Barriers, attitudes, confidence, and knowledge of nurses regarding metabolic health screening and intervention in people with mental illness: a pilot study from Uganda

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Abstract

Background: People with mental illness are at an increased risk for developing cardio-metabolic disorders. Routine screening following pharmacotherapy is however unacceptably low in sub-Saharan African countries with less than 1% adequately screened. It is unknown whether this is due to a lack of adequate competences.

Objectives: The aim of this pilot study was to assess the barriers, attitudes, confidence, and knowledge of nurses regarding metabolic health, prevention and treatment in Uganda.

Methods: Twenty-eight nurses (39% female, 30.9±6.9 years) completed the Metabolic – Barriers, Confidence, Attitudes and Knowledge Questionnaire and the physical activity prescription rate item of the Exercise in Mental Illness Questionnaire.

Results: More than 75% had a positive attitude towards metabolic screening and intervention and more than 50% were confident in providing smoking cessation advice, and physical activity and nutritional counseling. However, 57% stated that their heavy workload prevented them from doing health screening and promotion activities. There was a negative correlation (ϱ=-0.54, P=0.003) between the frequency of physical activity prescription and the perception of the inability of patients to change.

Conclusion: The present findings suggest that nurses are generally supportive of metabolic health screening and intervention but their high workload prevents them from implementing metabolic health interventions.

Keywords: Exercise, diet, metabolic syndrome, screening, smoking.

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Introduction

Mental disorders are the leading cause of years lived with disability, accounting for almost 20% of all disability-associated burden in low-to-middle and high-income countries[1]. The burden is estimated to increase further in the future[2] and will be increased by the greater risk for secondary cardio-metabolic co-morbidities impacting people with mental disorders[3-5]. Currently, people with severe mental illness (SMI) (i.e. schizophrenia spectrum, bipo-

lar disorder, major depressive disorder) die worldwide on average 14.5 years earlier, and the mortality gap in sub-Saharan African (SSA) countries is larger (27.7 years) than elsewhere in the world[6]. One of the reasons might be that in most SSA countries less than one percent of the health budget is dedicated to integrated physical and mental health care[7,8]. As a result, mental health services are poorly resourced, in particular with regards to any physical health concerns, and treatment rates for people with mental disorders remain low, with treatment gaps over ninety percent[9].

Pharmacotherapy is the mainstay of therapy programs for people with mental disorders in SSA[10], but psychotropic medications lead to increased risk of cardio-metabolic disease[11,12]. The metabolic risk associated with psychotropic medication has led to the development of several international treatment guidelines for routine metabolic screening and monitoring[13,14]. The extent and frequency of screening is debatable, but there is global consensus that baseline metabolic screening should form part of standard care for all patients with a regular prescription of any psychotropic medication[15]. However, a previous review demonstrated that routine screening following pharmacotherapy is unacceptably low in SSA countries with less than one percent adequately screened for all modifiable metabolic syndrome risk factors at baseline[16]. This is understandable given limited resources (including human resources) in many mental health centres.

A mental health system reform with a focus on a more holistic care is therefore urgently needed and should be operationalized[17]. Mental health nurses are well positioned to play a key role in providing holistic care for people who experience mental illness[18,19] and play an essential role as service gatekeepers. Although mental health nurses have traditionally focused on addressing mental illness symptomatology, and the physical health care needs of their patients were often seen as of lower priority[20], mental health nurses in Western settings today acknowledge that they have a substantial role in addressing physical health needs[21]. Data on barriers, knowledge and attitudes of nurses in low resourced mental health settings in low-to-middle income countries are however lacking. It is also not clear whether nurses working in mental health settings in these countries have the skills or knowledge to identify and manage the metabolic complications experienced by service users. Such information might assist in identifying topics for specific training in this area. There is evidence from high-income countries that even brief training can lead to improvements in rate of metabolic monitoring in inpatient settings[21].

Therefore, the aim of the current study was to assess the barriers, attitudes, confidence, and knowledge of nurses regarding metabolic health, prevention and treatment in Uganda. A secondary aim was to explore associations of perceived barriers and the confidence to prescribe physical activity as an intervention with the reported physical activity prescription rate in a resource-poor context such as Uganda.

Methods
Design
This is a cross-sectional study.

Setting and protocol
The entire nursing staff in three adult inpatient mental health facilities of Butabika Hospital, Kampala, Uganda, were invited to participate. These three wards were purposely selected as they are some of the busiest in the hospital. Combined, the facilities can accommodate 130 inpatients, although more than 200 patients are often treated and 32 nurses are employed to care for patients in these wards. The entire nursing staff was provided with an information sheet outlining the purpose of the study. Survey completion was facilitated by reminding the nurses after two weeks to participate, and this through personal contact or via a telephone call. No incentive for completion of the survey was offered. Participation was anonymous and informed consent was assumed on completion and return of the survey. Data were collected from November to December, 2017. Ethical clearance for the study was received from the Butabika Hospital Research Committee.

