

A Population-Based Study of Eating Disorders in Young Persons in Malta: Prevalence in Males Nearly Equals that in Females

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Abstract

Objective: The objective of this study was to examine the prevalence of eating disorders and attitudes to food and eating for youths between 10 and 16 years of age, in order to aid in the diagnosis and treatment of eating disorders in young people through empirical research in a previously unexamined area.

Methods: The tool selected for this population-based study was the ChEAT, i.e. the Children's Eating Attitudes Test. A representative cohort of 400, randomly sampled, young people aged 10-16, were asked all 26 questions of the ChEAT via telephone, while their parents/guardians were asked socio-demographic questions,

Results: 5.5% (2.25% M, 3.25% F) of the cohort scored at or above the cut-off of 20, indicating the presence of an eating disorder. No significant associations were found between disordered eating and socio-demographic data.

Conclusions: Findings indicate that males are catching up to females in eating disorder diagnoses. A male slightly higher mean ChEAT ≥ 20 could denote that disordered eating could be more acute for young men who are between 10 to 16 years old than it is for young women aged 10 to 16. The lack of significant association between the disordered eating and socio-demographic data could be a factor of the ages under examination in this study, and possibly these associations could arise at later ages.

Keywords: eating disorders, adolescents, children, male eating disorders, Children's Eating Attitudes Test

Highlights

- This population-based study was the first time Maltese research investigated the incidence of disordered eating or eating disorders among this population. A previous study had examined the prevalence of eating disorders for older age groups.
- Findings showed that 5.5% (3.25% female and 2.25% male) of 10 to 16-year-olds could be suffering from an eating disorder.
- Although eating disorders are often seen as affecting females more, these results indicate that in Malta, for this age group, eating disorders in males are matching up to eating disorders in females.

1. Introduction

Eating disorders are harmful eating behaviours that cause disturbances to normal perceptions and approaches to food and eating, and impair physical and mental health as well as social interactions (Treasure et al., 2010). Although they are commonly seen as mainly affecting young females, in reality they can affect anyone at any age, male as well as female (Mitchison et al., 2014). Anorexia nervosa and bulimia nervosa are relatively well-known eating disorders, along with binge eating disorder. (APA, 2013). Meanwhile, although not as widely recognised, avoidant/restrictive feeding disorder (ARFID) is becoming more well-known and more prevalent (Zimmerman & Fisher, 2017). Considering the havoc these disorders wreak on lives and given their high mortality rate, eating disorders are serious concerns. Adolescence has been determined to be a time of heightened risk for the development of these disorders (Culbert et al., 2015). Studies have shown that better outcomes are attained the earlier these disorders are identified and treated (Allen et al., 2013; Lyubov Matytsina et al., 2014; Zhang & Wing, 2015).

Eating disorders are significant public health concerns due to their wide-ranging social, physical, mental and economic impacts (Carta et al., 2014) and cost sufferers dearly, resulting in a very real impact to productivity, education, occupation, and especially to sufferers' future prospects. Although eating disorders are treatable, treatment is usually a lengthy and difficult process, made more so by sufferers' tendencies to be resistant to treatment (Fassino & Abbate-Daga, 2013). Van Hoeken & Hoek (2020) state that over 3.3 million healthy life years are lost annually to eating disorders. Mortality risk is persistently high, while the quality of life and earning potential of sufferers is reduced. With an average course of an eating disorder of around 6 years (Schmidt et al., 2016; Austin et al., 2021), the costs to national health systems are substantial – around 48% higher for sufferers than for non-sufferers, and for a minority of sufferers, treatment is unsuccessful.

