



Internet and smartphone application usage in eating disorders: A descriptive study in Singapore



Tina Tan, Angeline Kuek, Shih Ee Goh, Ee Lian Lee, Victor Kwok *

Department of Psychiatry, Singapore General Hospital, 20 College Road, Singapore 169856, Singapore

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ABSTRACT

Eating disorders are associated with significant morbidity and mortality. The Internet is a popular medium for individuals with eating disorders to discuss and reinforce their affliction. However, the available literature on Internet usage and eating disorders is scarce, especially in the area of social media and smartphone application (“app”) usage. This study looked at the Internet and smartphone app usage patterns of participants who presented with an eating disorder in Singapore, and whether it corresponded to severity of illness. Individuals who presented to the Eating Disorders clinic at the Singapore General Hospital completed a self-reported questionnaire on Internet and app usage. They also completed the EDE-Q, EAT-26 and CIA 3.0. 55 participants completed the study. 41.8% had anorexia nervosa, 34.5% had bulimia nervosa, and 9.1% were ED-NOS. 41.8% felt that apps helped to perpetuate their illness while 32.7% felt that the apps were helpful for recovery. Overall, any smartphone application usage was associated with younger age and greater eating disorder psychopathology and psychosocial impairment. While 30.9% had encountered eating disorder-related content on Facebook, only 12.7% visited Facebook groups related to eating disorders. For YouTube, “Cooking and Food” and “Beauty and Fashion” videos were among the top 3 types of videos that participants watched. In conclusion, Internet and smartphone app usage is significant, and they are associated with greater severity of illness. It is necessary to include interventions in this aspect as part of treatment of eating disorders.

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1. Introduction

Eating disorders are associated with significant morbidity and mortality (Arcelus et al., 2011; Harris and Barraclough, 1998; Smink et al., 2012) and have been identified by the National Institute of Mental Health (NIMH) as a priority area for adolescent and adult mental health (Chavez and Insel, 2007).

However, in this current age, the increased ease of access to the Internet and social media platforms has given individuals with eating disorders a medium to share their emotions, experiences and illness-related information. Pro-eating disorder websites perpetuate eating disorders as these websites encourage the achievement of low body weights, and also provide “tips and tricks” on weight loss, such as vomiting and fasting (Borzekowski et al., 2010). Additionally, these websites also place an emphasis on “thinspiration”, which are motivational quotes and images of thin celebrities (Borzekowski et al., 2010; Norris et al., 2006; Rouleau and von Ranson, 2011). A more recent worrying trend is the shift in

the online presence of pro-eating disorder groups, with many of them favouring social networking websites such as Facebook. Since then, hundreds of pro-eating disorder communities have appeared on these social networking websites (Teufel et al., 2013), increasing their accessibility to vulnerable individuals.

Facebook has garnered global popularity since its founding in 2004. With over one billion users, it is the most widely used online social network at the current time (Hummel and Smith, 2015; Thackeray et al., 2012). As Singapore is a multi-ethnic society known for its unique blend of Eastern and Western cultural and media influences (Future Ready Singapore, 2014), it is thus not unexpected that there are an estimated 3.22 million Facebook users, with a penetration level of 62.2% of the population (Infographics, 2015). It is likely that a large proportion of individuals with an eating disorder in Singapore are users of these social network sites, and that this would have an influence on their illness and patterns of behavior, as shown in previous studies (Becker et al., 2011; Cohen and Blaszczynski, 2015).

The available literature on the influence of Internet usage, in particular, social media and smartphone applications (“apps”), on eating disorders is scarce. Previous studies in this area had focused on pro-eating disorder websites. It was found that these websites

* Corresponding author. Tel.: +65 96491051.

E-mail address: victor.kwok@singhealth.com.sg (V. Kwok).

can have negative effects on users (Bardone-Cone and Cass, 2007; Cispke and Horne, 2007; Smith et al., 2013). A pilot study on 76 adolescents undergoing treatment for eating disorders found that 35.5% had visited pro-eating disorder websites, with 96% of this group learning new weight loss or purging methods from these sites (Wilson et al., 2006). Following that, a cross-sectional, Internet-based survey of adult pro-eating disorder website users found an association between heavy pro-eating disorder website usage and more disordered eating behaviours and a poorer quality of life (Peebles et al., 2012).

There is a gap in knowledge on the usage of social media in individuals with an eating disorder. This is an important area of exploration given the popularity of social media, its ease of use and accessibility and the shift of pro-eating disorder groups to social networking websites.

Smartphone applications have also proliferated. There are now apps that calculate food caloric content, apps that monitor activity levels and apps for sharing photos of food. The use of these various applications may play a role in perpetuating illness in individuals with eating disorders.

Elucidating this information is valuable in guiding future research and development of intervention options, which would include education to raise awareness amongst medical professionals, individuals with eating disorders and the community at large. Identification of factors which trigger and/or perpetuate eating disorder symptoms, would allow for development of targeted intervention programmes that are more up to date in this age of widespread smartphone application usage and ready access to the Internet.

