Instrumental Activities of Daily Living Dysfunction among People with Schizophrenia

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ABSTRACT

Background: Life skills are the basic skills that are needed to live independently and that support meaningful, productive roles. The negative symptoms and cognitive dysfunction seen in schizophrenia may lead to deterioration in the life skills of the patient. The assessment of current life skills of the patient and subsequent intervention becomes necessary for comprehensive rehabilitation of people with mental illness. This study attempted to assess the instrumental activities of daily living among people with schizophrenia in India. Methods: One hundred consecutive patients with schizophrenia, between 18 and 60 years, who presented to a tertiary psychiatric facility were assessed using (i) Lawton instrumental activities of daily living scale (LIADL), (ii) positive and negative symptom scale (PANSS), (iii) pro forma for sociodemographic and clinical characteristics. Results: The majority of the patients were male, young adults, married, with secondary school education, middle socioeconomic status, from nuclear families, unemployed and were diagnosed to have paranoid schizophrenia. The reported IADL dysfunction included difficulties in handling medications (86%), preparing food (85%), shopping (78%), handling finances (61%), doing laundry (52%), housekeeping (47%), using public transport (32%), and using telephones (5%). The dysfunction documented differs from that reported in the west. Total PANSS score \((P = 0.015)\) and its general psychopathology subscale \((P = 0.005)\) correlated inversely with the total LIADL score; PANSS scores and sociodemographic variables were associated with some subscales of LIADL. Conclusions: IADL dysfunction, common in people with schizophrenia, demands detailed assessment, and tailored training to ensure optimum functioning.

Key words: India, instrumental activities of daily living, life skills, mental illness, schizophrenia, socio occupational dysfunction

INTRODUCTION

Despite 50 years of pharmacological and psychosocial intervention, schizophrenia remains one of the leading causes of disability in the world. The syndrome is associated with functional impairments in social, occupational, and independent living activities.¹ It has been argued that one of the primary reasons for the historical lack of improvement in functional outcome is a general lack of success in treating the aspects of schizophrenia such as cognitive impairment...
and negative symptoms as these have the strongest associations with functional recovery.\(^{[2]}\)

In India, self-care is a common unmet need for people with psychiatric disorders as the psychiatric care mostly involves addressing the acute symptoms with little emphasis on rehabilitation.\(^{[3]}\) There is a dearth of studies from India which have documented deficits in instrumental activities of daily living skills. This study attempted to examine the extent of dysfunction in these life skills in people with schizophrenia.

**METHODS**

**Study setting**

The study was done in a 122-bed tertiary referral center having both inpatient and outpatient facilities for adults and children with mental and behavioral disorders. The center cares for patients with a variety of mental illnesses including schizophrenia. Psychiatrists, psychiatric nurses, occupational therapists, clinical psychologists, and psychiatric social workers form the treatment team and employ a multidisciplinary approach to the care of patients with mental illness. Pharmacological treatments, electroconvulsive therapy, and different psychological therapies are used in an eclectic approach. Patients who require comprehensive rehabilitation are admitted for an average of 4–6 weeks. They attend the occupational therapy unit where psychosocial rehabilitation is provided through one to one as well as group-based interventions.

**Study sample**

100 consecutive persons diagnosed to have schizophrenia by the International Classification of Disease 10 criteria,\(^{[4]}\) aged from 18 to 60, attending the occupational therapy unit of the department were recruited for the study after obtaining written informed consent. Intellectual disability and presence of comorbid psychiatric or physical conditions were exclusion criteria.

The following instruments were used to evaluate individuals:

1. Lawton instrumental activities of daily living scale (LIADL): The LIADL Scale consists of eight components, which measures an individual’s competence in functional instrumental activities of daily living. The components include ability to use a telephone, ability to perform simple shopping tasks, ability to prepare food, keep the house tidy, do their own laundry independently, level of assistance needed for traveling to different places and the kind of transportation required (public bus/auto/private vehicle, etc.), responsibility for taking their medications, and the ability to handle finances. The scale consists of eight questions, one from each category described above. Each component is scored differently based on the level of independence, where the assistance required is graded from maximal to minimal. A score of one is given for each component, they are able to attempt. A score of zero is given for the components, they are unable to attempt or where maximal assistance is required with a summary score from zero (low function) to eight (high function). The information can be collected from the patient or a knowledgeable caregiver. The interrater reliability and concurrent validity of the scale have been found adequate, and the scale has been used in various studies including one from India\(^{[5-7]}\).