Barriers, confidence, attitudes and knowledge regarding metabolic health screening and intervention
The Metabolic – Barriers, Confidence, Attitudes and Knowledge Questionnaire (M-BACK)[22] assesses participants' knowledge, confidence, attitudes and practice barriers of metabolic health screening, prevention and treatment. The questionnaire uses a five-point Likert-style scale from 'Strongly Disagree' to 'Strongly Agree' and includes four domains. Previous research22 indicated that the M-BACK is a reliable measure of the key elements of practitioner perceptions of barriers, and their knowledge, attitudes, and confidence regarding metabolic monitoring in people with mental illness.

Domain 1: Barriers
Items one through four address barriers to metabolic screening and intervention, including, workload, consumer interest, conflict with mental health goals and inability to change. These questions are negatively posed with the scoring reversed. Possible scores for the barriers domain range from 4 – 20.

Domain 2: Attitudes
Items five through eight investigate attitudes, including towards metabolic monitoring, the provision of smoking cessation advice, physical activity and nutritional intake. Possible scores for the attitudes domain range from 4 – 20.

Domain 3: Confidence
Items nine through 12 assess the confidence of respondents in providing interventions to prevent or treat metabolic syndrome including smoking cessation, physical activity and nutritional interventions. Possible scores for the confidence domain range from 4–20.

Domain 4: Knowledge
Items 13 through 16 assess knowledge of metabolic syndrome, screening, interpreting pathology reports and understanding of the metabolic side effects of neuroleptic medication. Possible scores for the knowledge domain range from 4–16.

Physical activity prescription behavior
Physical activity prescription practices were determined using the question from the Exercise in Mental Illness Questionnaire – Health Professionals Version (EMIQ-HP) for which content validity and test-retest reliability was previously established[23]: e.g., "Do you prescribe physical activity to people with a mental illness?" with four response options of: "Never", "Occasionally", "Most of the time" and "Always".

Statistical analysis
Participant demographics, responses to statements regarding participants' knowledge, confidence, attitudes and practice barriers of metabolic health and frequency of exercise prescription are reported using descriptive statistics (mean ± SD, frequencies). In accordance with previous studies on knowledge, confidence, attitudes and practice barriers regarding a healthy lifestyle[23,24], responses to statements were collapsed to three categories; "Agree", "Neutral", and "Disagree". Since the Likert scale responses are not assumed to be on an equal interval scale, the responses "Strongly agree" and "Agree" were collapsed to "Agree". Based on rating scale optimization, collapsing the positive responses ("Strongly agree" and "Agree") into one category is logical and does not create an artificial new category. Similarly, combining negative responses ("Strongly disagree" and "Disagree") demonstrates the strength of these responses, compared to neutral and positive responses[25]. The relationship between frequency of physical activity prescription ("Always" versus "Most of the time" versus "Occasionally" versus "Never") and the scores for the practice barriers for metabolic health screening and intervention and the physical activity confidence item were examined using Spearman's rho correlations. Correlation coefficients were interpreted according to earlier recommendations (26) where 0.00–0.30 is a negligible correlation; 0.30–0.50 is a low positive correlation; 0.50–0.70 is a moderate positivecorrelation; 0.70–0.90 is a high positive correlation and 0.90–1.00 is a very high positive correlation. Conversely, correlation coefficients between −1.0 and zero are interpreted as negative correlations. Based on a 10% error margin, a confidence level of 95%, a population size of 38 and a response distribution of 50%, a minimum sample size of 28 was required. Data analysis was performed using SPSS 24.0.

Results
Participants
Twenty-eight nurses (88% of the potential candidates), including 10 nurses without and 18 nurses with a specialist mental health nursing qualification, completed the questionnaires. The characteristics of respondents are shown in Table 1.

Table 1. Demographic characteristics of respondents (n=28)

Characteristic	Mean ± SD	Range
Age (years)	30.9 ± 6.9	22 - 48
Years in profession	7.0 ± 7.4	< 1 - 34
	Number of respondents	**Proportion of respondents**
Gender (male)	17	61%
Marital status (married)	19	68%
Full time employment (yes)	24	86%

Barriers regarding mental health screening and intervention

Responses to statements regarding practice barriers are shown in Table 2. When collapsed to categories of 'Agree', 'Neutral', and 'Disagree', more than half of the respondents agreed that "their workload prevented them from doing any health promotion activities with patients (16/28, 57%).

