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Screening for common mental disorders in people with epilepsy in Goma, in the Democratic Republic of the Congo: A cross-sectional study

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ABSTRACT

Objectives: Epilepsy is a chronic neurological disease that is highly susceptible to a variety of mental health problems due to its enormous biological, social, and psychological burdens. The purpose of this study was to determine the prevalence and identify risk factors for common mental disorders (CMDs) in people with epilepsy (PWEs) in Goma, in the Democratic Republic of the Congo (DRC).

Material and Methods: This is an analytical cross-sectional study conducted at the Neuropsychiatric Hospital Center in Goma (DRC) from March to April 2022, involving 302 PWEs. A questionnaire was administered to collect socio-demographic data, personal and family history, clinical features, and management of epilepsy. CMDs were assessed using the self-report questionnaire-20. Bivariate analysis was performed, followed by multivariate analysis, and variables with $P < 0.05$ in the final model were considered as risk factors associated with CMDs.

Results: The study included 302 PWEs, of which 56.9% were men, and the mean age was 28.4 ± 11.0 years. CMDs were present in 39.1% of the participants. The presence of CMDs was significantly associated with having five or more seizures in the month preceding the survey (adjusted odds ratio [aOR] = 3.8; 95% confidence interval [CI]: 1.7–8.3) and having medical co-morbidities (aOR = 3.1; 95% CI: 1.5–6.4).

Conclusion: The prevalence of CMDs in PWEs was high (39.1%), suggesting that this is a public health issue. Therefore, early detection and recognition of CMD symptoms should be a routine activity when managing PWEs.

Keywords: Epilepsy, Psychiatric comorbidity, Common mental disorder, Risk factors, Goma

INTRODUCTION

According to the International League against Epilepsy, epilepsy is defined as a neurological condition characterized by at least two unprovoked seizures.[1] Epilepsy has a multidimensional effect on the body, such as limitations on physical, mental, and behavioral functions. Due to factors such as traumatic brain injury, pneumonia, epileptic illness, suicide, and sudden death, epilepsy is associated with a high risk of premature mortality.[2] The prevalence of common mental disorders (CMDs) among people with epilepsy (PWEs) remains unclear due to methodological difficulties in estimating prevalence, including diagnostic criteria and classification of epilepsy, the selection of populations studied, the choice of survey type and diagnostic instruments, and data interpretation.[3] However, PWEs are known to suffer more

from CMDs than the general population, with over 50% reported in most studies.[4-8] Unfortunately, CMDs are often poorly recognized and treated, even in well-medicalized countries such as Canada, where 38% of PWEs with depressive disorders received no psychiatric treatment in the year before the survey conducted by Fuller-Thomson and Brennenstuhl.[9] Untreated CMDs exacerbate and perpetuate epilepsy and reinforce social, educational, and occupational exclusion. Furthermore, CMDs in PWEs create an additional burden for patients and their families, directly impacting quality of life.[10]

The assessment of CMDs in PWEs and the identification of associated risk factors are more important issues as the risk of cognitive, behavioral, and psychosocial disorders is increased in these patients.[10,11]

The study found that risk factors associated with CMDs in PWEs were female sex, young age, low income, poor quality of life, unemployment,[12] family history of psychiatric illness,[13] high frequency of seizures, low level of education,[14] duration of epileptic illness, poor adherence to antiepileptic therapy,[15,16] and medical co-morbidities.[16,17] These risk factors should be considered in the assessment and identification of CMDs in PWEs.

To our knowledge, no prior research has investigated the prevalence and risk factors of CMDs in PWEs in the Democratic Republic of the Congo (DRC). Therefore, this study aimed to determine the prevalence and identify risk factors for CMDs in PWEs in the DRC. The findings of this study will help fill the gap in knowledge in this area and provide valuable baseline data for future researchers and decision-makers.

MATERIAL AND METHODS

Study framework and design

This is a cross-sectional hospital analytical study carried out at the Neuropsychiatric Hospital Center in Goma (DRC) from March to April 2022. This study was carried out at this hospital, which specializes in the management of PWEs and is located in Goma, which is the capital of the province of North Kivu. This hospital serves a population of over 2 million.