2. Positive and negative symptom scale (PANSS): PANSS is a standard instrument to assess symptoms in psychosis. It constitutes three scales measuring positive symptoms, negative syndromes, and general psychopathology. The sum of the scales can also be added up to get a total score. The scoring is done from 1 (absent pathology) to 7 (extreme pathology) with the positive and negative subscales having seven items each and general psychopathology subscale having sixteen items.\(^{[8]}\) This scale has been used in various previous studies conducted among patients with schizophrenia in India\(^{[9-11]}\).

3. Pro forma for sociodemographic and clinical variables: The demographic details collected included the age, sex, socio-occupational status, educational qualification, marital status, type of family, and employment status. The clinical variables regarding subtype of schizophrenia, and duration of illness were also collected.

**Statistical analyses**

The mean and standard deviation were used to describe continuous variables while the frequency and percentages were obtained for categorical variables. The statistical significance of the correlation between two continuous variables was evaluated computing the Pearson’s correlation coefficient. The association between categorical variables was computed using Chi-square test. Multivariate analysis was done using linear regression.

**Ethical approval**

The study was approved by the Institutional Review Board and Ethics Committee (IRB Min. No. 9727).

**RESULTS**

Demographic characteristics

The majority of the patients had been diagnosed with paranoid schizophrenia, were male, young adults, married, with secondary school education, middle
socioeconomic status, from nuclear families and were unemployed at the time of study [Table 1].

Level of psychopathology and disability
The mean total PANSS score in the sample correspond to between “moderately ill” to “markedly ill” when compared with the clinical global impressions scale [12] [Table 1]. The mean total score on the LIADL was relatively low with only a negligible percentage of the study population being completely independent in IADL.

Extent of dysfunction in instrumental activities of daily living
Among the components of the LIADL, difficulty in housekeeping and using transportation was found in more than one-fourth of the population. More than half the population had difficulty in handling finances and doing laundry. Difficulty in housekeeping and using transportation was found in more than one-fourth of the population and only a small percentage had difficulty using telephone [Table 1].

Correlation between instrumental activities of daily living dysfunction and psychopathology
There was statistically significant inverse correlation between total LIADL score and total PANSS score as well as the general psychopathology subscale of the PANSS. The correlation between total LIADL scale and the positive as well as negative subscales of the PANSS did not show statistical significance. The LIADL component of “using telephone” was significantly associated with the PANSS positive subscale and the component of “Shopping” was significantly associated with the total score as well as the general psychopathology subscale of PANSS. There were no other significant associations found between the components of the LIADL and the various PANSS subscale scores [Table 2].

Correlation between instrumental activities of daily living dysfunction and demographic characteristics
The total as well as few sub domains of the LIADL showed significant positive association with various demographic variables. Demographic variables of gender and level of education were significantly associated with total LIADL score. The LIADL component of “using telephone” was significantly associated with the level of education. The LIADL component of “food preparation” was significantly associated with age, duration, and gender. The LIADL component of “house-keeping” was significantly associated with gender and marital status. The LIADL component of “doing laundry” was significantly associated with gender, socioeconomic status, and employment status. The LIADL component of “using transportation” was significantly associated with the level of education. The components of “shopping,” “taking medications” and “handling finances” failed to reveal any significant associations with the demographic data [Table 2].

Table 1: Characteristics of the study population (n=100)

