Review of the worldwide epidemiology of eating disorders

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Review of the worldwide epidemiology of eating disorders

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In the eating disorder section in this issue, Keski-Rahkonen and Mustelin (pp. 00–00) state that a basic requirement for advances in the detection and treatment of eating disorders is a better understanding of their epidemiology [1]. They compare epidemiologists with news reporters, who also attempt to answer five basic questions: who, what, when, where, and why? [1] (pp. 00–00). In previous years, the review articles in the eating disorder section in this journal showed that eating disorders most frequently occur in the high-risk group of young Western females, but do occur in older women, in men and in persons in non-Western countries [2,3]. In 2014, Pike *et al.* [4] found that eating disorders appear to be increasing in Arab and Asian countries in conjunction with increasing industrialization, urbanization, and globalization [4]. This year, the articles in the section on eating disorders try to address a global perspective and reviewed the worldwide epidemiology of eating disorders, with a special focus on understudied areas of the world.

THE GLOBAL BURDEN OF DISEASE

Erskine *et al.* (pp. 00–00) describe the inclusion of eating disorders in the Global Burden of Disease Study (GBD) as a watershed moment in the recognition of these disorders in the wider global health community [5]. Of 306 physical and mental disorders, anorexia nervosa and bulimia nervosa combined ranked as the 12th leading cause of disability-adjusted life years (DALYs) in females aged 15–19 years in high-income countries, responsible for 2.2% of all DALYs (pp. 00–00) [5,6]. Although globally this ranking did not change a great deal between 1990 and 2013 (moving from 13th in 1990 to 12th in 2013), the ranking in low-income and middle-income countries increased from 58th in 1990 to 46th in 2013 (pp. 00–00) [5]. This was largely a relative increase because of improvements in prevention and treatment of communicable diseases in these countries, which increased the proportion of total burden attributed to eating disorders despite the absence of a time trend in absolute numbers (pp. 00–00) [5].

In the GBD 2013 the number of DALYs per 100 000 of the population is highest in Western countries (pp. 00–00, 00–00) [5–7]. In Europe, anorexia nervosa is reported by 1–4%, bulimia nervosa by 1–2%, and binge eating disorder (BED) by 1–4% of women; 0.3–0.7% of European men report eating disorders (pp. 00–00) [1].

However, it is worth remembering that – as is the case with most diseases – because of their large population size India with over 1.32 billion and China with over 1.38 billion people, lead the world – along with the United States – as countries with the highest contributions of total DALYs caused by eating disorders among women aged 15–49 years (pp. 00–00) [7]. Thomas *et al.* (pp. 00–00) describe that notwithstanding evidence that eating disorders have a global distribution and are associated with increasing health burdens in Asia, epidemiological data in Asia and Pacific Island countries remain sparse [7]; the same holds true for Latin America (pp. 00–00) [8] and epidemiological data in Africa are even more scarce (pp. 00–00) [9].

PREVALENCE OF EATING DISORDERS

Incidence and prevalence are the two principal measures of the distribution of a disorder in the population under study. Incidence studies on eating disorders hardly exist in most parts of the world. In the review articles on Asia, Latin America, and Africa only the prevalence is studied (pp. 00–00, 00–00, 00–00) [7–9]. Prevalence studies of eating disorders are usually conducted in the high-risk population of young females. Most epidemiological studies report on point-prevalence, defined as the proportion of

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Table 1. Point prevalence of anorexia nervosa, bulimia nervosa, and binge eating disorder (BED) among young females

Country or continent	Anorexia nervosa (%)	Bulimia nervosa (%)	BED (%)
China [6,11]	1.05	2.98	3.58
Japan [6,12]	0.43	2.32	3.32[a]
Africa (pp. 00–00) [8]	<0.01	0.87	4.45[a]
Latin America (pp. 00–00) [7]	0.1	1.16	3.53
Hispanics/Latinas USA (pp. 00–00) [9]	0.08	1.61	1.92

[a]Prevalence of eating disorder not otherwise specified (EDNOS), including mainly BED, but also anorexia nervosa without amenorrhea and partial bulimia nervosa.

actual cases in a population at a specific point in time; a two-stage screening strategy has been widely used, even in the few studies in Africa, the most understudied continent. The first stage involves screening a large number of individuals for suspected cases, usually by means of an administered questionnaire. The second stage involves (semi-structured) interviews with the persons who are likely to have an eating disorder, based on their answers to the questionnaire. More thorough studies also interview a number of randomly selected persons who – on the basis of their questionnaires – do not appear to suffer from a disorder, to confirm that they are not cases.

