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Research article

The magnitude of disability in patients with schizophrenia in North West Ethiopia: A multicenter hospital-based cross-sectional study

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ABSTRACT

Objective: To assess the magnitude of disability and its associated factors among patients with schizophrenia in North West Ethiopia in selected hospitals, 2019.
Design: Multicenter hospital-based cross-sectional study.
Setting: Gondar, Felege Hiwot, and Debre Tabor hospitals.
Participants: We recruit 420 participants for interviews using a systematic random sampling technique.
Measurement: We collect the data by face-to-face interview. Disability was measured using the World Health Organization Disability Assessment Scale 2.0. Coded variables were entered into Epi data V.4.4.2 and exported to SPSS V.24 for analysis. Bivariate and multivariate logistic regressions with OR and 95% CI were employed.
Result: A total of 423 participants were interviewed, with a response rate of 99.3%. The magnitude of disability in this study was 41.7 % (95 %CI: 36.9, 46.4). Current use of alcohol (AOR = 2.47,n95CI; 1.36,4.48), being jobless (AOR = 3.27, 95CI; 1.80, 5.93), had negative symptoms (AOR = 13.05,95CI, 7.58,22.45), had 5 and more years of illness (AOR = 2.75,95CI; 1.29,5.86), and had 5 and more years of untreated psychosis (AOR = 3.78,95CI, 1.85,7.75) were predictors of disability.
Conclusion and recommendation: The magnitude of disability in this study was 41.7 %. Avoidance of alcohol usage, early initiation of treatment, creating job opportunities, and giving special emphasis to patients having negative symptoms is recommended.

1. Introduction

Schizophrenia is a severe, chronic, and disabling mental illness comprising several discrete clinical features with extensive variation between individuals [1], which places a significant burden not only on the individuals but also on their families and society [2]. Currently, it affects approximately 20–24 million people worldwide [3]. In the global burden of disease study, schizophrenia accounted for 1.1% of the total disability-adjusted life year (DALYs) and 2.8% of Years lived with disability (YLDs) [4].

Disability is one of the consequences of schizophrenia that individuals afflicted with it experience. It is highly prevalent across patients themselves, families, communities, and professionals [5]. According to the World Health Organization report, schizophrenia is the world's fourth leading cause of disability [6]. Disability in schizophrenia interferes with self-care and mental illness, medical care, further worsening physical health to produce a vicious cycle of disability [7], and the level of disability is more in chronic and episodic mental disorders [8].

Despite long years of pharmacological and psychosocial interventions, schizophrenia remains one of the leading causes of disability [9, 10] including poor self-care, inability to manage the tasks of daily living, social withdrawal, poor functioning in affinitive roles, and work incapacity [11]. A recent study comparing the functional disability between schizophrenia and bipolar disorder resulted in greater disability in schizophrenia than bipolar Disorder [12, 13].

A previous study analyzed that various aspects of psychosocial disability occur in schizophrenia such as psychopathological symptoms [14], impairments of basic cognition [14], social cognition [15], emotional experience [16], social functioning [17], vocational functioning [18] and quality of life [19, 20].

Particularly social disability is one of the most crippling aspects of functioning in schizophrenic patients because in a patient with

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schizophrenia there is a range [14] of deficits in emotion processing, including the ability to accurately perceive emotions, to use emotions to facilitate thinking and decision making and to understand and manage emotions in oneself and others [21]. According to research done in low- and middle-income countries, mental disorders account for 25.3% and 33.5% of all years lived with a disability respectively. People living with mental illness usually suffer from educational and income-generation opportunities and poor social networks within their society. Of all disabilities, severe mental illness is associated with the highest rates of unemployment, rating up to 90%. Despite the widespread availability of medications that suppress psychosis and prevent relapse, most patients with chronic mental illnesses such as schizophrenia remain disabled in different functions in the community [22].

