low quality based on the Newcastle-Ottawa quality assessment scale.

Data extraction

To reduce any bias, the four researchers independently extracted the data based on a pre-prepared checklist that included the author's name, study title, year of publication, study type, city and population of the study, sample size, and the prevalence of eating disorders, and study instruments. As provided in Table 1, this study includes 2 types of instruments: 1) self-report questionnaires, and 2) semi-structured interviews.

Self-report Questionnaires

The following questionnaires were used in the articles: eating attitude test (EAT-40 and EAT-26), eating disorder diagnostic scale (EDDS), and eating disorder diagnostic inventory (EDDI). The valid Persian version

of the questionnaires are available in Iran and have high sensitivity and specificity for screening eating disorder and its subtypes (14-16). Since the mentioned psychometric instruments assess the symptoms of eating for at least the last 1-6 months (17-19), they are an indicator to determine the point prevalence.

Semi-structured interviews

The following interview tools were used to assess the lifetime prevalence of psychiatric disorders, such as eating disorders: the kiddie schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL) and structured clinical interview for DSM-IV (SCID) (20, 21).

K-SADS-PL is developed to assess the current and previous courses of mental disorders in children and adolescents from the age of 6 to 18 years according to DSM-IV criteria. The validity and reliability of this questionnaire have been confirmed for the evaluation and diagnosis of psychiatric disorders in Iranian children and adolescents (20). SCID is also used in some studies as the gold standard of clinical diagnoses, which has high inter-rater reliability in the diagnosis of eating disorders (0.77); meanwhile, its validity is confirmed (21).

In the current study, based on the type of psychometric instrument used, the point prevalence and the lifetime prevalence of eating disorders were differentiated.

Statistical analysis

The STATA software, version 11, was used to analyze the data. The standard error of the prevalence of eating disorders was estimated using a binomial distribution. The random effect model was employed to combine and analyze the data. The heterogeneity between the initial studies was assessed using the Chi-square and I-square tests. The overall prevalence of eating disorders with a 95% confidence interval is shown in the forest plot diagram. The meta-regression method was utilized to determine the effect of gender on the heterogeneity of eating disorders. The Egger test and the funnel plot were used to assess publication bias.

2. Results

Based on the above-mentioned search formula, a total of 1959 articles were extracted from the 6 databases. After removing the duplicate records using the End-Note software, 1935 articles were reviewed based on the abstracts and titles according to the inclusion and
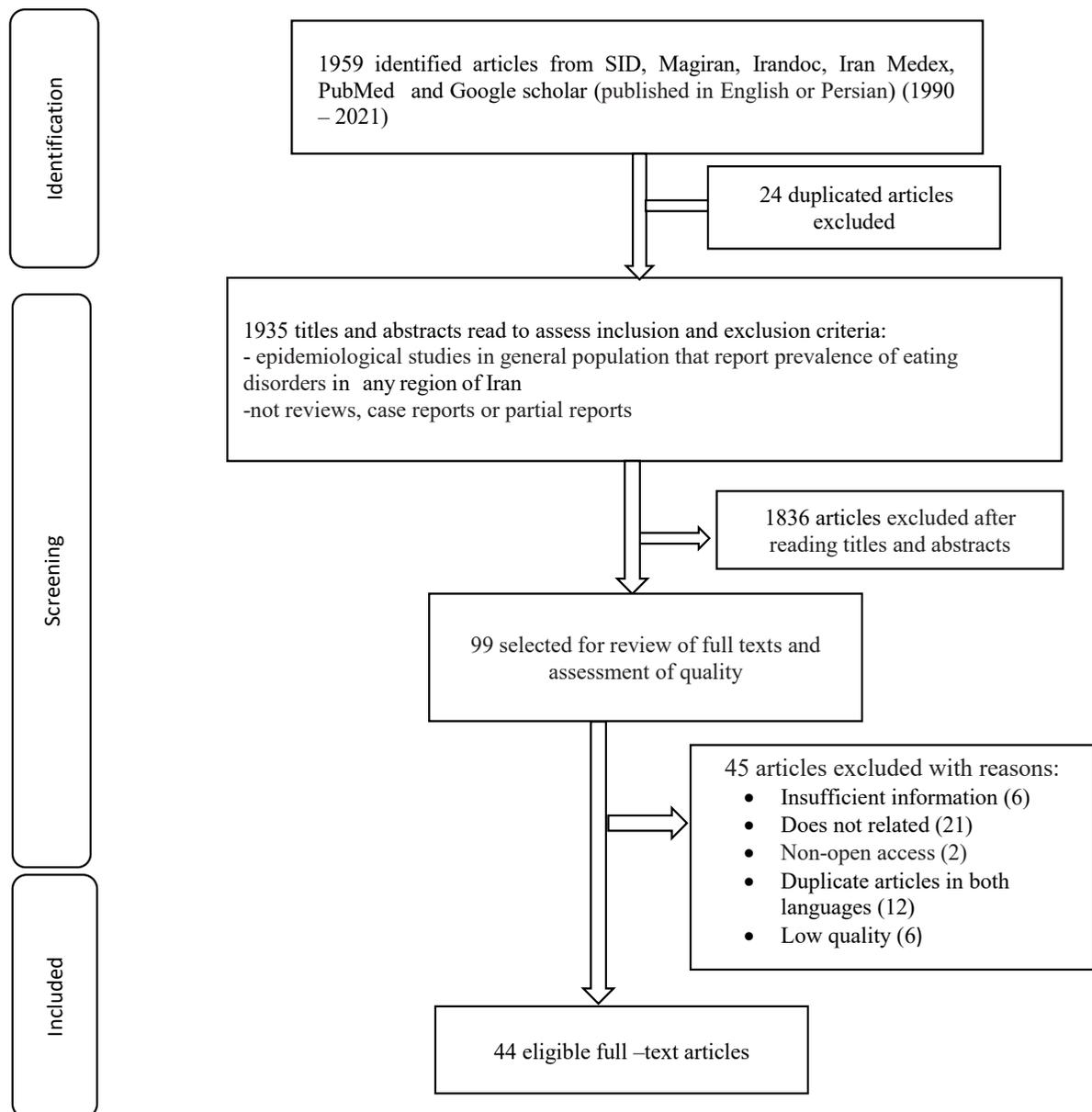
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Figure 1. Article selection flowchart according to PRISMA statement

