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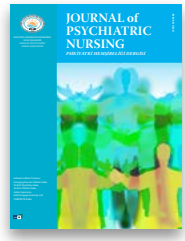

Original Article

# Development of a nurse-observed functional recovery instrument for patients with schizophrenia: A preliminary pilot study

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## Abstract

**Objectives:** Schizophrenia is a chronic mental disorder that impairs various functional domains of life. In Indonesia, most assessment tools used in mental health care remain focused on symptom measurement rather than functional recovery. There is a growing need for contextually relevant, nursing-based instruments to evaluate patients' daily functioning through direct observation. However, existing instruments often lack sensitivity to cultural context and are not optimized for routine use by nurses in community settings. Objective: This study aimed to develop and test the initial validity and reliability of a nurse-based Functional Recovery Scale for patients with schizophrenia in a community mental health setting.

**Methods:** A pilot study with a quantitative design was conducted from June to August 2024 at an outpatient mental health facility in Yogyakarta, Indonesia. A total of 30 patients diagnosed with schizophrenia were selected through purposive sampling. The initial instrument consisted of 40 observational items across seven domains: physical, psychological, social, economic, religious, medication adherence, and communication. Construct validity was assessed using Spearman's correlation, while internal consistency was evaluated using Cronbach's alpha.

**Results:** Of the 40 items initially tested, 38 were found to be valid, with r values above 0.361 and $p<0.05$. Two items ("able to dress independently" and "able to eat independently") were excluded due to low correlation values, likely because of ceiling effects. The scale demonstrated excellent internal consistency, with a Cronbach's alpha of 0.977. The instrument effectively captured key aspects of functional recovery relevant to the Indonesian cultural context and nursing practice.

**Conclusion:** The developed instrument demonstrated satisfactory validity and high internal consistency. The final 38-item scale, with its nurse-observed and culturally relevant design, may serve as a practical tool for assessing functional recovery in schizophrenia, particularly in Indonesian community care settings. However, given the small sample size (n=30) and single-site design, further studies with larger samples, multiple sites, and cross-validation against international instruments are recommended to enhance generalizability and establish inter-rater reliability. These findings suggest that nurse-observed, culturally grounded instruments may offer practical advantages over existing tools in community mental health settings, particularly in contexts where spirituality plays a central role in recovery.

**Keywords:** Functional recovery; nurse observation; reliability; schizophrenia; validity

Schizophrenia is a chronic mental disorder characterized by disturbances in thought, emotion, and behavior, which can lead to impaired functioning in social, occupational, and self-care domains.[1] Globally, schizophrenia affects approximately 24 million people, with significant variation in prevalence and outcomes across different healthcare systems. In Indonesia, the increasing number of individuals diagnosed with schizophrenia each year highlights the growing relevance of a

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functional recovery approach in rehabilitation efforts. According to the 2023 Indonesian Health Survey (Survei Kesehatan Indonesia/SKI 2023), released by the Ministry of Health of the Republic of Indonesia, the national prevalence of households with members experiencing symptoms of psychosis/schizophrenia reached 4.0 per 1,000 households, with 3.0 per 1,000 households having a confirmed diagnosis. Notably, the Province of Daerah Istimewa Yogyakarta recorded the highest prevalence nationally at 9.3 per 1,000 households, underscoring the particularly urgent need for effective community-based mental health services and functional recovery-oriented care in the study setting. Functional recovery refers to an individual's ability to independently perform daily activities, encompassing physical, social, economic, and psychological aspects.[2–4]

Contemporary approaches to schizophrenia care have shifted from a symptom-focused medical model toward a recovery-oriented framework that emphasizes functional outcomes and quality of life. This paradigm recognizes that symptom reduction alone does not guarantee improved quality of life or successful community reintegration. The ability to independently carry out daily tasks is a more robust predictor of long-term outcomes in individuals with schizophrenia.[5–7]

