

Catha edulis (Khat) use and Demographic Correlates of Schizophrenia: A Case-Control study.

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Research note

Keywords: Catha edulis, Khat, Catha edulis (Khat) use, schizophrenia, case-control, cases, controls

Posted Date: September 12th, 2019

DOI: <https://doi.org/10.21203/rs.2.14378/v1>

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Abstract

Objective

The purpose of this study was to determine the demographic correlates of schizophrenia and the use of *Catha edulis*.

Results

Results of the present study shows that variables like age ≤ 30 year (OR=2.6; 95%CI=1.166,5.821; p=.020), single marital status (OR=4.25; 95%CI=1.86,9.72; p=.001), unemployment (OR=3.82; 95%CI=1.74,8.38; p=.001), lifetime *Catha edulis* (khat) use (OR=3.89; 95%CI=1.75,8.64) are significantly correlated with Schizophrenia. Knowledge of the association between demographic variables and the use of *Catha edulis* would assist in both societal education on the diagnosis and prognosis of schizophrenia.

Introduction

Schizophrenia is unremitting and devastating condition attributed to many causal factors¹. It mainly affects an individual's thinking, feeling and behaviour². An incidence of all psychotic disorders increases from time to time across studies, while it remains constant for schizophrenia³. Schizophrenia occurs in all cultures and people around the world⁴. Globally up to 1% of the world population is estimated to be affected by schizophrenia⁵; however, the prevalence is higher among relatives, parents and twins of schizophrenia patients than the general population⁴. Schizophrenia is responsible for enduring disabilities due to its chronicity and severity⁶. Up to 60% of people with schizophrenia have moderate to severe disabilities⁷. According to World Health Organization as cited in Altamura et al⁸ around 1.1% of total Disability Adjusted Life Years and 2.8% of Years Lived with disability globally are estimated to be due to schizophrenia.

Many factors have been attributed to the causation of schizophrenia¹. However, researchers could not able to detect the exact causes of schizophrenia hence reliance on correlates⁹. Genetics, biological, and environmental factors are commonly referred as major factors that influence the pathogenesis of schizophrenia^{10, 11}. For instance, Fatani et al¹² stated that family and adoptive studies have recognized there are genetically predisposing factors in the development of schizophrenia.

Demographic correlates of schizophrenia had been also recognised as a hallmark of schizophrenia in developed countries. For example, demographic variables like gender, age, and employment have been reported to have significant associations with schizophrenia^{13, 14, 15}. However; in Ethiopia, as is in many developing countries, demographic correlates of schizophrenia are not fully understood.

On the other hand, environmental factors such like unpleasant life experiences, drug use and poor parenting are reported to have an association with schizophrenia¹⁶. For example, El-Sayed and Amin¹⁷

stated that chewing *Catha edulis* leaves (Khat) can elevate plasma dopamine level. Odenwald et al¹⁸ also reported that cases with psychotic symptoms in Somalia had started chewing *Catha edulis* leaves (khat) earlier in life and had been chewed it 8.6 years before the onset of the psychotic symptoms. However; although the use of *Catha edulis* leaves (Khat) is common among people with schizophrenia in Ethiopia, studies done on *Catha edulis* use as a correlate of schizophrenia are limited.

Methods And Materials

Setting

This study was conducted from January to December 2016 in Adare General Hospital which is located in Hawassa city, an administrative city for Southern Region of Ethiopia. The hospital is among the general hospitals in Ethiopia and has a bed capacity of 141 for inpatient care.

Sample

Forty (40) respondents of people with Schizophrenia (cases) and 117 people without Schizophrenia were conveniently recruited from Adere general hospital. The process of recruitment began with the first author (ABW) requesting permission from the hospital superintendant to collect data and explaining the objectives of the study to him.

Data collection

Data was collected using structured and pretested questionnaire that was developed by the researcher. Two trained research assistants helped with the collection of data. One was assigned for cases, while the other was assigned for control. Schizophrenia was the dependent variable while demographic variables (age, marriage, education ...) and *Catha edulis* (khat) use were independent variables. Informed consent were signed and collected from respondents before data collection.

Data analysis

Data were entered and analysed using SPSS version 23. Odds Ratio, 95% confidence interval and *p-value* less 0.05 were computed to determine the association between dependent (schizophrenia) and independent variables. Fisher's exact test were used to get *p-value* for cells that have expected counts less than five and Mantel-Haenszel statistics were used to control possible confounding variables.

Ethical considerations

Ethical approval was obtained from the department of health studies at the University of South Africa. An approval letter was also obtained from Adere general hospital and the Southern Ethiopia Nation

Result

From the total sample size (N = 157), response rate was 92.99% (N = 146), with 40 (25.5%) respondents from schizophrenia patients and 106 (67.5%) respondents from controls. However, data found from 140 (89%) respondents (37 from cases and 103 from controls) were involved in the analysis.