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exclusion criteria. The authors agreed on 99 abstracts that met the basic inclusion criteria. According to Figure 1, after evaluating the full text, 44 articles were finally eligible for analysis. Table 1 shows the characteristics of these studies along with their qualitative evaluation.

A review of all selected articles with a population of 61 088 individuals shows that during the last 31 years, the data related to all provinces of the country except for Qom Province are available.

The lowest age group was in the preschool age group and the highest at the age of 73 years. However, most studies were conducted on adolescents and young adults. As provided in Table 1, in 26 articles, only the female population was studied (11, 14, 15, 24-46) and in 2 articles, only the male population was studied (10, 47). In 16 studies, the study population included both genders (8, 9, 13, 16, 21-23, 48-56). Approximately 63.5% of the pooled sample was female. In 29 articles, the random sample was selected from a group of school or university students.

The point prevalence of eating disorders was reported in 10 articles in both genders. Combining the results of these studies, the prevalence of eating disor-

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Table 1. Quality assessment of final articles

Study	Representativeness	Sample Size	Response Rate	Measurement Tool	Rating Quality of the Research
Alavi 2010 (55)	Cluster random sampling (both gender)	799		K-SADS-PL	
Ast 2011 (36)	Random selection (female students)	300		EAT-26	****
Babai 2020 (40)	Random selection (female students)	322		EAT-26	****
Daeie-Farshbaf 2021 (41)	Random selection (female students)	725		EDDS	****
Rauof 2015 (21)	Multistage random sampling	1990		1)EAT-26 2) SCID	****
Eftekhari 2014 (42)	Multistage random sampling (female students)	594	99%	EAT-26	*****
Davodi 2016 (8)	A multistage random sample (male/female students)	302		EAT-26	****
Ahmadzadeh 2015 (43)	Simple random sampling (female students)	231	98.2%	EAT-26	*****
Faramarzi 2021 (44)	Cluster random sampling (female students)	535		EDDS	****
Farid 2016 (11)	Two-stage random sampling (female students)	537		EAT-26	****
Pourghassem Gargari 2011 (34)	Systematic random sampling (female students)	1887		EAT-26	****
Garusi 2016 (10)	Multistage stratified sampling (male students)	433		EDDS	****
Ghodsi 2017 (31)	Cluster random sampling (female students)	300		EAT-26	****
Jalali-Farahani 2014 (9)	Simple random sampling (students)	456	95.8%	EAT-26	*****
Khezri 2016 (29)	Stratified random sampling (female students)	600	99%	EAT-26	****
Mozaffari-khosravi 2011 (35)	Cluster random sampling (female students)	1400	-	EAT-26	****
Mohamadirizi 2014 (47)	Two-step random sampling (male students)	361	-	EAT-26	****
Mohammadi 2019 (13)	Randomly selected by a multistage cluster sampling, nationally-representative sample of Iranian children and adolescents' psychiatric disorders (IRCAP) survey	27111	91.78%	K-SADS-PL	*****
Mohammadi 2016 (50)	Multistage cluster random sampling (the population of these 5 provinces of Iran)	9639	98%	K- SADS-PL	*****
Naeimi 2016 (45)	Stratified random sampling method (students)	430	95%	EAT-26	*****
Nobakht 2000 (14)	Multistage random selection	3100	100%	1)EAT-26 2) SCID	*****
Rajabi 2014 (27)	Multistage cluster random sampling (female students)	710		EAT-26	****
Rasouli 2019 (45)	Two-stage random cluster sampling (students)	370		EAT-26	****
Rezaei 2015 (37)	Cluster random sampling (female students)	302	86%	EDDS	*****
Rostaee 2013 (13)	Random sampling (female students)	2766		EAT-26	****
Safarzade 2015 (52)	Stratified random sampling (students)	1500		EAT-26	****
Safavi 2009 (33)	Stratified random sampling (female students)	400		EAT-26	****
Sanaei 2016 (26)	Two-stage random sampling (female students)	619	82.5%	EAT-26	*****