The aim of this study was to assess a group of patients with eating disorders in Singapore who presented for treatment. Using a self-reported questionnaire, we would look at the pattern of usage of smartphone applications, Facebook and YouTube usage and whether usage is correlated with severity of illness. We anticipated that those with higher usage of Internet and smartphone applications would have a greater severity of eating disorders and more psychosocial impairment, which would suggest an area of targeted intervention when treating patients with eating disorders.

2. Methods

The Singapore General Hospital (SGH) is the largest tertiary acute hospital in Singapore, with the SGH Eating Disorders Programme being the national treatment and referral centre for eating disorders (Singapore General Hospital, 2014). We looked at individuals diagnosed with an eating disorder who presented to the SGH Eating Disorders Programme from 13th June 2013 to 20th December 2013. The inclusion criteria for the study were as follows: (1) individuals aged 12 and above, with no upper age limit; (2) individuals with an eating disorder based on criteria as determined by the DSM-IV-TR; (3) individuals who gave consent and (4) English-speaking individuals. Participants who did not provide informed consent and those who did not have an eating disorder diagnosis were excluded from the study. Informed consent was taken prior to the interview while participants were still at the clinic. Consent for participants below the age of 21 was obtained from a parent or legal guardian. This study received ethical approval from the hospital's Institutional Review Board.

Participants were invited to participate in the study, which self-reported questionnaires and a survey of socio-demographic information. The questionnaires consisted of the Eating Disorder Examination Questionnaire 6.0 (EDE-Q 6.0), Eating Attitudes Test-26 (EAT-26) and the Clinical Impairment Questionnaire 3.0 (CIA 3.0). Only English-based versions of the questionnaires were used.

The EDE-Q 6.0 is one of the most commonly used assessment scales for eating disorders. It examines the frequency of a variety of

disordered eating behaviours in the past 28 days. The EDE-Q 6.0 comprises of four scales: restraint, weight concern, shape concern and eating concern. The global score is calculated as an average of the four scales. It is a reliable and validated assessment tool for eating disorders (Berg et al., 2012), and is a valid instrument for assessing an individual's general level of eating disorder psychopathology.

Like the EDE-Q, the EAT-26 is a widely used self-report questionnaire comprising questions pertaining to eating behaviours, rated on a six-point scale (Garfinkel and Newman, 2001). This questionnaire has been validated as a measure of undifferentiated eating disorders at the cut-off value. When used without the cut-off scores, it can be used as a continuous measure of disordered eating behaviour and it is for this purpose that this questionnaire has been selected.

The Clinical Impairment Assessment (CIA) questionnaire is a 16-item self-report measure of the severity of psychosocial impairment due to eating disorder features (Bohn et al., 2008; DeJong et al., 2013). It focuses on the past 28 days and covers the domains of mood and self-perception, cognitive functioning, interpersonal functioning and work performance. This questionnaire is designed to be used immediately after filling in a measure of current eating disorder features (such as the EDE-Q) in the same time frame. It then provides a simple single index of the severity of psychosocial impairment secondary to eating disorders (DeJong et al., 2013).

A self-reported English questionnaire on Internet, social media and smartphone application usage was developed as no validated measure exists for the assessment of social media and smartphone application usage. The survey instrument designed by Wilson et al. (Wilson et al., 2006) was used as a reference. Studies have shown that time spent on Facebook is associated with body image disturbance and eating disorder pathology (Cohen and Blaszczynski, 2015), and that YouTube, with its popularity amongst Internet users and vast amount of content, has a high prevalence of pro-anorexia videos (Syed-Abdul et al., 2013). Hence, Facebook and YouTube were included in the questionnaire as representations of online social networking and video platforms, respectively. Questions related to Facebook and YouTube were not limited to how these websites were accessed (whether by computer, tablet, smartphone or other devices), as these can be accessed on a variety of platforms. Rather, questions emphasized the frequency and type of content accessed on these websites. All questions about Internet, Facebook or YouTube usage were asked in regard to usage via any connected device, unless the question specified smartphone app usage.

Our questionnaire also focused on participants' patterns of smartphone application usage. Increased use of smartphones has enabled higher Internet access through applications, with rising penetration rates worldwide (Fernández-Luque and Bau, 2015). Focus was made specifically on smartphone app usage as previous research has shown that apps can function as potential intervention options in treatment, as well as carry the risk of enabling an individual to maintain their eating disorder (Juarascio et al., 2015).

Data analysis was then performed using the Statistical Package for the Social Sciences version 22.0 for Windows XP (SPSS Inc, Chicago, IL, USA) and descriptives and frequencies reported. All of the above information was obtained in one interview with no subsequent follow-up visits. No analysis of intervention(s) was included in this study.

3. Results

Although 56 participants were enrolled in the study, 1 participant was excluded due to the absence of an actual eating

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