

# Abnormal eating attitudes in secondary-school girls in South Africa — a preliminary study

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**Objectives.** To document the existence of eating attitudes that may reflect current, pre- or subclinical eating disorders. To establish preliminary prevalence figures for abnormal eating attitudes.

**Design.** Cross-sectional survey of eating attitudes.

**Setting.** Non-clinical, community-based.

**Subjects.** Female high-school pupils.

**Outcome measures.** Total score derived from a self-report questionnaire, Eating Attitudes Test (EAT-26), which measures eating attitudes. Factor profile describing dimensions of eating-related psychopathology, derived from the clustering of questions on the EAT-26.

**Results and conclusions.** An overall prevalence figure of abnormal eating attitudes of 21.66% was documented. Black pupils had a higher prevalence than white pupils (37.5% v. 20.67%). The factor profile of respondents with abnormal eating attitudes did not differ between the race groups, although within the total sample, black respondents had a significantly stronger drive toward thinness. A significant developmental continuum was established, with prevalence figures for abnormal eating attitudes increasing with each standard from Standard 7 onward. The study provides preliminary epidemiological data on the prevalence of adolescent girls either suffering from or at risk of the development of an eating disorder. In addition, the study also provides evidence of the need for intervention strategies that commence in the pre-teen years.

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The concept that eating attitudes reflect the existence of eating-related psychopathology (anorexia nervosa, bulimia nervosa and eating disorder not otherwise specified<sup>1</sup>) would appear to be inherent in the Eating Attitudes Test (EAT-40;<sup>2</sup> EAT-26<sup>3</sup>). Both versions of this self-report questionnaire allow for the calculation of a score which, if above a certain value (EAT-40 — 30; EAT-26 — 20) is considered consistent with the presence of an eating disorder. The EAT-26 is valid for both clinical and non-clinical populations.<sup>4</sup>

The existence of eating disorders in the South African context is well established.<sup>5,6</sup> The studies by Norris<sup>5</sup> and Nash and Colborn<sup>7</sup> were clinically based. That by Ballot *et al.*<sup>6</sup> was a prevalence study that used body dimensions and reports of self-perception to diagnose anorexia nervosa in schoolgirls, while Le Grange *et al.*<sup>8</sup> used both the EAT-40 and a semi-structured interview to screen for anorexia nervosa at a ballet school.

Abnormal eating attitudes are associated with eating disorders and may reflect the presence of subclinical or preclinical forms of eating disorders.<sup>9</sup>

To date there do not appear to have been systematic studies of the prevalence of abnormal eating attitudes in South African schoolgirls, using the EAT-26 as a screening instrument. Most recently, however, the prevalence of eating disorders at certain universities was studied, although not reported in detail.<sup>10</sup> Of specific concern within the South African context is the emergence of these conditions in our black population. This phenomenon was mentioned in the report by Swartz and Sheward<sup>10</sup> and has been documented clinically.<sup>11</sup> Subsequent to the 3 cases reported by Szabo *et al.*,<sup>11</sup> additional black schoolgirls have been treated at the eating disorder unit at Tara, a psychiatric facility in Johannesburg, all diagnosed with bulimia nervosa. From a situation where no black patients with these conditions had ever been documented or reported on in South Africa, we now had several clinical cases. Given the clinical existence of eating disorders in a sector of the South African population not previously associated with such conditions, as well as the general paucity of South African data on the subject, it seemed imperative to conduct a preliminary prevalence study using a screening method (EAT-26) that reliably identifies abnormal eating attitudes in a non-clinical population.<sup>12</sup>

The aim was to provide preliminary data on the extent of the problem in an at-risk population generally and in black female South Africans specifically.