However, most instruments currently used to assess recovery in patients with schizophrenia in Indonesia remain symptom-focused rather than addressing patients' functional abilities.[4] Tools such as the Global Assessment of Functioning (GAF) and the World Health Organization Disability Assessment Schedule (WHODAS) are often considered too general and may lack sensitivity to patients' day-to-day behavioral dynamics.[5] Furthermore, these instruments typically rely on patient self-report or structured interviews, which may be influenced by insight deficits, cognitive impairments, or social desirability bias, all of which are common challenges in populations with schizophrenia.[6] There is limited availability of holistic and culturally relevant assessment tools, particularly in nursing practice, that reflect the sociocultural context of Indonesian society. Beyond symptom reduction, the ability to independently carry out daily tasks is a key predictor of long-term quality of life in individuals with schizophrenia.[6,7]

Instruments that can assess real-time, context-based functioning—especially through direct observation by nurses—are therefore highly relevant in community settings, where such observations may more accurately reflect patients' real-life functioning than interviews or self-report scales.[8,9] Nurses, particularly in community mental health settings, have the most frequent and sustained contact with patients and are uniquely positioned to observe functional behaviors in naturalistic contexts.[10] Consequently, a practical, observation-based tool that nurses can use without requiring extensive technical training is urgently needed. Previous studies have shown that function-based observational instruments can enhance the objectivity of assessments and strengthen targeted nursing interventions.[10,11]

**What is presently known on this subject?**

- Most assessment tools used for schizophrenia in Indonesia remain symptom-focused rather than evaluating functional recovery, and existing instruments such as GAF and WHODAS lack sensitivity to context-based functioning and often require specialized training.

**What does this article add to the existing knowledge?**

- This study developed a culturally relevant, nurse-observed functional recovery instrument for patients with schizophrenia that incorporates a religious/spiritual domain and demonstrated excellent validity and reliability, with 38 valid items and a Cronbach's alpha of 0.977.

**What are the implications for practice?**

- The instrument provides a practical, observation-based tool that nurses can use without extensive training to assess real-time functional recovery across seven domains (physical, psychological, social, economic, religious, medication adherence, and communication) in Indonesian community mental health settings.

Aligned with this perspective, developing a nursing-based instrument that captures the real-life dimensions of patients' experiences is essential. The instrument developed in this study comprises seven key domains: physical, psychological, social, economic, religious, medication adherence, and communication. These domains were identified through a combination of literature review, clinical observation, and expert consultation with mental health professionals working in Indonesian community settings. The domains were designed based on clinical observations and nurses' practical needs for evaluating patients' comprehensive recovery status.

The primary innovation of this instrument lies in its direct observation approach and the use of functional indicators that nurses can readily identify in daily practice. By focusing on observable functional behaviors rather than subjective symptom reports, the instrument enhances objectivity and reduces assessment bias. Moreover, this instrument incorporates a religious domain—an aspect often overlooked in conventional tools—despite spirituality playing a significant role in the recovery process of patients with schizophrenia in the Indonesian context.[12,13] The inclusion of this culturally relevant domain represents a significant departure from Western-developed instruments and reflects the reality that spirituality plays a vital role in coping, meaning-making, and recovery for many Indonesian patients.[14,15]

To ensure the instrument's reliability, psychometric testing was conducted, including assessments of item validity and reliability. Item validity was evaluated using Spearman correlation between item scores and total scores, while reliability was tested using Cronbach's alpha. This approach aligns with best practices in small-scale instrument validation, which have proven effective in measuring item stability and consistency.[14]

Several studies over the past five years have demonstrated that instruments developed with sound theoretical frameworks and rigorous statistical methods can achieve validity and reliability, even with relatively small sample sizes (e.g., 30 respondents).[15,16]

Based on the above rationale, this study aimed to (1) develop a nurse-observed functional recovery assessment instrument for patients with schizophrenia based on culturally relevant domains and (2) assess the preliminary validity and reliability of the nurse-developed instrument for evaluating functional recovery in patients with schizophrenia through pilot testing in a community mental health setting in Yogyakarta, Indonesia. The findings are expected to support evidence-based nursing practices and contribute to the availability of a contextual, practical, and highly applicable assessment tool in mental healthcare services. The study sought to answer the following research questions: (1) Do the instrument items demonstrate acceptable construct validity, as indicated by Spearman correlation coefficients exceeding the critical r value of 0.361 at $p<0.05$? (2) Does the final instrument achieve excellent internal consistency, as indicated by a Cronbach's alpha coefficient of ≥0.90?

