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The need for waist circumference as a criterion for metabolic syndrome in people with mental illness

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ABSTRACT

Central obesity is a risk factor for metabolic syndrome, but taking waist circumference measurements can be uncomfortable for psychiatric inpatient clinicians and consumers, and if often avoided. The objective of this study was to assess whether metabolic syndrome in people with mental illness can be diagnosed without using waist circumference measurements. This study involved a retrospective file audit of metabolic monitoring forms stored in consumers' electronic health records of community-based and inpatient mental health consumers at a mental health service located in regional Queensland, Australia. Of the 721 consumer files audited, 261 included a metabolic monitoring form. Of these 261 forms, 74 contained data on all five criteria for metabolic syndrome and the population-specific criteria for waist circumference was met in 54 (73%) of cases. Metabolic syndrome was detected in 39 consumers and waist circumference was necessary for this diagnosis in 12 (31%) cases. Measurement of waist circumference is, therefore, necessary for the detection of metabolic syndrome for a substantial proportion of consumers. The common practice of avoiding waist circumference measurements clearly needs to change if the physical health needs of consumers are to be adequately addressed.

1. Introduction

Metabolic syndrome (MetSyn) is a cluster of risk factors associated with the development of cardiovascular disease (CVD), including dysglyceamia, hypertension, dyslipideamia and central obesity (Alberti et al., 2009). A number of factors play a role in the development of MetSyn, including genetic predisposition, poor nutrition, physical inactivity, family history of diabetes and low educational attainment (Cameron, Shaw, & Zimmet, 2004). In the general population, the prevalence of MetSyn is approximately 22% (Beltrán-Sánchez, Harhay, Harhay, & McElligott, 2013). However, in people with mental illness this figure is between 1.5–3 times greater (Marazziti, Rutigliano, Baroni, Landi, & Dell'Osso, 2013; Morgan et al., 2013).

Several factors contribute to the significantly increased presence of MetSyn in people with mental illness including nutritional inadequacies, low levels of physical activity and smoking (De Hert et al., 2011). People with mental illness also exhibit dysregulation in biological pathways including increased oxidative stress, neurotransmitter imbalances, chronic inflammation and alterations to the hypothalamus-pituitary-adrenal axis pathway (Lopresti & Drummond, 2013). Medication use, particularly second generation antipsychotics, exert an impact on energy balance that, in concert with the aforementioned lifestyle and neurohormonal factors, contributes to the development of MetSyn in people with mental illness (Deng, 2013).

Monitoring the physical health of people with mental illness is critical in providing quality holistic care (Stanley & Laugharne, 2011), Nurses in mental health services may be particularly well placed to contribute significantly to the physical health of con-

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sumers due to their educational preparation in this area (Brunero & Lamont, 2009; Happell et al., 2011; Robson & Gray, 2007). Despite the prevalence and known risks associated with MetSyn in people with mental illness, however, routine screening is often ad-hoc and incomplete (Coyle, Macpherson, Hussaini, & Arnott, 2011; Millar, Sands, & Elsom, 2014; Organ, Nicholson, & Castle, 2010; Rosenbaum et al., 2014). In particular, waist circumference (WC) assessment is often absent from metabolic monitoring in people with mental illness. For example, an audit of metabolic monitoring of 21 inpatients in the UK reported that only 62% of files documented WC assessments and only 21% of files had data for all five parameters for MetSyn criteria (Coyle et al., 2011). However, this finding differs considerably from findings of recent studies from Australia. For example, an audit of 618 files from a large metropolitan mental health service reported that WC data was present in only 7% of files (Organ et al., 2010). A more recent study reported that none of the 60 files audited contained WC assessments (Rosenbaum et al., 2014). An audit of metabolic monitoring in a large metropolitan community mental health service did not include WC assessments as the service did not routinely undertake this assessment (Millar et al., 2014). None of the above mentioned studies include regional, rural or remote mental health services. In the interests of geographic equity of service provision, it is important to consider services outside metropolitan regions.

