Predictors of subjective recovery from recent-onset psychosis in a developing country: A

mixed-methods study

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**Abstract** 

Purpose: This study was conducted to: a) investigate the levels and progress of subjective

recovery from recent-onset psychosis; b) examine its predictive factors and; c) describe

perceived challenges and opportunities affecting recovery. The findings were expected to help

inform recovery oriented psychiatric care in low-income, particularly African, countries.

**Methods:** This sequential explanatory mixed-methods study involved 263 service users with

recent-onset psychosis from North-western Ethiopia. For the quantitative part, a nine-month

longitudinal study approach was employed with three time-point measurements over 9 months.

Predictor variables for subjective recovery from recent-onset psychosis were identified by

hierarchical multiple linear regression tests. Following the quantitative survey, individual

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qualitative interviews were conducted with 19 participants. Interview data were transcribed

and thematically analysed.

Results: High mean subjective recovery scores were recorded throughout the study

(Questionnaire about the Process of Recovery score ranging from 44.17 to 44.65). Quality of

life, internalized stigma, disability, hopelessness, satisfaction with social support, and central

obesity were significant predictors of subjective recovery across the three time-points.

Participants' perceived challenges and opportunities affecting their recovery were categorized

into four themes.

Conclusion: In Ethiopia a low percentage of individuals with SMIs initiate psychiatric

treatment and many discontinue this to attend spiritual healing. However, for those engaged in

psychiatric treatment consistently high mean subjective recovery scores were found. Devising

mechanisms to integrate the two sectors is suggested. Approaches to improve quality of life,

functioning, hope, internalized stigma and provide need-based social support are suggested to

be incorporated in recovery oriented psychiatric care.

*Key words: Subjective recovery, recent-onset psychosis, low-income country* 

**Background** 

Recovery from severe mental illness is a priority to patients, families and health care providers

[1, 2]. Clinical recovery relates to symptomatic and functional improvement; and is

underpinned by the biomedical model [3]. This view of recovery has been criticized for being

too medical focused and ignoring service users' perspectives and individual values [3, 4].

Whereas subjective recovery is in accordance with the recovery model and is focused on hope,

empowerment, choice, self-defined goals, healing, well-being and control over symptoms.

Subjective recovery recognizes holism [3, 5] and the individualistic process where individuals

strive to achieve a meaningful and satisfying life, as defined by themselves, with or without

symptoms [6, 7]. Most definitions agree that subjective recovery is a nonlinear process and a

self-optimizing journey [2, 8, 9].

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Studies showed that recovery levels vary across countries with different developmental levels, and subjective recovery is influenced by various factors [10-12]. However, evidence about subjective recovery from low-income, particularly African countries is scant [13]. Consequently, there is currently little understanding of the factors that may promote subjective recovery over time [14]. This evidence is essential to inform the development of recovery-oriented mental health services in the region. Hence, this study aimed to investigate the levels and progress of subjective recovery from recent-onset psychosis, examine its predictor variables, and describe perceived challenges and opportunities affecting subjective recovery over nine months.

#### Methods

This study adopted a sequential explanatory mixed-methods (quantitative followed by qualitative) design with a post-positivist approach which advocates there could be multiple reality/different understandings and hence to capture a more reliable findings methodological pluralism/triangulation is advised [15]. A sequential explanatory design is well suited for researching complex issues, such as the individualistic nature of subjective recovery [16]. The longitudinal quantitative approach examines the level and progress of recovery over time and identified its predictors, whereas the qualitative findings, which was conducted after the quantitative part, are used to explain and expand the challenges and opportunities affecting subjective recovery from service users' perspectives. Therefore, the purpose of a sequential explanatory mixed-methods design is to employ qualitative methods to understand and expand upon quantitative results.

#### **Quantitative Component**

### Study design, period and setting

The quantitative part of this study adopted a nine-month prospective observational study approach to capture the nonlinear nature of subjective recovery and determine if the associated variables had sustained and long-lasting associations on subjective recovery. The three time-point measurements were done at baseline, three months and nine months from December 2017 to October 2018. The study was conducted in three tertiary hospitals of North-Western Ethiopia. In the country, over 25 million people were estimated to have mental health problems and the majority rely on traditional and religious healing practices [17].

#### Samples and sampling

Three study hospitals were purposively selected for better representations of the population in the region and for their convenience. Sample size was determined considering 10-20 participants [18, 19] for 15 potential predictor variables, which were identified in a systematic review [13], to be inserted into the multiple linear regression model to be computed the multiple regression statistical tests. Simple random sampling technique was used to select study participants using computer-generated random numbers. Individuals with recent-onset psychosis (up to 5 years illness duration) [20] attending outpatient psychiatric treatment, mentally stable to communicate and aged 16 years and above were included in the study.