## Method

The study was conducted at an all-girl, racially diverse, English-medium private school situated within the greater Johannesburg metropolitan area. There were no specific characteristics that made the chosen school preferable to any other similar school. However, the nature of the school was important for a number of reasons, viz. socio-economic status of the participants (upper and upper-middle classes are predominantly associated with eating disorders;<sup>13</sup> the prevalence of dieting, bingeing and vigorous exercise for weight control increases with higher socio-economic status,<sup>14</sup>) and the fact that private schools have been racially diverse for a longer period than government schools in South Africa (which might enhance the effect of exposure to 'Western' culture on the black pupils), with greater assimilation of the values hypothesised to influence the onset of eating disorders in ethnic groups not typically associated with these conditions.<sup>15</sup>

The study was approved by the Committee for Research on Human Subjects at the University of the Witwatersrand and was obviously fully discussed with the principal of the school. An information letter was sent to all parents who,

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together with their daughters, were required to sign a consent form before participating. Participation was voluntary and anonymity mandatory.

Having received approval from all the parties involved, a specific day and time were chosen for the study. All pupils present simultaneously completed a demographic datasheet that included information pertaining to race, age, school standard, height and weight (which all participants had been instructed to measure the day before the study), the EAT-26 and a dieting questionnaire<sup>12</sup> that explores the participants' own dietary practices and highlights potential family, peer and media influences. (These findings are reported in a separate paper.) One of the authors (CH) was present at the school on the day of the study.

Frequency tables were compiled in respect of the demographic data. The means for height, weight and body mass index (BMI) (weight (kg)/(height (m) x height (m))<sup>2</sup>) were calculated. EAT-26 scores were derived from the completed questionnaires and means established for both white and black respondents. Scores  $\geq 20$ <sup>12,17</sup> were taken as suggestive of an eating disorder, with prevalence figures being established for the entire sample as well as both black and white subsamples. In addition, prevalence figures were also established for each school standard<sup>6-10</sup> for the purposes of confirming the possible presence of a developmental continuum, i.e. with increasing school standard, the prevalence of EAT-26 scores indicative of an eating disorder increases. Scores for the specific factors (I: dieting behaviour, II: bulimia and food preoccupation, III: oral control), which are derived from the clustering of specific items from the EAT-26, were also calculated.<sup>3</sup>

### Statistical analysis

Two sample *t*-tests were used to compare means; chi-square tests for both association and trend were used to determine whether a significant relationship between abnormal eating attitudes and school standard existed.

## Results

Two hundred and thirteen girls participated in the study: 84% of the sample ( $N = 179$ ) were white, 11.3% ( $N = 24$ ) black, 3.3% ( $N = 7$ ) oriental, 0.9% ( $N = 2$ ) Indian and 0.5% ( $N = 1$ ) coloured. All pupils speak and are taught in English, yet there were 15 different home languages within the sample. However, 90% ( $N = 191$ ) cited English as their home language. With regard to school standard, 20.2% ( $N = 43$ ) were in Standard 6, 21.1% ( $N = 45$ ) in Standard 7, 22.1% ( $N = 47$ ) in Standard 8, 23.9% ( $N = 51$ ) in Standard 9 and 12.7% ( $N = 27$ ) in Standard 10 (matric). The mean height was 167 cm (SD = 6.458), the mean weight 53.15 kg (SD = 8.518) and the mean BMI 19.01 (SD = 2.68).

The mean age was 14.75 years (SD = 1.39). The mean EAT-26 score for the sample was 11.74 (SD = 11.44), which is slightly higher than the normative data (mean EAT-26 score = 9.9; SD = 9.2) described originally<sup>3</sup> (Table I). For the purposes of this study, the primary racial groups compared were black and white (Table II). The mean age of black pupils was 15.41 years (SD = 1.139) and of white pupils 14.69 years (SD = 1.39). A *t*-test revealed a significant difference ( $P = 0.0153$ ). The mean BMI of black pupils was

20.14 (SD = 2.95) and of white pupils 18.88 (SD = 2.64). A *t*-test procedure revealed no significant difference ( $P = 0.067$ ).

