Introduction

Despite multiple physical, mental, and social health benefits, few individuals with schizophrenia are physically active [1]. Physical inactivity is an independent risk factor of mortality and strategies are needed to help people with schizophrenia become active given their high early mortality [2,3]. Research suggests that providing individuals with schizophrenia online information about physical activity can help them understand program options strengthen their self-efficacy to be active and overcome barriers to engaging in regular activity. The purpose of this study was to evaluate the accuracy, quality, and readability grade level of online physical activity, exercise, and sport information for people with schizophrenia. To find and evaluate relevant websites, this study employed the methodology used by Gorczynski et al. Websites were evaluated for descriptive characteristics, information accuracy, technical quality, theoretical behavioral quality, targeting strategies, and readability. A total of 15 websites were evaluated. Overall, the online information that was evaluated was of poor theoretical behavioral quality, not based on recommended guidelines of physical activity, not tailored for age or gender, and of very high grade reading level. Online information was of worse quality than previously reviewed. Recognized and authoritative health agencies need to take a greater role in delivering high-quality online information on physical activity for people with schizophrenia.

Methods

Inclusion and exclusion criteria

To find and evaluate relevant websites, this study employed the methodology used by Gorczynski et al [6]. Websites were evaluated if they met the following inclusion criteria: 1) discussed physical activity, exercise, or sport; 2) discussed individuals with schizophrenia (any subtype); and 3) presented information in English. For this study, physical activity was defined as any bodily movement caused by skeletal muscles that resulted in energy expenditure, whereas exercise was defined as any form of physical activity that was “planned, structured, repetitive, and purposive” to achieve improvements in physical fitness [7]. Sport was defined as any casual or organized form of physical activity at all levels of competition that aimed to improve physical fitness and mental and social wellbeing [8]. Websites were not included in the study if they 1) only listed links to external websites, and 2) provided information relevant to health professionals (e.g., academic journals).

Search protocol and evaluation

A structured protocol was used to identify websites using GOOGLE.co.uk, where the first four pages of returns were examined per search term (40 links per search term). Search terms included:
“physical activity and schizophrenia”; “exercise and schizophrenia”; and “sport and schizophrenia”. Overall, 15 websites were found and evaluated by two reviewers. Reviewed websites are available in Appendix A.

Websites were evaluated for the following items: descriptive characteristics, information accuracy, technical quality, theoretical quality, targeting strategies, and readability. Descriptive characteristics included information accessibility (e.g., number of clicks to reach content), presence of other communication outlets (e.g., social media, comment boards), and use of a database to organize content. Presence of other communication outlets and a database was evaluated on a dichotomous scale, where 1 = yes, and 0 = no.

Information accuracy referred to whether the website presented its information in accordance to the World Health Organization Global recommendations on physical activity for health [9]. The presence of information for both aerobic and resistance exercise was evaluated on a dichotomous scale, where 1 = yes, and 0 = no.

Technical quality was evaluated on the publication benchmarks of the Journal of the American Medical Association. The publication benchmarks included: authorship, attribution or references, currency, disclosures, endorsements by a major institution, and contact information. The presence of each benchmark was rated on a dichotomous scale, where 1 = yes, and 0 = no. Each website was rated out of a score of 6.

Theoretical behavioral quality evaluated the presence of constructs from the health belief model [10], the Trans theoretical model [11], the theory of planned behavior [12], and social cognitive theory [13]. Constructs pertained to knowledge dissemination (instructions, accessibility, aids, community resources), cognitive (benefits, barriers, risks, self-efficacy, self-talk, perceived social norms), and behavioral (modeling, social support, goal setting, motivational readiness, self-monitoring) elements of the included theories. The presence of each construct was evaluated on a dichotomous scale, where 1 = yes, and 0 = no. Each website was rated out of a score of 15.

Targeting strategies included the presence of age and gender based information. Each item was evaluated on a dichotomous scale, where 1 = yes, and 0 = no.

Lastly, the readability of each website was evaluated using the Flesch-Kincaid Grade Leve formula (x). The formula was used to evaluate the first multi-sentence paragraph of each website. The formula produced a grade level that corresponded to the US grade required to read the content [14,16].

Results

Overall, physical activity, exercise, or sport content for people with schizophrenia could be reached within approximately one click from the main page of each website reviewed. A total of 13 websites (87%) had a presence of other communication outlets like Face book or Twitter and 9 websites (60%) contained a physical activity information database.

A total of 10 websites (67%) provided information based on published physical activity recommendations. Ten websites (67%) provided information on the frequency and duration of aerobic exercise, while 8 websites (53%) provided information on the intensity of aerobic exercise. No websites discussed strength training.

For technical quality, 11 websites (73%) exhibited the presence of at least three of six publication benchmarks. Fourteen websites (93%) included a disclosure statement, 13 websites (87%) provided a publication date, 12 websites (80%) provided authorship details, 10 websites (67%) used references, 3 websites (20%) had any endorsements, and 2 websites (13%) provided contact details for their authors.

Theoretical behavioral quality was considered poor. A total of 11 websites (73%) provided instructions about being active, and 14 websites (93%) discussed the health benefits of regular activity. On average, websites scored 2.2 out of 15 on theoretical behavioral qualities.

For targeting strategies, 1 website (7%) discussed age considerations for exercise and 1 website (7%) discussed gender issues. Overall, websites had an average grade reading level of 15.5, well above the recommended grade of 8.

Discussion

The purpose of this study was to evaluate the accuracy, quality, and readability grade level of online physical activity, exercise, and sport information for people with schizophrenia. Overall, the online information that was evaluated was of poor theoretical behavioral quality, not based on recommended guidelines of physical activity, not tailored for age or gender, and of very high grade reading level. Although evaluated information was easy to obtain, usually within one click, and of high technical quality, it was not helpful for individuals looking to ultimately change their activity behaviors.

The results of this study are in line with the previous review of websites that provided information about physical activity, exercise, and sport to people with schizophrenia [6]. Since that review [6], fewer websites currently exist for people with schizophrenia to assist them in being more physically active. Furthermore, information quality has decreased, becoming less theoretically sound, less targeted, and harder to comprehend. Given that physical activity interventions based on behavioral theories tend to be more effective at changing physical activity behaviors than interventions based on no theory [15], the current available information makes it very difficult for any user to become active. The current study findings illustrate that a valued information source for people with schizophrenia [5] should be used very cautiously.

With respect to study limitations, a few should be noted. First, the Internet is an ever evolving medium and information obtained from the included websites for this review may have changed or no longer be available. Second, not all websites that contain information on physical activity exercise, and sport for people with schizophrenia may have been included in this study. Google ranking systems index billions of websites based on content. Websites that may have qualified for study inclusion could have fallen outside the 40 links per search term range. Lastly, the constructs of only four behavioral theories were used in the evaluation of websites. The evaluation of other constructs from different behavioral theories may have provided a different outcome of theoretical behavioral quality.

Overall, given online information is sought after by people with schizophrenia [5], recognized and authoritative health agencies need to take a greater role in delivering high-quality online information on physical activity for people with schizophrenia.
References


