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Physical activity correlates among people with psychosis: Data from 47 low- and middle-income countries[☆]

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ABSTRACT

Background: People with schizophrenia engage in low levels of physical activity (PA). However, few large-scale studies have investigated the factors that may influence PA participation in individuals with psychosis and data from low- and middle-income countries (LMICs) is especially scarce. Thus, we investigated PA correlates in a large sample of people with a psychosis diagnosis across 47 LMICs.

Methods: Cross-sectional data from the World Health Survey, restricting to those with a self-reported lifetime diagnosis of schizophrenia/psychotic disorder, was analyzed. PA was assessed by the International Physical Activity Questionnaire (IPAQ) and participants were dichotomized into those that do and do not (low PA) meet the minimum recommended PA weekly targets (≥ 150 min). A range of socio-demographic, health behavior, and mental and physical health variables were examined using random effects logistic regression.

Results: Overall 2407 people (mean 42.0 years, 41.5% males) with schizophrenia/psychosis were included. The prevalence of low PA was 39.2% (95%CI = 37.0%–41.2%). Male sex (odds ratio (OR) = 1.33), increasing age, unemployment (vs. employed OR = 2.50), urban setting (vs. rural OR = 1.75), inadequate fruit consumption (vs. adequate fruit intake OR = 3.03), depression (OR = 1.33), sleep/energy disturbance, and mobility limitations were significantly associated with low PA. Marital status, education, wealth, smoking, vegetable and alcohol consumption, anxiety, cognition, pain, and chronic medical conditions were not significant correlates.

Conclusion: PA is influenced by a range of factors among people with psychosis. These correlates should be considered in interventions aiming to facilitate PA in psychotic individuals living in LMICs.

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1. Introduction

In the general population, there is an abundance of evidence that physical activity (PA) is associated with good health, including reduced cognitive decline (Hamer and Chida, 2009) and decreased risk of

cardiovascular disease and associated mortality (Naci and Ioannidis, 2013). Moreover, PA may protect against mental health conditions such as depression (Mammen and Faulkner, 2013), promotes healthy aging (Hamer et al., 2014), and is associated with better quality of life (Nelson et al., 2007). In light of this, international organizations (e.g. World Health Organization, 2014) have recommended that people should attempt to achieve 150 min of moderate to vigorous PA per week, which could include 30 min of aerobic PA (such as brisk walking, playing sports, using the gym) five times per week.

Perhaps unsurprisingly, a recent meta-analysis of 35 studies incorporating 3453 individuals with psychosis demonstrated that 43.4% fail to achieve 150 min of moderate-vigorous PA per week, a figure 50% higher than that of age- and sex-matched controls in the general population (Stubbs et al., 2016a). Clearly this is a concern, given the wider health benefits of PA in the general population. Moreover, there is consistent evidence that engaging in PA and exercise can improve a plethora of outcomes in patients with psychosis, such as cognition (Firth et al., 2016b), cardiorespiratory fitness (Vancampfort et al., 2016b), cardio-metabolic risk factors, and quality of life (Firth et al., 2015). Given this, understanding factors associated with PA in people with schizophrenia are essential to develop population-level interventions to increase PA (Firth et al., 2016a). A previous systematic review across 25 studies and 25,013 people with schizophrenia found that negative symptoms, low motivation, cardio-metabolic risk factors, and social isolation were associated with low PA (Vancampfort et al., 2012). However, this literature was confined to high-income countries and no studies were found in low- and middle-income countries (LMICs) despite the high prevalence and burden of mental disorders in LMICs (Weinmann and Koesters, 2016). While in the general population it is estimated that low PA is more evident in high-income countries (World Health Organization, 2014), there are increasing concerns about this in LMICs (Vancampfort et al., 2017). In addition, most PA correlate studies to date have included small sample sizes (<100 people) from a single country, thus limiting generalizability.

Given these gaps and limitations within the literature, the current study aimed to investigate the correlates of PA among community-dwelling individuals with a self-reported lifetime diagnosis of schizophrenia/psychosis in a large sample across 47 LMICs.

