Prevalence of body image concern among schoolgirls aged 12–17 years in Iran
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Abstract:
BACKGROUND/AIM: Adolescent girls’ concerns about their body images can negatively affect their social and academic performance. This study aimed to determine the prevalence of body image concern (BIC) in adolescent schoolgirls in Iran and its risk factors.

PATIENTS AND METHODS: This epidemiological study with cross-sectional design was conducted in 2018 on 396 middle schoolgirls aged 12–17 years (mean age = 14 years) living in Khorramabad, Iran. For screening BIC, the Persian version of BIC inventory (BICI) was used. Their birth order, school grade, school type, father’s education, and household income were also recorded. Collected data were analyzed in SPSS v. 18 software using descriptive statistics and Chi-square test.

RESULTS: Of 396 girls, 106 (26.8%) had BIC, 89 (84%) reported moderate BIC, and 17 (16%) severe BIC. Their mean BICI score was 40.84 ± 12.93 (out of 42). Most of them reported to spend a significant amount of time checking their appearance in the mirror (n = 81, 20.5%) and examining flaws in their appearance (n = 74, 18.7%). A few of them were embarrassed to leave the house because of the appearance and avoided from looking at the appearance in the mirror (n = 6, 1.5%). There was no significant difference in BIC severity in terms of birth order, school grade, school type, father’s education, and household income factors (P > 0.05).

CONCLUSION: The prevalence of BIC among schoolgirls in Iran is high. Appropriate therapeutic interventions should be carried out to improve their quality of life, mental health, and self-esteem to reduce the BIC prevalence.

Keywords: Adolescent, body image, epidemiology, health, schools

Introduction

Adolescence is a critical period in body image development. Changes in different cultural, social, physical, and psychological aspects that characterize adolescence have interaction with shape and body image between the ages 12 and 18 years.[1] Demographic factors such as sex, age, and celibacy have been reported to influence body image.[2] Body image is defined as a person’s perception, feelings and thoughts about his/her body, incorporating body size estimation, the evaluation of body attractiveness, and various emotions associated with body shape and size;[3] therefore, it can said that body image concern (BIC) is a multi-dimensional construct encompassing how we perceive, think, feel, and act toward our bodies in terms of size, shape, and general appearance.[4] BIC is associated with several variables such as weight control, self-esteem, body mass index and depressive symptoms,[2,3,5-7] eating disorders,[8] short- and long-term maintenance of physical activity,[9] experiential avoidance and metacognition beliefs,[6] sociocultural factors,[8] and mental health.[10] Body image dissatisfaction is considered as the primary motivation for

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It also causes depression and anxiety, lower quality of life, weight concerns and alcohol abuse.

Recent studies have mostly screened the BIC prevalence in university students. A few of them have investigated it in school students. In one study conducted in 2010 on adolescent schoolgirls aged 10–16 years in Jordan, 21.2% of them were reported to have BICs. In another study conducted in 2013 on public school students aged 11–17 years in Brazil, it was reported that 19.5% of the adolescents had BICs, with a prevalence of 26.6% in girls and 10% in boys. Body image dissatisfaction is higher in females than in males. Adolescent girls’ concerns about their body image, due to real or imaginary preoccupation, develop a sense of shame which makes them avoid social situations and thus negatively affects their social and academic performance. Given the physical, psychological, and social consequences of BICs, it is important to identify the factors associated with this disorder. Considering the high prevalence of this disorder in Iran, the problems that this disorder causes, and the risk factors for adolescents, especially girls, scholars should continue to investigate possible causal variables to further understand and treat BIC. To our knowledge, no epidemiological study in Iran has examined BIC prevalence among school students. Most of the recent epidemiological studies on BIC in Iran have been conducted among college students (aged ≥18 years). Considering this limitation and given that BIC prevalence in girls is higher than in boys, this study aimed to determine the prevalence of BIC among schoolgirls aged <18 years in Iran and its risk factors.