The current issue of this journal incorporates the first meta-analyses of the prevalence of eating disorders in Latin America (pp. 00–00) [8] and Africa (pp. 00–00) [9], which enables us to compare the results with recent findings in Asia (pp. 00–00) [7], Europe (pp. 00–00) [1], and among Hispanics/Latinos in the USA (pp. 00–00) [10], also in this issue. Table 1 highlights prevalence rates of eating disorders in two large Asian countries (China and Japan), in Africa, in Latin America, and among Hispanics/Latinos in the USA.

Thomas *et al.* (pp. 00–00) describe that epidemiological studies of eating disorders in Asia pose a major challenge because of the uncertain validity of diagnostic assessment [7]. For example, the average BMI in South Asia is among the lowest globally, with nearly a quarter of both men and women classified as underweight (i.e., BMI $< 18.5\,kg/m^2$) (pp. 00–00) [7–11]. The most robust epidemiological data on eating disorders in Asia come from East Asia, including China, the country with the largest population in the world. Recent studies suggest that fat concern and other maladaptive eating attitudes are on the increase among young females in China and may be even more common than among some of their Western counterparts (pp. 00–00) [7]. A two-stage study among female students in Wuhan, China [12] showed very high prevalence rates of eating disorders (see Table 1). In a large-scale multicohort study of female students in Japan, between 1982 and 2002, the prevalence of anorexia nervosa increased from 0.11 to 0.43%, bulimia nervosa increased from 0.0 to 2.32%, and eating disorder not otherwise specified (EDNOS) increased from 0.89 to 3.32% (pp. 00–00) [7,13].

Van Hoeken *et al.* (pp. 00–00) could only find four studies in Africa providing specific epidemiological data on eating disorders over a period of more than two decades [9]. Only three of these African epidemiological studies examined the prevalence of bulimia nervosa and EDNOS, which in DSM-IV includes BED (pp. 00–00) [9]. No cases of anorexia nervosa were reported in the epidemiological studies in Africa (pp. 00–00) [9]. These findings in Africa are in line with the absence of cases of anorexia nervosa in both a prevalence study among African American women in the USA [14] and a comprehensive incidence study among the majority African Caribbean population of Curaçao (pp. 00–00) [9,15]. Some women in the African studies would have fulfilled the criteria for anorexia nervosa according to the DSM-V criteria, which are more cross-culturally sensitive and do not require the amenorrhea criterion as specified in the DSM-IV (pp. 00–00) [9].

In a systematic review and meta-analysis, Kolar *et al.* (pp. 00–00) found that anorexia nervosa is also a rare disorder in Latin America, but that bulimia nervosa and especially BED are common mental disorders [8]. Interestingly, the rates in Latin America resemble the prevalence of eating disorders among Hispanics/Latinos in the USA with a very low rate for anorexia nervosa and high rates for bulimia nervosa and BED (pp. 00–00) [10].

SOCIO-CULTURAL DIFFERENCES

The most striking finding is the very low prevalence of anorexia nervosa in Africa and Latin America and among Hispanics/Latinos in the USA compared with the rates in Western countries, but also compared to at least some Asian countries, such as China and Japan (pp. 00–00, 00–00, 00–00, 00–00) [7–10]. Perez *et al.* (pp. 00–00) argue that Hispanics/Latinos in the USA endorse fewer weight concerns as well as less dieting and exercise behaviors than their non-Hispanic White peers, leading to fewer cases of anorexia nervosa [10]. Kolar *et al.* (pp. 00–00) also suggest that there may be some aspects of Latin

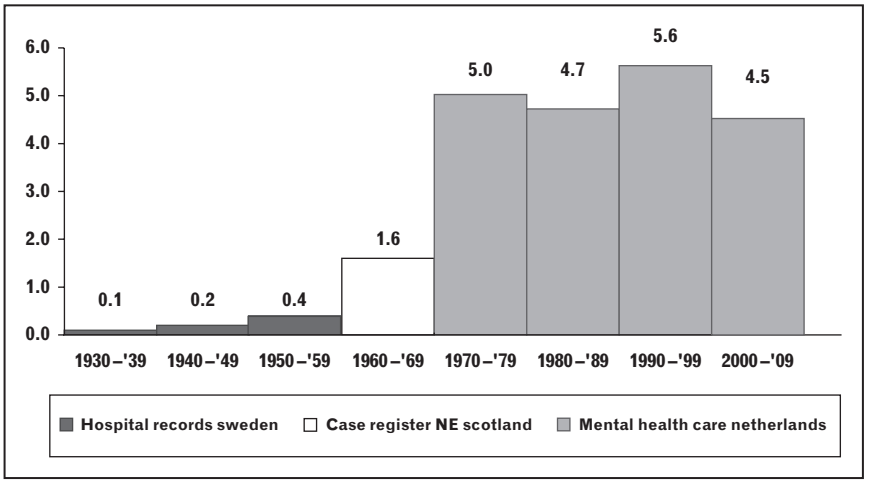

FIGURE 1. Registered yearly incidence of anorexia nervosa in Western Europe over time.