Table 2. Level of agreement [*n* (%)] with statements regarding barriers to metabolic screening and intervention.

	Strongly disagree	Disagree	Neither disagree / agree	Agree	Strongly agree
My workload prevents me doing any health promotion activities with clients.	0 (0%)	9 (32%)	3 (11%)	12 (43%)	4 (14%)
Consumers with a serious mental illness are not interested in improving their physical health.	8 (29%)	10 (36%)	1 (4%)	5 (18%)	4 (14%)
Informing clients about the possible effects of medications may have on their mental health will increase non-adherence.	4 (14%)	8 (29%)	6 (21%)	8 (29%)	2 (7%)
Screening for metabolic syndrome and physical health interventions are pointless as poor physical health outcomes are unavoidable.	8 (29%)	10 (36%)	4 (14%)	5 (18%)	1 (4%)

Attitudes regarding mental health screening and intervention

The agreement with statements expressed by the nurses regarding their attitude towards metabolic health screening and intervention is shown in Table 3. In a manner similar to the responses to statements regarding barriers, scale optimization was performed to result in three categories. When collapsed to categories of "Agree", "Neutral", and "Disagree", more than half of the respondents agreed with the all the statements, i.e. the importance of metabolic screening (23/28; 82%), advice on smoking cessation (25/28; 89%), encouraging physical activity (26/28; 93%) and advice on nutritional intake (26/28; 93%).

Table 3. Level of agreement [*n* (%)] with statements regarding attitudes to metabolic screening and intervention.

	Strongly disagree	Disagree	Neither disagree / agree	Agree	Strongly agree
Metabolic health screening is an important part of my role as a mental health clinician.	0 (0%)	2 (7%)	3 (11%)	15 (54%)	8 (29%)
Giving smoking cessation advice is an important part of my role as a mental health clinician.	1 (4%)	2 (7%)	0 (0%)	11 (39%)	14 (50%)
Encouraging consumers to increase their level of physical activity is an important part of my role as a mental health clinician.	0 (0%)	1 (4%)	1 (4%)	16 (58%)	10 (36%)
Discussing nutritional intake is an important part of my role as a mental health clinician.	0 (0%)	1 (4%)	1 (4%)	12 (43%)	14 (50%)

Confidence regarding mental health screening and intervention

When collapsed to categories of "Agree", "Neutral", and "Disagree", more than half of the respondents agreed that they feel confident to provide smoking cessation (19/28; 68%), physical activity (18/28; 64%) and nutritional interventions (20/28; 71%). Only 36% (10/28) of the respondents agreed that they feel confident to screen (See Table 4).

Table 4. Level of agreement [*n* (%)] with statements regarding confidence to screen and intervene

	Strongly disagree	Disagree	Neither disagree / agree	Agree	Strongly agree
I am confident in my ability to screen for metabolic syndrome.	0 (0%)	6 (21%)	12 (43%)	9 (32%)	1 (4%)
I am confident in providing smoking cessation advice to consumers	0 (0%)	1 (4%)	8 (29%)	12 (43%)	7 (25%)
I am confident in prescribing exercise interventions to prevent / treat metabolic syndrome.	0 (0%)	3 (11%)	7 (25%)	13 (46%)	5 (18%)
I am confident in using dietary interventions to prevent / treat metabolic syndrome in consumers.	0 (0%)	4 (14%)	4 (14%)	16 (57%)	4 (14%)

Knowledge regarding mental health screening and intervention

As shown in Table 5, exactly half of the respondents agreed they had sufficient knowledge as to what constitutes the metabolic syndrome (14/28; 50%) and how to screen for it (14/28; 50%), while more than half of the respondents agreed that they know how to read pathology reports of lipid and glucose results (17/28; 61%), and they acknowledged that they undersood the metabolic side-effect profiles of different neuroleptic medications (20/28; 71%).

Table 5. Level of agreement [*n* (%)] with statements regarding knowledge about metabolic health issues and screening.

	Strongly disagree	Disagree	Neither disagree / agree	Agree	Strongly agree
I have a good knowledge of metabolic syndrome.	0 (0%)	7 (25%)	7 (25%)	10 (36%)	4 (14%)
I understand how to screen for metabolic syndrome.	0 (0%)	6 (21%)	8 (29%)	10 (36%)	4 (14%)
I understand how to read pathology reports for lipids and glucose results.	1 (4%)	7 (25%)	3 (11%)	15 (54%)	2 (7%)
I understand the metabolic side-effect profiles of different neuroleptic medication.	1 (4%)	2 (7%)	5 (18%)	10 (36%)	10 (36%)

Frequency of physical activity prescription

Three respondents (11%) reported "always" prescribing physical activity, 3 (11%) reported prescribing physical activity "most of the time", 21 (75%) reported prescribing physical activity "occasionally" to their patients and one (4%) reported "never" prescribing physical activity.

