



# Raising Awareness of Metabolic Syndrome in People Treated With Typical Long-Acting Injectable Antipsychotic Medications in an Irish Community Mental Health Setting

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## Abstract

This paper details an action research study that was carried out with nurses and patients in a community mental health service in Ireland. People with mental illnesses who receive antipsychotic medications have excess mortality which is two to three times higher than the general population, shortening their life expectancy of 20 -30 years. An action research methodology was specifically chosen to enact two cycles of action used in this study assisted in examining metabolic risk in patient's receiving long acting typical injectable antipsychotic medication. This methodology was practical because it identified the people i.e. the patients and the nurses who could help to improve it and, this study was consciousness raising and allowed practice transformation to occur. Two action cycles took place and was led by with community mental health nurses (n=8) and patients who participated (n=45). The first cycle of action was obtaining metabolic screening data of the patient's metabolic markers. Metabolic screening of risk factors utilized NCEP ATP III criteria [1]. The second cycle of action involved obtaining a second round of screening data on the patient's metabolic markers to determine if there was an improved health status. At baseline, fourteen patients 31% met the criteria for metabolic syndrome. At the 2nd screening metabolic screening just eight patients 17 % met the criteria for metabolic syndrome. Action research has assisted nurses and patients to identify the problem and subsequently to develop a way forward that was aimed towards changing and improving the physical health and wellbeing of the patients. By engaging in this meaningful activity, the nurses became catalysts in empowering others to bring about real change and that is now improving the lives of patients with severe mental illness, who badly need it.

**Keywords:** Mental health; nurses; People; Metabolic syndrome; Patients; General population; Screening

**Abbreviations:** CATIE: Clinical Antipsychotics Trials of Intervention Effectiveness; HDLC: High Density Lipoprotein Cholesterol.

## Background

Individuals with severe and enduring mental illness die, on average, 20 -30 years earlier than the general population [2,3]. These premature deaths are due to the

development of metabolic syndrome which is cluster of biochemical and physiological irregularities which lead to the development of cardiovascular disease and type 2 diabetes [4-6] Metabolic prevalence rates in individuals diagnosed with bipolar disorder are reported at 37.3% [7] and in individuals diagnosed with major a depressive disorder as 30.5%[8]. Metabolic syndrome is prevalent among individuals with a diagnosis of schizophrenia [9] The landmark Clinical Antipsychotics Trials of Intervention Effectiveness (CATIE) study carried out between 2000- 2004 with 1,460 patients with a diagnosis of schizophrenia established that one third met the criteria for metabolic syndrome, 88 % (n= 486) had untreated dyslipidaemia, 62 % had hypertension and 38 % were found to have diabetes [10]. Prevalence rates vary from 19.4% to 68%<sup>6</sup> resulting in a 13-30 years shortened life expectancy[11].

Participating factors contributing to metabolic syndrome include obesity, sedentary lifestyle with low physical activity and genetic predisposition<sup>6</sup>. The medical complications of metabolic syndrome are increased blood pressure, central obesity, abnormal cholesterol levels and elevated fasting glucose which increase the risk of heart attack, stroke and diabetes mellitus [4,12,13]. Greenwood and Shires [14] used the tagline 'don't just screen – intervene' when they reported on the need for mental health services to conduct cardio metabolic risk screening to enable early identification and treatment of risk factors to avoid life-restricting and life-shortening physical disorders. There has been a long tradition of separating mental healthcare services which originally were provided in isolated psychiatric asylums or institutions; away from general health care services which are provided in regional general hospitals. Since the transition in Ireland from institutional care to community care, mental health services were often physically located separate from physical healthcare services; the latter generally located in primary care centres and work closely with General Practitioners. Policy changes now underpin mental health care practice; the Irish Mental Health Commission published its first Judgement Support Framework in 2015 as a guidance document to assist mental health services to comply with the Mental Health Act 2001. This document contains rules and regulations that must be complied with. Most recently Version 5 of the Judgment Support Framework in 2018 places responsibility on mental health services to use a standardized screening tool to conduct physical health screening and to organize physical health screening as part of an individual care plans. It also advocates providing health promoting activities with emphasis on smoking cessation, diet and exercise and better co-ordinate GP's and mental healthcare services. At the time

of this study, there was no evidenced based metabolic screening or interventions program promoted within this community mental health service. Hence, the rationale for this study to advance physical health screening and provide a brief intervention program for individuals who were prescribed long acting antipsychotic medication.