Table I. Demographics of sample ( $N = 213$ )

	Age (yrs)	Weight (kg)	Height (m)	BMI	EAT-26
Mean	14.75	53.15	1.67	19.01	11.74
	Black	White	Coloured	Indian	Oriental
Race (%)	11.3	84	0.5	0.9	3.3
	6	7	8	9	10
Standard (%)	20.2	21.1	22.1	23.9	12.7

Table II. Results

	BMI	EAT-26 score	Age	Factor I score	Factor II score	Factor III score
Total sample						
Black	20.14	16.16*	15.41†	11.83†	1.58	2.75
White	18.18	11.50	14.69	7.89	1.37	2.23
EAT-26 $\geq 20$						
Black	20.67	27.55	16	20.11	2.66	4.77
White	19.47	31.02	15.54	21.56	4.67	4.78
EAT-26 < 20						
Black	19.81	9.33†	15.06	6.86	0.93	1.53
White	18.72	6.41	14.46	4.33	0.51	1.57

\*  $P = 0.05 - 0.06$ .

†  $P < 0.05$ .

The mean EAT-26 score for blacks was 16.16 (SD = 10.47) and for whites 11.50 (SD = 11.63). A *t*-test procedure revealed no significant difference ( $P = 0.052$ ), although the result tends towards significance. Of the total sample, 21.66% ( $N = 46$ ) (scored  $\geq 20$  on the EAT-26. All were from either the black ( $N = 9$ ) or white ( $N = 37$ ) samples, giving prevalence figures of 37.5% for blacks and 20.67% for whites. The total sample of black and white pupils was separated into those with EAT scores  $\geq 20$  and those with scores < 20. Within the former group, no significant differences were found (using *t*-test procedures) between the racial groups for either mean BMIs (black = 20.67, SD = 3.40; white = 19.47, SD = 2.05;  $P = 0.36$ ), EAT scores (black = 27.55, SD = 6.5; white = 31.02, SD = 8.87;  $P = 0.20$ ) or ages (black = 16, SD = 1.22; white = 15.54, SD = 1.04;  $P = 0.25$ ). Within the latter group, *t*-test procedures revealed no difference with regard to mean BMIs (black = 19.84, SD = 2.75; white = 18.72, SD = 2.76;  $P = 0.16$ ) or age (black = 15.06, SD = 0.96; white = 14.46, SD = 1.38;  $P = 0.10$ ), but a significant difference was found with regard to EAT scores, with black pupils scoring higher (black = 9.33, SD = 4.77; white = 6.41, SD = 4.96;  $P = 0.38$ ). Within both racial groups, those pupils scoring 20 or above on the EAT-26 had significantly higher mean ages than those scoring below 20 (black:  $P = 0.049$ ; white:  $P = 0.00$ ). Scoring of the specific factors within the total sample of black and white pupils revealed significantly higher mean factor I scores for black pupils (black = 11.83, SD = 7.94; white = 7.89, SD = 8.24;  $P = 0.03$ ) using a *t*-test procedure. Mean factor II and III scores were not significantly different. In the pupils scoring

≥ 20 on the EAT, no significant differences were found between the racial groups in respect of individual factor scores; this was also the case for those scoring < 20. Finally, prevalence figures for each school standard were calculated. Using chi-square analyses, a significant association was noted, with an increasing prevalence for each successive school year (Std 6:  $N = 1$  (2.33%); Std 7:  $N = 6$  (13.33%); Std 8:  $N = 11$  (23.4%); Std 9:  $N = 15$  (29.41%); Std 10:  $N = 13$  (48.15%); chi-square = 23.97,  $df = 4$ ,  $P < 0.001$  (Fig. 1). However, the chi-square test for trend was not significant (chi-square = 0.7818;  $df = 3$ ;  $P > 0.01$ ), implying that the prevalence rates do not increase in a uniformly linear fashion.