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Study	Representativeness	Sample Size	Response Rate	Measurement Tool	Rating Quality of the Research
Shahrivar 2008 (56)	Cluster random sampling (adolescents, 12-17 years of age)	1105		K-SADS-PL	****
Shirzadi 2019 (23)	Screening phase of the rural and urban area of Kermanshah County (GHQ-28), random selection for the second phase of the study (SCID)	2103		SCID	****
Zamani 2013 (22)	Cluster random sampling (preschool children)	220		Self-made questionnaire (validated measurement tool)	****
Zarghami 2003 (49)	Stratified random sampling (female students)	1200		EAT-26	****
Nadjarzadeh 2012 (24)	Random sampling	400	91.5%	EAT-26	*****
Mohiti 2019 (46)	Random cluster sampling (female students)	359	100%	EAT-26	*****
Qaderi 2016 (25)	Cluster random sampling (female students)	340	93%	EAT-26	*****
Shams-Aldin Saeid 2010 (15)	Cluster random sampling (female students)	650	99.53%	EDDS	*****
Mollazade 2013 (28)	available sampling (female students)	420	94%	EAT-26	****
Garusi 2013 (16)	Multistage random sampling (community-based study)	1181	98%	EDDS	*****
Heidari 2006 (30)	Stratified random sampling (female students)	300		ADEI	****
Ebrahimzade mosavi 2017 (54)	Stratified random sampling (female/male students)	400		EAT-26	****
Hosseini kasnaviyeh (2014) (51)	Nonrandom sampling (female/male students)	400		EAT-26	****
Rouzitalab 2015 (53)	Systematic random sampling (female/male students)	210		EAT-26	****
Hosseini 2016 (38)	Random sampling (female students)	231	98.2%	EAT-26	*****
Roshandel 2012 (39)	Stratified random sampling (female students)	400		EDDI, EAT-26	****

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K-SADS-PL: kiddie schedule for affective disorders and schizophrenia for school-age children-present and lifetime version; EAT-26: eating attitude test–26 items; EDDS: eating disorder diagnostic scale; SCID: structured clinical interview for DSM-5; EDDI: eating disorder diagnostic inventory; ADEI: Ahwaz Eating Disorder Invantery.

ders with a 95% confidence interval was estimated to be 22% (CI, 7-38). The point prevalence of eating disorders was reported in 9 studies in men and 32 studies in women; therefore, by combining the results of each group, the point prevalence of eating disorders in men and women was estimated at 20% (95% CI, 0.13-0.26) and 23% (95% CI, 0.17-0.28), respectively.
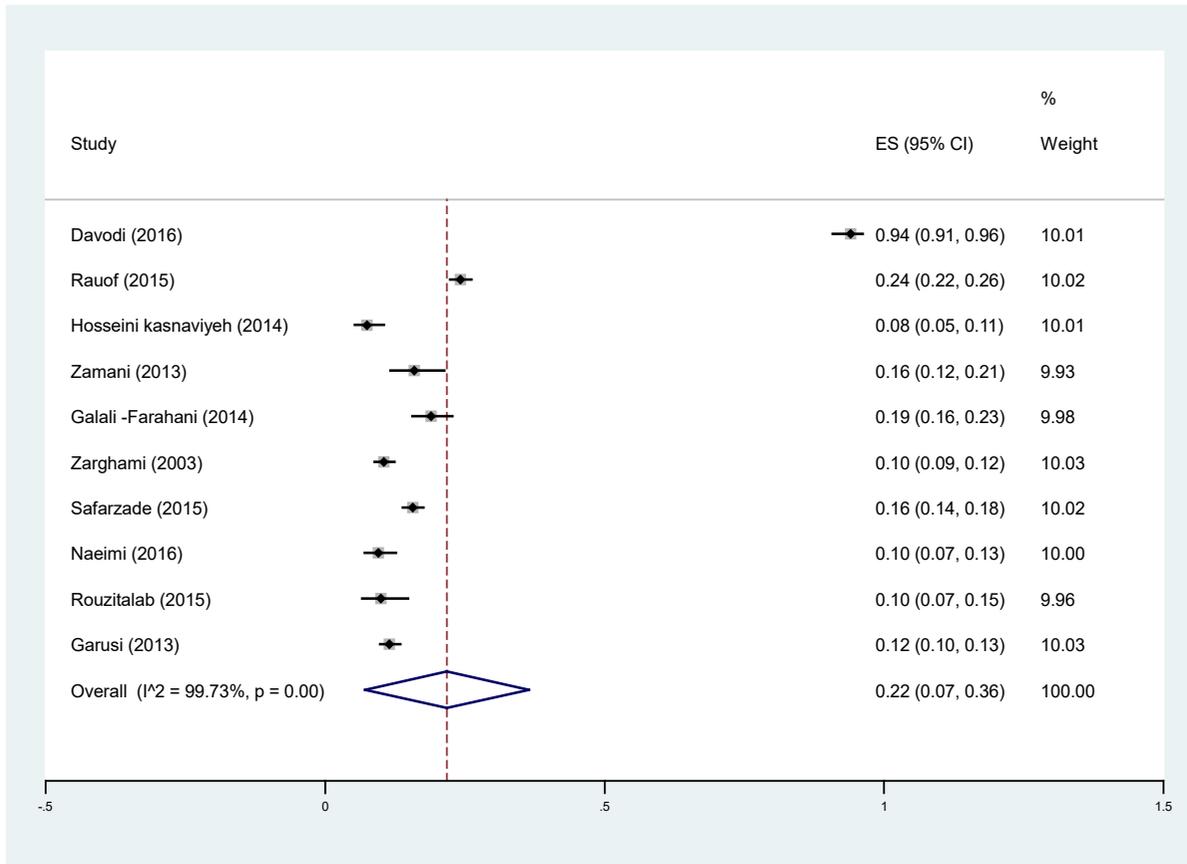
There was limited information on the prevalence of eating disorders subtypes in men as well as BED in women; however, the point prevalence of AN and BN in women was 0% (95% CI, 0.00 - 0.00) and 5% (95% CI, 3%-6%), respectively.