## Methodology

Action research was specifically chosen as the methodology for this study because it collaborates with people; rather than on people [15] and deliberately it actively engages participants who shape the process of the investigation [16]. Action research seeks to "bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities" 17[(p.7)]. Action research has promoted this non-elitist approach to implement change and generate knowledge in which the research participants themselves carry out context specific research. For example, McDaid [18] examined service user involvement in health planning and policy, while Ryan and Happell [19] utilized action research to learn from service user's experience of seclusion. Munten et al [20] utilized an action design to assist nurses to implement evidenced based practices, whilst Clements [21] collaborated with nurses and service users attending a clubhouse to develop a recovery model of care. This study was undertaken using a number of action cycles to construct what the issues/problems were, through to planning and taking action. Finally, to evaluating action(s) to see what was learned or improved [16].

## Study objectives

The aim of the study was to detect metabolic syndrome in people treated with typical long-acting injectable antipsychotic medications the objectives were to: conduct a baseline physical health screen (metabolic monitoring) to determine the presence of metabolic syndrome. Then conduct a second physical health screen for metabolic syndrome and observe how effective of the metabolic screening is in addressing the physical health and wellbeing of individuals who are in receipt of long acting antipsychotic medication.

## Ethical approval and considerations

Individuals receiving mental health care are described as a vulnerable population and in danger of covert pressure to participate in research, which may be due to the unequal power relationship between health professionals and patients [22]. Those from the critical psychiatry

movement consider the range of psychotropic medications (which includes long acting antipsychotic injections) used as psychiatric treatments to be repressive [23,24]. Negotiating and establishing confidentiality and anonymity with former nurse colleagues and a vulnerable patient population, in action research was not straightforward. Williamson and Prosser [25] suggest that it may be difficult for action researchers to fully guarantee the confidentiality and anonymity of participants due to the changing nature of action research, where cycles of action may require additional data collection to evaluate the success of previous actions. Brydon –Miller et al [26] (p.15) advise action researchers ensure they establish the ethical principles of autonomy, beneficence, justice and ‘to ensure respect for the participants knowledge and the experience that they bring with them’. This study drew on the notion of covenantal ethics as its ethical framework [27]. The first named author who was the lead action researcher developed an operational guideline with the nurse participants, through a democratic process that made the ethics explicit. This guideline was added to and updated through all the action cycles throughout the research study. Another important aspect of this study was that the nurses influenced the direction of the cycles of action; therefore control remained in the hands of these nurse researchers. The operational guideline was not just concerned about obtaining informed consent from patient participants; it was also concerned about how the research data would be generated and analysed and on how the knowledge would be used to bring about change. Prior to commencing this study ethical approval was obtained from the Human Research Ethics Committee at University College Dublin, Ireland. Permissions were also sought from the Irish Health Service Executive service area managers, before gaining entry to the mental health community setting. The participation of nurses working and patients who were attending this mental health service was voluntary. Participants were fully informed at recruitment that they were free to withdraw at any time without any consequences. At no time through the time frame of the study did any of the participants opt out. Because face validity is important in action research and must be demonstrate the fit between methods used and the outcomes (Reason and Bradbury 2008), which directly addressed the aim of the study by enacting the three action research cycles that were undertaken. An audit trail was written to document all the decisions and activities that were made throughout the study.

### **The study participants: recruitment and eligibility criteria**

Once institutional ethical approval and local permission was obtained, the lead action researcher approached the

study area’s Director of Nursing with this action research proposal. The director approved and suggested locating the study in a community area that had not previously being involved in this type of research activity related to the physical health care of patients with severe mental illness. The director suggested that it would be advantageous to have a lead researcher who had ‘insider knowledge’ [28], who would be accepted by the nursing team and who could actively engage and empower them into bringing about an improvement aimed at physical health care. The action researches travelled to the community mental health area and held a prearranged meeting with eight community nurses and fully explained the participative nature of the proposed action research study to them and make available an information sheet and consent form for them to consider. The nurses were enthusiastic about the study and this was the start of a year relationship for the lead researcher and these eight community mental health nurses.

Patients living in the community, who were attending this community mental health service for their long acting antipsychotic medications, were invited to participate. This group of patients were a small subset of the population of people attending this mental health service. These patients were all diagnosed by their psychiatrists as having severe and enduring mental illness and were treated with oral and long acting antipsychotic medications. The inclusion criteria for patients were:

- a. Adult male and female patient were eligible i.e. over 18 years of age.
- b. The patient must be considered mentally stable by his/her consultant psychiatrist; therefore, the psychiatrist acted a gatekeeper and had to give verbal consent, so that patient could be recruited for this study.
- c. The patient must be in receipt of their long-acting medication for over a six-month period. Many of these patients were also receiving one or more oral antipsychotics, this did not exclude participation.
- d. The patient should have English as his/her first language and could understand the study information sheet and informed consent form.
- e. In keeping with the operational guideline - participation must be voluntary, the patient freely agreed to a metabolic health screen.
- f. The patients with identifiable physical health risks must voluntary agree to participate in a brief intervention wellness program.