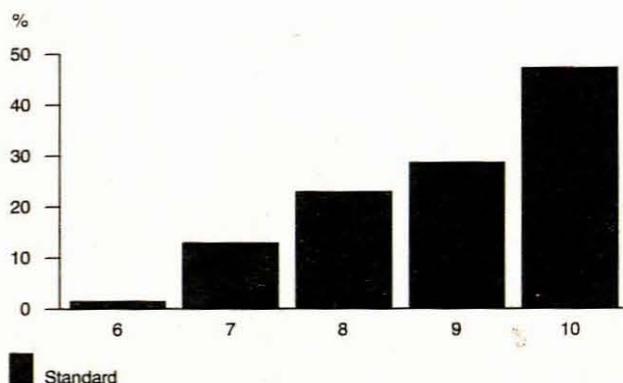


Fig. 1. Abnormal EAT-26 scores — prevalence (%) by school standard.

## Discussion

While the existence of eating disorders in both clinical and non-clinical samples has been documented in South Africa<sup>5-8,11</sup> the current study — albeit in a preliminary way — is apparently the first attempt to provide epidemiological data on the prevalence of abnormal eating attitudes, as measured by the EAT-26, which may reflect current, pre- or subclinical eating disorders in this schoolgirl sample. Furthermore, the study highlights the existence of such attitudes in a non-clinical sample of black South African schoolgirls.

All 213 girls present on the day of the study completed the demographic datasheet, EAT-26 and dieting questionnaire. Total enrolment at the school is 280 and 3 pupils were absent on the day; the participation rate was therefore 76% (6 pupils were absent on the day before the study and 4 on the day after). This figure is slightly lower than the 83% participation rate obtained in a similar study conducted in Egypt.<sup>18</sup> However, in a recent Japanese study of eating attitudes,<sup>12</sup> 24% of the participants refused to consent to the use of weight information. While this is not strictly analogous to non-participation, it does reflect that in that sample only 76% of the subjects participated fully. The basis of the non-participation is not clear, but one might speculate that within this group there exist individuals for whom the exploration of eating-related issues is threatening. The overall prevalence of 21.6% is significantly higher than an earlier, similar African study conducted in Egypt<sup>18</sup> that reported a prevalence of 11.4% with regard to abnormal

eating attitudes (EAT-40) in a secondary school female population. On direct interview of those pupils scoring positively (≥ 30), 15 of the 40 were diagnosed as having an eating disorder (4.6%). In the current study, the anonymity required by the ethics committee precluded such an interview. However, a British study of abnormal eating attitudes in London schoolgirls<sup>19</sup> using the EAT-26 found that approximately 25% of EAT-positive respondents had an eating disorder at clinical interview. Theoretically this would translate into a 5.4% prevalence of eating disorders in the current sample. Studies using the EAT-40 in Arab populations have found significantly higher positive predictive values.<sup>18,20</sup>