**Data collection and measurement tools:** After a full day's training, registered psychiatric nurses collected the data from patients' hospital charts/records, physical health measurements and face-to-face interviews using a set of structured and validated data collections tools. Subjective recovery was measured by the Questionnaire about the Process of Recovery (QPR) [21]. Quality of life of the participants was assessed using the 26 items WHOQOL-BREF [22]. Beck's Hopelessness Scale (BHS) was used to measure the level of hopelessness [23]. Level of disability was assessed using the World Health Organizations Disability Assessment Schedule (WHODAS) [24]. Level of psychotic symptoms was scored using the Positive and Negative Syndrome Scale (PANSS) [25]. Inter-rater reliability of PANSS was found to be high (ICC = 0.985, *P*<0.001) when tested prior to the main study. The nine-item Internalized Stigma in Mental Illness (ISMI) developed by Ritshera, Otilingama [26] was used to assess the level of internalized stigma. The Social Support Questionnaire (SSQ-6) developed by Sarason, Sarason [27] was used to assess the social support and satisfaction with it. Details of the validity and reliability of these tools for the study population with Amharic language are given in the previous publication of the baseline data [28].

#### Data analysis

Data entry and analysis was done using IBM, SPSS version 23 statistical software [29]. Descriptive analysis was carried out to contextualise the study participants. Hierarchical multiple regression test was used to identify significant predictors. Study variables, which were tested for their prediction/relation to subjective recovery, were identified in a systematic review conducted prior to the current study [13]. The predictions of the independent variables on the dependent variable at each measurement time were tested independently. Independent

variables were grouped in temporal precedence and entered into the regression models accordingly [30]. Consequently, sociodemographic and substance use variables were entered in the first model, followed by physical health states and psychosocial variables. Finally, to identify the significant predictors at the ninth month, all significant predictors at any of the measurement time-points were introduced into the last hierarchical regression test in sequence with the round of assessment. The subjective recovery measurements of the first and second phase measurements were also inserted as independent variables in the regression models. Assumptions for multiple linear regression test were checked and for the violated assumptions corrections were made by replacing with the mean values for missing cases and excluding the outlier cases. After these corrections the data fulfilled the assumptions of linear regression test for normality and multicollinearity [19, 31]. In each block, "Enter Method" was used for regression tests. For all tests, the level of significance was set at p<0.05.

#### **Qualitative Component**

# Study design and samples

A qualitative descriptive design was employed to describe perceived challenges and opportunities during the process of recovery [32]. These data were used to explain the findings of the quantitative study by providing deeper naturalistic, contextual interpretations of service users' recovery experiences [33]. The design of the interview guide questions, and sampling of participants was informed by the findings of the quantitative part [16, 34].

Nineteen participants from different levels of subjective recovery scores in the quantitative measurement were purposively selected until data saturation was achieved by doing concurrent and constant analysis [16, 35]. Data saturation was achieved at 15 participants and four more participants were interviewed for member checking and testing the data iteration.

#### Data collection and analysis

Interview guide questions were developed guided by relevant literature on the topic, findings of the quantitative data and clinical experiences of the research team [36, 37]. The principal investigator conducted face-to-face interviews with audio recording and memo writing using Amharic version of the interview guide. An inductive thematic analysis method was used following suggestions by Joffe [38] and Maguire and Delahunt [39].

#### Rigour of the study

To strengthen study rigour, participants with different levels of recovery were involved, data were collected/analysed until saturation was achieved, memo/field notes were taken persistently throughout interview and analysis, member checking was conducted and themes were cross-checked with the original data [33, 40]. Qualitative interviews were conducted in a private room of each hospital that interviewees sought their routine psychiatric follow-up care so interviewees might have perceived that I (interviewer and principal researcher of this study) am a health care provider. However, I introduced myself that I was not working in those hospitals and not their health care provider. I was part of the community that the participants came from and spoke the same language and hence we might have some shared norms, values understanding and experiences. Prior to embarking to this study process, I spent much time on reading previous works on the topic, conducted a systematic review on this topic and a longitudinal study. Hence, assumptions that I brought to the study could have its impact on data collection, analysis and interpretations. However, in the final data analysis and interpretation process, co-investigators who are from different cultures and settings, but who are in the field of mental health have involved shaping and reinforcing the interpretations of the findings. Therefore, the interpretations of qualitative findings shall be in consideration of these issues. The mixed-methods design and the involvement of more than one researcher also strengthen the rigour of the study [40].

# Combined interpretations of quantitative and qualitative findings

Taking suggestions by Polit [16] and Ostlund, Kidd [34] findings from the two approaches were summarized and integrated at the interpretation phase of the study. Findings from the quantitative approach were used as main data while qualitative findings were used to explain.

#### **Results**

# Quantitative results

From the three hospitals, 263 individuals with recent-onset psychosis were recruited for the baseline measurement, while 201 and 190 of them were involved in the second and third round measurements respectively. Figure 1 presents the study flow diagram. Participants who disengaged from the follow-up were either not traceable, disengaged from their treatment,

withdrew from the study or transferred to other hospitals. Over half of the participants (n= 145, 55.1%) were male. The mean age was 29.58 years ranging from 16 to 65 years. More than half of the participants (54.0%) were diagnosed with schizophrenia. The mean duration of untreated psychosis (DUP) and duration of illness were found to be 7.61 (SD = 11.6) and 22.84 (SD = 6.87) months, respectively. The demographic, substance use, physical health and clinical characteristics are presented in Table 1.

