

Need for Integrated Health Services for People with Schizophrenia and Cardiometabolic Risk: A Case Study

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Abstract

This study aimed to obtain an overview of the need for integrated health services for people with schizophrenia and cardiometabolic risk.

The case patient is a 36-year-old man with continuous paranoid schizophrenia since the age of 16 and morbid obesity. He took risperidone irregularly, with increased appetite and uncontrollable weight gain as side effects of treatment. His elderly parents were his primary caregivers. The patient has been bedridden for the past 2 years and totally dependent on others for self-care. The community health center learned of his situation 6 months ago, and since then doctors have monitored his condition regularly through home visits. While hospitalized, the patient received interdisciplinary collaboration services to manage his psychiatric disorders and cardiometabolic risk. At discharge, a meeting was held between the healthcare team and family, and open communication and coordination with the healthcare providers at the Community Health Center was provided.

The complex medical problems for people with schizophrenia and cardiometabolic risk require an integrated health service. Various regulations and policies, financing, health services, human resources, partnerships, and infrastructures can be utilized to develop such an integrated service; however, further studies are still required to assess the feasibility of such service.

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Introduction

A recent systematic review found that the estimated median lifetime prevalence of schizophrenia was 4 per 1000.¹ The Indonesian Basic Health Survey in 2013 estimated that around 400,000 people were affected by schizophrenia.² This number might be underestimated due to lack of access to health service which make it a very important issue in handling schizophrenic patients.

Schizophrenia is a chronic, relapsing, severe disease that is a burden for patients and their families. Hallucinations and delusions are hallmarks of schizophrenia,³ affecting how people with schizophrenia think, feel, and behave. The

symptoms experienced by people with schizophrenia can be very disabling, as they may lose touch with reality.

The burden in people with schizophrenia is due not only to dysfunction and disability, but also to physical illness. Comorbidity of physical illness in people with schizophrenia leads to premature death (9 to 10 years earlier than the general population).⁴ People with schizophrenia are 2 to 3 times more likely than the general population to die early, often from preventable diseases such as cardiovascular, metabolic, and infectious diseases.⁵

The prevalence of schizophrenia with cardiometabolic syndrome ranges from 37% to 50%.³ Various bio-psycho-social factors, such as genetics, lifestyle, symptoms of disability, stigma, and discrimination, medication management, and difficulty in accessing health services, underlie the occurrence of cardiometabolic risk in people with schizophrenia.^{3,6} Although the causes of this risk are well understood, comorbid conditions are often overlooked.^{3,7,8} The inability of people with schizophrenia to access healthcare and the

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availability only of less comprehensive healthcare systems are major contributing factors to the problem.^{2,6,9}

The aim of this study was to obtain an overview of the need for integrated health services for people with schizophrenia and cardiometabolic risk through a case study of a patient and the established mental health system in the Jakarta area. The detailed objectives were to identify problems related to the treatment of people with schizophrenia and cardiometabolic risk, to identify potential solutions, and develop recommendations for the treatment of this group of patients.

Case Report

The patient is a 36-year-old single Chinese-Indonesian man. He is a college graduate with no work experience. An only child, he lives in South Jakarta with his elderly parents as his primary caregivers. His father works as an interpreter and his mother gives private English lessons. They utilize the National Health Insurance (Jaminan Kesehatan Nasional-JKN) to access healthcare. The consent to publish this case report for study purpose was obtained from the patient's parent.

In July 2018, at the age of 36, the patient was referred from primary care at the Pesanggrahan Community Health Center (Puskesmas) to the tertiary psychiatric service at the Cipto Mangunkusumo National General Hospital due to morbid obesity, immobility, and continuous paranoid schizophrenia. Prior to admission, the patient was observed to have hallucinatory behavior (talking to himself) and was irritable toward his parents. His irritability was related to his belief that his mother would hurt him, although his suspicion was never proven. This situation lasted for a long time, but the parents were not able to take him to a proper health service because of physical and financial constraints. They relied on the services offered by the Community Health Center (e.g., home visits and ambulance for transportation).

The patient began to show abnormal behavior in 1998, at the age of 16. His parents were concerned and took him to a psychiatrist. He was diagnosed with obsessive-compulsive disorder and received risperidone 2 mg/day. He responded well to the medication and continued his education at a different high school. He

received a college degree in management in 2004, at the age of 22. He continued to take his medication for 8 years until his parents decided to stop the medication in 2006, when he was 24 years old. Due to his increased appetite and uncontrollable weight gain, his weight reached 150 kg. His parents thought these were side effects of risperidone.