Although WC assessment as a measure of central obesity is critical to establish a diagnosis of MetSyn, there can be barriers to the collection of WC data in people with mental illness. Evidence suggests that both clinicians and consumers feeling uncomfortable with the close proximity required for undertaking the assessment (Barber et al., 2014). Furthermore, the low rates of WC data observed in recent audits raises the question of whether WC data is necessary to establish a diagnosis of MetSyn in people with mental illness, given the prevalence of other metabolic abnormalities. In addition, although the aforementioned studies conducted in metropolitan settings have reviewed multiple cardiometabolic risk factor monitoring, they have not considered these as a cluster for the detection of metabolic syndrome. Moreover, the contribution made by WC measurement to MetSyn detection has not been considered. This is critical in the physical health assessment of people with mental illness since MetSyn is more prevalent in this population. Given the limited attention to MetSyn in previous retrospective file audits, and specifically the poor reporting of WC in people with mental illness, the primary objective of this study was to assess whether metabolic syndrome in people with mental illness can be diagnosed without using waist circumference measurements.

2. Method

2.1. Design

This study is a retrospective file audit of 721 electronic consumer health records.

2.2. Setting

This retrospective file audit was conducted in an adult mental health service located in regional Queensland, Australia. The service is co-located within the grounds of a large regional public hospital and provides both inpatient and community mental health services. The service receives approximately 85 referrals per month to its adult inpatient and community mental health services.

2.3. Data

As a strategy for improving the physical health of people with mental illness, the regional mental health service has implemented a service-wide standardised metabolic monitoring form, which enables recorded data to be uploaded to consumers' electronic health records. The form facilitates the recording of metabolic-related data, including anthropometrics, blood markers of cardiovascular and endocrine health, and electrocardiogram findings. Pertinent to the present study, the form enables the collection of data on the five criteria for MetSyn.

Data for the present analysis were derived from a retrospective file audit of 721 consumer files stored on the mental health service electronic records database. The file audit was conducted between November 2014 and April 2015 and included all consumers with electronic health records at the service. Of these 721 files, 261 contained entries in their metabolic monitoring forms. In total, 74 contained data for all five criteria for MetSyn. The present study only focuses on the data of those consumers for whom data were recorded for all five criteria ($n = 74$).

2.4. Procedure

Following health service and university ethics approval, a trained research assistant extracted data from the electronic metabolic monitoring forms of consumers and recorded the de-identified data in a spreadsheet. We used this data for the analysis.

2.5. Statistical analysis

For the purpose of the present study, the harmonised criteria for MetSyn described in Alberti et al., (2009) was used. With respect to WC, the population specific criteria for WC measurements of 88 cm for females and 100 cm for males were used. These are identical to those used in a previous study examining the physical health of regionally located mental health consumers (Happell, Stanton, Hoey, & Scott, 2014). Inferential statistics were used to compare differences in age, sex and diagnosis of consumers for whom all five criteria were reported, with those for whom all criteria were not reported. Descriptive statistics were used to report how many MetSyn criteria were met and whether WC was one of the criteria met.

3. Results

A total of 721 files were included in the audit. Of these 721 files, 261 contained entries in their metabolic monitoring forms. In total, 74 contained data for all five criteria for MetSyn and the remaining 187 did not have entries for all five criteria. There was no difference between consumers with and without criteria recorded in terms of their age and sex (see Table 1). A higher percentage of consumers with schizophrenia, compared with other diagnoses, had data for all five criteria recorded.

For 54 of the 74 consumers (73.0%) for whom all criteria were recorded, the WC criteria for MetSyn were also met (see Table 2). In 24 cases (32.4%), consumers met 4 or 5 criteria for MetSyn, meaning that diagnoses of MetSyn could be made with or without waist circumference data. In 15 of 74 cases (20.7), consumers met 3 criteria for MetSyn, and waist circumference data enabled the diagnosis of MetSyn to be made in 12 of these 15 cases (80.0%). In the remaining 35 cases (47.3%), diagnoses of MetSyn were not possible, either with or without waist circumference data, because 2 or fewer criteria were met. Considering the 39 cases where the detection of MetSyn were possible, waist circumference data was necessary for diagnosis in 12 cases (30.8%).

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