Similarly, we pooled the data from all studies that reported the lifetime prevalence of eating disorders, AN, and BN in 3 categories (1-both genders 2-men 3-women). In 3 studies, an overall estimate of eating disorders was not reported directly; therefore, we considered the total prevalence of AN and BN as the prevalence of eating disorders to have enough data to analyze.

Figures 3-5 show that lifetime prevalence of eating disorder, AN and BN with a 95% confidence interval was estimated at 1% (1%-2%) (I-square: 92.55%, P=0.00), 1% (0%-1%) (I-square: 91.32%, P=0.00), 1% (0%-1%) (I-square: 89.66%, P=0.00).

The lifetime prevalence of eating disorders in men and women was 1% (CI, 0%-1%) and 2% (CI, 1%-3%), respectively. The heterogeneity between groups was high, the I-square was estimated at 78.35%, P=0.00 in men, and 95.32%, P=0.00 in women.

Figure 2. Forest plot of point prevalence of eating disorders in both genders

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The lifetime prevalence of AN was estimated 0% in women (CI, 0.00–0.00) (I-square: 92.20%, P=0.00) and 0% (CI, 0.00–0.00) (I-square: 71.70%, P=0.00) in men.

The lifetime prevalence of BN in men and women was 0% (CI, 0.00–0.00) (I-square: 73.01%, P=0.01) and 1% (CI, 1%-2%) (I-square: 96.39%, P=0.00), respectively.

Only one article reported the lifetime prevalence of BED (13), which was estimated to be 0.48 in boys and 0.23 in girls (50).

To investigate the effect of gender as a source of heterogeneity on the overall prevalence of eating disorders, a meta-regression was performed which shows that the effect of gender is not significant (β=-0.01, P=0.832).
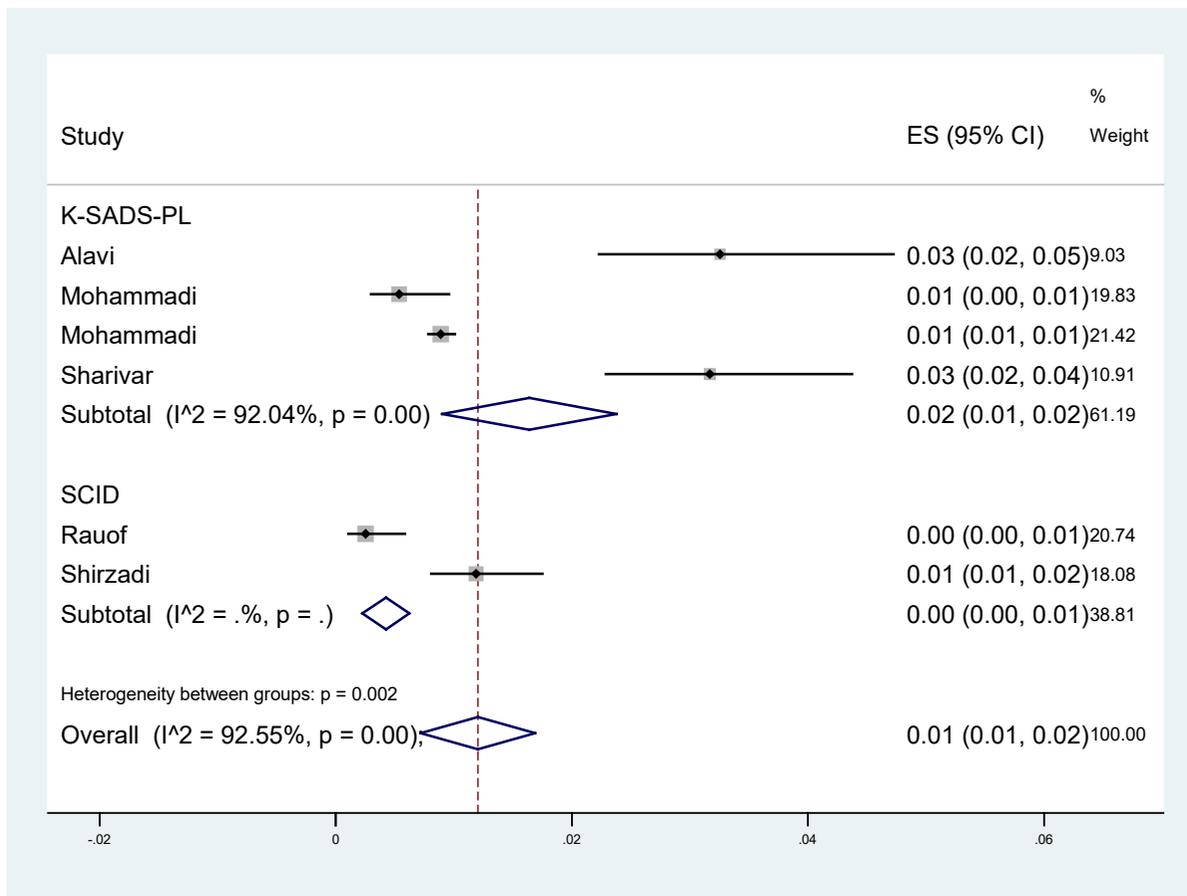
According to the results of the Egger test, the publication bias is statistically significant (P<0.001). The funnel plot chart of publication bias in the prevalence of eating disorders is shown in Figure 6.