After discontinuing medication, the patient started to collect garbage and became irritated if his parents tried to throw it away. In 2011, at the age of 29, his behavior worsened and his parents took him to a psychiatrist. He was treated with risperidone and showed great improvement. However, the parents discontinued his medication after 2 months because of concern about the side effects. After discontinuing medication, the patient started to show abnormal behavior again, such as talking to himself and irritability toward other people.

In 2014, at the age of 32, the patient was taken to a psychiatrist again and was offered aripiprazole as an alternative medication. The parents declined this offer because of financial issues. The doctor then prescribed haloperidol drops (the dosage is unknown), but he did not respond well. His parents stopped using haloperidol and changed to risperidone twice a week, despite the occurrence of the side effects.

Since 2016, at the age of 34, the patient has had limited mobility due to a fall accident. He complained about back pain and mentioned broken legs. His parents took to a nearby general practitioner, who advised him to have an x-ray. The examination found no emergency or surgical indication. However, since that incident the patient has been bedridden and totally dependent on others for his care. He can only move himself from side to side and change his lying position without any help. He also shows increasing irritability toward new people and can only be calmed by food.

In 2018, when he was 36 years old, a cadre from the Community Health Center learned about his situation during a house inspection and reported it to the health officer at the center. Since then, two doctors have alternated in visiting him at home twice a week to monitor his physical condition by performing a standard physical examination and selected measurements of nutritional status.

The chronicity of the patient's condition was of concern to his parents. The most

concerning issues were about his communication ability, physical size, and ability to take care of himself. They took the initiative to meet with the head of the Community Health Center and to obtain a referral to a tertiary care facility from the district government.

When the patient arrived at the Cipto Mangunkusumo National General Hospital, he was found to have bizarre and grandiose delusions and hallucinatory behavior. He repeatedly said that he was tired and unable to do any physical exercise and sometimes wished for death. According to the physical and nutritional assessment, his estimated weight was 179 kg, with a body mass index of 61.9 kg/m², waist circumferences 138 cm, and blood pressure 130/82 mmHg. Imaging studies showed lumbar spondylosis and bilateral sacroiliitis, although based on the orthopedic examination, this did not cause a severe mobility issue. However, morbid obesity is considered a debilitating condition as it can severely limit mobility and cause significant health challenges including decubitus ulcers. Laboratory results showed total cholesterol was 206 mg/dL (normal <200 mg/dL), triglycerides (TG) 94 mg/dL (normal <150 mg/dL), high-density lipoproteins (HDL) 40 mg/dL (normal range 41-60 mg/dL) and low-density lipoproteins (LDL) 156 mg/dL (normal <100 mg/dL). Patient's fasting blood glucose 90 mg/dL (normal <100 mg/dL) and his random blood glucose 152 mg/dL (normal <180 mg/dL). Measurement for liver and renal function, and thyroid hormonal test were normal. The patient was found to have continuous paranoid schizophrenia, grade II morbid obesity, immobility, hypercholesterolemia, bilateral knee osteoarthritis, low back pain due to lumbar spondylosis and bilateral sacroiliitis, and grade I decubitus ulcer. He received collaborative care, as described in Table 1. These combinations of care were considered to be effective for the patient, because they could control his psychotic symptoms, manage his dietary intake, and motivate him to move his body.

Improvement of the patient's psychotic symptoms was measured by The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia, 1987, by SR Kay. Between the first and second weeks, there was a 14% reduction in symptoms. Because this indicated a slow response, his antipsychotic medications were changed from aripiprazole and lorazepam

to trifluoperazine and long-acting injection fluphenazine. In the third week, the PANSS score was reduced by 30%. However, there was no improvement in the patient's insight. Other developments were measured through nutritional status. The complete records are listed in Table 2. During hospitalization, the interdisciplinary team conducted a case conference to discuss a further treatment plan, in particular to prepare the patient for community-based treatment. The discussion emphasized the need for sustainable and comprehensive treatment, especially to manage his psychotic symptoms and cardiometabolic risk. The family needed to be motivated and educated to give antipsychotic medications consistently and to implement dietary modifications and physical activities. In addition, it was necessary to hand over and arrange the subsequent treatment process with the healthcare provider in the nearby Community Health Center.