## Materials and Method

### Study Design

This study employed a quantitative design with a pilot-testing approach as the initial phase in developing a new assessment instrument. The research was conducted between June and August 2024 at an outpatient mental health facility in the Special Region of Yogyakarta, Indonesia.

### Participants and Sampling Technique

The target population comprised all patients with schizophrenia who were actively registered and receiving outpatient care at the study facility. During the study period, approximately 120 patients were registered at the facility. Purposive sampling was employed because the study required participants who met specific clinical criteria essential for instrument testing, namely clinical stability and verbal communicability, which precluded the use of random sampling methods. A total of 30 respondents were selected using purposive sampling based on the following inclusion criteria: (1) diagnosed with schizophrenia by a psychiatrist, (2) able to communicate verbally, (3) aged 18–65 years, (4) clinically stable, with no acute psychotic episode in the past month, and (5) willing to participate in the study by signing an informed consent form. Exclusion criteria included severe cognitive impairment or comorbid substance use disorders that could affect functional assessment. This sample size aligns with recommendations for exploratory psychometric validation studies, particularly in small-scale research.[16]

### Research Instrument

The instrument was developed through a three-stage process: (1) a literature review of existing functional recovery frameworks, (2) focus group discussions with mental health nurses to identify culturally relevant functional indicators, and (3) expert panel review for content validation. The initial instrument consisted of 40 observational items reflecting seven domains: physical, psychological, social, economic, religious, medication adherence, and communication. Each item was rated by nurses using a four-point Likert scale (1=never, 2=occasionally, 3=often, 4=always). A total score was calculated by summing the item scores. As this study employed an instrument development design rather than a correlational or experimental design, traditional independent and dependent variables were not applicable. The primary construct measured was functional recovery, operationalized as nurses' observed scores across the seven domains. Each domain captured a distinct aspect of recovery: the physical domain assessed self-care and daily living skills; the psychological domain measured emotional regulation and symptom awareness; the social domain evaluated community participation; the economic domain captured work capacity and financial management; the religious domain assessed spiritual practice; the medication adherence domain measured treatment compliance; and the communication domain evaluated verbal interaction skills.

As supplementary data, nine additional dichotomous observational indicators (e.g., personal hygiene, affect, and eye contact) were also assessed (yes/no). These items were used for descriptive purposes and were not included in the statistical analyses of validity or reliability.

Before data collection, the instrument was reviewed by three senior nurses and one psychiatrist through a focus group discussion to ensure content relevance. However, formal content validity indexing (I-CVI) was not conducted. The expert panel reached consensus on item clarity, relevance, and comprehensiveness, with minor wording adjustments made based on their feedback.

### Data Collection Procedure

Observations were conducted directly by three trained nurses who had completed a two-hour training session on the use of the instrument, including scoring guidelines and behavioral indicators for each item. Each patient was observed during at least two interactions over 1 week to capture typical functional behaviors. Assessments were conducted during routine interactions between nurses and patients in the outpatient setting, without any specific intervention or experimental manipulation. Observations typically lasted 15–30 minutes per session and were documented immediately after each interaction to ensure accuracy.

### Statistical Analysis

Data were analyzed using SPSS version 25. Descriptive statistics were used to characterize the sample and examine score distributions. Construct validity was examined using Spearman's correlation between each item score and the total score. An item was considered valid if its correlation coefficient exceeded the critical r value of 0.361 at the $p<0.05$ significance level. Internal consistency was assessed using Cronbach's alpha and interpreted as follows: ≥0.90, excellent; 0.80–0.89, good; 0.70–0.79, acceptable; and <0.70, poor. Items with correlation values below the threshold were flagged for revision or removal. Incomplete data were excluded from the analysis.

### Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Universitas Aisyiyah Yogyakarta (Approval No: 1790/KEP-UNISA/VIII/2023, Date: August 21, 2023). All research procedures adhered to ethical standards in health research, including obtaining written informed consent from all participants. Participants were informed of their right to withdraw at any time without consequences for their treatment. Confidentiality was maintained by assigning unique identification codes to all data, and only the research team had access to identifiable information.

## Results

### Participant Demographics

The demographic characteristics of the study participants included age, gender, education level, employment status, and duration of illness. A total of 30 patients diagnosed with schizophrenia participated in this study. The mean age was 38.5 years (SD=10.2; range, 22–58 years), with the majority being female (n=17, 56.7%). Most participants had completed secondary education (n=17, 56.7%), were unemployed (n=20, 66.7%), and had been diagnosed with schizophrenia for an average of 8.3 years (SD=5.1). The distribution of participant characteristics is presented in Table 1.

**Table 1. Participant demographics**

| No | Variable | Frequency | Percentage (%) |
|---|---|---|---|
| 1. | Age | | |
| | <24-35 years | 4 | 13.3 |
| | 36-45 years | 7 | 23.3 |
| | 46-55 years | 7 | 23.3 |
| | >56 years | 12 | 40.0 |
| 2. | Gender | | |
| | Male | 13 | 43.3 |
| | Female | 17 | 56.7 |
| 3. | Education Level | | |
| | Elementary School | 6 | 20 |
| | Junior High School | 6 | 20 |
| | Senior High School | 16 | 53.3 |
| | Bachelor's Degree | 2 | 6.7 |
| 4. | Duration of Illness | | |
| | <10 years | 3 | 15.8 |
| | 10–20 years | 7 | 36.8 |
| | 21–30 years | 5 | 26.3 |
| | >30 years | 4 | 21.1 |

### Validity Testing Results

Following data collection from 30 patients with schizophrenia, statistical analysis was conducted to evaluate the psychometric characteristics of the developed functional recovery assessment instrument. The analysis focused on two main aspects: construct validity, assessed using Spearman's rank correlation between each item and the total score, and internal consistency, measured using Cronbach's alpha. The objective was to determine how consistently and significantly the instrument items reflected the theoretical construct of functional recovery. Initial testing was conducted on all 40 items. The structure and example items of the instrument were previously described in the Methods section, while the full list of items is presented in Table 2.

Based on the results, 38 of the 40 items demonstrated acceptable construct validity during this initial pilot testing. The validity criteria required each item to have a correlation coefficient (r value) greater than the critical value of 0.361 and a significance level of $p<0.05$. The valid items spanned all seven domains—physical, psychological, social, economic, religious, medication adherence, and communication—suggesting that they reliably reflected the construct of functional recovery as intended.

Two items did not meet the criteria. Specifically, the item "The patient can dress independently" yielded a correlation coefficient of 0.122 ($p>0.05$), and the item "The patient can eat independently" showed a correlation coefficient of 0.098 ($p>0.05$), both indicating insufficient construct representation. These findings likely reflect ceiling effects, as most participants in this stable outpatient sample had already mastered these basic self-care skills, resulting in limited score variability. These findings suggest that while the majority of items in the instrument are psychometrically sound, the nonvalid items should be considered for revision or removal in future studies.

### Reliability Testing

To assess the instrument's internal consistency, a reliability analysis was conducted using Cronbach's alpha. The analysis