3. Discussion

The results of this meta-analysis showed that the point prevalence and lifetime prevalence of eating disorders in Iran are 22% and 1%, respectively. The difference between men and women is not significant. The lifetime prevalence of AN and BN, separately, in the general population is 1%. In the female population, the point prevalence and lifetime prevalence of BN are higher than AN. However, in the male population, the prevalence of both major eating disorder subtypes is close to zero.

The review of epidemiological studies conducted on eating disorders in Iran shows that the prevalence of this disorder has been considered in almost all provinces and different population subgroups in recent years.

The results of the meta-analysis performed on the studies conducted with questionnaires are similar to some of the studies conducted in Asian countries near

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%

Study	ES (95% CI)	Weight
K-SADS-PL		
Alavi	0.03 (0.02, 0.05)	9.03
Mohammadi	0.01 (0.00, 0.01)	19.83
Mohammadi	0.01 (0.01, 0.01)	21.42
Sharivar	0.03 (0.02, 0.04)	10.91
Subtotal (I^2 = 92.04%, p = 0.00)	0.02 (0.01, 0.02)	61.19
SCID		
Rauof	0.00 (0.00, 0.01)	20.74
Shirzadi	0.01 (0.01, 0.02)	18.08
Subtotal (I^2 = .%, p = .)	0.00 (0.00, 0.01)	38.81
Heterogeneity between groups: p = 0.002		
Overall (I^2 = 92.55%, p = 0.00);	0.01 (0.01, 0.02)	100.00

-.02   0   .02   .04   .06

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Test(s) of heterogeneity:
            Heterogeneity  degrees of
              statistic     freedom        P      I^2**
K-SADS-PL        37.68        3           0.00    92.04%
SCID               .          1             .       .%
Overall          67.16        5           0.00    92.55%
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Figure 3. Forest Plot of lifetime prevalence of eating disorder in both genders

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Iran. According to a study conducted in 2014 on female medical students in Islamabad, Pakistan, using the EAT-26, 21.6% of the subjects had a score higher than the cut-off level (57).

In a small study of female adolescents in India using the EAT-26, 26.6% of the subjects scored above the cut-off level. In another retrospective study in the same country, 0.18% of children and adolescents who were referred to a psychiatric clinic had AN (58).
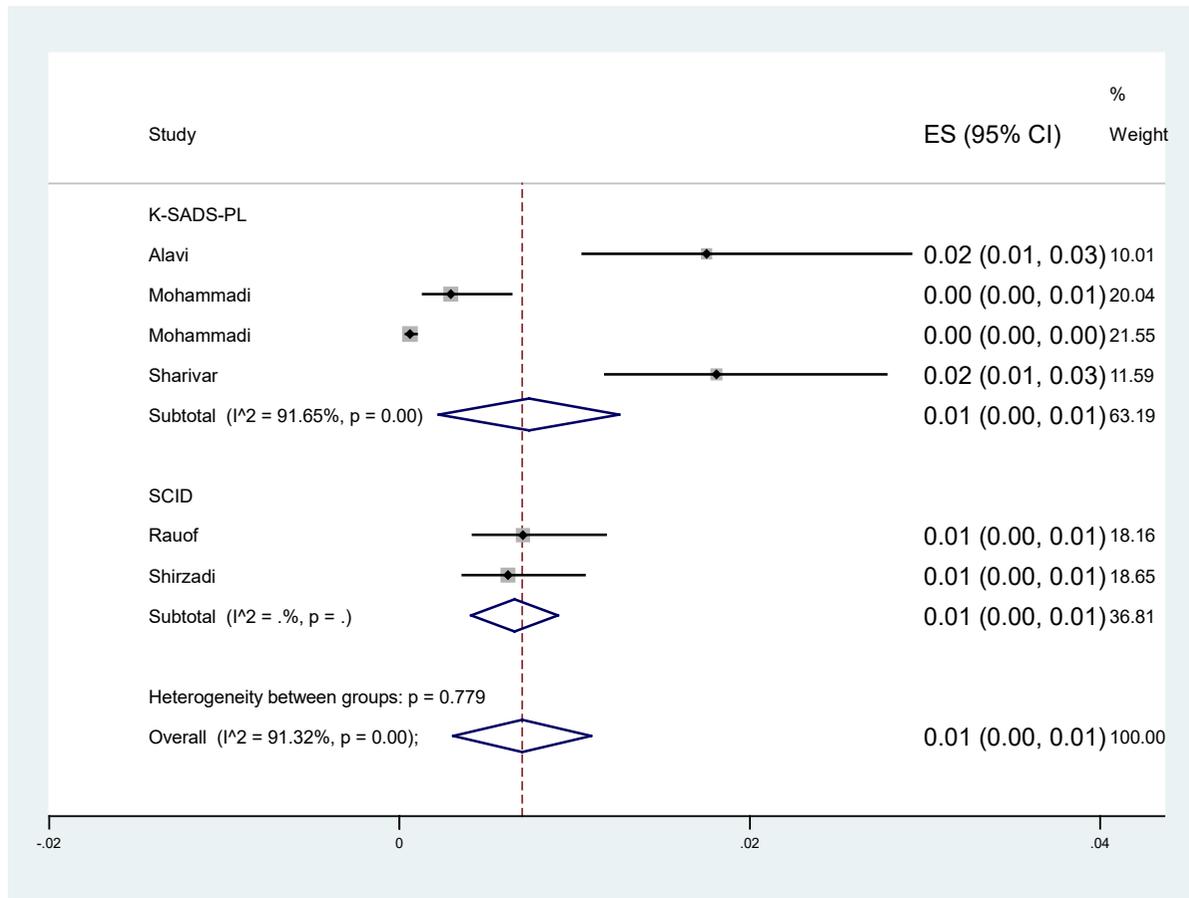
In studies conducted in Malaysia based on the EAT-26 questionnaire, 18.5% and 23.8% of people had a score higher than the cut-off level, which is considered at risk of eating disorders (59).