Problems	Intervention
Psychotic symptoms with history of non-adherence	1 st week - Aripiprazole 1x30mg and lorazepam 1x1mg 2 nd week - trifluoperazine 2x10 mg Long-acting injection fluphenazine 25 mg intramuscular per 2 weeks
High cholesterol level	Simvastatin 1x10mg
Back pain	Paracetamol 3x1000 mg
Obesity	1700 kcal meal 5 egg whites 2 extra servings of animal protein 2 servings of fruit juice
Immobilization	bed reclining 45-60° range of motion exercise for upper and lower limb weight shifting every 2 hours to prevent decubitus

Table 1. Collaborative Management Prescription.

Week	PANSS Score	Arm circumference (cm)	Estimated Body weight (Kg)	Body Index (Kg/m ²)	Mass
1	98	75	162	61,9	
2	84	75	180	61,9	
3	68	59,4	158	54,7	

*PANSS, The Positive and Negative Syndrome Scale

Table 2. Records of the patient's development.

Discussion

Schizophrenia is a mental disorder that affects men more frequently than women. The onset of this disorder is usually earlier in men.¹⁰ Our patient fits into this category, as he started to experience distortions in thinking and behavior from a young age. The course of the illness may affect educational and occupational performance. As seen in this case, even though he made it through college, with his uncontrollable symptoms he was not able to get himself a job that would lead him to be financially dependent.

As a chronic disorder, schizophrenia is treatable with proper medicines and psychosocial support. The major concern is that the majority of people with chronic schizophrenia lack access to treatment.⁵ This case study is a perfect example of such a challenge. The patient became dependent on his parents while their physical and emotional capacity declined as they grew older and faced many limitations to access to proper treatment.

This case also shows the development of cardiometabolic risk in people with schizophrenia. According to the modified Adult Treatment Panel III (ATP III) in Indonesia, people are considered to have cardiometabolic risk if they meet any of the following criteria¹⁰: abdominal obesity (waist circumference ≥ 90 cm in men and ≥ 80 cm in women), high triglyceride level (≥ 150 mg/dL), low high-density lipoprotein cholesterol level (< 40 mg/dL in men and < 50 mg/dL in women), high blood pressure ($\geq 130/80$ mmHg), and high fasting blood glucose level (≥ 110 mg/dL)

The patient in this case meets at least two of these criteria and he is considered to have a high risk of developing metabolic syndrome. Therefore he needs assertive management and treatment to reduce the risks of morbidity and mortality. Compared with the general population, people with schizophrenia have a higher risk of dying from a wide range of comorbid conditions.¹ The use of second-generation antipsychotics may contribute to the increased risk of mortality.

These medications are more likely to cause weight gain and metabolic syndrome. During the patient's latest hospitalization, adjustment of his medication by changing from risperidone to aripiprazole was part of the strategy to minimize cardiometabolic risk. However, this strategy was

not effective to manage his psychotic symptoms. Therefore, the medication was changed again to trifluoperazine a high potency typical antipsychotic with lower metabolic side effect.¹¹

A worrying situation is emerging because the differential gap in mortality associated with schizophrenia is increasing. The increase in the gap occurs because people with schizophrenia do not share in the improved health of the general population. About 10% to 15% of people with schizophrenia with chronic and relapsing courses will have long-lasting disability that leads to unemployment. This situation may cause prolonged stress for people with schizophrenia and decrease their ability to take care of themselves, including performing tasks related to health issues. In the primary care setting, less than 7% of people with schizophrenia and cardiometabolic risks receive treatment for both problems.¹²

Because of the complex nature of health problems, a health system is needed. A health system is defined as the combination of resources, organizations, financing, and management that culminates in the delivery of health services to the population.¹³ The World Health Organization defines the purpose of a health system as the provision of all activities whose primary purpose is to promote, restore, and maintain health.¹³ The term "purpose" is then extended to include prevention of household poverty due to illness. A health system has many parts, including regulation and policy, financing and payment system, health service, human resources, partnership with stakeholders, and facilities and infrastructure.¹² These elements affect the access of people with schizophrenia and their families to healthcare. Based on this case, we formulated problems and potential solutions according to each component of the health system, as listed in Table 3.