Research done in India among schizophrenic patients, 83% of them found with mild to moderate disability [23]. Another comparative study in Southern India showed that patients on antipsychotics had significantly less disability across all domains of disability, which was rating as 40% of the patients with treatment were disabled in contrast to 71% of the patients not receiving treatment [24].

Likewise, a comparatives study of disability in individuals with bipolar affective disorder and schizophrenia in a sub-Saharan African revealed that 24.93% and 27.02% of patients were disabled respectively. The factors associated with this study were: unemployment status and remittance source of income [13].

Disability in schizophrenia is the main public health problem due to its severity, chronic, and disabling nature. Its impact is not limited to the individual but rather it passes down to the whole family and society. Inability to function in everyday settings is responsible for the huge indirect costs of schizophrenia, which may be as much as three times larger than direct treatment costs for psychotic symptoms.

Early treatment with antipsychotics reduces the severity as well as the occurrence of disability. In the Ethiopian context, prevalence studies of disability in schizophrenia are very scarce. It is, therefore, necessary to assess the magnitude and associated factors of disability in a schizophrenic patient.

Thus, the findings of this will help to plan intervention programs for chronic mentally ill patients.

Therefore, this study aimed to assess the magnitude and associated factors of disability among schizophrenic patients at Debretabor, Felegehiwot, and Gondar general hospital attending psychiatry unit, Amhara North West Ethiopia, 2019.

2. Methods

2.1. Study area and period

An institutional-based cross-sectional study was conducted from January 1 to February 15 2019. The study was conducted at Debre tabor, Felegehiwot, and Gondar hospitals which are Far from 666, 563, and 738 km respectively north of the capital city of Ethiopia. Based on the monthly report of the psychiatry unit there are approximately about 100 at Debretabor, 250 at Felegehiwot, and 280 patients at Gondar hospital. In all the three hospitals outpatient, inpatient, and emergency mental health services for adult and childhood psychiatric problems are being given. Moreover, outpatient services for substance use disorder have been given in the hospitals. Specifically, Debre Tabor comprehensive specialized hospital is now in the process to begin a comprehensive substance rehabilitation center in its full capacity.

2.2. Study participants and sampling

The study participants were recruited by using a systematic random sampling technique.

There were 150, 375 and 420 participants who visited Debre tabor, Felege Hiwot and Gondar hospitals per 1 and half month respectively. To select the study subjects from each hospital; the interval size (k) was calculated using the following formula.

$$K1 = 150/67 = 2.2 \sim 2, \ K2 = 375/168 = 2.2 \sim 2, \ K3 = 420/188$$
$$= 2.2 \sim 2$$

where 67, 168 and 188 were the number of participants interviewed in Debre Tabor, Felege Hiwot and Gondar hospital respectively.

Therefore the interval K was 2 that the participants interviewed every 2 for the three hospitals. and the first participant was determined by lottery method. This recruitment process was done on the registration book of the hospital. To avoid the repeated interview of a single subject, their medical registration number were recorded and checked in the subsequent interviews. Participants aged 18 years and above and having no active psychopathology were included in the study during the data collection period. There were a total of 945 schizophrenic patients who had follow up over 1 and half month and participants who were epileptic and intellectually disabled were excluded (Figure 1).

2.3. Sample size determination

The sample size was determined by using a single population proportion formula.

Taking into account the following assumption, the proportion of patients with schizophrenia (p) is 0.5%; (as there was no research done in Ethiopia), the margin of error (α) = 0.05; the level of confidence (95%), 1.96 Z (standard normal distribution), and 10% non-response rate. Accordingly, a representative sample was calculated to be 423.

2.4. Study variables

The dependant variable was disability measured by WHO disability assessment scale 2.0. We measured disability as dichotomous variables (yes/No).

Independent variables included Sociodemographic factors (age, sex, marital status, ethnicity, religion, residence, educational, and occupational status), clinical variables (current medication, number of medication, duration illness, duration of untreated psychosis, positive, and negative), and substance-related factors (alcohol consumption, cigarette smoking, khat chewing).