**Table 2. Validity test results**

| No | Statement Item | r-value | r-table | p | Validity |
|---|---|---|---|---|---|
| Physical Indicators | | | | | |
| 1 | The patient is able to bathe independently | 1 | 0.361 | 0.000 | Valid |
| 2 | The patient uses soap while bathing | 0.826 | 0.361 | 0.000 | Valid |
| 3 | The patient can urinate independently in the bathroom | 0.565 | 0.361 | 0.001 | Valid |
| 4 | The patient can defecate independently in the bathroom | 0.565 | 0.361 | 0.001 | Valid |
| 5 | The patient is willing to brush their teeth independently | 0.805 | 0.361 | 0.000 | Valid |
| 6 | The patient is able to dress independently | 0.122 | 0.361 | 0.519 | Not Valid |
| 7 | The patient is willing to wash their hair | 0.687 | 0.361 | 0.001 | Valid |
| 8 | The patient participates in household chores (sweeping, doing laundry, and/or helping out) | 0.714 | 0.361 | 0.000 | Valid |
| 9 | The patient is able to sleep at night (7–8 hours/day) | 0.412 | 0.361 | 0.024 | Valid |
| 10 | The patient is able to eat independently | -0.122 | 0.361 | 0.522 | Not Valid |
| 11 | The patient dresses appropriately | 0.593 | 0.361 | 0.001 | Valid |
| Psychological Indicators | | | | | |
| 12 | The patient is able to manage emotions when facing problems (stressors) | 0.593 | 0.361 | 0.004 | Valid |
| 13 | The patient's facial expressions match their emotional state | 0.516 | 0.361 | 0.003 | Valid |
| 14 | The patient can recognize early signs of relapse | 0.632 | 0.361 | 0.000 | Valid |
| 15 | The patient is able to express signs of relapse | 0.579 | 0.361 | 0.001 | Valid |
| 16 | The patient is free from clinical symptoms (delusions, hallucinations, etc.) | 0.467 | 0.361 | 0.009 | Valid |
| Social Indicators | | | | | |
| 17 | The patient is willing to participate in community activities | 0.411 | 0.361 | 0.024 | Valid |
| 18 | The patient is able to interact well with others | 0.358 | 0.361 | 0.052 | Valid |
| 19 | The patient is able to use transportation | 0.482 | 0.361 | 0.007 | Valid |
| Economic Indicators | | | | | |
| 20 | The patient is able to work according to their abilities | 0.533 | 0.361 | 0.002 | Valid |
| 21 | The patient earns income from their work | 0.532 | 0.361 | 0.002 | Valid |
| 22 | The patient is able to manage their finances | 0.532 | 0.361 | 0.002 | Valid |
| Religious Indicator | | | | | |
| 23 | The patient performs religious practices according to their faith | 0.655 | 0.361 | 0.000 | Valid |
| 24 | The patient believes in the existence of God (for those who are religious) | 0.670 | 0.361 | 0.000 | Valid |
| Medication Adherence | | | | | |
| 25 | The patient takes medication regularly and independently | 0.539 | 0.361 | 0.002 | Valid |
| 26 | The patient is able to attend scheduled health check-ups independently | 0.548 | 0.361 | 0.002 | Valid |
| Communication Indicators | | | | | |
| 27 | The patient's speech is coherent | 0.535 | 0.361 | 0.002 | Valid |
| 28 | The patient is able to maintain interactions | 0.511 | 0.361 | 0.004 | Valid |
| 29 | The patient is able to initiate conversation | 0.509 | 0.361 | 0.004 | Valid |
| 30 | The patient is able to ask questions spontaneously | 0.480 | 0.361 | 0.007 | Valid |
| 31 | The patient is able to respond spontaneously | 0.563 | 0.361 | 0.001 | Valid |
| Observation | | | | | |
| | The patient does not have body odor | 0.727 | 0.361 | 0.000 | Valid |
| | The patient's fingernails appear clean | 0.608 | 0.361 | 0.000 | Valid |
| | The patient's hair appears clean | 0.608 | 0.361 | 0.000 | Valid |
| | The patient's hair appears neat | 0.686 | 0.361 | 0.000 | Valid |
| | The patient's skin appears clean | 0.733 | 0.361 | 0.000 | Valid |
| | The patient's teeth appear clean | 0.666 | 0.361 | 0.000 | Valid |
| | The patient's mouth does not have bad odor | 0.727 | 0.361 | 0.000 | Valid |
| | The patient's affect is appropriate | 0.675 | 0.361 | 0.000 | Valid |
| | The patient makes eye contact during interaction | 0.343 | 0.361 | 0.000 | Valid |