In addition to geographical proximity, countries like Pakistan, and India have significant similarities with Iran in terms of culture, socio-economic conditions, race, and genetic factors. This confirms the observa-

tions of other studies that emphasize the role of cultural, economic, and genetic factors in the epidemiology of eating disorders (60).

Most of the studies conducted in Iran were questionnaire based. They were performed among specific subgroups (female school or university students), which resulted in bias in this regard. Meanwhile, the standard method of the clinical interview was used in a small number of published studies. During the last 3 decades (from 1990 to 2021), 8 studies with the standard method of the clinical interview have been conducted in different population groups and scales in Iran.

The first study was conducted in 1998 by Nobakht & Dezhkam on girls from the age of 15 to 18 years in Tehran using the SCID and the results were associated with the highest prevalence of eating disorders (4.13%) among studies based on interview instruments (14).

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Figure 4. Forest plot of lifetime prevalence of anorexia nervosa in both genders   *Journal of Pediatrics Review*
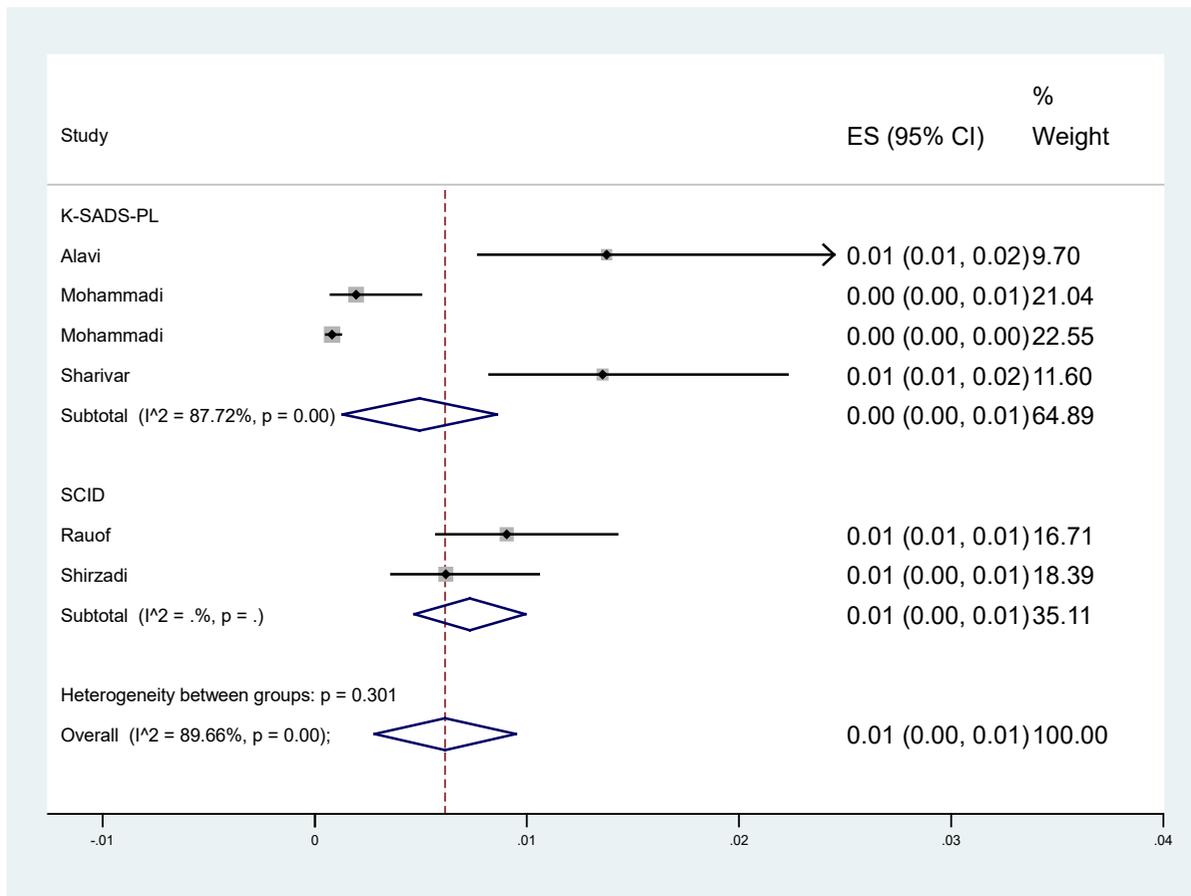
In 2009, Rostayi et al. reported a lower prevalence of eating disorders and its subcategories (2.1%) in a study conducted on the same population group with an instrument similar to the study of Dezhkam but a smaller sample size (2700 people) (32).