#### PLEASE INSERT TABLE 1 HERE

The level of subjective recovery, disability, and psychosocial and clinical characteristics are presented in Table 2. The mean score of participants' subjective recovery was found to be high and remained consistent; mean QPR ranging from 44.17 at baseline to 44.65 at third month assessments. Continuously increasing hopelessness levels were recorded; mean BHS 3.25, 3.59 and 4.56 at baseline, third- and ninth month follow-up assessments, respectively. Participants had moderate mean internalized stigma scores throughout the nine-month study period. Levels of disability were moderate across the three measurements; 20.25, 18.03 and 19. 47 at baseline, third- and ninth month's assessment points respectively. The overall mean psychotic symptom level was found to be low (mean PANSS = 37.6) at baseline and remained almost the same in the consecutive two measurements. Nearly equivalent mean scores (ranging from 41.04 at ninth month to 42.85 at third month) of the overall social support were found. The self-reported quality of life of the study participants was found to be high and sustained throughout nine months with the overall mean score of 3.24 at baseline assessment and 3.16 at third and ninth-month's measurements.

#### PLEASE INSERT TABLE 2 HERE

Quality of life, hopelessness and central obesity were found to be the three significant predictors of subjective recovery for the baseline measurement. Quality of life was the most significant positive predictor while hopelessness and central obesity negatively predicted. Details of the test results of the baseline measurements can be found in a previously published manuscript [28]. For the third month follow-up measurement quality of life was again the most significant predictor of subjective recovery (unstandardized B coefficient = 2.43, P = 0.002). The other two significant predictors in for the third month follow-up measurements were internalized stigma (ISMI) (unstandardized B coefficient = -1.83, P = 0.006) and satisfaction domain of the social support (SSQ6-satisfaction) (unstandardized B coefficient = 0.12, P = 0.002).

0.04). The regression test result table is attached in supplemental Table 1. The regression test results of the ninth month follow-up showed that quality of life (unstandardized B coefficient = 5.60 P > 0.001), level of disability (WHODAS) (unstandardized B coefficient = -0.17, P = 0.03) and internalized stigma (unstandardized B coefficient = -1.99, P = 0.036) were the significant predictors of subjective recovery. Supplemental Table 2 presents the result for the regression of the ninth month measurements.

Table 3 presents the regression test results at the ninth month. Four variables (one from the third month and three from the ninth month measurements) significantly predicted subjective recovery at nine months. Quality of life score was found to be the most significant predictor of subjective recovery (unstandardized B coefficient = 5.24 P < 0.001). Internalized stigma was also found to be a significant negative predictor of subjective recovery (unstandardized B coefficient = -1.92, P = 0.022). The level of disability at the third month (unstandardized B coefficient = -0.10, P = 0.025) and ninth month (unstandardized B coefficient = -0.31, P < 0.001) negatively predicted subjective recovery at ninth month. The score of subjective recovery at baseline and third month (second round) did not show a significant prediction for the subjective recovery score at the ninth month.

#### PLEASE INSERT TABLE 3 HERE

# **Qualitative results**

A total of 19 individuals, 63.16% male and 52.6%) diagnosed with schizophrenia were interviewed in this part of the study. "Altered health, psychiatric treatment and side effects of antipsychotics", "collective understanding and social process to psychosis management", "opportunities and challenges of working" and "faith, hope and determination" are the themes identified as challenges and opportunities affecting subjective recovery.

Altered health, psychiatric treatment and side effects of antipsychotics: Participants perceived that their altered health condition and side effects of the antipsychotics were the main challenges they faced. Being easily fatigued, unable to perform daily activities, poor quality of sleep and weight gain were the common complaints. However, these physical health problems were often overlooked by health care providers. A 30 years old man stated that: "... I have been assessed for it (a problem in his abdomen) but they (health professionals) said there is no problem". A nother participant also stated: "... but they only focus on my mind". Gl Many

participants stated that some of their symptoms sometimes flare-up and destroy the things they constructed. A 26 years old male stated that: "... I sometimes get confused and get lost ... how could I ask others 'where I am' while I am in the toilet ... it is embarrassing". GI Participants' highlighted that although antipsychotic treatment had improved their mental health state, the side effects were also devastating. Comments from others about the negative effects of antipsychotics were also common. A divorced man stated that: "...you know, to get married to another woman, the medicines have killed my sexual feeling ... my ex-wife is also telling me to stop taking the pills". G4

Collective understanding and social process to psychosis management: The community's understanding of psychosis and interdependency within the family was found to have a strong influence on the type of treatment participants received and their consequent recovery. Almost all participants reported that they had visited either traditional or spiritual healing sites before visiting health care facilities and this was usually decided by the family. Most participants viewed that psychosis was just like any other acute illnesses, which needs to be treated for a limited period before it is cured. The majority of the interviewees mentioned that they were "waiting for their doctors to decide no more medicine is required" during interviews. A female student who had been on treatment for about three years stated: "...I am well now ... but I am having too many pills. I am also concerned for how long I should keep taking the pills" G5. A high interdependency within the family was apparent from the interviews. A 30 years old male who quitted his job due to his illness mentioned: "... they (his parents) support me, they feed me ... I have no job/responsibility to worry about. I do not consider them in this (as supporting) because they are my family."F4 However, some complained of losing the freedom to decide. A college student stated: "... you know, it is my life ... it should be my decision to attend classes or not ... it should be my preference to choose a profession for myself ... but ...". G1 Participants found it challenging to fulfil the roles, responsibilities and behaviours they were expected to discharge. An unemployed participant found it difficult to maintain good relationships with his friends: "... I am trying to act like their friend, but you know it is not easy ... the relation cannot be "normal" I rather prefer to stay home". G8