2.5. Data sources and measurement

Data were collected by face-to-face interviews using a semi-structured questionnaire by four trained mental health professional specialists using the Amharic version of the tool for 1 and half month. The questionnaire was designed in English and translated to Amharic and back to English to maintain its consistency. Data collectors were trained on how to interview participants and explain unclear questions and the purpose of the study. Furthermore, they were made aware of ethical principles, such as confidentiality/anonymity/data management, and securing respondents' informed consent for participation.

Disability was measured using WHODAS 2 which has a 36-item self-report measure with Likert response options ranging from 1 'None' to 5 'extremely' for each item, giving a potential scale score range of 36–180, and disability was explained by the sum of WHODAS 2 items scored above mean. We adapted this instrument from a study conducted in rural Ethiopia [1]. It showed a high internal consistency, reliability, and a strong correlation with a disability diagnosis. We conducted a reliability analysis for data that gave an acceptable score (Cronbach's α = 0.73).

Disability: is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for an individual in his or her socio-cultural setting [2].

Diagnosis of schizophrenia: was made based on diagnostic statistical manual of American psychiatric association-5 (DSM-5) and their
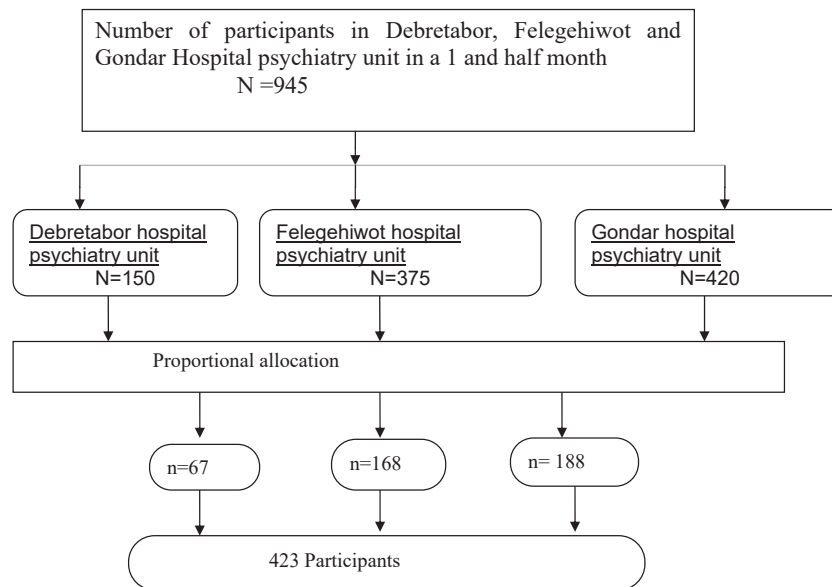
Figure 1. Showing sampling procedure for magnitude and associated factors of disability among patients with schizophrenia Amhara, North West, Ethiopia, 2019.

diagnosis were taken from the chart based on their medical registration number.

Disability in schizophrenia: The presence of disability in schizophrenia was explained by the sum of WHODAS 2 items scored above mean.

Substance use history: To examine substance use history, respondents were asked: 'Have you ever used any substance in the last 3 months or in your lifetime?' and the responses were yes/no [3].

Positive symptoms: The presence of exaggerated ideas, perceptions, or actions that show the person can't tell what's real from what isn't including hallucination, delusion disorganized speech, grossly disorganized or catatonic behavior.

Negative symptoms: refer to an absence or lack of normal mental function involving thinking, behavior, and perception including lack of pleasure, alogia, a volition affective flattening, apathy, poor rapport, lack of spontaneity.

Positive or negative symptoms were examined by verbal report and physical manifestations during the course of interview as well as reports of behavior by primary care workers or families.

Number of medications: To examine the numbers of mediation that participants were taking: Respondents were asked how many medications you are taking? The responses were one/two or more.

Items on Sociodemographic factors: Items on Sociodemographic factors (age, sex, and ethnicity, religion, and marital status, residence, educational and occupational status) were adopted from a variety of literature.