At the commencement of the study, all fifty-one patients in this community mental health service receiving long acting injections. (Table 1) details the long acting antipsychotics that these patients were receiving.

Patients	Long-acting medication that was prescribed
43	Generic name Fluphenazine decanoate Trade name - Modecate
2	Generic name Flupentixol decanoate Trade name - Depixol
4	Generic name Zuclopenthixol decanoate Trade name - Clopixol
2	Generic name Haloperidol Decanoate Trade name - Haldol

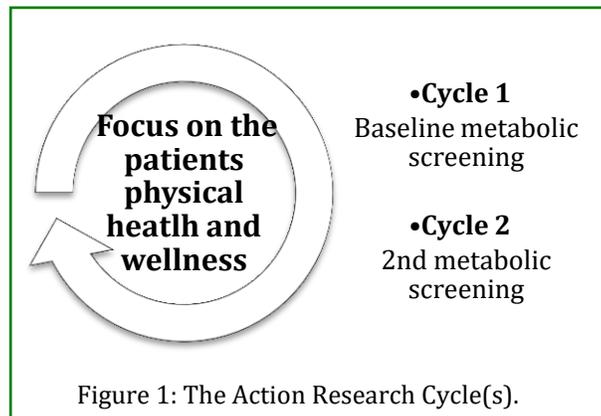
Table 1: Long acting medication that patients were receiving.

These 51 patients who were receiving long acting antipsychotic medication were informed of the physical health screen and of a health intervention program by their consultant psychiatrist. They were provided with an information pack to take home; which asked them to consider the written information and a consent form for participating in the study. The nurses followed up with these patients at their next clinic visit on the information and consent form that was provided. Forty-six agreed to

participate, the five patients who did not consent, were advised to visit their General Practitioner/ Primary Care Physician for a physical health check. One individual who had agreed to participate passed away; this resulted in forty-five study patients participating in the metabolic health screening.

### The Action Research Cycles

The study was one large action cycle which focused on the patient's physical health and wellness and involved constructing and planning actions, taking action and evaluating those actions. Nested within this large cycle was two smaller cycles, the first cycle was constructing the problem/issue was and consisted of gathering baseline screening data on the patient's metabolic status, to gain knowledge on the metabolic prevalence in this sample, to improve their situation. Cycle two involved conducting a second-round metabolic screen to determine prevalence of metabolic syndrome; this led to an evaluation of the three cycles of action. (Figure 1) displays this cyclical process



### Cycle 1 - Screening for metabolic syndrome

To construct what the issues or problem was baseline physical health metabolic screening was undertaken. There have been several criteria to determine metabolic syndrome, the one utilized was published by Alberti et al [1] which recommends (Table 2) five diagnostic criteria to

be utilized for metabolic screening. This included measurements of abdominal obesity, blood pressure, and pathology tests for dyslipidaemia and insulin resistance, three abnormal findings out of these five parameters, determined if the patient has metabolic syndrome.

Metabolic screening parameter	Cut off points
Elevated waist circumstanes	Ethnic population specific. We used the North European $\geq 102$ cm - males $\geq 88$ cm females
Elevated Blood Pressure	Systolic $\geq 130$ mm Hg and Diastolic $\geq 85$ mm Hg
Elevated triglycerides	$\geq 150$ mg/dl or $\geq 1.7$ mmol/L
Reduced HDL	$\leq 40$ mg/dl in males or $\leq 1.03$ mmol/L $\leq 50$ mg/dl in females or $\leq 1.29$ mmol/L
Elevated fasting glucose	$\geq 100$ mg/dl or $\geq 5.6$ mmol/L

Table 2: Diagnostic criteria that used for metabolic screening<sup>1</sup>.

There was no formal way of recording of metabolic screening in this community mental health service at the commencement of this study, therefore a metabolic screening data collection sheet was developed based on the five criteria for the detection of metabolic syndrome (Table 2). The action phase of this cycle involved the community nurses getting familiar with and gathering baseline metabolic screening data. The lead action researcher and community nurse formatted the metabolic screening data collection sheet for baseline data collection and re-used it later 2nd round data collection. Each patient had a data collection sheet which captured their age, gender and had the five metabolic risk factors: i.e. waist circumference, blood pressure, fasting cholesterol levels (Triglycerides and HDL's) and blood glucose (these screening sheets were securely stored in the patient's case files). The nurses who worked at the regular injection clinics conducted the 45 metabolic screens over a two-month period.