**Opportunities and challenges of working**: Work was felt to be an essential part of recovery for the majority of participants, although it also presented various challenges. A male participant said: "... staying at home causes depression ... staying at work is better". The advantages of having something to work on is not limited to staying active in life, for some

generating income for themselves and family was also the concern. A single mother of three shared that: "I quitted my job because of the problem, I have no income now ... nowadays I even could not cover for the pills". F2 However, having a job or being in study was not helpful for all, some participants mentioned that their occupation was not appropriate for their health condition. A college student stated: "I cannot continue my study ... it demands some outdoor work and on machinery ... I could not tolerate that". G1 The challenge is not only from the work but also the colleagues in the work or school environment. A female student mentioned the challenges she was facing from other school students: "... last semester they (students in school) snatched and torn my school bag ... maybe because I look/act different in the school".

Faith, hope and determination: Having faith and hope for a better future, and being dedicated to improve one's own health were perceived to be among important pillars for recovery. Some interviewees mentioned that the illness had destroyed their hope and made them desperate about the future. A mother who lost her job and marriage stated: "It (the illness) is affecting my whole life, destroys my morale, makes me inferior ... I hate to live". F2 Nevertheless, not all have been traumatized by the illness; some have revived and taken it as a good opportunity. A 22 years old high school student stated: "... I hope I will join University ... be a doctor like you people here ... if I was not sick, I would not have a chance to talk to the psychologists here, visit monasteries (holy water sites) which all gave me a lot of lessons ... I think what all happened to me was for good". G7 In a traditional community, like Ethiopia, it is very common that health and illness are closely related to spirituality. A female participant described: "...after some days with pills (antipsychotics) ... I stop taking them (the pills) ... my mother took me to the holy water ... after a couple months' improvement with holy water I got sick again, at that time I came back here ... after that, I am taking the pills and holy water together." This suggests that spiritual healing practice were helpful for some, but interruption/discontinuation of psychiatric treatment for the spiritual care could prolong the time of recovery; and hence the integration of the two care modalities might augment each other for better recovery.

#### **Discussion**

The subjective recovery level of Ethiopian psychiatric outpatient service users was found to be high and remained stable over the study period with no significant difference over the study period (P = 0.925); mean scores of QPR ranged from 44.17 to 44.65. The levels were greater

than the UK studies 32.47 in Law, Shryane [41] and 28.76 in Morrison, Turkington [42]. Potential reasons for this could be due to variations in perceptions of the illness and its treatment, tight social bonds, utilization of more than one care modality, and variations in study participants. These assumptions were explained by the qualitative findings of the current study in which participants perceived the illness they were facing was something to be permanently free from after completing a limited course of treatment.

The participants' understanding of the illness might be reflected by the low reported mean hopelessness (BHS) score at baseline = 3.23 (although increased to 3.59 at the third month and 4.56 at the ninth month) as compared to (mean BHS = 8.49) in Law, Shryane [41]. Hopelessness was also one of the significant negative predictors for subjective recovery at the baseline measurement, which concurs with earlier studies [43-45]. Faith, hope and determination was one of the themes identified that interviewees perceived as a contributing factor to their recovery. Study participants were found to have multiple sources of hope such as spiritual healing sites and strong familial interdependence. The high level of hope and subsequent elevated level of subjective recovery might also relate to the participants' optimistic understanding of their illness and treatment for it. In accordance with the qualitative finding of the current study, a previous study in Ethiopia also reported that people expected a cure from treatment for psychiatric disorders [46], which reflects their understanding and mental health literacy. Several studies reported that insight into the nature of the illness was a determining factor for different treatment outcomes such as quality of life and hope [47, 48]. When service users become aware that their illness may become enduring or realize that the illness can have a progressively deteriorating course [2, 49] it may lead to decreased subjective recovery levels [13, 50]. This indicates that the currently achieved level of subjective recovery may not be sustained for some participants [47].

The majority of participants reported they had a regular job or study; which could have also contributed to higher levels of subjective recovery. Level of disability was also found to be the only variable that predicted subjective recovery after six months, indicating its' prolonged association on subjective recovery. From the qualitative data, one of the themes identified was "opportunities and challenges of working" which emphasizes the benefit of being engaged in an activity and also the potential distress it might cause. Having limitations in functioning affects recovery in a multifaceted way, including financial constraints [51].