2.6. Data processing and analysis

All collected data were checked for completeness and consistency and entered into Epi-data V.4.4.2 and then exported to SPSS V.24 for analysis. We computed descriptive, bivariate, and multivariate logistic regression analyses to see the frequency distribution and to test the association between independent and dependent variables, respectively. Factors associated with disability were selected during the bivariate analysis with a $p < 0.05$ for further analysis in the multivariable logistic regression analysis. In the multivariable logistic regression analysis, variables with $p < 0.05$ at 95% CI with adjusted OR were considered as statistically significant.

2.7. Ethical consideration

Permission was obtained from the Amhara Health Bureau Ethical Committee. We received written informed consent from study participants who could give consent and from the caretakers for those participants who could not have capacity to give consent after expressing the advantage of this research work. .Confidentiality was maintained by omitting personal identifiers.

2.8. Patient and public involvement

In the current study, participants were people who had follow-up at outpatients departments of psychiatry and they were not involved in the study design and recruitment. The results of this study will be disseminated to the Federal Ministry of Health, Amhara Health Bureau, and the three hospitals.

3. Results

A total of 420 respondents participated in this study with a response rate of 99.3%. The majority of the respondents were males 221 (52.6%). Most of the participants were single 222 (52.9%), orthodox followers 369 (87.9%), and Amhara by ethnicity 418 (99.5%). Regarding their occupation, about 1/4th of them were jobless 108 (25.7%) (Table 1).

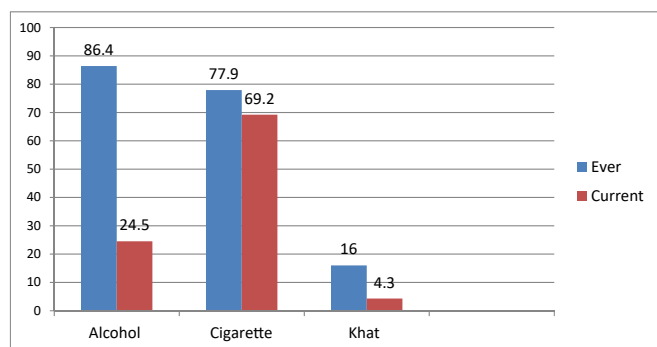### 3.1. Substance-related factors of the respondents

The majority of the respondents had ever use of alcohol and cigarette (Figure 2).

3.2. Clinical factors

The majorities of the respondents were taking medications currently 401 (95.5%) and were taking only one medication 384 (91.4%). Near to half of the participants had positive symptoms 200 (47.6%) and were untreated 215 (51.2%) (Table2).

Table 1. Sociodemographic characteristics of participants attending Debretabor, Felegehiwot, and Gondar hospitals, North West Ethiopia, 2019 (n = 420).

Characteristics	Frequency	Percent
Age		
18–24	115	27.3
25–39	209	49.8
40–49+	96	22.9
Sex		
Male	221	52.6
Female	199	47.4
Marital status		
Single	222	52.9
Married	126	30
Widowed	16	3.8
Divorced	56	13.3
Religion		
Orthodox	369	87.9
Muslim	49	11.7
Protestant	2	0.5
Ethnicity		
Amhara	418	99.5
Tigray	2	0.5
Educational status		
Illiterate	158	37.6
Primary school	126	30
Secondary school	80	19
Diploma	30	7.1
Degree and above	26	6.2
Job status		
Has job	312	74.3
Jobless	108	25.7
Residence		
Urban	211	50.2
Rural	209	49.8

Table 2. Clinical factors of the participants attending Debretabor, Felegehiwot and Gondar hospitals, North West Ethiopia, 2019 (n = 420).