The gender of the patients was 26 males (58%) and 19 females (42%), ranging in age from 20 to 83 years. The patients all had their metabolic screen conducted on their long acting injections clinic day, which started at 9am so that fasting blood samples for cholesterol and glucose could be obtained. The sample blood bottles and accompanying pathology forms had pre-printed bar-coded stickers with the participants name, ID number and date of birth. The date, time, consultant psychiatrist name and initials of the phlebotomist were entered on each blood form, following blood collection prior to being sent to the local laboratory. These blood results were later entered onto each participant metabolic data collection sheet once the results were returned from the hospital laboratory. Tea and toast was offered following the blood taking, to allow participants time to relax, before their injection was administered and their anthropomorphic measurements taken to calculate BMI, waist circumference and blood pressure.

### **Evaluating the results of baseline metabolic screening**

Following baseline metabolic screening, an examination of the 45 metabolic screening data collection sheets, revealed that fourteen participants (31%) met the criteria for metabolic syndrome. 28 patients (10 males and 18 females) had elevated waist circumferences. 17 patients (11 males and 7 females) had elevated blood pressure readings. Elevated triglycerides were recorded in 16 patients (9 males and 7 females). Reduced high-density lipoprotein cholesterol (HDL-C) was recorded in 7 patients (6 males and 1 female) and 17 patients (10 males and 7 females) had found to have elevated glucose levels. This first action cycle found that there was prevalence of

over 30% fitting the criteria of metabolic syndrome. The results of the metabolic screening were discussed at a number of meetings with the lead researcher and the community nurses. The poor health status of many patients encouraged the nurses to develop and implement a brief intervention health and wellness program to bring about an improvement in this high-risk patient's health status. The nurses also suggested that once patients would be informed on specific health actions that are available to them, they might try to address and prevent further deterioration of their physical health. The nurses decided that all patients who had completed the baseline metabolic screen should be made aware of their metabolic screening results, and if they fulfilled the criteria for metabolic syndrome, they should be asked if they wished to participate in the brief intervention program. The nurses anticipated that patients at risk might take action to improve their health status, if they understood and regarded themselves as vulnerable arising from this physical health condition (i.e. metabolic syndrome) and believed that metabolic syndrome might have potentially serious consequences to their health and wellness.

### **Cycle 2. Second round metabolic screening**

The second action cycle involved evaluating the previous actions to see what the outcomes were. Each of the 45 patient participants already had a data collection sheet which captured the five metabolic risk factors at baseline; waist circumference, blood pressure, fasting cholesterol levels (triglycerides and HDL's) and blood glucose. The nurses who had conducted the baseline screening carried out a second-round metabolic screens at outpatient clinics, over a two-month period. The result of this metabolic screening revealed that eight participants (17 %) fulfilled the criteria for metabolic syndrome. On this occasion 26 patients (12 males and 14 females) had elevated waist measurements. 14 patients (10 males and 4 females) had elevated blood pressure readings. 10 patients (7 males and 3 females) had elevated triglycerides levels. 5 patients (3 males and 2 females) had reduced HDL. 14 patients (7 males and 7 females) had elevated glucose levels.

### **Evaluating the action cycles**

The lead researcher had been visiting the community health centre almost every week from the commencement of the study to empower and support the nurses through the action cycles. As the researcher was about to leave the research site she met with the nurses to evaluate the action cycles. The nurses were confident in conducting metabolic screening and in obtaining medical histories and lifestyle habits and they were now advising and empowering patients on the importance of physical

activity, healthy dietary advice for maintaining a healthy weight to referring individuals to smoking cessation programmes. The first cycle of the study constructed the extent of the problem, after screening of 45 patients, who identified that 30% (14 out of 45) fitted the criteria for metabolic syndrome. These individuals were found to have large waist circumstances with large levels of abdominal fat, elevated blood pressure, blood glucose and triglycerides levels and low levels of high-density lipoproteins. The second round of metabolic screening revealed a prevalence of 18% (8 out of 45) fitting the criteria for metabolic syndrome.