Epidemiological studies of eating disorders, including prevalence studies, provide information about “the occurrence of disorders and trends in the frequency of disorders over time” (Smink et al., 2012, p. 406). These studies give a general overview of the onset and progression of these disorders. Epidemiological studies show that although 15-19-year old females are the focus of most research, eating disorders are increasing among males and older women, as well as in non-Western countries (Hoek, 2016). Typically, understanding of eating disorders has been aimed at young females, with aetiology, diagnosis, treatment and outcomes mainly studied for this demographic. Meanwhile, although interest is increasing, studies of eating disorders in males fall short (Culbert et al, 2015; Strother et al., 2012). However, as several studies note, the incidence and prevalence of eating disorders among men is increasing (Ganson et al., 2019; Pritchard, 2008; Strother et al., 2012), yet as Forrest et al, (2017, as cited in Ganson et al., 2019) observe “less than one in ten adolescent males with an eating disorder seeks treatment” (p.2).

According to prevalence data, the lifetime prevalence for an eating disorder as described in the DSM is 2.9% for women and 0.1% for men. (Nagl et al., 2016). Epidemiologists such as Nagl et al., (2016) and Keski-Rahkonen & Mustelin (2016) place lifetime prevalence rates for sub-clinical EDs at 2.2% for females, while the rate for males is estimated to be 0.7%. With numerous negative effects that eating disorders exert on all areas of a sufferer's life, and the huge impact on their quality of life, identifying and treating eating disorders as soon as possible is vital, particularly as treatment results improve the sooner that treatment for the disorder is begun. Early treatment greatly improves results and enhances the long-term possibility of recovery (Cooney et al., 2018).

Until quite recently, general understanding of the development of eating disorders in Malta and the effect that these have on the sufferer's life and outcomes was not well understood or even studied. A 2012 study examined the prevalence of eating disorders in the Maltese Islands for the first time, although only for people aged 15 to 65. The purpose of this study was to determine the prevalence of eating disorders and establish what treatment was needed (Grech, 2013). The 2012 study found that Malta had prevalence rates for eating disorders on par with the rest of Europe, and this served as the basis for the setting up, in 2014, of the national eating disorder and obesity treatment center - *Dar Kenn għal Saħħtek* (Home for the Shelter of your Health). This facility offers both residential and semi-residential, holistic treatment programmes (Falzon Aquilina et al., 2015; Grech, 2013). Nonetheless, within a few years of operation *Dar Kenn għal Saħħtek* found that they were admitting a number of patients younger than 15 years of age, and realised that although eating disorders were present in the population, not enough was known about them by the general public as well as professionals (Orsini, 2017). This led to a collaboration between the eating disorder treatment facility and the Faculty of Social Wellbeing at the University of Malta, which was tasked to examine the prevalence of eating disorders among young persons in Malta aged 10 to 16, a previously unexplored area (Azzopardi et al., 2020). The full report is available on <https://www.um.edu.mt/library/oar/handle/123456789/76595>. This paper will present findings from that study.

1.1 Objectives

The objectives of this paper, as identified in the original study, as presented in Azzopardi et al., 2020, are:

- 1) to investigate the prevalence of eating disorders among children and adolescents in the Maltese Islands;
- 2) to determine whether socio-demographic factors such as age, educational attainment, or other factors play a part in the prevalence of eating disorders;
- 3) to deliver evidence-based information to guide future planning of eating disorder treatment.

2. Methods

For this study the Children's Eating Attitudes Test (ChEAT) was selected as the most appropriate study tool. The 26-item ChEAT was developed by Maloney, McGuire and Daniels in 1988 (Maloney et al., 1988), is widely used with children populations, and has been validated for use with children from the age of 8 years old (Ornstein et al., 2017), as well as translated into various languages in a number of studies globally (Chiba et al., 2016; Lommi et

al., 2020; Sancho et al., 2005). For this study, the ChEAT was translated into Maltese by two independent researchers and back-translated into English to evaluate the precision of the translation. Additionally, the Maltese ChEAT was piloted with a small group, to ensure that it was clear and comprehensible for the age groups at which this study was aimed. Permission to use the test was obtained from Dr Maolney on 20th March 2020, and the project was granted ethical approval from the Faculty for Social Wellbeing Research Ethics Committee at the University of Malta and also from the University Research Ethics Committee (Ref. 5613) in July 2020.