Characteristics		Frequency	Percent
Negative symptoms	Yes	180	42.9
	No	240	57.1
Positive symptoms	Yes	200	47.6
	No	220	52.4
Taking medication currently	Yes	401	95.5
	No	19	4.5
Number of medications	One medication	384	91.4
	2≥ medications	36	8.6
Duration of the illness	<1 year	104	24.8
	1–5 years	184	43.8
	≥5	132	31.4
Duration of untreated psychosis	1–2 years	91	21.7
	2–5 years	114	27.1
	≥5 years	215	51.2

longer duration of untreated psychosis, current use of alcohol, being jobless, had positive and negative symptoms were found to be significant at a P-value <0.05. These factors were entered into multivariable binary logistic regression for further analysis to control confounding effects. In multivariate analysis having current alcohol use, being jobless, having ≥5 years of duration of illness, having untreated psychosis for ≥ 5 years, and having negative symptoms were significantly associated with disability at a p-value less than 0.05.

The odds of being disabled among patients with schizophrenia were 2.47 times higher among respondents who use alcohol as compared with those who didn't use alcohol currently (AOR = 2.47,95CI; 1.36,4.48).

Being jobless was 3.27 times more likely to develop a disability as compared with those respondents who had a job (AOR = 3.27, 95CI; 1.80, 5.93).

The likelihood of developing disability was 2.75 times higher among respondents who had 5 and more years of illness as compared with those respondents who had less than a 1-year duration of illness (AOR = 2.75,95CI; 1.29,5.86).

Those respondents who were not treated for 5 and more years were 3.78 times more likely to develop a disability as compared with those respondents who were not treated for less than two years (AOR = 3.78,95CI, 1.85,7.75). The likelihood of developing disability was 13.05 times higher among respondents who had negative symptoms as compared with those who had no negative symptoms (AOR = 13.05,95 CI, 7.58,22.45) (Table 3).

Figure 2. Substance-related factors of disability among patients with schizophrenia attending outpatient departments in North West, Ethiopia, 2019.

3.3. Magnitude of disability

The magnitude of disability in this study was 41.7% (95 % CI: 36.9, 46.4).

3.4. Factors associated with disability

To determine the association of independent variables with a disability, bivariate, and multivariate binary logistic regression analysis was carried out.

On the bivariate analysis of disability in relation to each explanatory variable: Not taking medication currently, longer duration of the illness,

4. Discussion

Schizophrenia remains one of the leading causes of disability and a life-shortening illness, caused mainly by poor physical health and its complications. The result is a considerably reduced lifespan that is marred by reduced levels of independence. In this study, the magnitude of disability was 41.7 % (95 %CI: 36.9, 46.4). This finding was in line with the studies conducted in China 41% [4], and other research conducted in China 37 %, 44% in men and women respectively [5], in India 41% [6]. On the other hand, the findings of this study were lower than the previous studies undertaken in India 83% [7], Ranchi Institute of Neuropsychiatry and Allied science Ranchi, 88% [8], Thirthahalli Taluk of Shimoga District, Karnataka 62% [9], in Spain 67.6% [10] and Nigeria 78% [11]. The possible reason could be the instrument, sample size, and cultural difference.

On the contrary, the finding of this research was higher than the studies done in Malaysia 34% [12]. The difference could be the sample size, in this study the sample size was 420 but in the Malaysian study, 128, and in this study, all the respondents were schizophrenic but in the case of Malaysia study the participants were both patients with schizophrenia and mood disorders.

Table 3. Factors of disability among participants attending Felegehiwot, Gondar and Debretabor hospitals North West, Ethiopia, 2019 (n = 420).

variables	Category	Disability Yes No	COR (95%CI)	AOR (95%CI)
Job-status	Has job Jobless	100 212 75 33	1 4.82 (3.00,7.74)*	1 3.27 (1.80,5.93)*
Current use of alcohol	No Yes	106 211 69 34	1 4.04 (2.52,6.48)*	1 2.47 (1.34.4.45)*
Positive symptoms	No Yes	76 144 99 101	1 1.86 (1.25,2.75)*	1 1.48 (0.87,2.53)
Negative symptoms	No Yes	42 198 133 47	1 13.34 (8.33,21,34)*	1 13.05 (7.58,22.45)*
current medication	Yes No	160 241 15 4	1 5.65 (1.84,17.33)*	1 1.48 (0.39,5.62)
Duration of the illness	<1 year 1–5 years ≥5 years	32 72 77 107 66 66	1 1.62 (0.97,2.69) 2.25 (1.31,3.86)*	1 1.57 (0.79,3,13) 2.75 (1.29,5.86)*
Duration of untreated psychosis	1–2 years 2–5 years ≥5 years	28 63 38 76 109 106	1 1.13 (0.62,2.03) 2.31 (1.38,3.89)*	1 1.60 (0.73,3.53) 3.78 (1.85,7.75)*