Correlates between the frequency of physical activity prescription and the barrier scores

There was no significant correlation between the frequency of physical activity prescription and the scores for the workload barrier (ϱ=-0.31, P=0.11), consumer interest barrier (ϱ=-0.30, P=0.12), conflict with mental health goals barrier (ϱ=0.04, P=0.82), and the confidence to prescribe physical activity (ϱ=0.02, P=0.95), but there was a moderate negative correlation with the perception of the inability of patients to change (ϱ=-0.54, P=0.003).

Discussion
General findings
The current study is the first to assess barriers, attitudes, confidence, and knowledge of nurses regarding metabolic health, prevention and treatment in a low-income country. Our data suggest that nurses working in an inpatient service in Uganda have a good basic knowledge of the metabolic health risks patients with mental illness are confronted with. More than half of the respondents indicated that that they knew how to read lipid and glucose results. More than three quarters of the respondents also have a positive attitude towards metabolic screening and intervention and more than half were confident in providing smoking cessation advice, and physical activity and nutritional counseling. The high level of awareness about the metabolic health risks, and the good basic knowledge about and confidence in metabolic screening, prevention and treatment, in the majority of the nurses is likely due to continued medical education (CME) programs. Since Butabika hospital is the only national mental referral hospital, many of its staff are exposed to information related to lifestyle counseling, owing to the fact that the hospital runs more educational sessions than at other settings, from both local resources and donors. The positive attitude towards holistic care and the good basic knowledge of Ugandan nurses are however not new and have been reported in other health programs delivered by hospitals in Uganda[27]. The Ministry of Health needs to consolidate this human capital. However, our study also indicates that not all nurses have benefited yet from te available educational programs and ongoing efforts are needed. Our data suggest that those who believe that physical health interventions are pointless as poor physical health outcomes are unavoidable (22% agree while 14% are neutral related to this statement), will also in practice less frequently prescribe physical activity. Next to this, a screening of the 100 most recent medical files ofthe Butabika Hospital, Kampala, Uganda (data not presented) demonstrated that in none of the patients were all metabolic syndrome components screened for and reported. Therefore, it seems that the positive attitude and good basic knowledge of the nurses have not yet translated into good clinical practice. Continuing the CME program to reach all nurses working in mental health, has the ability to improve the attitudes, confidence and knowledge of nurses in delivering metabolic screening and intervention. It is also important to test pre- and post effectiveness of such training through tools such as the EMIQ-HP and

M-BACK in order to refine and improve this training in the future.

Another important observation in our study was that 57% of the respondents stated that their heavy workload prevented them from doing health screening and promotion activities with patients. It is important to note that other studies report institutional constraints for other health facilities in Uganda, such as treatment settings for malaria[28] and HIV[29], that include lack of human resources, infrastructure, and low monitoring rates. The major implication is that there is need for a systemic change in health delivery systems in Uganda[30,31]. The Ugandan Ministry of Health needs to consider such constraints through its general and mental health care plans. Training institutions in Uganda for medical cadres should follow suit in bridging some of these gaps, especially human resource gaps. Unfortunately, the mental health budget is less than one percent of the overall health care budget[32] and therefore the current challenges are likely to persist unless more funding becomes available. An alternative would be to introduce and strengthen the integration of lifestyle counseling in the ongoing efforts to integrate mental health into primary health care levels. It is vital that community resource persons (e.g., village health teams) at the primary health care level are empowered to deliver lifestyle counseling to people with mental health problems. However, the staff at this level are also already overwhelmed by service demands.

Limitations
The present study should be considered in the light of some limitations. First, we did not obtain surveys from nurses working in rural mental health settings. Together with the small number of nurses participating (albeit 88% of the potential candidates completed the questionnaires), the generalizability of our findings remains to be confirmed. Second, we did not assess the reliability and validity of the M-BACK22 in the current setting and therefore data should be interpreted with caution.

Conclusion
The present findings suggest that the nurses who participated in this study are generally supportive of metabolic health screening and intervention. More than half are also confident in providing smoking cessation advice, and physical activity and nutritional counseling. However, the

high workload prevents them from implementing metabolic health interventions. More human resources within the mental health system are needed. Policy endeavors are also needed to integrate mental health into primary health care. Further examination in larger cohorts, including nurses in rural settings, will progress our understanding of the delivery of metabolic screening, prevention and treatment for people with mental illness in low-resource settings.

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