The specific prevalence figures are of interest in that among the black pupils, abnormal eating attitudes are more common than among their white counterparts (37.5% v. 20.67%). Despite the emergence of clinical eating disorders in South African blacks,<sup>11</sup> this was an unexpected finding. Comparison of the total black and white samples did not reveal significant differences in either the BMI or EAT scores. However, the black sample had both a higher mean BMI and EAT score with EAT-negative (< 20) black scholars scoring significantly higher on the EAT-26 than their white counterparts. These findings could imply that black scholars in the current sample have more disturbed eating attitudes than white scholars. Within the group of pupils scoring positively on the EAT (≥ 20), no difference was found between black and white pupils in respect of either their BMIs, EAT scores or factor profiles. These findings provide evidence that within the sample studied, respondents with a potential eating disorder are similar across racial groupings. This is in keeping with the clinical findings described by Szabo *et al.*<sup>11</sup> Overall analysis of specific factor scores revealed that black pupils had a stronger preoccupation with being thinner. This finding stands in contrast to that of a study<sup>21</sup> that applied the Eating Disorders Inventory (EDI) to a racially diverse group of secondary-school girls attending private schools in Zimbabwe. The site of that study was Harare, the capital city. The study found that white pupils had a stronger drive toward thinness. It was concluded that black subjects were less driven with regard to the intensity of dieting behaviour (the 'drive for thinness' sub-scale on the EDI has a relatively high correlation with the 'dieting' (factor I) sub-scale on the EAT-26<sup>22</sup>). The current study provides contradictory evidence. It needs to be borne in mind that that study was undertaken some 9 years earlier. It might also be speculated that urban, black society in Zimbabwe is more 'traditional' than in South Africa, i.e. less inclined to endorse Western aesthetic values. In attempting to explain our finding, two factors are important. Firstly, although not significantly different, black pupils had a higher mean BMI than white pupils. The desire to weigh less and serious dieting behaviour are more commonly associated with a higher BMI.<sup>23,24</sup> This is certainly the situation in our study where the group with the lowest mean EAT score (6.4) had the lowest mean BMI (18.72), viz. the EAT-negative white group. Secondly, the role of cultural assimilation might be significant. This is stated in view of the well-established impact of relocation from one culture to another<sup>9</sup> on promoting abnormal eating attitudes. However, other factors associated with relocation have also been implicated, e.g. personality traits of neuroticism and introversion, as well as

parental overprotectiveness.<sup>9</sup> Of specific relevance to the findings of this study are those of a study<sup>25</sup> that found a greater prevalence of eating disorders among Asian schoolgirls than their white counterparts at a secondary school in Bradford, England. In addition, the mean scores on the EAT-26 were higher for the Asian sample, as in our black sample. While not ascribing this finding to the stress of acculturation, the concept was discussed with specific reference to a study<sup>26</sup> where a 'positive correlation' had been found between abnormal eating attitudes and acculturation among adolescent Hispanic girls in America. In both of the aforementioned studies the groups under acculturative stress were non-white immigrants. How does one reconcile this with black, South African, adolescent, secondary-school girls?

The prevailing ethos of South African private and government English-medium (formerly whites only) schools is strongly Anglophile. The impact of acculturation on a young black girl entering a formerly whites-only educational facility is potentially akin to that experienced by adolescent Asian girls in England or Hispanic girls in America. However, this is not necessarily the situation where black pupils predominate. Further study is required on the validity of acculturative stress as a risk factor in the local setting. With regard to the overall and specific prevalence figures, international studies provide a basis for comparison. The overall figure of 21.66% is similar to that of a Canadian study<sup>27</sup> which established a prevalence rate of 22%. This may reflect the powerful influence of North American value systems to which young South Africans were predominantly exposed, via the entertainment media, during the recently ended British cultural boycott of South Africa. Recent American studies have documented prevalence rates of abnormal eating attitudes, using the EAT-26, of 17.5% (suburban adolescent females<sup>28</sup>) and 18.2% (female college students<sup>29</sup>).

The prevalence figure of 37.5% for our black sample closely resembles that found for high-risk populations, i.e. 38% among dance students and 34% among modelling students.<sup>30</sup> This could imply that black adolescents who attend private schools are an extremely high-risk group. The finding of a significant development continuum, with an increase in abnormal eating attitudes commencing in standard 7 (mean age = 13.88 years, SD = 0.43), correlates well with previous findings that in normative populations body dissatisfaction increases markedly from age 13 to 14 years, with girls aged 14 - 18 years tending to score higher on the body dissatisfaction scale of the EDI than 11 - 13-year-olds.<sup>31</sup> The finding that 48.15% of final-year high-school girls in this sample have abnormal eating attitudes is alarming, yet should be interpreted with caution in respect of its generalisability until more extensive research is conducted. However, one should not be dismissive, given the recent finding that scores on the EDI body dissatisfaction subscale in a non-clinical sample of female college undergraduates<sup>29</sup> were higher than those reported in the normative data of a decade earlier.<sup>32</sup> By implication, body dissatisfaction has increased in the past decade, affecting eating attitudes accordingly.