Perhaps, lower symptom severity, lower hopelessness and higher subjective recovery levels might suggest better overall recovery levels in low-income countries, as reported in some earlier systematic reviews [11, 52]. This may be related to the contextual and social issues such as potential benefits from traditional and religious healing practice, having less competitive/stressful lives, tighter social bonds and a lower degree of urbanization in low-income countries [12, 53]. The current study also identified that individuals who had better satisfaction with social support had a higher level of subjective recovery. Isaac, Chand [10] and Myers [12] proposed that a high level of social support could be one of the potential reasons for better recovery outcomes in low-income countries. The social support to individuals with psychosis in this study was found to be mostly paternalistic, which might help reduce distress, however, some felt that they were being over-controlled. However, the generalizability of the high level of recovery recorded in this study should be treated cautiously. Because only the minority of individuals with SMI who have better socio-economic status can afford treatment from hospitals in Ethiopia [17].

The regression test results indicated that quality of life was the strongest predictor of subjective recovery in all three measurement points. It is perhaps logical that someone with a poor quality of life would have also a low subjective recovery level. Although not limited to individuals with recent-onset psychosis, studies by Kukla, Lysaker [54] and Chiu, Lo [55] also found a direct relationship between subjective recovery and quality of life in people with SMIs. The prediction of quality of life to subjective recovery in the quantitative part of this study was supported by the findings in the qualitative part. From the participants' narratives, it was found that disabling psychotic symptoms, the side effects of the antipsychotics and the related physical, psychological, social and functional impairments, which are components of quality of life, were impacting upon their recovery. However, some researchers have speculated that improved levels of recovery in people with psychosis could also lead to a reduced quality of life due to distress resulting from having more insight and a greater awareness of the challenges of living with the illness [56, 57].

Internalized stigma was the other significant negative predictor of subjective recovery both at the second and third round measurements. Internalized stigma could hinder recovery via several mechanisms, such as denying symptoms [48]), social withdrawal [58, 59], delayed treatment initiation and poor treatment adherence [60], physical inactivity, weight gain, poor self-care [61], depression, negative feelings about self, alcohol and drugs use, dissatisfaction

in life and poor quality of life [45]. Narratives from the qualitative part also highlighted that service users were having difficulties to meet social expectations and to perform roles, they felt incompetent within social relations, and hence isolated themselves from important social interactions. Being isolated and inactive did not only hinder recovery but also might increase vulnerability to different physical health problems, including central obesity, which was the other the significant negative predictor of subjective recovery at the baseline measurement.

Strengths and limitations of the Study: In terms of the strengths, the study employed a mixed-methods study design that enables to explain the quantitative findings with the qualitative findings, and hence the individualistic nature of subjective recovery from recent-onset psychosis was well addressed. By employing repeated assessments in the quantitative measurements, the non-linear nature of subjective recovery and the variability of its related factors was also captured. Concerning limitations, the majority of individuals with SMIs in Ethiopia are not getting treatment and hence were not represented in this study. The study mostly relies on self-report data gathered by psychiatric nurses working at the study hospitals which might result some reporting/desirability biases. Only the most prominent potentially related variables were surveyed in the quantitative part of the study and some potentially important influences were not captured quantitatively. Nevertheless, many additional issues were explored in the succeeding qualitative interviews.

Implications and conclusions: Persistently high level of subjective recovery from recentonset psychosis was found for individuals engaged in psychiatric treatment. However, in lowincome countries like Ethiopia, a low percentage of individuals with SMIs initiate psychiatric
treatment and the majority of them visit spiritual healing sites, most by discontinuing their
psychiatric treatment which might be due to misunderstanding the illness and its treatment.
Stakeholders should work on the mental health literacy of the community and increase the
health service coverage, not only in treatment initiation but also to enhance the engagement
rate. Devising mechanisms to integrate the two sectors (spiritual healing sites and Western
treatment modalities) is suggested. Subjective recovery could be further enhanced by
improving quality of life and functioning and providing need-based social support.

#### **Ethical standards**

Ethical approval to conduct the study was obtained from the Human Subjects Research Ethics Sub-Committee of The Hong Kong Polytechnic University and permissions were granted from the local office in Ethiopia and each study institution. Written informed consent was obtained from individual participants and parents/legal guardians for individuals under 18 years old after full explanation of the objective and procedures of the study.

#### **Conflict of interest**

The authors declare that they have no conflict of interest.

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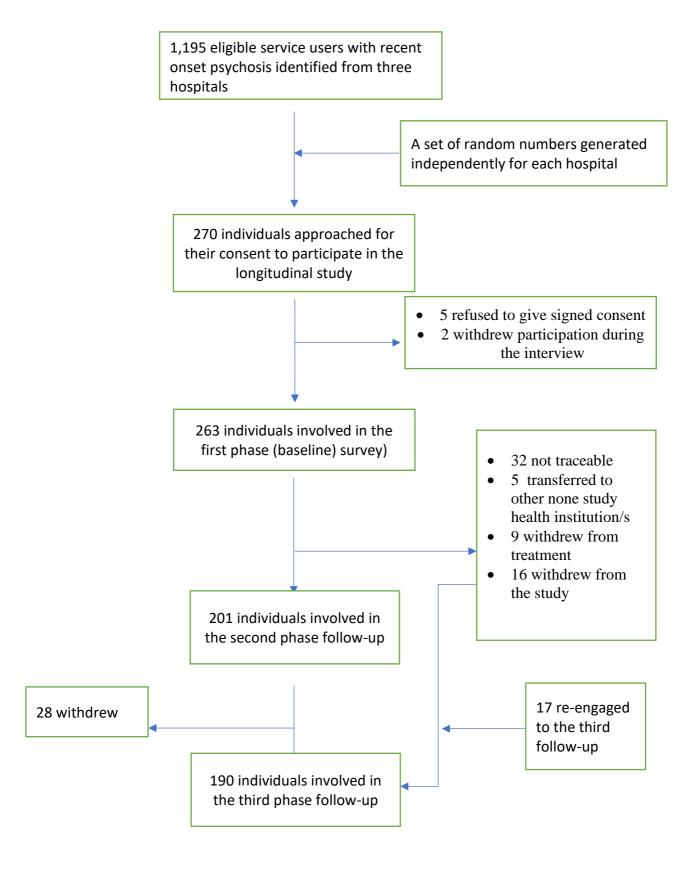