American culture that are protective against the development of anorexia nervosa, such as a different body ideal of Latinas and Latinos compared with other ethnicities, which idealizes a more curvaceous shape and higher body weight than in Western countries [8]. In Africa, a large-scale National Health and Nutrition Examination Survey in South Africa revealed that despite a very high mean BMI (29.0 kg/m^2) more black African women were happy with their current weight, and fewer attempted to lose weight, compared with females from other ethnicities (pp. 00–00) [9,16].

Culture does not only have an impact on the occurrence of eating disorders, but it also influences treatment plans (pp. 00–00) [10]. Perez *et al.* (pp. 00–00) describe that these cultural differences highlight the need to incorporate into treatment issues related to acculturative stress (e.g., managing conflicting gender roles, beauty ideals, and family conflict) and to discuss the cultural importance and meaning of food [10].

INCIDENCE OVER TIME

Incidence rates are better measures to study time trends than prevalence, because incidence is defined as the number of new cases in the population per year. Because the incidence of eating disorders in the general population is relatively low, it is hard to study; for example, it is impossible to screen a sufficiently large population – at least 100 000 people – continuously over several years. Therefore, incidence rates have often been based on detected cases in hospital records and case registers of inpatients and outpatients in mental healthcare facilities. On the basis of some recent European studies, anorexia nervosa might appear to have become more common over time (pp. 00–00) [1]. However, a possible reason for increasing rates is changing diagnostic practices (pp. 00–00) [1]. Keski-Rahkonen and Mustelin (pp. 00–00) highlight a Dutch nationwide community-based study, which tried to account for changing diagnostic practices by tracking eating disorders in general practice using the same diagnostic protocol from 1985 to 2009 [1,17]. The incidence rates of anorexia nervosa remained stable, but surprisingly those of bulimia nervosa significantly decreased in primary care in the Netherlands over a period of three decades (pp. 00–00) [1,17].

Ten years ago, a review article in this journal described time trends over the 20th century of the registered incidence of anorexia nervosa in mental healthcare in Europe [18]. Figure 1 updates the time trend data for anorexia nervosa from this previous article [18] for the first decade of this century – based on the number of cases referred to mental healthcare from a general practice study in the Netherlands in 2005–2009 [17]. Although, different strategies have been used in these studies, the time trend data suggest an increase in the incidence of anorexia nervosa from the 1930s into the 1970s. This might be the result of better detection of persons with anorexia nervosa and the availability of more mental healthcare facilities, but it is also possible that it reflects a true increase in the incidence of anorexia nervosa up to the seventies. In the 1960s and 1970s, another beauty ideal became more widely adopted, as represented by very thin models such as the famous supermodel Twiggy in the midsixties. From 1970 into the 21st century, the incidence of anorexia nervosa in mental healthcare facilities in the Netherlands appears to be very stable at around 5 per 100 000 total population per year (Fig. 1).

OUTCOME

The epidemiological studies in most countries, especially non-Western countries, have focussed on the occurrence of eating disorders, showing that differences in rates might at least partially be explained by socio-cultural factors. In Western countries, especially in Western Europe, the focus of epidemiological research on eating disorders shifts toward studies on course and risk factors, including genetic vulnerability (pp. 00–00, 00–00) [1,19]. Important parameters of outcome are recovery and on the other end of the spectrum, mortality [2]. A large community-based study in Finland found that most (88%) young women with anorexia nervosa were weight-restored by their mid-thirties (pp. 00–00) [1,20]. However, clinical samples show that the mortality of eating disorders and especially of anorexia nervosa is high [2,21]. In a long-term follow-up study of over 5000 inpatients, standardized mortality ratios were found to be of 5.35 for anorexia nervosa, 1.49 for bulimia nervosa, and 1.50 for BED [21].

GENETIC FACTORS

In the last article of the eating disorder section in this issue, Bulik *et al.* (pp. 00–00) describe anorexia nervosa, bulimia nervosa, and BED as heritable conditions that are influenced by both genetic and environmental factors [19]. Replicated heritability estimates for anorexia nervosa range between 0.48 and 0.74, for bulimia nervosa between 0.55 and 0.62, and for BED between 0.39 and 0.45 (pp. 00–00) [9,22]. The co-occurrence of eating disorders and other psychiatric conditions, as well as suicide, is in part because of shared genetic factors (pp. 00–00) [19]. A very large Swedish population study reported significantly increased risk of suicide attempts among not only individuals with eating disorders, but also among individuals without eating disorders who had a relative with an eating disorder [23]. Bulik *et al.* (pp. 00–00) [19] are hopeful that in the next decade genetic epidemiological studies will further reveal the nature, magnitude, and specificity of genetic and epigenetic contributions to the etiology of eating disorders.

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Conflicts of interest

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