**Patients and Methods**

This is an epidemiological study with a cross-sectional design. The study population consisted of all middle schoolgirls in Khorramabad, Iran, in 2018. Of these, 396 were selected using a multi-stage stratified cluster random sampling method. For sampling, first, the city was divided into two regions and all girls’ middle schools were considered as clusters. Then, from each region, six schools (three nonprivate and three private) were randomly selected, and in each school, one classroom was selected from each grade. From each class (n = 36), 11 students aged 12–17 years who had given informed consent to participate in the study were selected randomly and using the random number table. Unwillingness to continue participating in the study and returning incomplete questionnaires were the exclusion criteria. Participants were screened for BIC using the Persian version of BIC inventory (BICI) as well as a demographic form for surveying age, birth order, grade, type of school, father’s education, and household income. The BICI is a 19-item, reliable, valid, and user-friendly tool for assessing dysmorphic concern developed by Littleton et al. It consisted of two factors: the first with 12 items is about dysmorphic appearance concern and the second factor with 7 items is about interference in social functioning due to appearance concerns. Littleton et al. reported Cronbach’s alpha of 0.92 and 0.76 for these two factors, respectively (total α = 0.93). For each item, respondents were asked to rate how often they had the described feeling on 5-point Likert type scale ranged from 1 = Never to 5 = Always. The measure is scored by summing the scores of all items. The total score ranges from 19 to 95 where higher scores represent higher levels of dysmorphic concerns. The cutoff point for considering BIC as positive was 42. The psychometric properties of this tool have been reported to be satisfactory in the Iranian society. The BICI was first translated to Persian by Bassak Nejad. They reported acceptable validity and internal consistency (Cronbach’s alpha = 0.73) of its Persian version. Ghadakzadeh et al. also tested the validity and reliability of the Persian BICI items and reported a validity of 85% and Cronbach’s alpha of 0.90. Questionnaires were completed by the researcher through interviewing students. Before collecting data, necessary permissions were obtained from related organizations and the study was approved by the Research Ethics Committee of Lorestan University of Medical Sciences (code: IR.LUMS.REC.1397.056). After explaining the study method and objectives, they all signed an informed consent form. They were assured of the confidentiality of their information. Collected data were analyzed in Statistical Package for the Social Sciences (SPSS) v.18 (SPSS Inc., Chicago, IL, USA) software using descriptive statistics (frequency and percentage) and Chi-squared test. The significance level was set at 0.05 (P < 0.05).

**Results**

Participants had a mean age of 14.1 ± 0.99 years (ranged 12–17 years). Most of them (51.5%) were first-born children and first-grade students (34.1%) studying in public schools (51%); most of them had fathers with high school diploma and lower level (49.3%), and household income of most of them was >30 million Rials (51.8%). Table 1 presents more information about their demographic characteristics. Of the 396 participants, 106 had BIC (26.8%) where 89 (84%) had moderate and 17 (16%) severe BIC. None of them had mild BICs. Their mean score from the BICI was obtained as 40.84 ± 12.93. Table 2 presents the prevalence of BIC based on the BICI items. As can be seen, most of the participants answered “always” to the question no. 2 (n = 81, 20.5%) stating: “I spend a significant amount of time checking my appearance in the mirror” and the question no. 12 (n = 74, 18.7%) stating: “I examine flaws in my appearance”, while only a few of them responded...
Table 1: Characteristics of participants (n=396)

| Characteristics                        | n (%) |
|----------------------------------------|-------|
| Birth order                            |       |
| 1<sup>st</sup>                          | 204 (51.5) |
| 2<sup>nd</sup>                          | 108 (27.3) |
| 3<sup>rd</sup>                          | 63 (15.9) |
| 4<sup>th</sup> and higher               | 21 (5.3) |
| Total                                  | 396 (100) |
| Father’s education                     |       |
| High school diploma and lower          | 195 (49.3) |
| Bachelor degree                        | 126 (31.8) |
| Master degree                          | 75 (18.9) |
| Total                                  | 396 (100) |
| Household income (Rials)               |       |
| <20 million                            | 48 (12.1) |
| 20-30 million                          | 143 (36.1) |
| >30 million                            | 205 (51.8) |
| Total                                  | 396 (100) |
| Grade                                  |       |
| 1<sup>st</sup>                          | 135 (34.1) |
| 2<sup>nd</sup>                          | 127 (32.1) |
| 3<sup>rd</sup>                          | 134 (33.8) |
| Total                                  | 396 (100) |
| Type of school                         |       |
| Public                                 | 202 (51) |
| Private                                | 194 (49) |
| Total                                  | 396 (100) |

always” to the items no. 17 and 19 (n = 6,15%) which were related to the embarrassment to leave the house because of the appearance and avoiding from looking at the appearance in the mirror. Over 80% of them had responded “Never” to these two questions.