Figure 1. Samples and sampling

Table 1: Sociodemographic, substance use and clinical characteristics

Variable		Category	Frequency (%)		
Gender (N=263)		Male	145(55.1)		
		Female		118(44.9)	
Residence (N=261)		Urban		161 (61.7)	
		Rural		100(38.0)	
Marital Status (	(N=263)	Single		149 (56.7)	
		Married		73(27.8)	
		Divorced/Widowed		41 (15.5)	
Education Leve	el (N=263)	Illiterate		62 (23.6)	
		Primary School		57 (21.7)	
		Secondary School	1	75 (28.5)	
D 11 1 (N 0)	(2)	College diploma and	above	69 (26.2)	
Religion (N=26	53)	Orthodox Christian		203 (77.2)	
		Muslim	50 (19.0)		
Employment (N	J_262)	Protestant Christian None		10 (3.8) 57 (21.7)	
Employment (1	N-203)	Student		53 (20.2)	
			mployed or private work)	153 (58.2)	
Variable		Range	inployed of private work)	Mean (SD)	
Age (N=259)		16 - 65		29.58 (9.11)	
	ntreated Psychosis	0 - 59		7.61 (11.59)	
in Months (N=				7.01 (11.07)	
· · · · · · · · · · · · · · · · · · ·	illness in Months	0.2 - 58	22.84 (11.87)		
Variable		Baseline	Second round	Third round	
		n(%)	n(%)	n(%)	
Cigarette smok	ing	14 (5.3)	9(4.5)	8(4.2)	
Alcohol drinkii	ng	26 (9.9)	8(4.2)	9(4.7)	
Khat chewing		23 (8.7) (N=262)	13(6.5)	19(10.0)	
Other drugs usi	ng	4 (1.4)	3(1.5)	2 (1.1)	
	8	. (-1.)		_ ()	
Blood	Normal	186(75.6)	137(74.1)	125(72.5)	
pressure	Pre- Hypertensive	9(3.7)	8(4.3)	7(4.0)	
	Hypertensive	51(20.7)	40(21.6)	44(23.5)	
BMI (Weight	Underweight	45(17.4)	22(11.9)	22(12.7)	
to height)	Normal weight	166 (64.3)	129(69.7)	116(67.1)	
	Overweight	41(15.6)	28(15.1)	28(16.2)	
	Obese	6 (2.3)	6(3.2)	7(2.7)	
Centrally Obese		109 (42.2)	78(42.4)	74(42.5)	

Table 2: Subjective, functional, psychosocial and clinical recovery characteristics

Variable (Possible score range)		Baseline	Second round	Third round
		Mean (SD)	Mean (SD)	Mean (SD)
QPR (0 - 60)		44.17 (5.76)	44.65 (5.47	44.62 (7.17)
, ,		(N = 163)	(N = 201)	(N = 190)
ISMI (1 - 4)		2.12(0.45)	1.99(0.39)	1.95(0.57)
		(N = 262)	(N = 201)	(N = 189)
BHS (0-20)		3.25(3.88)	3.59(4.15)	4.56(4.70)
		(N = 260)	(N = 201)	(N = 190)
WHODAS (1	(2-60)	20.25(9.33)	18.03(8.10)	19.47(8.70)
		(N = 261)	(N = 201)	(N = 190)
WHOQOL-	Overall scale (1-5)	3.24(0.52)	3.16(0.41)	3.16(0.40)
BREF		(N = 261)	(N = 200)	(N = 190)
	Physical (1-5)	3.47 (0.64)	3.51(0.499)	3.47(0.46)
		(N = 261)	(N = 200)	(N = 190)
	Psychological (1-5)	3.35(0.57)	3.38(0.43)	3.32(0.46)
		(N = 261)	(N = 200)	(N = 190)
	Environmental (1-5)	3.02(0.59)	2.90(0.48)	2.89(0.54)
		(N = 261)	(N = 200)	(N = 190)
	Social (1-5)	3.05(0.71)	2.76(0.54)	2.82(0.53)
		(N = 261)	(N = 200)	(N = 190)
PANSS	Overall scale (30 – 210)	37.61(8.50)	37.36(8.99)	39.48(11.55)
		(N = 261)	(N = 198)	(N = 190)
	Positive (7 – 49)	8.90(2.71)	8.20(1.93)	8.44(2.34)
		(N = 261)	(N = 198)	(N = 190)
	Negative (7 – 49)	9.42(3.30)	9.13(2.72)	9.60(3.63)
		(N = 261)	(N = 198)	(N = 190)
	General psychopathology	19.28(4.08)	19.34(4.06)	20.01(4.95)
	(16-112)	(N = 261)	(N = 198)	(N = 190)
SSQ-6	Overall Scale (6 – 90)	42.56(11.55)	42.85(8.9)	41.04(8.05)
		(N = 261)	(N = 200)	(N = 188)
	Number (0 – 54)	11.71(7.26)	10.94(7.04)	9.95(5.90)
		(N = 261)	(N = 200)	(N = 188)
	Satisfaction (6-36)	30.98(7.49)	31.92(3.60)	31.09(3.62)
		(N = 261)	(N = 200)	(N = 188)

