Original paper

DOI: http://doi.org/10.4038/sljpsyc.v13i2.8351

Prevalence of overweight or underweight among institutionalized patients with schizophrenia: a descriptive cross-sectional study

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Abstract

Background

Schizophrenia is known to be associated with metabolic and or nutritional derangements among institutionalized patients due to multiple reasons that may have a negative impact on the recovery process.

Aims

To determine the prevalence of overweight or underweight and their associated factors among patients diagnosed with schizophrenia at the long-stay facilities of the National Institute of Mental Health (NIMH) and the Halfway Home, Mulleriyawa, Sri Lanka.

Methods

A descriptive cross-sectional study was carried out among patients of the long-stay units of the NIMH and the Halfway Home, Mulleriyawa, Sri Lanka. Patients with an ICD 10 diagnosis of schizophrenia for more than five years were recruited. The socio-demographic and clinical details were obtained from the patients and their medical records using a pre-piloted questionnaire. The body mass index (BMI), the mid-upper arm circumference (MUAC), the waist circumference (WC), and the waist/hip ratio were measured using standard techniques.

Results

Out of the 218 participants who consented, 65% were females who were more likely to be on two or more antipsychotics than males (P=0.01). The male participants were significantly more likely to be diagnosed with a comorbid medical condition than the females (P=0.01).

Of the sample, 33% of the males and 14% of the females were underweight, while 35% of the females and 5% of the males were overweight and these differences were statistically significant (P<0.001). The prevalence of android (apple-shaped) obesity was 97% in those who were overweight (P<0.001). Strong correlations were observed between the BMI and the MUAC (r =0.808, P< 0.001) and between the BMI and the WC (r=0.849, P< 0.001).

Conclusions

A considerable proportion of males and females with long-standing schizophrenia were underweight and overweight, respectively. Clinicians must pay attention to nutritional status of institutionalised patients as it has an impact on the recovery process.

Key words: schizophrenia, obesity, metabolic syndrome, body composition, underweight

SL J Psychiatry 2022; 13(2): 4-8

Introduction

Schizophrenia is a chronic debilitating mental illness with a lifetime prevalence of 1% and due to its early age of onset, chronic course, and other factors, it is known to have a negative impact on the quality of life of the affected individuals (1,2). A person's weight, whether overweight or underweight is considered an important factor in assessing his/her nutritional status (3,4). Research also indicate that being overweight or underweight is prevalent among patients with schizophrenia (3,4).

Physical inactivity, atypical antipsychotics, genetic factors and being institutionalized have been reported as contributing factors to being overweight or underweight in patients with schizophrenia (5-7).

The body composition is considered an indirect measure of one's nutritional status (2, 8, 9). The body mass index (BMI) is one of the indicators of body composition, however, when used on its own, it is said to be of low accuracy (2, 8, 9). Other methods used to measure the body composition include, the body fat percentage, the waist circumference and waist/hip ratio while the mid-upper arm circumference is considered a surrogate marker of chronic malnutrition (2, 8,9).

There is a lack of studies regarding the nutritional status of institutionalized patients with schizophrenia in Sri Lanka.

The current study was carried out with the objectives of determining the prevalence of overweight or underweight among patients with schizophrenia at several long-stay facilities in Sri Lanka and their associated factors.

Methodology

A descriptive cross-sectional study was conducted at the Halfway Home, Mulleriyawa and the long-stay wards of the NIMH in December 2019.

Ethical clearance was obtained from the Ethics Review Committee of the National Institute of Mental Health (NIMH) and permission to go through the medical records of the consenting participants was obtained from the Director, NIMH.

All patients of the two long-stay wards of the NIMH and four randomly selected wards out of a total of twelve wards in the Halfway Home, Mulleriyawa, with an established diagnosis of schizophrenia for more than five years were recruited after obtaining their written informed consent.

The calculated minimum sample size was 196 to detect a 10% estimated prevalence of metabolic derange-ment around a 10% precision within a 95% confidence interval (7).

The demographic and clinical information regarding the psychiatric and medical disorders and their treatment were obtained from the participants and their clinical records. The weight, height, waist circumference (WC), hip circumference (HC), waist/hip ratio (WHR), and mid-upper arm circumference (MUAC) using standard instruments were obtained for each participant.