## Discussion

Previous Irish studies have reported on the physical health risks of patient attending Irish community mental health services. Feeney et al [29] reported on 50 patients and found 36 % fitted the BMI obese range, 28.6% had impaired glucose tolerance, 61.2% had high cholesterol and 17% had high blood pressure. O'Callaghan et al [35] reported on documentation on the criteria for metabolic syndrome in 64 outpatient files, they found that weights were recorded in only 1.6% files and HDL high density lipoprotein in 12.5%. A re-audit of 54 patient files demonstrated improved levels of documentation; e.g. weight was recorded in 61.1 % of files. In 2012 a study of 100 patients taking antipsychotic medication found 55% met the criteria for metabolic syndrome, 12 months later 43% of these 100 patients met criteria for metabolic syndrome [31]. This present study relates with these previous Irish research studies. The need to precisely screen for the risk factors for metabolic syndrome in individuals diagnosed with schizophrenia who are treated with antipsychotic medication has been stressed in America, Canada, Europe, South Africa, Sweden and Australia. Recommendations emphasise obtaining baseline screening data and to continue periodic screening and documenting health parameters. Aspects of metabolic syndrome such as weight gain and elevated blood pressure, blood glucose and cholesterol are potentially remediable with health and lifestyle interventions. The World Health Organization [32] Technical Report Series 916, on diet, nutrition and the prevention of chronic diseases suggest that changes in lifestyle habits and have a beneficial effect and reduce the prevalence of the metabolic syndrome. Lifestyle interventions are known to half the progression of diabetes [33], however this is difficult to achieve in mental health setting without individually tailored programmes. A number health and educational programs have demonstrated the potential to reduce and the lower the risk factors associated with metabolic syndrome [14,34,35] Manu et al [36] suggest that diet and exercise

advice should be routinely be offered to all patients receiving antipsychotic medication.

## Limitations

Limitations in research studies are often considered to be influences, shortcomings or conditions that researchers cannot control. The findings of this study present a few limitations. Action research is "personally demanding and challenging because it entails a close engagement with and commitment to collaborating industrial practitioners" Simonsen [37] (p119). Managing this action research study was demanding and establishing collaboration with the nurses in the clinical environment, entailed visiting the them almost every week, over a year, to progress the study smoothly and at a swift pace. This was a balancing act, as the lead researcher, had experience in action research and change management, but had to "let go of control" so that the nurses would take on control and engage in the action cycles. Because the aim of the study was to address the physical health and wellbeing of individuals with a diagnosis of schizophrenia that were in receipt of long-acting antipsychotic medications, this restricted the inclusion criteria to this population who were medication compliant and engaged with the community mental team. Many of these patients were receiving oral psychotropic medications however these oral medications were not accounted for and may have been a contributing factor to the development of metabolic syndrome in these patients. Because of the separation and lack of co-ordination of primary care from secondary mental health care, the patient's case notes did not record if any physical health medication were being prescribed, this information needs to be available when determining if patients are being medically controlled for conditions related to metabolic syndrome.

We suggest that the benefits of utilizing action research outweighed any research shortcomings because the action cycles succeeded in engaging nurses to question their practice or lack of health screening after considering the evidence base and acquiring the justification for screening and intervening. Their critical examination of practice was then compared to international evidence which made it possible for transformative change to occur from the bottom up. As these nurses began to collaborate to build new knowledge they became empowered to creating the potential for change and improvement.

## Clinical implications

This study with a relatively small sample of individuals (n=45) in receipt of long acting antipsychotic medication in an Irish community mental health service, has

demonstrated that the provision of metabolic screening can lead to improvements in the physical health and wellbeing. Individuals with severe mental illness represent a vulnerable population and researchers have continuously shown high prevalence rates of metabolic syndrome and they have endorsed the need to conduct baseline and regular screening of the physical health needs of all individuals receiving antipsychotic medications. Despite this, metabolic syndrome remains under recognised, under diagnosed and under treated within the clinical environment. Recently due to policy regulations a significant aspect a mental health nurse role is in the and prevention of metabolic syndrome and the promotion of healthy lifestyles [38-41]. Mental health nurses need to engage in health promotion interventions as a routine part of care planning and these needs to focus on assisting patients/clients to modify their lifestyle by encouraging balanced diet, moderate amount of exercise and advice on the dangers alcohol and smoking. Health care advice needs to be provided to patients, their families and carers on the serious health risks associated with metabolic syndrome. This study found that to encourage attendance at metabolic screening clinics, and wellness programs, providing reminders such as phone calls, text messages and or emails, to patients/clients (or their carers) helped. Also, psychiatrists and nurses need to reaffirm the importance of metabolic screening when patients are at outpatient clinics. Happell et al [41] has advocated the need for a designated nurse specialist physical health nurse to coordinate screening and continuous quality improvement programs for the physical health of patients. These specialist nurses in our opinion could keep a register of patients and up-to date statistics with data on the number of patients with metabolic syndrome at any given time. They could also help to organize interventions for patients with metabolic syndrome. Above all else mental health nurses need to have a positive attitude towards physical health care and remember every person has the ability to change; they just need someone to believe in them.

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