QPR: Questionnaire about the Process of Recovery, PANSS: Positive and Negative Syndrome Scale, BHS: Beck's Hopelessness Scale, SSQ6: Social Support Questionnaire with six items, ISMI: Internalized Stigma of Mental Illness, WHODAS: World Health Organizations Disability Assessment Schedule, WHOQOL: World Health Organization Quality of Life.

Table 3: All round data multiple linear regression test (A: Model Summary, B: ANOVA, C: Coefficients)

A. Model Summary <sup>a</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	0.230 <sup>b</sup>	0.053	0.027	6.01	
2	0.385°	0.148	0.1	5.78	
3	.0808 <sup>d</sup>	0.653	0.624	3.73	

B. AN	OVA <sup>a</sup>					
Model		Sum of	df	Mean Square	F	Sig.
		Squares				
1	Regression	514.75	7	73.54	2.04	.051 <sup>b</sup>
	Residual	9205.97	255	36.10		
	Total	9720.72	262			
2	Regression	1437.83	14	102.70	3.08	<0.001°
	Residual	8282.89	248	33.40		
	Total	9720.72	262			
3	Regression	6344.24	20	317.21	22.74	<0.001 <sup>d</sup>
	Residual	3376.47	242	13.95		
	Total	9720.72	262			

a. Dependent variable: QPR third round (subjective recovery)

b. QPR baseline, WHOQOL baseline, BHS baseline, WTHR baseline, ISMI Baseline, SSQ6-satisfaction baseline, WHODAS baseline

c. QPR baseline, WHOQOL baseline, BHS baseline, WTHR baseline, ISMI baseline, SSQ6-satisfaction baseline, WHODAS baseline, QPR second, WHOQOL second, ISMI second, WHODAS second, SSQ6-satisfaction second, BHS second and WTHR second

d. QPR baseline, WHOQOL baseline, BHS baseline, WTHR baseline, ISMI baseline, SSQ6-satisfaction baseline, WHODAS baseline, QPR second, WHOQOL second, ISMI second, WHODAS second, SSQ6-satisfaction second, BHS second, WHTR second, ISMI third, WTHR third, BHS third, WHODAS third, WHOQOL third and SSQ6-satisfaction third

Table 3: Continued (C: Coefficients)

C. Coeffic	cients <sup>a</sup>					
Model		Unstanda	rdized	Standardized	t	Sig.
		Coefficients		Coefficients		
		В	Std.	Beta		
			Error			
1	(Constant)	49.94	5.91		8.45	0.00
	QPR baseline	0.078	0.09	0.074	0.872	0.384
	WHOQOL baseline	-0.688	1.141	-0.059	-0.603	0.547
	BHS baseline	-0.005	0.131	-0.003	-0.041	0.967
	Waist-to-hip ratio baseline	0.399	0.784	0.032	0.509	0.611
	ISMI baseline	-2.542	1.027	-0.185	-2.475	0.014*
	SSQ6-satisfaction baseline	-0.027	0.064	-0.029	-0.43	0.667
	WHODAS baseline	-0.043	0.051	-0.066	-0.833	0.406
2	(Constant)	56.77	8.09		7.02	0.000
	QPR baseline	0.06	0.09	0.06	0.72	0.473
	WHOQOL baseline	-0.75	1.17	-0.06	-0.64	0.522
	BHS baseline	0.13	0.13	0.08	0.98	0.331
	Waist-to-hip ratio baseline	0.42	0.85	0.03	0.50	0.621
	ISMI baseline	-1.96	1.02	-0.14	-1.92	0.056
	SSQ6-satisfaction baseline	-0.03	0.06	-0.04	-0.54	0.593
	WHODAS baseline	-0.04	0.05	-0.06	-0.77	0.440
	QPR second	0.02	0.10	0.02	0.21	0.837
	WHOQOL second	0.65	1.52	0.04	0.43	0.668
	ISMI second	-1.93	1.39	-0.11	-1.39	0.166
	WHODAS second	-0.10	0.07	-0.12	-1.44	0.151
	SSQ6-satisfaction second	-0.13	0.12	-0.07	-1.06	0.292
	BHS second	-0.26	0.12	-0.15	-2.05	0.041*
	Waist-to-hip ratio second	0.01	0.49	0.00	0.02	0.986
3	(Constant)	32.72	6.53	0.00	5.01	0.000
3	QPR baseline	0.01	0.06	0.01	0.16	0.876
	WHOQOL baseline	-0.42	0.77	-0.04	-0.54	0.587
	BHS baseline	0.00	0.09	0.00	-0.02	0.984
	Waist-to-hip ratio baseline	-0.17	0.56	-0.01	-0.30	0.765
	ISMI baseline	0.41	0.68	0.03	0.60	0.763
	SSQ6-satisfaction baseline	-0.04	0.04	-0.04	-0.95	0.342
	WHODAS baseline	-0.05	0.04	-0.04	-1.51	0.132
	OPR second	0.05	0.03	0.04	0.82	0.132
		0.03	1.01	0.05	0.86	
	WHOQOL second ISMI second	-0.99	0.91	-0.06	-1.09	0.389
	WHODAS second	-0.99	0.91	-0.06	2.25	0.275
	SSQ6-satisfaction second	0.02	0.08	0.01	0.28	0.782
	BHS second	0.05	0.09	0.03	0.56	0.578
	Waist-to-hip ratio second	0.28	0.37	0.04	0.75	0.453
	ISMI third	-1.92	0.83	-0.15	-2.31	0.022*
	Waist-to-hip ratio third	-0.29	0.79	-0.02	-0.37	0.712
	BHS third	-0.04	0.09	-0.03	-0.43	0.669
1	WHODAS third	-0.31	0.06	-0.35	-4.80	<0.001*
	WHOQOL third	5.24	1.05	0.36	4.99	<0.001*
	* significant predictor	0.06	0.08	0.03	0.73	0.468