An item is considered valid if r-value > r-table (0.361) and $p<0.05$. Source: Validity test conducted using Spearman's correlation (n=30). The "Observation" section (items 1–9) consists of dichotomous indicators (yes/no) assessed for descriptive purposes only. These items were not subjected to Spearman's correlation analysis for construct validity. The r-values displayed for these items are presented for reference and should not be interpreted as validity coefficients equivalent to those of the Likert-scale items (1–31)

**Table 3. Cronbach's alpha reliability test results**

| Instrument | Number of Items | Cronbach's Alpha | Interpretation |
|---|---|---|---|
| Functional Recovery Scale for Schizophrenia | 38 | 0.977 | Very High Reliability |

was applied to the 38 items previously deemed valid based on the construct validity results. A high alpha value indicates strong inter-item correlations and consistency in measuring the same construct, namely functional recovery in patients with schizophrenia. The results are summarized in Table 3.

The final reliability analysis was conducted on the 38 items included in the final version of the Functional Recovery Scale for Schizophrenia. The calculated Cronbach's alpha value was 0.977, which is categorized as very high. This result indicates excellent internal consistency, suggesting that the items are positively correlated and reliably measure the construct of functional recovery in individuals with schizophrenia. Corrected item-total correlations ranged from 0.58 to 0.89, with all items contributing positively to the overall scale reliability.

## Discussion

The findings demonstrate that the majority of items in the Functional Recovery Scale for Schizophrenia exhibit acceptable construct validity. A total of 38 of the 40 items showed statistically significant correlations with the total score, suggesting that these items effectively represent the main domains of functional recovery: physical, psychological, social, economic, religious, medication adherence, and communication. These results reinforce the conceptual understanding that recovery in schizophrenia involves not only symptom remission but also the restoration of a person's ability to live a socially meaningful and productive life.[17]

A key strength of the instrument lies in its design for use by nurses through direct observation, which allows assessment of functional indicators as they naturally occur in patients' daily behaviors.[18,19] Unlike self-report measures that may be affected by poor insight or response bias, observational assessment provides a more objective evaluation of actual functional performance in real-world contexts. This aligns with the findings of Parker et al.,[20] who highlighted the value of observational approaches in nursing for producing valid, actionable clinical data.

The few items found to be invalid likely exhibited score homogeneity or limited variability. The exclusion of "able to dress independently" and "able to eat independently" is methodologically justified, as the ability to dress and eat independently represents basic skills that most patients in this study had already mastered, which reduced score variation and weakened their statistical correlations. This ceiling effect is common when assessing stable outpatient populations and suggests that these items may be more appropriate for acute or institutionalized settings, where basic self-care deficits are more prevalent.[21] Additionally, although the item "eye contact during interaction" was statistically significant, its correlation value fell below the threshold, possibly reflecting cultural variations in social expression or clinical symptoms that affect relational behavior, as also noted in other psychiatric studies.[21,22]

From a reliability perspective, the Cronbach's alpha value of 0.977 indicates excellent internal consistency, suggesting that the instrument items coherently measure the intended construct. While such a high alpha value could theoretically indicate item redundancy, the breadth of functional domains covered and the face validity confirmed by expert reviewers suggest that the items capture distinct yet related aspects of functional recovery. Although the sample size was relatively small (n=30), early-stage validation with small samples is widely accepted in instrument development, especially when items are constructed on a strong theoretical foundation and with expert consultation.[23,24]

The content development process involved consultation with three senior nurses and one psychiatrist. Although a formal content validity index (I-CVI) was not computed, the instrument underwent qualitative content review through focus group discussions, ensuring that the items were practically relevant and reflective of clinical nursing practice. Future studies should include formal I-CVI calculations to strengthen evidence of content validity. From the authors' clinical perspective as community mental health nurses, the domains and items identified in this instrument reflect the real challenges observed in daily nursing practice. Patients who demonstrate improvements in medication adherence, religious participation, and communication tend to show broader signs of functional recovery in community settings. These observations, accumulated through years of direct patient interaction, informed the selection of items and reinforced the instrument's practical relevance beyond its statistical properties.