Numerous limitations pertain directly to this study, which is also subject to the limitations that apply to similar studies. The sample size and specific characteristics of the school

preclude generalisation of the findings. However, as the majority of the school participated one can assume that the findings are potentially representative of similar schools in South Africa. At the very least, the data provide preliminary evidence of the extent of abnormal eating attitudes in a specific segment of South African society. In doing so, they serve as a point of reference for more extensive and comprehensive work investigating the problem. As mentioned earlier, the extent of epidemiological data within the South African context is very limited. The use of the EAT-26 as the screening instrument could be questioned in terms of its validity in a South African adolescent sample. The study should be viewed as the first in a process of future validation of this instrument in this population group. In terms of its applicability to an adolescent sample, the mean age of this sample was very similar to an earlier study<sup>2</sup> that validated the use of this questionnaire in adolescents (current: 14.75; earlier: 15.5). The current study demonstrated that pupils scoring above the cut-off score of 20 tended to be older in both black and white samples. This may simply indicate that age is a risk factor for abnormal eating attitudes or that cognitive maturity influences the understanding and hence accuracy of responses, consequently with higher scores. The existence of clinically diagnosed eating disorders, in accordance with *DSM* criteria, within the South African setting would seem to imply that the associated risk factors for the development of these conditions are also operational within the South African setting. An optimal cut-off score, predictive of an eating disorder and derived from South African samples, would be ideal. This begs the question: how different are samples subscribing to 'Western' value systems in terms of eating attitudes and associated behaviour? A recent study<sup>33</sup> comparing Austrian and American samples using the EDI found no significant dissimilarities in respect of bulimia nervosa, implying that different cultural groupings that subscribe to similar value systems manifest with the same condition in a uniform way. However, the same does not necessarily apply cross-culturally, i.e. when comparing First- and Third-World or 'Western' and non-Western cultures. In terms of clinical eating disorders, weight phobia is an inconsistent finding in non-Western patients with anorexia nervosa.<sup>34</sup> With regard to the use of the EAT-26 as a screening instrument for abnormal eating attitudes in non-Western, non-English-speaking samples, caution has been expressed in respect of the validity of prevalence figures for abnormal eating attitudes derived in these settings, which tend to be much higher than those from English-speaking, 'Western' settings, despite the lower prevalence of clinical eating disorders.<sup>35</sup>

Misinterpretation of questions, despite careful translation, would appear to be the confounding factor. This was unlikely to have been an issue in our current sample in that no translation took place, and prior to the study the questionnaire was screened by the school authorities to assess the sophistication of the language used. However, this in itself does not guarantee that all questions were correctly interpreted by the current sample, for whom English is not a first language. Modifications of the wording have been made for a subsequent study, according to the recommendations of the school authorities.

## Conclusion

The current study appears to be the first use of the EAT-26 in a secondary-school, female, adolescent, racially diverse sample in South Africa. The findings demonstrate a rather high prevalence of abnormal eating attitudes. The overall prevalence rate approximates those found in numerous North American studies, suggesting a possible cultural influence. The prevalence rate among black scholars is comparable to that in very high-risk groups, which may be attributable to acculturative stress experienced in the school situation. The findings of the study provide preliminary substantiating evidence that the clinical cases of eating disorders in black South African females<sup>11</sup> potentially portend the emergence of these conditions in numbers similar to those in their white counterparts. (This view is also shared by the authors of a recent British study.<sup>35</sup>) Further research into this is obviously warranted. The study also provides preliminary data on the age of onset and nature of progression of abnormal eating attitudes. The findings highlight the need to consider interventions in the pre-teenage period, given a 2.33% prevalence of abnormal eating attitudes in scholars in their first year of high school with a mean age of 12.8 years (SD = 0.58); this increases significantly each year thereafter to a prevalence of 48.15% in the final year of high school.

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