| Characteristic                       | Mean (SD) | n (%) |
|-------------------------------------|-----------|-------|
| Age (years)                         | 30.83 (9.69) |      |
| Duration of illness (years)         | 8.99 (6.89)   |      |
| Subtype of schizophrenia            |            |      |
| Paranoid                            | 82 (82)    |      |
| Sex                                 |            |      |
| Male                                | 68 (68)    |      |
| Education                           |            |      |
| Secondary school level              | 39 (39)    |      |
| Marital status                      |            |      |
| Married                             | 52 (52)    |      |
| Employment                          |            |      |
| Currently unemployed                | 49 (49)    |      |
| Socioeconomic status                |            |      |
| Middle                              | 46 (46)    |      |
| Living situation                    |            |      |
| Nuclear family                      | 77 (77)    |      |
| LIADL mean total score (8)          | 3.52 (1.62) |      |
| LIADL minimum score (1)             | 8 (8)      |      |
| LIADL maximum score (8)             | 2 (2)      |      |
| PANSS total score (210)             | 82.45 (26.81)|    |
| PANSS positive subscale (49)        | 19.79 (7.88)|    |
| PANSS negative subscale (49)        | 24.44 (8.30)|    |
| PANSS general psychopathology (112) | 38.22 (14.59)|    |
| LIADL A-difficulty in using telephone | 5 (5)      |      |
| LIADL B-difficulty in shopping      | 78 (78)    |      |
| LIADL C-difficulty in food preparation | 85 (85)  |      |
| LIADL D-difficulty in housekeeping  | 47 (47)    |      |
| LIADL E-difficulty in laundry       | 52 (52)    |      |
| LIADL F-difficulty in mode of transportation | 32 (32)  |      |
| LIADL G-difficulty in responsibility for medications | 86 (86) |      |
| LIADL H-difficulty in handling finances | 61 (61) |      |

PANSS – Positive and negative symptom scale; LIADL – Lawton instrumental activities of daily living scale; SD – Standard deviation

Table 2: Correlation of total Lawton instrumental activities of daily living scale scores with the positive and negative symptom scale scores and demographic characteristics (n=100)

| Domain                  | Bivariate statistics | Multivariate statistics (adjusted for age and gender) |
|-------------------------|----------------------|-----------------------------------------------------|
|                         | PCC (P)              | Beta                                                |
| **Domain**              | **Beta**             | **t**      | **P**    |
| PANSS total             | -0.243 (0.015)       | -0.228     | 0.015    |
| PANSS positive subscale | -0.189 (0.059)       | -0.182     | 0.031    |
| PANSS negative subscale | -0.116 (0.250)       | -0.156     | 0.166    |
| PANSS general subscale  | -0.277 (0.005)*      | -0.236     | 0.012    |
| Education level         | 2.355 (0.046)        | 0.147      | 0.148    |
| Gender                  | 9.198 (0.03)         | 0.375      | 0.000    |
| Age                     | 0.081 (0.424)        | 0.109      | 0.922    |

*Correlation is significant at the 0.01 level (two-tailed); †F (P), PANSS – Positive and negative symptom scale; LIADL – Lawton instrumental activities of daily living scale; PCC – Pearson’s Correlation Coefficient.

significant associated with the level of education. The components of “shopping,” “taking medications” and “handling finances” failed to reveal any significant associations with the demographic data [Table 2].
DISCUSSION

Prevalence of instrumental activities of daily living dysfunction among people with schizophrenia

The aim of this study was to assess the level of instrumental activities of daily living dysfunction in people with schizophrenia. It was found that only 2% in the sample were completely independent in their instrumental activities of daily living. More than half of the sample had difficulty in activities of doing laundry, handling finances, shopping, food preparation, and handling medications. The dysfunction in instrumental activities of daily living among people with schizophrenia has been documented in other populations. A study done among people with schizophrenia in the Indian population has revealed that 88.1% of the 101 patients completely lacked the ability to live independently. However, the authors were unable to find studies in indexed, peer-reviewed journals which documented the extent of specifically instrumental activities of daily living dysfunction among the Indian population.

Need for more focus on instrumental activities of daily living skills

There are many studies done in patients with schizophrenia which have showed impaired life skills as leading to significant disability. A study from India concluded that independent functioning at baseline was a predictor of better recovery when followed up after 10 years. There are various studies which support correlation of life skills deficits with psychopathology quality of life, cognitive difficulties and negative symptoms. Even though our study did not reveal statistically significant correlation between individual domains of positive and negative symptom subscales, the correlation between general psychopathology domain and total PANSS scores with the LIADL score points to correlation of psychopathology with instrumental activities of daily living dysfunction. There was also significant association between the positive subscale of the PANSS with the LIADL component of using telephone and between the general psychopathology subscale of PANSS with the LIADL component of shopping. The lack of significance between the other components of the LIADL with the various PANSS subscales can imply that instrumental activities of daily living dysfunction can be present irrespective of the symptom status. This is an area of lacuna in Indian research as most of the studies assessing domains of psychosocial functioning in schizophrenia have focused on cognitive skills, negative symptoms, social functioning, vocational functioning, and overall disability rather than ADL.