Unlike instruments such as GAF or WHODAS, which are often too broad and require specialized training, this tool was intentionally designed to be contextual, practical, and usable by nurses in community mental health settings. Although GAF is widely used, it lacks sensitivity to subtle behavioral changes in daily functioning. Similarly, WHODAS offers strong theoretical grounding but is less suited for routine clinical observation in real-world nursing practice.[25] Thus, there is a critical need for observation-based, cultur-

ally contextualized tools that can be administered without additional training.

One of the most notable strengths of this instrument is the inclusion of a religious domain. Spirituality is rarely integrated into international functional recovery instruments despite its critical role in the psychological resilience and recovery of patients with mental health conditions in Indonesia.[26] The inclusion of this culturally relevant domain enhances not only the scale's statistical validity but also its practical and cultural applicability. Items in the religious domain (e.g., "patient participates in religious activities" and "patient expresses spiritual beliefs as a source of comfort") demonstrated strong correlations with the total score (r>0.70), supporting the relevance of this dimension in the Indonesian context.

### Limitation

The study has several limitations, particularly regarding sample size and geographic scope. First, the small sample size (n=30) limits the generalizability of the findings and precludes more advanced statistical analyses, such as exploratory or confirmatory factor analysis. Second, data were collected from a single outpatient facility in Yogyakarta, which may not represent the diversity of populations with schizophrenia across Indonesia, including those in rural settings or with different cultural backgrounds. Third, inter-rater reliability was not assessed, which is an important consideration for observational instruments to ensure consistency across different nurse observers. Fourth, no concurrent validation with established instruments (e.g., FROGS or WHODAS) was performed to establish criterion validity. Therefore, the generalizability of the findings is limited to the local setting in which the study was conducted. Further research with larger and more diverse populations, including multicultural validation, is recommended to expand the instrument's applicability and robustness across broader mental healthcare contexts.

## Conclusion

The Functional Recovery Scale for Schizophrenia, developed based on nursing observation, demonstrated acceptable validity and reliability in the initial pilot phase. Of the 40 items initially tested, 38 met the validity criteria, resulting in a final 38-item scale with a Cronbach's alpha coefficient of 0.977, indicating excellent internal consistency. The valid items span all seven domains—physical, psychological, social, economic, religious, medication adherence, and communication—demonstrating comprehensive coverage of the dimensions of functional recovery. Clinically and contextually, the instrument is considered relevant for community-based nursing practice in Indonesia, as it captures patients' functional dimensions in a direct and holistic manner.

However, as this study is exploratory, with a limited sample size and a single-site design, several limitations must be acknowledged. Further testing on a larger scale is necessary to strengthen external validity and support the generalizability of the findings. Future research should include (1) multicenter validation with larger and more diverse samples (n>100), (2) assessment of inter-rater reliability to ensure consistency across nurse observers, (3) concurrent validation with established international instruments to establish criterion validity, (4) exploratory and confirmatory factor analyses to verify the seven-domain structure, (5) test-retest reliability assessment, and (6) evaluation of the instrument's sensitivity to change over time. Additionally, formal content validity indexing (I-CVI) should be performed, and the instrument's utility in different clinical settings (e.g., inpatient and rural community settings) should be explored.

Despite these limitations, this study provides important preliminary evidence for a culturally relevant, nurse-friendly functional recovery assessment tool that addresses a significant gap in Indonesian mental healthcare. The instrument's practical design and inclusion of spirituality as a recovery domain represent meaningful contributions to evidence-based psychiatric nursing practice.

**Ethics Committee Approval:** The study was approved by the Health Research Ethics Committee of Universitas Aisyiyah Yogyakarta (no: 1790/KEP-UNISA/VIII/2023, date: 21/08/2023).

**Informed Consent:** Written informed consent was obtained from all participating patients before enrollment in the study. Participants were informed about the purpose and procedures of the study, the voluntary nature of participation, confidentiality of their information, and their right to withdraw at any time without any effect on the care they received.

**Conflict of Interest Statement:** The authors declare that there is no conflict of interest.

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