Results

Out of the 218 patients recruited for the study, 142 (65.14%) were females. The female participants were on average 7.5 years older (P< 0.01) than the males (the mean ages of females and males were 61.3 years and 53.7 years respectively). There were no statistically significant differences between males and females concerning the duration of the illness or the duration of the inpatient stay at the hospital. At least one medical comorbidity was present in 80.26% of the males and 64.79% of the females and this difference was statistically significant (X^2= 5.66, P=0.01). A higher proportion of males had learning disability (X^2=34.40, P=0.01) and epilepsy (X^2=10.77, P=0.02) while hypothyroidism (X^2=7.07, P=0.05) was found to be higher among the female sample with the differences being statistically significant.

In the study sample, risperidone was prescribed more to female participants than males (X^2=8.04, P=0.003) (Table 1). A higher percentage of females (47%) than males (33%) were receiving two or more antipsychotic medications simultaneously and the difference was statistically significant (t= -2.015, P=0.045) (Table 1). More than 4% of female patients were receiving four antipsychotic medications simultaneously.

Table 1. Medications prescribed across the two study groups

Medications	Male		Female	
	Total	%	Total	%
Risperidone	22	28.95	70	49.3
Haloperidol	21	27.63	42	29.58
Clozapine	21	27.63	31	21.83
Olanzapine	16	21.05	38	26.76
Trifluoperazine	16	21.05	24	16.9
Chlorpromazine	2	2.63	4	2.82
Depot antipsychotics	1	1.32	2	1.41
Other antipsychotics	2	2.64	1	0.7
Lithium	9	11.84	22	15.49
Benzhexol	54	71.05	105	73.94
Antiepileptics	20	26.32	42	29.58
Antidiabetic medications	12	15.78	14	9.85
Vitamins/ Minerals	26	34.21	31	21.83

The average BMI differed significantly between the males and the females (19.82 kg/m^2 vs 23.63 kg/m^2 respectively, P <0 .001) (Table 2).

Higher percentage of males (33% vs 14% in females) had a low BMI (BMI of <18.5 kg/m^2), and higher percentage of females (35% vs 5% in males) had a high BMI (BMI of >25 kg/m^2). These differences were statistically significant (P<0.001).

MUAC showed a significant difference between the two groups, where a higher proportion of the males had low MUAC (23.68%) while only 7.75% of the females had low MUAC (P<0.001). There was a strong statistically significant correlation between the MUAC and BMI values for both the male and the female patients (r=0.808, P<0.001) (Figure 1).

In the study population, 10.53% of males and 76.76% of females had excessive waist circumference (P<0.001) as per the cut-off values of the World Health Organization (WHO). The proportions with excessive waist-to-hip ratio, which is a marker of android (apple-shaped) obesity also significantly differed between males (63.16%) and females (97.18%) (P<0.001). There was a statistically significant strong correlation between BMI and WC (r=0.849, P<0.001) (Figure 2).

Table 2. Distribution of BMI values

BMI Category	Male		Female	
	Number	%	Number	%
<15	10	13.16	0	0
15-15.9	0	0	5	3.52
16-18.4	15	19.74	15	10.56
18.5-24.9 (Normal BMI)	47	61.84	72	50.71
25-29.9	3	3.95	37	26.06
30-34.9	1	1.32	12	8.45
>35	0	0	1	0.71
Total	76	100	142	100

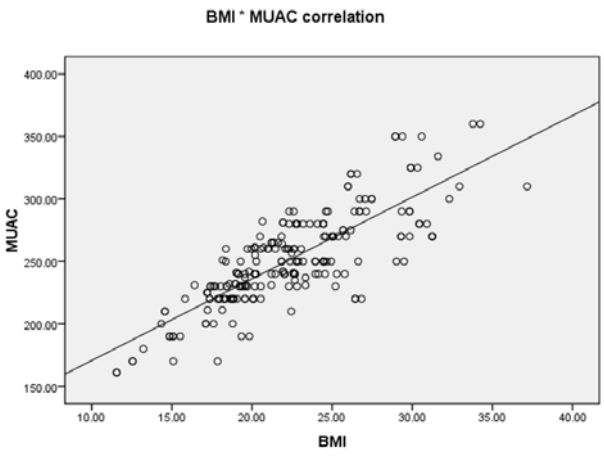

Figure 1. Correlation between BMI and MUAC.