Sample size was determined by consulting online sample size calculators, and minimum sample size was found to be 379. A final sample size of 400 was selected as this was above the minimum limit. A total of 1636 telephone calls were made in order to achieve a stratified sample of 400 respondents, with a 95% confidence level and +/- 5% margin of error (Azzopardi et al., 2020). Out of all the telephone calls made, 547 did not fulfill eligibility criteria, 174 did not wish to participate, 6 persons did not complete the survey and a further 509 calls were unanswered.

Data collection began in August 2020, and was done by telephone via stratified random sampling, in order to be nationally representative. Data collected were representative by gender, age and the district where the child respondent lived. Since the target group consisted of minors, before data was collected consent was obtained from the parents/guardians, and assent was obtained from the children, in line with ethical requirements. Demographic data about the parents, family composition and children's age and gender was gathered from the parent or guardian who replied to the call, while the children's attitude to food and eating was assessed by asking them the 26 items from the ChEAT (Children's Eating Attitude Test). Respondents were given the choice of whether they preferred to reply in English or Maltese.

Participants' anonymity was maintained since no identifying details were collected, and as the children's responses were ranged on a 5-point Likert scale from 'Always' to 'Never', their replies also remained confidential and could not be understood by anyone in the room with them, only by the researchers. Scoring followed the conventional method of assigning a score of 0 (zero) for answers of sometimes, rarely and never, a score of 1 (one) for often, a score of 2 (two) for very often and 3 (three) for always, as directed by Maloney et al. The aggregate score denotes the child's attitude to eating, with a standardised cut-off score of ≥ 20 indicating problematic eating patterns and higher scores indicative of greater disordered eating and the presence of eating disorders (Murphy et al., 2019). Although no clinical interviews were held to confirm results, a "score of 20 or greater is considered clinically significant relative to the normative population" (Ornstein et al., 2017, p.1069).

Since for persons with an eating disorder, talking about their eating patterns can be distressing, during the data collection phase, the children were given details of a helpline they could contact if they felt disturbed following the discussions. Provisions were also made for a clinical psychologist, child psychologist and drama therapist from *Dar Kenn għal Saħħtek* to be on call in case the telephone interviewer felt that the child needed professional assistance. Both child participants and parents were informed before beginning the telephone interview that if researchers felt that the child showed clear signs of an eating disorder, in order to safeguard the child, the researchers would terminate the survey and ask to speak to the parents (due to all participating children being under age). In such a case, researchers would then ask to refer the child to the stand-by team from *Dar Kenn għal Saħħtek*, however no such instances were encountered in this study. This set-up was put in place as it was felt that the researchers had a duty to put the children's health and wellbeing first.

The data were analysed using SPSS version 26. Cronbach's alpha was used to test internal consistency, with results showing high validity for the Maltese version of the ChEAT, which returned a Cronbach's alpha value of 0.77. This compares well to similar studies using ChEAT such as Chiba et al., (2016); and Sancho et al., (2005). Examination of variables was made using the Chi-Square test of associations.

3. Results

Of the 400 children who completed the ChEAT, 212 were females (53%) and 188 were males (47%). Distribution was fairly even across all age groups, with mean age being 13 years. The majority of respondents ($n = 378$; 94.5%), scored below the cut-off point of ≥ 20 . However, 5.5% ($n = 22$) had ChEAT 26 scores above the cut-off score of 20 or more, signifying the possibility of an eating disorder or the presence of disordered eating (Figure 1, below). Overall, the mean ChEAT score was 6.46, with mean score for females of 6.47, and a mean score of 6.45 for males. Of the 5.5% ($n = 22$) who scored 20 or above, 59.1% were female ($n = 13$; 3.25% of total sample), while 41% were male ($n = 9$; 2.5% of total sample), (Table 1, below). The highest ChEAT score (49) belonged to a 15-year-old male residing in the Northern Harbour, who attended a private/independent school; a 14-year-old female who also lives in the Northern Harbour, had the highest score (42) among females scoring ≥ 20 , and attended Government/public schooling. The mean ChEAT ≥ 20 score for females was 27.4, while for males it was 28.9.