Cultural influences in performance of instrumental activities of daily living

The demographic variable of gender was significantly associated with overall instrumental activities of daily living dysfunction as well as components of food preparation, housekeeping, and laundry. The results also imply association between various other demographic variables such as age, duration of illness, socioeconomic status, marital status, and employment status with different components of instrumental activities of daily living. There is scope of studying the impact of age of onset and duration of illness, education, and occupation on instrumental activities of daily living.

Implications for practice

Outcome measures in schizophrenia should not only just be limited to clinical factors such as psychopathology but also on social factors such as functioning. This will eventually lead to intervention strategies being more client centered in that interaction between both these factors will be considered and subsequently targeted during service delivery. While in developed countries, there is an amalgamation of acute care and community care services for people with chronic mental illnesses, this is not so for low- and middle-income countries. When patients are sent home with their psychopathological symptoms controlled yet not independent, the burden of care falls on the family. This burden is increased due to stigma, economic disadvantage and lack of supportive community services to ensure reintegration. Therefore, unless the independent living skills requirements of the patient population are addressed successfully, their felt needs would not be met.

CONCLUSION

Impairments in functional performance are characteristic of schizophrenia. Interventions focusing on independent living skills seem to lead to better outcomes for patients in addition to reducing burden on family and community. In India, focus on self-care activities is a common unmet need for patients, and there is also lack of research done in this particular area. This insufficiency needs to be addressed through making activities of daily living training a part of all routine mental health interventions. Researchers
should also focus on evaluating the extent and impact of functional deficits among people with Schizophrenia to make rehabilitative measures more efficient.

Financial support and sponsorship
The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: this study was funded by a grant from the Christian Medical College, Vellore (IRB Min. No. 9727).

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Murray CJ, Lopez AD. Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. Lancet 1997;349:1436-42.

2. Harvey PD, Green MF, Keefe RS, Velligan DI. Cognitive functioning in schizophrenia: A consensus statement on its role in the definition and evaluation of effective treatments for the illness. J Clin Psychiatry 2004;65:361-72.

3. Pillai RR, Sahu KK, Matthew V, Hazra S, Chandran P, Ram D. Rehabilitation needs of persons with major mental illness in India. Int J Psychosoc Rehabil 2010;14 Suppl 2:95-104.

4. World Health Organization. WHO International Classification of Diseases: Clinical Descriptions and Diagnostic Guidelines. 10th ed. Geneva: WHO; 1992. Available from: http://www.who.int/classifications/icd/en/GRNBOOK.pdf. [Last accessed on 2017 May 27].

5. Lawton MP, Brody EM. Assessment of older people: Self-maintaining and instrumental activities of daily living. Nurs Res 1970;19 Suppl 3:278.

6. Vittengl JR, White CN, McGovern RJ, Morton BJ. Comparative validity of seven scoring systems for the instrumental activities of daily living scale in rural elders. Aging Ment Health 2006;10 Suppl 1:40-7.

7. Datta D, Datta PP, Majumdar K. Relationship of activity of daily living with quality of life. Br Med Bull 2014;2 Suppl 4:757-64.

8. Kay SR, Fiszbein A, Opier LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 1987;13:261-76.

9. Charles H, John T, Chandy S, Ezhilraasi E, Antonisamy B, Jacob KS. Validation of the Routine Assessment of Patient Progress (RAPP) in patients with psychosis in South India. Int J Methods Psychiatr Res 2003;12:157-64.

10. Johnson S, Sathyaseelan M, Charles H, Jeyaseelan V, Jacob KS. Insight, psychopathology, explanatory models and outcome of schizophrenia in India: A prospective 5-year cohort study. BMC Psychiatry 2012;12:159.

11. Johnson S, Sathyaaseelan M, Charles H, Jeyaseelan V, Jacob KS. Predictors of insight in first-episode schizophrenia: A 5-year cohort study from India. Int J Soc Psychiatry 2014;60:566-74.