<sup>\*</sup> significant predictor

QPR: Questionnaire about the Process of Recovery, BHS: Beck's Hopelessness Scale, SSQ6: Social Support Questionnaire, ISMI: Internalized Stigma for Mental Illness, WHODAS 2.0: World Health Organizations Disability Assessment Schedule, WHOQOL: World Health Organization Quality of Life, WTR: Waist-to-Hip Ratio

Table 4: Themes and their illustrator quotes

Themes	Illustrator quote/s
Altered health, psychiatric treatment and side effects of antipsychotics	"problem in my abdomen also would not allow me to stay away from toilet for a long time I have been assessed for it but they (health professionals) said there is no problem". F4 Another participant also reported that: " but they only focus on my mind". G1  " when I go somewhere, I have a problem/difficulty to recognize it, I accidentally (unexpectedly/without any warning) get confused and get lost how could I ask others 'where I am' while I am in toilet it is embarrassing." G1  " when I sleep a scary woman sometimes come and horrified me at that time, I slap my wife sleeping next to me". F3
	" after that I came here and they (health professionals) gave me an injection, and it (the injection) stabilizes all my turmoil I once missed my injection and the problem reoccurred. After that, I am very strict on my schedule and get much better". FI  "I am gaining a lot of weight; my blood pressure is also raising. Those people measuring my blood
	pressure told me it was due to the stress and the pills I was taking". G6
	"you know, to get married to another woman here, the medicines have killed my sexual feeling my ex-wife is also telling me to stop taking the pills". G4
Collective	"thanks to God I am well now but I am having too many pills. I am also concerned for how
understanding and social process to psychosis	long I should keep taking the pills" G5 " they (her father and the priest) took me to the holy water for four months". G1
management	" they (his parents) support me, they feed me I have no job/responsibility to worry about. I do not consider them in this (as supporting) because they are family". F4
	" you know, it is my life it should be my decision to attend classes or not it should be my preference to choose a profession for myself but". GI
	" but I could not continue. People are asking if I am still in study and I am saying "yes". $^{GI}$
	"I have some friends, but they all have completed their education and have income, I am trying to act like their friend, but you know it is not easy the relation cannot be "normal" I rather prefer to stay home". G8

# Opportunities and challenges of working

- "... staying at home causes depression ... spending days at home is not good, staying at work is better"  $^{\rm G4}$
- "I used to have a small shop, but I quitted because of the problem, I have no income now, I applied for free treatment, but it is taking time, nowadays I even could not cover for the pills".  $^{\rm F2}$
- "I cannot continue my study ... it demands some outdoor work and on machineries ... it demands labour work for longer time ... I could not tolerate that".  $^{\rm G1}$
- "... last semester they (students in school) snatched and torn my school bag ... they asked me to give them money".  $^{F5}$

# Faith, hope and determination

- "It (the illness) is affecting my whole life, it destroys my morale, it makes me inferior  $\dots$  I hate to live".  $^{\rm F2}$
- "... I hope I will score good grade, join University, be a good citizen for my country and be doctors like you people here ... if I was not sick, I would not have a chance to talk to the psychologists here, visit monasteries (holy water sites) which all gave me a lot of lessons ... I think what all happened to me was for good". G7
- "...after few days with pills (antipsychotics) ... I stop taking them (the pills) ... my mother took me to the holy water ... after few months' improvement with holy water I got sick again, at that time I came here ... after that, I am taking the pills and holy water together ... this is holy water we brought from St Gabriel". <sup>G9</sup>