Chi-square tests were carried out on variables of interest, including age, gender district of residence, marital and employment status of parents and type of school attended, however no statistically significant association was found for any of these variables.

Distribution of ChEAT ≥ 20 Scores by Gender

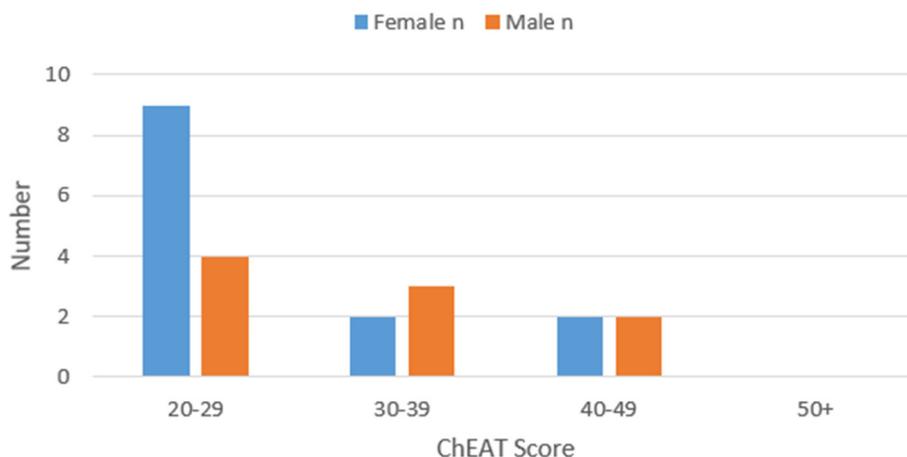


Figure 1. ChEAT ≥ 20 Scores by Age

Table 1. ChEAT Scores by Gender

Description	Female		Male		Total	
	N	%	N	%	N	Total %
CHEAT Score < 20	199	49.75%	179	44.75%	378	94.5%
CHEAT Score ≥ 20	13	3.25%	9	2.25%	22	5.5%
Number of Respondents	212	53%	188	47%	400	100%

Many Researchers have commented upon an in-built factorial structure within the ChEAT (Legendre et al., 2021; Smolak, & Levine, 1994). For this study, the research team identified the 5-factor model preferred by Murphy et al., (2019), who examined different permutations of the latent factors, as the best fit, since the authors determined it was the most robust. Examining means for the 5 factors of Weight Preoccupation (WP), Dieting (D), Food Preoccupation (FP), Vomiting and Purging (VP), and Social Pressure (SP), it was found that, in this sample, Weight Preoccupation was the most strongly influential factor, with a mean of 0.84, while Vomiting and Purging (mean of 0.03) was the least frequent behavior within this cohort (Figure 2).