Table 3 presents statistics of the participants with BIC based on risk factors of birth order, school grade, school type, father’s education, and household income. Most of those with severe BIC were first-born child children (14.6%); third-grade students (22.5%) studying at private schools (19%), with household income >30 million rials (20.3%), and their father had high school diploma and lower degree (15.4%). Furthermore, the Chi-square test results presented in Table 2 showed no statistically significant difference in BIC severity between students in terms of birth order (P = 0.903), school grade (P = 0.356), school type (P = 0.367), father’s education (P = 0.976), and household income (P = 0.07). This indicates that these factors have no association with the BIC prevalence (P > 0.05).

Discussion

In today’s societies where the main beauty goals of adolescent and young people, especially girls, are to be fit and lean, changes caused by puberty put more pressure on them to meet these goals. They spend a lot of time (and money) thinking and concerning about their body shape. BIC is one’s wrong perception, feelings and thoughts of appearance and body which leads to significant distress and/or impairment, depression and anxiety, lower quality of life, weight concerns, and eating disorders. So far, various studies have been conducted to determine the prevalence of BIC in adolescents. Its prevalence has been reported differently in various studies. There is no official estimate of the prevalence of BIC, and it is difficult to obtain these estimates since people usually try to hide this disorder. In this epidemiological study, we attempted to estimate the prevalence of BIC among schoolgirls in Iran. The prevalence rate was reported 26.8%, where 89 (84%) had moderate and 17 (16%) severe BIC. This indicates that more than one-fifth of the adolescent girls had BIC which is considerable. In Iran, a few of epidemiological studies have investigated its prevalence among school students. Esnaashari et al. reported body dysmorphic disorder prevalence in high school female students in Yazd city as 7.1%. Safarzade et al. showed that 23.4% of secondary schoolgirls in Gonabad County had body dysmorphic disorder. As can be seen, the reported rate in our study is higher compared to their studies. This can be due to differences in place of residence, study population, educational level, and the awareness level. In our study, participants had 12–17 years old with a mean age of 14 years, while in the studies of Esnaashari et al. and Safarzade et al., the mean age of schoolgirls with body image dissatisfaction was 17 and 16 years, respectively. According to the American Psychiatric Association, the average age at the onset of body shape concerns is 12–13 years. Early onset is related to severity of symptoms, a history of attempted suicide and greater comorbidity, substance abuse, and anxiety and personality disorders. Most of the recent epidemiological studies on BIC prevalence in Iran have been conducted among university students (aged ≥18 years); in the study of Asgari and Amini on 151 college students (male and female) using the BICI tool for screening in Ahhar county, 27.3% had severe BIC. In Moghimian et al.’s study, 34.4% of 360 female university students in Isfahan city had moderate-to-severe BIC. Momeni et al. reported that among 394 medical students in Qazvin city, 27.8% had moderate-to-severe BIC where girls had higher dissatisfaction. In both the studies, students had been evaluated by the Body Shape Questionnaire. Accordingly, it can be said that college students have higher BIC compared to school students which is also consistent with other studies conducted in foreign countries. For example, the results of Thomas et al. in the United Arab Emirates and El Ansari et al. in Egypt support this claim. They indicated that 74.8% and 40% of female university students were dissatisfied with their current estimated body image, respectively. Ferrari et al. in a study in Brazil also reported a high prevalence of body image dissatisfaction among university students (69.5%).
Among studies conducted on school students in other countries, Mousa et al. [22] evaluated adolescent schoolgirls aged 10–16 years in Jordan and reported that 21.2% of them had BIC. In the study of Santana et al. [6], 26.6% of public schoolgirls aged 11–17 years in Brazil had BIC. Both the studies used the Body Shape Questionnaire for screening. Compared to our study where schoolgirls were assessed by the BICI tool, it can be said that BIC prevalence among schoolgirls in Iran is higher than in these countries. This can be because of differences in the