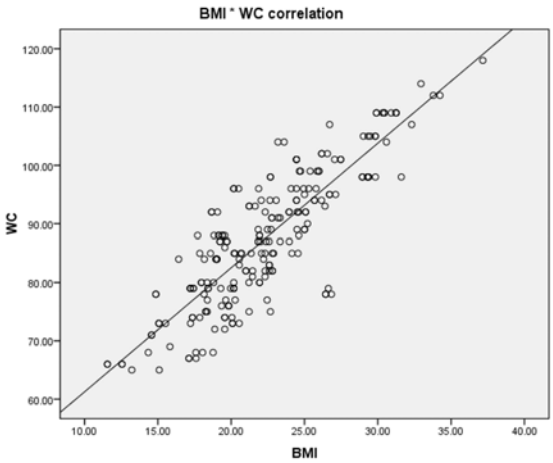

Figure 2. Correlation between BMI and WC.

Discussion

The results of this study revealed an interesting pattern of obesity and malnutrition across our sample of male and female patients diagnosed with schizophrenia in long term residential care in Sri Lanka. When the BMI values were considered, a large proportion of the males were found to have a low BMI compared with the females. A high proportion of males (13.16%) were very severely underweight (BMI <15 kg/m^2). None of the female patients were categorized under this group. These findings could be explained using several hypotheses. Firstly, the elderly females could be genetically more prone to develop central adiposity and obesity (10,11). The female sample of our study had a mean age of 61 years, and this could be one explanation for the high BMI of the female sample (12). In addition, the female participants were on more than one antipsychotic and this has been found to be a risk factor for abdominal obesity in females diagnosed with schizophrenia (12). Other factors such as fewer opportunities to engage in physical exercise and the presence of hypothyroidism among the female participants may have also contributed to these findings. However, our findings are in contrast with the findings of a study conducted in another Asian country which reported that male patients with schizophrenia were more prone than females with schizophrenia to be overweight and obese (2).

There were no significant differences in the duration of the diagnosis and duration of the stay between males and females which could explain the observed differences in BMI. But males had more comorbidities than females and several male patients were treated for tuberculosis which would have contributed to the observed underweight among males. In addition, patients with a learning disability, which proportion was significantly higher in males, would be at risk of not getting enough amount of food or not eating if they were not observed properly. If the energy expenditure is more than the intake, the result is malnutrition or being underweight (13,14). This could be another explanation for the higher proportion of being underweight among males.

These findings were further confirmed by the measure of the MUAC which is a more sensitive measure of chronic malnutrition than BMI as it accounts for muscle mass as well (15). Twenty-four percent of males were found to have low MUAC suggestive of chronic malnutrition whereas only 8% of females had low MUAC. This finding was compatible with that of BMI and evidence for malnutrition and being underweight among males (16).

We found that the majority of the female patients in our study had an excessive WC which may indicate a higher risk for metabolic-related morbidity and mortality (17).

Limitations

This was a cross-sectional study where the associations were assessed statistically. Non-availability of a control group is also a drawback as it could have enabled a comparison with the general population characteristics of body composition.

The participant characteristics such as recall bias and documentation errors might have affected the quality of the data.

Conclusion

Our findings indicate the importance of screening all long-stay patients regularly regarding their metabolic and nutritional parameters using multiple measures as utilized in our study.

Acknowledgements

We acknowledge the support given by the staff of the NIMH, Angoda, and the Halfway Home of Mulleriyawa for conducting the study. We also acknowledge Dr. Nuwan Wickramasinghe for assisting with the data analysis and Dr. Sanjeewani Amiyangoda for assisting with the analysis of the medical nutrition component.

Statement of contribution

TRA was the principal investigator and both TRA and MG contributed to the development of the research concept, writing of the proposal, drafting of the questionnaires, preparing, and editing the manuscript. Both authors approved the final manuscript.

Funding

Self-funded.

Conflicts of interest

None declared.

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