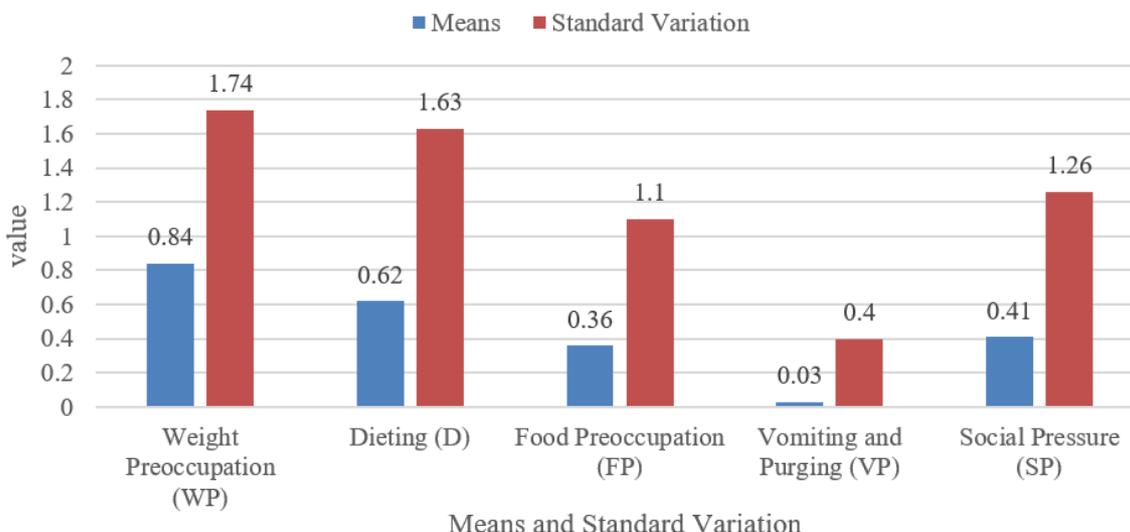


Figure 2. Means Examination for 5-Factor Model

4. Discussion

Although these results confirm that the vast majority of children do not demonstrate disordered eating or eating disorder symptomatology, signifying that for most of them the presence of an eating disorder is not indicated, the findings also show that a proportion of children are affected and will require proper diagnosis and treatment. 5.5% ($n = 22$), of the 400 children surveyed in this nationally representative study, had a total ChEAT score above the cut-off, indicating the presence of an eating disorder for this proportion of the cohort, with respondents who had higher scores having greater indication for the presence of an eating disorder. Within Malta's population at the time of study, this translates to over 1600 children and adolescents, aged between 10 and 16 years old, who potentially exhibit an eating disorder, and who should be receiving treatment.

One important finding of this study was that the number of affected males exceeded expectations. Additionally, the closeness of male to female proportion of sufferers indicates that, despite conventional thinking that these conditions affect females more strongly, young males are also highly susceptible to eating disorders. This is supported by other studies, which found that prevalence of eating disorders among males is increasing (Gorrell & Murray, 2019; Mitchison et al., 2014; Mond et al., 2014; Wiseman et al., 2004) and, indeed the study of eating disorders in males is becoming a topic of increasing interest in research (Eichstadt et al., 2020; Raevuori et al., 2014; Silen et al., 2021), although more research on this topic would certainly be beneficial. The US National Association of Eating Disorders (NEDA), found that around a third of persons who are affected by eating disorders are male, whereas subthreshold eating disorder behaviour is equally prevalent in both males and females (NEDA, 2018). The reason for this could be an increasing preoccupation with body-consciousness among young men, combined with a tendency for under diagnosis of males, possibly because eating disorders manifest differently in males and females (Allen et al., 2013; Shu et al., 2015; Wiseman et al., 2004). The current study also found that the mean ChEAT ≥ 20 score for males is slightly higher than it is for females (F: 27.38, M: 28.89), which could indicate that for this age-cohort, male disordered eating is more severe. This tends to go against trend, as research also shows that in general males score lower on eating disorder instruments, as these have been predominantly designed and authenticated for females (Mond et al., 2014; Raevuori et al., 2014).

Similarly to previous research, the current study found that for the ages under examination, factors such as gender and age do not particularly influence eating behaviors. Statistical analysis did not reveal any significant associations between disordered eating and variables such as age, gender and category of school attended, or for socio-economic factors, such as parents' employment or education level. This finding is reflected in other studies, such as Murphy et al. (2019), Rolland et al., (1997) and Wiseman et al., (2004), who all found that age and gender had little effect on disordered eating in children and adolescents. Other researchers also found that age and gender differences start to occur at around ages 15 to 18, but are not really present below 15 years, (Allen et al., 2013; Chiba et al., 6; Sancho et al., 2005). Consequently, the age range of 10 to 16 years considered for this study, could account for the lack of significant associations. Additionally, researchers such as Chiba et al. and Rolland et al., suggest that particularly among younger children, age-specific differences may not be reflected in questionnaire responses, since young respondents possibly do not understand the questions or the import behind them, such as with questions that deal with purging. Furthermore, these studies posit that younger children may be unable to comprehend the strategy of intentional purging as a means to achieve thinness. Furthermore, researchers have found that respondents in urban areas tend to turn in higher ChEAT scores (Chiba et al., 2016; Huang et al., 2023; Lommi et al., 2020), indicating that children living in urban areas possibly experience higher media influence and pressure to be thin than those in rural areas. Given the size and geography of the Maltese islands, where we lack isolated rural areas, this could well be a factor affecting scoring in this study.