### Table 2: Prevalence of body image concern among the schoolgirls based on the body image concern inventory items

| Item                                                                 | Never, n (%) | Rarely, n (%) | Sometimes, n (%) | Often, n (%) | Always, n (%) |
|----------------------------------------------------------------------|--------------|---------------|------------------|--------------|---------------|
| 1. I am dissatisfied with some aspect of my appearance                | 142 (35.9)   | 96 (24.2)     | 78 (19.7)        | 42 (10.6)    | 38 (9.6)      |
| 2. I spend a significant amount of time checking my appearance in the mirror | 65 (16.5)    | 67 (17.1)     | 105 (26.5)       | 78 (19.8)    | 81 (20.5)     |
| 3. I feel others are speaking negatively of my appearance             | 329 (83.4)   | 29 (7.3)      | 18 (4.5)         | 10 (2.5)     | 10 (2.5)      |
| 4. I try to camouflage certain flaws in my appearance                 | 123 (31.1)   | 99 (25)       | 65 (16.4)        | 42 (10.6)    | 67 (16.9)     |
| 5. I examine flaws in my appearance                                   | 102 (25.8)   | 105 (26.4)    | 60 (15.2)        | 55 (13.9)    | 74 (18.7)     |
| 6. I have bought clothing to hide a certain aspect of my Appearance  | 154 (38.9)   | 82 (20.7)     | 49 (12.4)        | 48 (12.1)    | 63 (15.9)     |
| 7. I feel that others are more physically attractive than me          | 239 (60.3)   | 70 (17.7)     | 40 (10.1)        | 22 (5.6)     | 25 (6.3)      |
| 8. I have considered consulting/consulted some sort of medical expert regarding flaws in my appearance | 329 (83.2)   | 29 (7.3)      | 18 (4.5)         | 10 (2.5)     | 10 (2.5)      |
| 9. I have missed social activities because of my appearance           | 42 (87.5)    | 6 (12.5)      | 48 (100)         |              |               |
| 10. I have been embarrassed to leave the house because of my appearance | 338 (85.4)   | 31 (7.8)      | 13 (3.3)         | 8 (2)        | 6 (1.5)       |
| 11. I fear that others will discover my flaws in appearance           | 208 (52.5)   | 108 (27.2)    | 30 (7.6)         | 20 (5.1)     | 30 (7.6)      |
| 12. I have avoided looking at my appearance in the mirror             | 353 (89.1)   | 20 (5.1)      | 12 (3.0)         | 5 (1.3)      | 6 (1.5)       |

### Table 3: Prevalence of body image concern among the schoolgirls based on the severity level categorized by risk factors

| Variable                        | Moderate | Severe | Total | Test results* |
|---------------------------------|----------|--------|-------|---------------|
| Birth order, n (%)              |          |        |       |               |
| 1st                             | 41 (85.4)| 7 (14.6)| 48 (100)| R=0.571, df=3,  |
|                                 |          |        |       | Sig.=0.903    |               |
| 2nd                             | 32 (84.2)| 6 (15.8)| 38 (100)|               |
| 3rd                             | 10 (76.9)| 3 (23.1)| 13 (100)|               |
| 4th and higher                  | 6 (85.7)| 1 (14.3)| 7 (100) |               |
| Type of school                  |          |        |       |               |
| Nonprivate                      | 42 (87.5)| 6 (12.5)| 48 (100)| R=0.815, df=1, |
|                                 | 47 (81)  | 11 (19)| 58 (100)| Sig.=0.367    |               |
| Private                         |          |        |       |               |
| Grade                           |          |        |       |               |
| 1st                             | 33 (86.8)| 5 (13.2)| 38 (100)| R=2.064, df=2, |
|                                 | 25 (89.3)| 3 (10.7)| 28 (100)| Sig.=0.356    |               |
| 3rd                             | 31 (77.5)| 9 (22.5)| 40 (100)|               |
| Household income                |          |        |       |               |
| <20 million                     | 13 (76.5)| 4 (23.5)| 17 (100)| R=5.115, df=2, |
|                                 | 29 (96.7)| 1 (3.3)| 30 (100)| Sig.=0.077    |               |
| >30 million                     | 47 (79.7)| 12 (20.3)| 59 (100)|               |
| Father's education              |          |        |       |               |
| High school diploma and lower   | 44 (84.6)| 8 (15.4)| 52 (100)| R=0.048, df=2, |
|                                 | 24 (82.8)| 5 (17.2)| 29 (100)| Sig.=0.976    |               |
| Bachelor degree                 | 21 (84)  | 4 (16) | 25 (100)|               |