Health System Level	Primary Care	Tertiary Hospital	Community
Regulation & Implementation policy	Problems Health Act Mental Health Act Minister of Health Regulation about Community Health Center	Potentials Health Act Mental Health Act Clinical Pathway of Schizophrenia	Problems Implementation Health Act Mental Health Act Convention on the Rights of person with disabilities Minimum Service Standards for each City
Financing and payment system	Tariff ceiling	National Health Insurance Financial insurance for chronic diseases (e.g. Prolanis)	Tariff ceiling Claim system National Health Insurance Private funding Funding from local government
Health System Level	Primary Care	Tertiary Hospital	Community
Health service	Problems Treatment as usual Identification is not necessarily delivering treatment service Chronic care program for non-communicable disease	Potentials Indoor and outdoor services Outreach (Ketuk Pintu Layani Dengan Hati Program) Join exam room for psychiatric and other non-communicable disease	Problems Highly specialized care Standardized (based on best practice evidence) Intensive treatment
Human resources	Lack of knowledge about physical and mental health needs of commitment to	Availability of health care provider Level of competence to deliver health care accordingly	Availability of specialists & sub-specialists Level of competence to deliver specialized & sub-specialized care
		Lack of communication between provider Fragmented focus in determining treatment goal	Patient and families are: Lack of insight Lack of capacity Lack of knowledge and understanding Lack of competence
		Trained lay-persons	Easy access Long term care Home care <i>Pos Pembinaan Terpadu (Posbindu)</i>
Health System Level	Primary Care	Tertiary Hospital	Community
Partnership with stakeholders	Dual position	Closely supervised by local government	Limited scope of work Connected with central government Professional organization
Facilities and infrastructure	Medical record database (collected to the local government) Standardized medication are available	Less option for medication	Internal medical record system Limited stock of medication
		High variety of medication Free transportation access for elderly and disabled	Medical record information system is not accessible Medication is available in selected pharmacy
		Less transport needed	Engage with customer and families Cross-sectoral collaboration

Table 3. Problems and Potentials in Managing People with Schizophrenia and Cardiometabolic Risk.

In terms of regulation and policy, for example, national and local regulations guarantee physical and mental health services for every Indonesian citizen. Although the policies that apply in each place impose restrictions on access to health services. The low level of knowledge from policy-makers regarding cardiometabolic risk in PWS is also considered as one of the barriers to accessing health services. Morbid obesity as seen in this case is actually preventable if patient undergone routine monitoring in the healthcare facilities. The minimum measurements consist of body weight and height, also waist circumference. Although those are quite easy procedures, not all mental health facilities are equipped with the tools needed due to lack of knowledge from the policymaker.¹³ The existence of regulations such as Health Act and policies such as Minimum Service Standards in each region can be used to encourage the provision of integrated and outreach health services to meet sustainable development goals.

The second component, financing, by the National Health Insurance (JKN-Jaminan Kesehatan Nasional), as well as payment systems through claims is often detrimental to patients and healthcare providers. The types of services that can be provided are limited by the ceilings determined by the Health Insurance Organizing Body (*Badan Penyelenggara Jaminan Kesehatan-BPJS*). However, the existence of the National Health Insurance opens community access to health services according to their level and can help meet the needs of standard health services.

Human resources, capacity, level of education, and competencies are the determinants of the types and quality of services that can be provided for people with schizophrenia and cardiometabolic risk. The low level of understanding from health worker, negative attitude, and multiple tasks to carry also considered as one of the barriers to give the optimal health services for people with schizophrenia with cardiometabolic risk.¹³ It is necessary to improve not only knowledge but also skill through counselling, education, training, and assistance to increase health services for PWS with cardiometabolic risk.

The problems in partnership with stakeholders are about the dual position, limited scope of work and strength in partnership. These

problems could be resolved by being closely supervised by local government and connected with central government. It is also necessary to collaborate with patients and their families to strengthening the partnership.

The fact that there are various forms of health services, facilities, infrastructure management, availability and capacity of health workers, resulting in the incapability of primary health center (PHC) to conduct the highest collaboration service model in the form of clinical pathway.¹¹ The form of other integrated service is finally adapted to became integrated service flow model. However, this model also was not carried out properly due to unresolved existing constraints in PHCs, even though most of the health workers are willing to continue the implementation.¹³

To manage the complexity of a case such as that described above, a doctor needs the skills to be a care coordinator.¹⁴ As coordinator of the care of people with schizophrenia and cardiometabolic risk, a doctor needs to be able to show democratic leadership, think comprehensively, foster partnerships with stakeholders, and conduct monitoring evaluation to ensure that health services move along smoothly.

Conclusions

The complexity of medical problems in this case required an integrated health service. Various potential solutions from regulations and policies, financing, health services, human resources, partnerships, and infrastructures can be utilized to develop integrated services for people with schizophrenia and cardiometabolic risk. Further studies are needed to assess the feasibility of such services.

Declaration of Interest

The authors declare no conflict of interest.

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