4.1 Recommendations for Practice, Policy and Future Research

These findings have implications for the diagnosis of eating disorders as well as the training of professionals. Diagnostic adjustments may be needed, to account for the under diagnosis of eating disorders in males, and for the different presentation of these disorders in males compared to females. More research on eating disorders in young males is needed in order to verify whether young males are more strongly affected by eating disorders than their female counterparts, as well as to determine the divergent pathways of eating disorder aetiology and manifestation, and to improve diagnosis and routes to treatment. Given the importance of catching and treating eating disorders as early as possible, this study also recommends that information campaigns about eating disorders are set up to increase awareness of eating disorders among the general public and professional practitioners.

Knowledge of prevalence of eating disorders is highly beneficial and can assist public health and treatment facilities to be prepared for future needs. However, patterns change and it is also important to keep on top of changes in trends. In order to track trends in eating disorders, and as there are currently no such studies of eating

disorder trends in Malta, the researchers suggest that the study be undertaken every three to five years, as part of a longitudinal examination into eating disorders in Malta.

4.2 Conclusion

The results of this population-based study show that while the majority of young people do not suffer from an eating disorder, there is a percentage that are affected. These young people require help and treatment in order to improve their outlook. Although eating disorders are typically seen as primarily affecting females, a sizeable proportion of sufferers in our sample of young people aged 10 to 16 years was male. These figures lead us to conclude that in the prevalence and diagnosis of eating disorders for persons aged 10 to 16 years, males are catching up to females. Additionally, there is a possibility that young males experiencing eating disorders at this age are more strongly affected than young females. The findings that males may be catching up to women in eating disorder diagnoses has implications for diagnosis and treatment methodologies, particularly since typically males are diagnosed later and suffer more shame and stigma. These factors, as well as the difference in course and aetiology of eating disorders in males, warrants further study and this paper recommends that resources are devoted to the issue, and to disseminating knowledge and information that may prevent eating disorders in young people. It is hoped that these findings will aid treatment centers in the areas of awareness, preparedness and capacity.

The fact that no significant association was discovered for socio-demographic factors, such as age and family income, is consistent with other studies which found that for this age range, eating disorder behavior is prevalent at all socio-demographic levels.

Although findings on correlations between socioeconomic status vary, several studies have discovered that these connections are not necessarily present, (Litmanen et al., 2017; Solmi et al, 2016). The reason for this could be that eating disorders may be affected by a number of underlying causes, and that no single, specific factor can be regarded as having significant influence on their genesis. Further research may be needed to determine the possible presence of other influencing factors.

In Malta, as in other countries (Wong et al., 2022), professionals have noticed that sufferers with eating disorders are coming in at younger ages than previously. Awareness of the prevalence, possible causes and risk factors for eating disorders among young people, such as those stated above, are extremely helpful in assisting early diagnosis, improving treatment outcomes and assisting treatment centers to be prepared for future requirements.

4.3 Limitations

The main limitation in this study is the use of a self-response eating disorder instrument. These tend to be generally better oriented towards females and do not have equal sensitivity when it comes to examining disordered eating in males. In addition, while ChEAT is a practical and valid tool for estimating prevalence, on its own it is unable to identify the specific eating disorder present on its own. A clinical interview would be needed to confirm the presence as well as determine the nature of the eating disorder. Such an interview would furthermore diagnose whether children scoring <20 have an eating disorder, as, since this is a self-report questionnaire, the children's replies could mask the presence of such a disorder. This shortfall could be addressed in further studies by holding clinical interviews with participants who score ≥ 20 .

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Conflict of interest

None to declare.

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