Six years later, Raouf et al. assessed 1990 male and female students in the age group of 13 to 15 years living in the two provinces of northwestern Iran (East and West Azerbaijan) using SCID, which showed a much lower prevalence compared to the other two previous studies (0.25%) (21).

In 2016, a study was conducted by Mohammadi et al. in 5 major provinces of Iran (Tehran, Isfahan, Fars, East Azerbaijan, and Khorasan Razavi) on 9639 people from the general population from the age of 6 to 18 years. This was performed at a larger sample size compared to previous studies. In this study, the KSADS-PL was used

as the research instrument and the prevalence of eating disorders was reported to be 0.52% (50).

Three years later, Mohammadi et al. conducted a wide national study in 30 provinces of the country, in which they used an edited version of the KSADS-PL based on the changes in the DSM-V criteria to diagnose eating disorders (13). Their study with the multistage cluster sampling method was performed on 27 111 children and adolescents in the age group of 6 to 18 years, with a total prevalence of eating disorders estimated at 0.89. Compared to previous studies in which the prevalence of eating disorders was calculated based on the DSM-IV criteria, the total prevalence of AN and BN subcategories in this study was 0.14%, which indicates a decrease in the prevalence of this disorder compared to other epidemiological studies conducted in this field over the last two decades. Similarly, the prevalence of AN and BN subcategories has sepa-

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Test(s) of heterogeneity:
            Heterogeneity  degrees of
              statistic     freedom              P       I^2**
K-SADS-PL            24.42          3            0.00     87.72%
SCID                    .          1               .         .%
Overall             48.34          5            0.00     89.66%
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Figure 5. Forest plot of lifetime prevalence of bulimia nervosa in both genders

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rately decreased compared to previous studies. Given the considerable population of this study, it had a statistically significant effect on the present meta-analysis and the results of the analysis are very close to the findings of the mentioned study.

In 2019, Shirzadi et al. surveyed psychiatric disorders in Kermanshah Province, west of Iran, which evaluated 2102 participants from the age of 20 to 73 years in two phases. They first screened the population for mental health problems and then used SCID to determine the prevalence of each disorder based on the DSM-IV criteria. This is the only study that has reported a lifetime prevalence of AN and BN in people over 20 years of age.

The results of this study are almost in line with several studies in other countries of the world. An epidemiological study conducted in South Korea in 2011 reported the lifetime prevalence of AN to be 0% and the prevalence of BN to be 0.1%. This study was per-

formed using the multi-stage cluster sampling method among 6027 adults from the age of 18 to 74 years and the Korean version of the composite international diagnostic interview (CIDI) has been used as a diagnostic instrument (61). In Latin America, the lifetime prevalence of AN was estimated to be less than 0.1% according to a review article (62).

However, the present meta-analysis shows that, in Iran, the prevalence of eating disorders and its subcategories is slightly different from the prevalence rate in developed and high-income Western countries, and also compared to studies conducted in other non-Western countries. For example, in a meta-analysis conducted in China, the lifetime prevalence of AN, BN, and BED was estimated at 0.21, 0.81, and 2.22%, respectively (63). In a review article by Hans W. Hoek, the lifetime prevalence of AN and BN in Africa was lower than in Japan (0.01% and 0.78% vs. 0.43% and 2.32% respectively), while the lifetime prevalence of
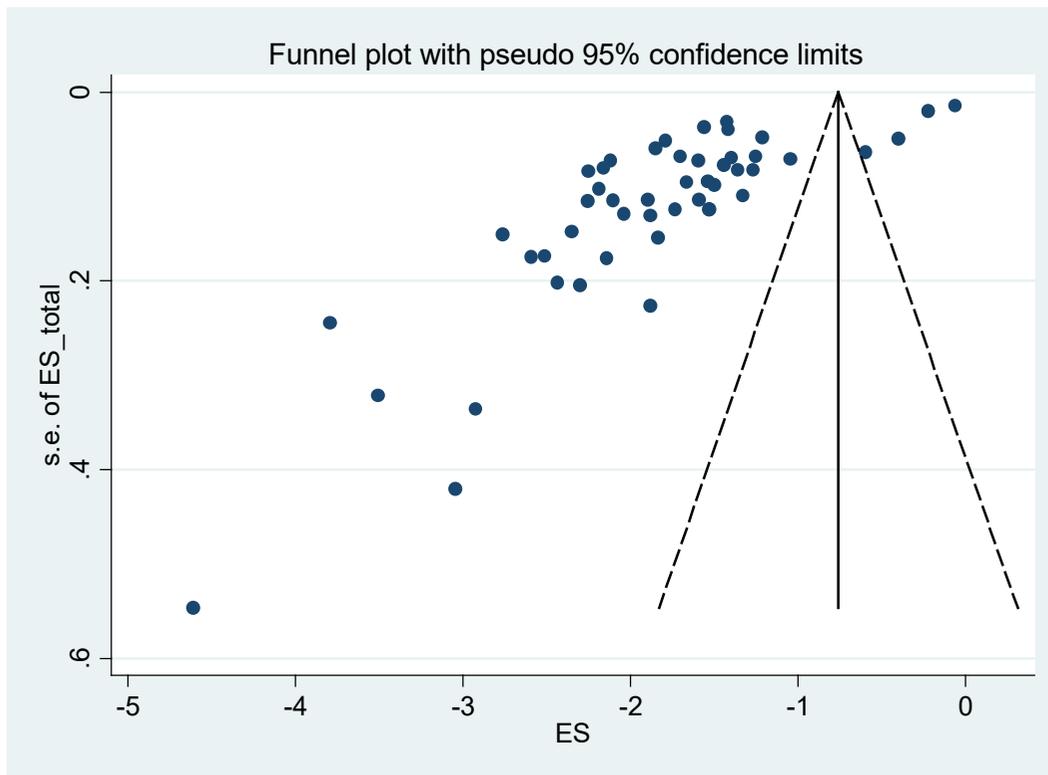
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Figure 6. Funnel plot of publication bias