*Chi-square test, R=Pearson Chi-square. BIC=Body image concern
study population, screening tool, living environment, and sociocultural factors. Our results revealed that a father’s education and household income, birth order, school grade, and school type had no significant association with having BIC. This is consistent with the results of Brito et al. [24] In their study in Brazil on the prevalence and severity of body dysmorphic disorder symptoms in patients seeking abdominoplasty (mean age = 38 years), no statistically significant difference was found between groups with respect to their sociodemographic characteristics including educational level. Regarding household income, birth order, school grade, and school type, no similar study was found to compare them with our results. Concerns over body image among school students who are human capital of a society indicate a challenge to their mental and physical health. Since they play a vital and undeniable role in the future development of a country, their physical and mental health should be taken into account. Adolescents with body image dissatisfaction should be identified and treated properly to improve their social, occupational, and academic status. Based on the results of this study, there is a need for future studies on preventive measures to reduce the BIC of school students, especially girls.

There were some limitations in conducting this study. For example, we used a self-report tool for assessing samples. Samples were only adolescent girls and there were some difficulties in the diagnosis of their BIC. Psychological state of samples during the completion of the questionnaires was another limitation that can affect the responses. Furthermore, no comparison was conducted between those with and without BIC. Further studies are recommended to use different tools for screening, on other gender groups (boys), and in other cities of Iran and compare the patients with controls.

Conclusion

It was found out that BIC prevalence was high among schoolgirls aged 12–17 years in Iran. It is recommended that appropriate therapeutic interventions such as metacognitive interventions, individual therapies, or cognitive-behavioral therapies should be designed for them to improve their self-esteem. It is also recommended that the cultural factors involved in the diversity of the results should be identified.

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Conflicts of interest

There are no conflicts of interest.

References

1. Voelker DK, Reel JJ, Greenleaf C. Weight status and body image perceptions in adolescents: Current perspectives. Adolesc Health Med Ther 2015;6:149-58.
2. Asgari M, Amini K. Investigating self-esteem and body image concern among students of Islamic Azad University of Abhar using demographic variables. PCNM 2017;7:25-32.
3. El Ansari W, Dibba E, Labeeb S, Stock C. Body image concern and its correlates among male and female undergraduate students at Assuit University in Egypt. Glob J Health Sci 2014;6:105-17.
4. Golmohammadian M, Morovati F, Rashidi A. To predict the concern of body image based on mindfulness, experiential avoidance and metacognition beliefs in high school students. IJHEHP 2018;6:168-78.
5. Garrusi B, Garousi S, Baneshi MR. Body image and body change: Predictive factors in an Iranian population. Int J Prev Med 2013;4:940-8.
6. Santana ML, Silva RC, Assis AM, Raich RM, Machado ME, de J Pinto E, et al. Factors associated with body image dissatisfaction among adolescents in public schools students in Salvador, Brazil. Nutr Hosp 2013;28:747-55.
7. Jankauskiene R, Baceviene M. Body image concerns and body weight overestimation do not promote healthy behaviour: Evidence from adolescents in Lithuania. Int J Environ Res Public Health 2019;16:864.
8. Kristjánsdóttir H, Sigurðardóttir P, Jónsdóttir S, Porsteinsdóttir G, Saavedra J. Body image concern and eating disorder symptoms among elite icelandic athletes. Int J Environ Res Public Health 2019;16:2228.
9. Johnson P, Fallon EA, Harris BS, Burton B. Body satisfaction is associated with Transtheoretical Model constructs for physical activity behavior change. Body Image 2013;10:163-74.
10. Mostafavirad F, Dehghan Ardekani Z. Predicting mental health based on the personality characteristics and body image of high school female adults students. J Women Soc 2019;10:331-64.
11. Ghadakzadeh S, Ghazipour A, Khajeddin N, Karimian N, Borhani M. Body image concern inventory (BICI) for identifying patients with BDD seeking rhinoplasty: Using a Persian (Farsi) version. Aesthetic Plast Surg 2011;35:989-94.
12. Danesh S, Foroozanzadeh E. The big 5 personality and body image in cosmetic surgery applicants in Esfahan. Shenakht J Psychol Psychiatry 2018;5:115-28.
13. Ghazizadeh Hashemi SA, Edalatnoor B, Edalatnoor B, Niksou O. A comparison of body image concern in candidates for rhinoplasty and therapeutic surgery. Electron Phys 2017;9:5363-8.
14. Junne F, Zipfel S, Wild B, Martus P, Giel K, Resmark G, et al. The relationship of body image with symptoms of depression and anxiety in patients with anorexia nervosa during outpatient psychotherapy: Results of the ANTOP study. Psychotherapy 2016;53:141-52.
15. Czerand CE, Sarwer DB, Kazak AE, Clarke A, Rumsey N. Body image and quality of life in adolescents with craniofacial conditions. Cleft Palate Craniofac J 2017;54:2-12.
16. del Mar Bibiloni M, Coll JL, Pich J, Pons A, Tur JA. Body image satisfaction and weight concerns among a Mediterranean adult population. BMC Public Health 2017;17:39.
17. Silva DA, Nahas MV, de Sousa TF, Del Duca GF, Peres KG. Prevalence and associated factors with body image dissatisfaction among adults in southern Brazil: A population-based study. Body Image 2011;8:427-31.
18. Ferrari EP, Petroski EL, Silva Diego AS. Prevalence of body image dissatisfaction and associated factors among physical education
students. Trends Psychiatry Psychother 2013;35:119-27.