Demographic Description

[Insert Table 1.1 here]

Most cases were younger than respondents in controls. Majority of controls were Sidama in ethnicity; while, 54.1% (n = 20) of cases were in other ethnic groups. Proportion of being single was higher for cases than controls. Around 73% of cases were single, whereas only 38.8% of controls were single (Table-1.1). More than half of controls able to learn up to secondary school or above; however, majority of cases were illiterate or elementary school. Important differences in employment among cases and controls were also observed. For example, majority of cases were unemployed when compared to controls, see Table-1.1.

Correlates of Schizophrenia

[Insert Table 1.2 here]

In Table-1.2 majority of cases were younger than controls. This difference was genuine and statistical significant. Respondents with schizophrenia were found 2.6 times more likely to be younger than respondents without schizophrenia. Female respondents seem more likely to be affected by schizophrenia in this study; however, gender difference in the present study was not significant ($OR = 1.89, p = 0.117$). Other evidences also showed the prevalence of schizophrenia across gender is similar². Respondents with schizophrenia (cases) were also four times more likely to be single than respondents in controls (Table-1.2).

On the other hand, independent variables like educational background, ethnicity, and religion did not have an association to schizophrenia in this study, see Table-1.2. However, occupation and Catha edulis (khat) use were identified to be a risk factor for the outcome variable "schizophrenia". Cases were 3.8 times more likely to be unemployed than controls and cases were almost 3.89 times more likely to use the leaves of Catha edulis (Khat) than controls, see Table-1.2.

Discussion and Conclusions

According to the present study, schizophrenia was found to have significant association with respondents' age, marriage, occupation and Catha edulis use. Majority of respondents with schizophrenia were younger than respondents without schizophrenia. Other evidences have supported these findings. Sadock et al² and stated that schizophrenia starts at early age. Altamura et al⁸ also reported that schizophrenia occurs before the age of 40 years. Findings of the present study also confirmed that schizophrenia patients were more likely to be single and unemployed when compared to healthy controls. These findings were supported by different studies. Prasad¹³ reported that schizophrenia patients were less likely to be employed even when compared to people with other mental illness like bipolar affective disorders.

Significant association between Catha edulis (Khat) use and schizophrenia was also identified in the present study. Respondents with schizophrenia were almost four times at increased risk to use Catha edulis leaves (to chew Khat) compared to healthy controls. Results of the present study were in line with a case-control study done among Somalia refugees in Kenya²⁰ and other few critical reviews²¹, in which these evidences had reported there was a causal association between excessive Catha edulis use and psychotic disorders. Odenwald et al¹⁸ also reported that the use of Catha edulis always precedes psychotic symptoms of cases with psychotic disorders. However, Zenebe et al²² had reported that there was no association between Catha edulis use and schizophrenia which is in contrary to the findings of the present study. This variation could be explained to the different designs used by researchers.

From the findings of the present study the researcher has concluded that age, marital status, occupation and Catha edulis (khat) use are independent predicting factors for schizophrenia.

This means that schizophrenia has early age of onset and economically productive age groups are highly affected by schizophrenia. Schizophrenia patients also spend long periods of their life without payable employment, getting marriage and on using substances like Khat (Catha edulis) that have a potential to worsen schizophrenia symptoms.

Limitations

This study has tried to compare homogenous cases and controls by restricting their age to be between 18 to 50 years and selecting controls from close associates of schizophrenia patients. However, cases and controls were not matched for demographic variables in this study. All limitations for case-control study design are also true for this study.

Declarations

Ethical approval and consent to participants

Ethical approval for this study was obtained from University of South Africa Health Studies Higher Degrees Committee (with reference number HSHDC/453/2015) and necessary approval letters were

obtained from responsible bodies. Informed consent was signed from respondents before data collection was started.

Consent to publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interest

I confirm that all authors have approved the manuscript for submission and they do not have any financial or non-financial competing interest. I want also to assure that any changes to authorship will not be made after the acceptance of the manuscript.

Funding

The data collection cost of this study was funded by University of South Africa (UNISA).

Authors' contribution

Abraha G Woldemariam has participated in conducting the study, writing up the report, and preparation of the manuscript. Prof Gloria Thupayagale-Tshweneagae, Hafto Desta Kahsay Dr. Misgna Teklay Gebremedhin have participated in the preparation and editing of the manuscript.

Acknowledgement

I want to express my special gratitude to University of South Africa for funding the data collection cost and Respondents of the study for their participation voluntarily.

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Tables

Due to limitations, Tables 1 & 2 are only available for download from the Supplementary Files section.

Supplementary Files

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- [table1.pdf](#)
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