Key: *P < 0.05, model fitness (Hosmer and Lemshow) = 0.172.

On the independent predictors of disability, current use of alcohol being jobless, had negative symptoms, had 5 and more years of illness, and had 5 and more years of untreated psychosis were predictors of disability.

Specifically, the greater likelihood of disability occurred among those who used alcohol currently as compared with those respondents who did not use alcohol currently, which is similar to other study [9]. The evidence indicates that substance abuse severely complicates schizophrenia by causing relapse, hospitalization, disrupting behavior, creating familial problems, residential instability, decreased functional status, and medication noncompliance [13].

Participants who had negative symptoms were more likely to develop a disability as compared with those respondents who had no negative symptoms. This is due to that the negative symptoms of schizophrenia, including problems with motivation, social withdrawal, diminished affective responsiveness, speech, and movement, contribute more to poor functional outcomes and quality of life for individuals with schizophrenia than do positive symptoms [14]. This was supported by the studies conducted in Turkey, India, Spain, and a result of meta-analysis [15, 16, 17, 18].

Having 5 and more years of illness was significantly associated with disability in this study. The rationale might be, longer duration of psychosis is associated with poor response to antipsychotic treatment, the severity of negative symptoms, and poor functional outcomes [19]. The finding was supported by the studies conducted in Indian studies [8, 9, 20].

The odds of developing disability were 3.78 times higher among respondents who had 5 and more years of untreated psychosis as compared with those respondents who were not treated for less than two years which is similar to the results of other studies [16, 21]. The possible explanation might be there is an association between a longer duration of untreated psychosis and poor outcome in schizophrenia. These studies have been interpreted as providing evidence that untreated psychosis may constitute an "active morbid process" that is "toxic" to the brain which leads to disability [22].

Moreover, being jobless was the strongest predictor of disability as compared with those individuals who had a job which was supported by the study done in Taiwan [23]. Because employment for individuals living with psychiatric disabilities becomes an acceptable norm and expectation, then the barriers of stigma, class bias, and discrimination diminish [24].

4.1. Strength and limitations

The design of the study was cross-sectional; therefore, we were unable to conclude the observed associations may not necessarily any causal direction. This study also missed important factors to be included as factors that greatly affected disability including social support, quality of life, and the type of medication that the patients were taking.

This is the first novel study in this area that tried to show the magnitude of disability in schizophrenic patients.

In this research, a relatively large sample size was included and since it was a face-to-face interview, we were addressing individuals who had a disability for further investigation and intervention.

5. Conclusion

The magnitude of disability in patients with schizophrenia was 41.7 %. This confirmed that schizophrenia has a greater impact on the functionality of the patient. Current use of alcohol, being jobless, had negative symptoms, had 5 and more years of illness, and had 5 and more years of untreated psychosis were factors significantly associated with disability. Therefore we recommend that disability-focused regular screening of the patient with schizophrenia by trained health professionals and timely linkage for better rehabilitation and other mental health services. It is also necessary to emphasize individuals with current use of alcohol, jobless, had negative symptoms, had 5 and more years of illness, and had 5 and more years of untreated psychosis. Furthermore, longitudinal study is recommended by including important factors that have been missed in this study such as social support, quality of life and the type of medication that the patients take.

Declarations

Author contribution statement

Data availability statement

Data included in article/supplementary material/referenced in article.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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