2. Methods

2.1. Settings and protocol

The World Health Survey (WHS) was a cross-sectional study undertaken from 2002 to 2004 in 70 countries worldwide. The details of the survey including the questionnaires are available from the WHO website (<http://www.who.int/healthinfo/survey/en/>). Briefly, single-stage random sampling or stratified multi-stage random cluster sampling was conducted depending on the country. Those aged ≥ 18 years with a valid home address were eligible to participate. Each member of the household had equal probability of being selected. Trained interviewers conducted face-to-face or telephone interviews. A standardized questionnaire was used in all countries with some countries using a shorter version. The individual response rate across all countries was 98.5% (Nuevo et al., 2012). Ethical approval was obtained from ethical boards at each study site. Informed consent was obtained from all participants.

2.2. Variables

2.2.1. Physical activity (PA)

In order to assess if participants completed the recommended PA levels of 150 min of moderate to vigorous PA per week (Vancampfort, 2012), we used the International Physical Activity Questionnaire (Craig et al., 2003). The total amount of moderate to vigorous PA over the last week was calculated based on self-reported (time spent

physically active and frequency) moderate and high intensity PA combined. Those scoring ≥ 150 min of moderate to high intensity PA were classified as meeting the recommended guidelines (coded 0), and those scoring < 150 min (low PA) were classified as not meeting the recommended guidelines (coded 1).

2.2.2. Socio-demographics

These included information on sex, age, marital status [married/cohabiting or other (never married/separated/divorced/widowed)], highest education attained (at least secondary completed or not), wealth quintiles, employment status (unemployed or not), and setting (rural or urban). Principal component analysis based on 15–20 assets was performed to establish country-wise wealth quintiles. Employment status was assessed with the question ‘What is your current job?’ Those who answered ‘not working for pay’ were considered to be unemployed.

2.2.3. Health behaviors

The question ‘Do you currently smoke any tobacco products such as cigarettes, cigars, or pipes?’ with the answer options, ‘daily’, ‘yes, but not daily’, or ‘no, not at all’ identified smokers. Those who replied ‘daily’ or ‘yes, but not daily’ were considered to be current smokers. Two separate questions for fruits and vegetables were used to assess the amount of servings the participant eats on a typical day. The answer to these questions were dichotomized as < 5 or ≥ 5 servings/day following WHO/FAO recommendations (Bishwajit et al., 2017). Alcohol consumption was assessed by first asking the question ‘Have you ever consumed a drink that contains alcohol (such as beer, wine, etc.)?’ Respondents who replied ‘no’ were considered lifetime abstainers. Those who replied affirmatively were asked how many standard drinks of any alcoholic beverage they had on each of the past 7 days. The number of days in the past week in which four (females) or five (males) drinks were consumed was calculated (World Health Organization, 2002); a total of 1–2 and ≥ 3 days in the past 7 days were considered infrequent and frequent heavy drinking respectively. All other respondents, apart from lifetime abstainers, were considered non-heavy drinkers.

2.2.4. Mental health

Depression was defined using the DSM-IV algorithm, based on duration and persistence of depressive symptoms in the past 12 months (Cifuentes et al., 2008; Loerbroks et al., 2012). Anxiety was assessed by the question ‘Overall in the past 30 days, how much of a problem did you have with worry or anxiety’ with answer options being none, mild, moderate, severe, and extreme. Those who answered severe and extreme were considered to have anxiety (Koyanagi and Stickley, 2015; Wong et al., 2013). We used the extreme categories for their potential clinical relevance. Details for the variables on sleep/energy and cognition are provided in Section 2.2.6.

2.2.5. Physical health

Arthritis, asthma, and diabetes were based solely on self-reported lifetime diagnosis. For angina, in addition to a self-reported diagnosis, a symptom-based diagnosis based on the Rose questionnaire was also used (Rose, 1962). Chronic back pain was defined as back pain (including disc problems) every day during the last 30 days. Visual impairment was defined as extreme difficulty in seeing and recognizing a person that the participant knows across the road (i.e., from a distance about 20 m) (Freeman et al., 2013). The total number of these conditions was calculated. Details on the pain/discomfort and mobility difficulty variables are provided in the section below (Section 2.2.6).

2.2.6. Health status (sleep/energy, cognition, pain/discomfort, mobility)

Participants’ health status was evaluated with eight health-related questions pertaining to four domains: (a) sleep/energy; (b) cognition; (c) pain/discomfort; (d) mobility. Each domain consists of two questions assessing health function in the past 30 days (see eTable 1

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