19. Moghimian M, Salmani F, Azarbarzin M. Investigation of relationship between body image satisfaction and academic field of study of female students of Islamic Azad university branch of Najafabad. Iran J Nurs Res 2012;7:64-71.

20. Momeni M, Ghorbani A, Hasandoost F. Predictors of body image dissatisfaction among students of Qazvin University of Medical Sciences. IJPN 2016;4:28-37.

21. Thomas J, Khan S, Abdulrahman AA. Eating attitudes and body image concerns among female university students in the United Arab Emirates. Appetite 2010;54:595-8.

22. Mousa TY, Mashal RH, Al-Domi HA, Jibril MA. Body image dissatisfaction among adolescent schoolgirls in Jordan. Body Image 2010;7:46-50.

23. Presnell K, Bearman S, Stice E. Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. Int J Eat Disord 2004;36:389-401.

24. Brito MJ, Nahas FX, Cordás TA, Gama MG, Sucupira ER, Ramos TD, et al. Prevalence of body dysmorphic disorder symptoms and body weight concerns in patients seeking abdominoplasty. Aesthet Surg J 2016;36:324-32.

25. Garrusi B, Baneshi M. Body dissatisfaction among Iranian youth and adults. Cad Saúde Pública 2017;33:e00024516.

26. Littleton HL, Assom DS, Fury CL. Development of the body image concern inventory. Behav Res Ther 2005;43:229-41.

27. Littleton H, Breitkopf CR. The body image concern inventory: Validation in a multiethnic sample and initial development of a Spanish language version. Body Image 2008;5:381-8.

28. Bassak Nejad S. The relationships between selected psychological antecedents and body image concern among women seeking plastic surgery. Int J Psychol 2007;1:35-46.

29. Buhlmann U, Glaesmer H, Mewes R, Fama JM, Wilhelm S, Brähler E, et al. Updates on the prevalence of body dysmorphic disorder: A population-based survey. Psychiatry Res. 2010;178:171-5.

30. Esnaashari N, Bakhshayesh A, Afshani A. The prevalence of body dysmorphic disorder in female adolescents of Yazd. J Shahid Sadoughi Univ Med Sci 2014;22:1237-45.

31. Safarzade S, Tohidinik HR, Mahmoody-Khorandi ZM. The prevalence of body dysmorphic disorder in adolescents of Gonabad county in 2014. J Clin Psychol 2016;1:93-100.

32. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013. p. 242-7.

33. Björnsson AS, Didie ER, Grant JE, Menard W, Stalker E, Phillips KA. Age at onset and clinical correlates in body dysmorphic disorder. Compr Psychiatry 2013;54:893-903.