12. Leucht S, Kane JM, Kissling W, Hamann J, Etschel E, Engel RR. What does the PANSS mean? Schizophr Res 2005;79:231-8.

13. Twamley EW, Woods SF, Zurhellen CH, Vertinski M, Narvaez JM, Mausbach BT, et al. Neuropsychological substrates and everyday functioning implications of prospective memory impairment in schizophrenia. Schizophr Res 2008;106:42-9.

14. Strassnig M, Signorile J, Gonzalez C, Harvey PD. Physical performance and disability in schizophrenia. Schizophr Res Cogn 2014;1:112-21.

15. Shrivastava A, Shah N, Johnston M, Stitt L, Thakar M. Predictors of long-term outcome of first-episode schizophrenia: A ten-year follow-up study. Indian J Psychiatry 2010;52:320-6.

16. Walkup J, Gallagher SK. Schizophrenia and the life course: National findings on gender differences in disability and service use. Int J Aging Hum Dev 1999;49:79-105.

17. Ivarsson AB, Carlsson M, Sidenvall B. Performance of occupations in daily life among individuals with severe mental disorders. Occup Ther Ment Health 2004;20 Suppl 2:33-50.

18. Bowie CR, Reichenberg A, Patterson TL, Heaton RK, Harvey PD. Determinants of real-world functional performance in schizophrenia subjects: Correlations with cognition, functional capacity, and symptoms. Am J Psychiatry 2006;163:419-25.

19. Chaudhury PK, Deka K, Chetia D. Disability associated with mental disorders. Indian J Psychiatry 2006;48:95-101.

20. Aki H, Tomotake M, Kaneda Y, Iga J, Kinouchi S, Shibuya-Tayoshi S, et al. Subjective and objective quality of life, levels of life skills, and their clinical determinants in outpatients with schizophrenia. Psychiatry Res 2008;158:19-28.

21. Green MF, Kern RS, Braff DL, Mintz J. Neurocognitive deficits and functional outcome in schizophrenia: Are we measuring the “right stuff”? Schizophr Bull 2000;26:119-36.

22. Prouteau A, Verdoux H, Briand C, Lesage A, Lalon de P, Thara R, Rajkumar S. Nature and course of disability in schizophrenia: A ten-year follow-up study. Indian J Psychiatry 2005;79:231-8.

23. Thara R, Rajkumar S. Nature and course of disability in schizophrenia. Indian J Psychiatry 1993;35:33-5.

24. Padmavathi R, Thara R, Srinivasan L, Kumar S. Self-assessed cognitive dysfunction and objective performance in outpatients with schizophrenia participating in a rehabilitation program. Schizophr Res 2004;69:95-91.

25. Thara R, Rajkumar S, Naravane J, Deka K, Chetia D. Insight, psychopathology, explanatory models and outcome of schizophrenia in India: A prospective 5-year cohort study. BMC Psychiatry 2012;12:159.

26. Shrivastava A, Shah N, Johnston M, Stitt L, Thakar M. Predictors of long-term outcome of first-episode schizophrenia: A ten-year follow-up study. Indian J Psychiatry 2010;52:320-6.

27. Walkup J, Gallagher SK. Schizophrenia and the life course: National findings on gender differences in disability and service use. Int J Aging Hum Dev 1999;49:79-105.

28. Ivarsson AB, Carlsson M, Sidenvall B. Performance of occupations in daily life among individuals with severe mental disorders. Occup Ther Ment Health 2004;20 Suppl 2:33-50.

29. Bowie CR, Reichenberg A, Patterson TL, Heaton RK, Harvey PD. Determinants of real-world functional performance in schizophrenia subjects: Correlations with cognition, functional capacity, and symptoms. Am J Psychiatry 2006;163:419-25.

30. Aki H, Tomotake M, Kaneda Y, Iga J, Kinouchi S, Shibuya-Tayoshi S, et al. Subjective and objective quality of life, levels of life skills, and their clinical determinants in outpatients with schizophrenia. Psychiatry Res 2008;158:19-28.

31. Green MF, Kern RS, Braff DL, Mintz J. Neurocognitive deficits and functional outcome in schizophrenia: Are we measuring the “right stuff”? Schizophr Bull 2000;26:119-36.

32. Prouteau A, Verdoux H, Briand C, Lesage A, Lalon de P, Thara R, Rajkumar S. Nature and course of disability in schizophrenia: A ten-year follow-up study. Indian J Psychiatry 2005;79:231-8.