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BED in Africa was higher than Japan (4.45% vs 3.32%). (5). According to retrospective data by Hudson et al., the mean age of the onset of AN, BN and BED are 18.9, 19.7, and 25.4 years, respectively (64). Due to the fact that all interview-based studies in Iran focus on children and adolescents under the age of 18, lack of sufficient standard studies covering older people may lead to this difference." is more accurate.

In addition, since the role of cultural and social factors is highly emphasized as a risk factor in the etiology of eating disorders (3, 60), it seems that unknown components in the Iranian culture are involved in the prevalence of this disorder. In their observations, Kolar et al. noted the effect of some cultural aspects in Latin America on the lower prevalence of AN compared to Western countries. They believe that some races prefer a muscular appearance and a higher body mass index (5).

Similarly, Perez et al. attribute the lower prevalence of AN in these individuals compared to other Western countries to the lower concern of Hispanic Americans about weight (5). Given that the findings of the present study prove that in Iranian women, the point prevalence of BN was higher than AN (5% vs. 1%) and the lifetime prevalence of BN was also slightly higher

than AN (1% vs 0%), it is hypothesized that, contrary to popular belief, weight ideals in Iranian women are less dependent on the media environment of Western societies; rather, the traditional pattern of desirable muscular appearance is still prevalent among Iranian women. However, we did not find any study about the attitude of the general Iranian population toward their ideal weight and appearance. Therefore, commenting on the impact of cultural indicators as well as social factors requires further research.

Pike et al. in 2014 reported that the prevalence of eating disorders in Asian countries is likely to increase in line with changes in globalization and industrialization (5). However, according to the present analysis, even though studies conducted in the last 30 years have evaluated a larger sample of children and adolescents, the prevalence of eating disorders has not been growing at least in people under the age of 18. Although in two studies conducted by Mohammadi et al. in 2016 and 2019, the prevalence of eating disorders increased from 0.52% to 0.89%, this small difference may be due to changes in the DSM classification system and the introduction of new criteria to diagnose eating disorders and its subcategories (13, 50).

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Another point worth noting in this meta-analysis is that the majority of articles have focused on girls and women, and there is limited information on eating disorders among Iranian boys and men. In the majority of studies that compared the two genders, the prevalence of eating disorders, especially AN, was higher in females. However, in the study by Mohammadi et al. (2019), a higher prevalence of BED was reported in boys (13). In the study by Garrusi, the prevalence of eating disorders in men from the age of 14 to 55 years was higher than in women in the same age group (12.2% vs 10.5%) (16). In the study by Rouzitalab, the prevalence in men from the age of 18 to 26 was higher than in women in the same age group (15.4% vs 4.8%) (53). It seems that the tendency to have a muscular appearance, which has become popular among Iranian adolescents and young boys in recent years, is effective in this event (13, 53), which requires more detailed studies.

4. Conclusions

The present meta-analysis is the only systematic review of the studies conducted from 1990 to 2021 on the prevalence of eating disorders in Iran and includes all articles that examine the population of healthy people and not individuals who refer to diagnostic and treatment clinics. In this review article, to homogenize the data, the studies have been separated according to the method used and the results of each group have been analyzed separately. According to our research findings, the prevalence of eating disorders and its major subgroups in children and adolescents is much lower than in high-income and industrialized countries, sufficient information about the epidemiology of this disorder and its other subgroups, such as BED and other specified feeding or eating disorders is not present in adults. Furthermore, determining the prevalence of this disorder among Iranian boys and men requires more attention, given the scarcity of available data. Considering the significant prevalence of BN in girls and BED in boys, it is necessary to provide health care about the cardiovascular consequences of being overweight in both population groups. It is worth noting that better clarification of the patterns of eating disorders in Iran requires studies that will be conducted in the future with accurate methodologies and instruments and based on the new DSM-V classification in both genders and all age groups of the general population.

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