Study population

The study population consisted of PWEs enrolled for follow-up at the Neuropsychiatric Hospital Center in Goma (DRC) from March to April 2022. The enrollment register showed that over 2500 patients had a history of epilepsy follow-up at this center. On average, 50 PWEs visited the clinic each week, resulting in an estimated total of 400 PWEs following up during the data collection period. Using the formula $n = z^2p(1-p)/d^2$, with a standard deviation at 95% confidence interval [CI] (z^2=1.96), a precision error at 5% (0.05), a prevalence of CMDs of 35.8% from a study by Wubie *et al*.,[16] a margin of error of 5%, a confidence certainty interval of 95% (alpha = 0.05), and 10% non-response, the sample size for the study was calculated to be 388. Eligible participants were recruited using a systematic sampling approach. Exclusions were made for patients with language impairment, mental retardation, coma, or those who did not consent to participate. The final sample size was 302 PWEs.

All cases of follow-up epilepsy during the study period aged 18 years and older were allowed to participate in the study, while PWEs unable to communicate during the interview were excluded.

Operational definitions

Epilepsy is defined as a chronic neurological disease characterized by two or more unprovoked seizures.[1] Common mental or psychiatric disorders were operationalized as a score of ≥7 on the self-report questionnaire (SRQ-20).[18]

Data collection

Questionnaires were utilized to collect data, which were prepared in French and translated into Swahili (for some patients). To collect CMD data, a standardized and valid SRQ-20 questionnaire with 20 elements was used through an interviewer-based questionnaire.[18] A score of ≥7 was used to establish the presence of CMD. The SRQ-20 questionnaire assesses common mental symptoms experienced by patients over the past 30 days.

The questionnaire was pre-tested on 20 individuals who were not included in the study 1 week before the data collection period. Data were collected by 10 practicing physicians who underwent adequate training on research objectives, procedures, and ethical issues. The clarity, consistency, and completeness of the collected questionnaire were verified daily by the investigators, and the necessary corrections were made before the next day's work began. To ensure reliability and accuracy, double data entry was performed, and the computer data were cleaned.

Statistical analysis

STATA version 16 was used as a data entry and analysis tool. Descriptive statistics (percentages, mean, and standard deviation) were used to summarize the sociodemographic and clinical characteristics of the PWEs included in the study. A bivariate analysis followed by a logistic regression model was conducted to assess potential risk factors for a CMD. Variables with $P < 0.2$ in the bivariate analysis were grouped into multivariable logistic regression. The adjusted odds ratio [aOR] with its 95% (95% CI) was used to measure

the strength of the association, and the statistical significance was set to $P < 0.05$ in the final model.

Ethical considerations

This study was approved by the Medical Ethics Committee of the University of Goma with the approval number UNIGOM/CEM/002/2022. Before the interview, each participant provided free written informed consent after receiving a brief explanation of the study. Participants were informed of their right to refuse or withdraw their participation at any time without prejudice. Personal identifiers such as names, addresses, and telephone numbers were not recorded during data collection. The collected data were kept confidential and used solely for the purpose of the study.

RESULTS

Sociodemographic characteristics of the respondents

A total of 302 PWEs participated in the study, achieving a response rate of 100%. The mean age of the participants was 28.4 ± 11.0 years, with the majority (135, 44.7%) being between 18 and 24 years of age. Of the participants, 172 (56.9%) were men. Half of the participants (151, 50%) had completed secondary school. The majority of participants (161, 53.3%) were Protestant. More than three-quarters of participants (229, 75.8%) were single, and over one-third (35.1%) were employed [Table 1].

Clinical characteristics of the respondents

The study found that 48.7% of PWEs had experienced seizures for <5 years, and 24.2% had no seizures in the month before the survey. 45.7% of participants received antiepileptic medication as monotherapy, while 10.9% received bitherapy. 43.4% had discontinued antiepileptic therapy. Medical co-morbidity was present in 14.2% of participants, while 33.1% had a family history of epilepsy. Only 4.3% of participants smoked, while 11.6% consumed alcohol [Table 2].

Prevalence of CMDs in PWE

The classification of PWEs as having CMDs was based on a score ≥7 on the SRQ-20 questionnaire, while those with a score <7 on the SRQ-20 were classified as not having CMD. The study found that the prevalence of CMDs was 39.1% (95% CI: 33.7–44.7%) [Figure 1].

Table 1: Sociodemographic characteristics of the respondents.

Variable	Total (*n*=302)	PWEs with common mental disorder (*n*=118), *n* (%)	PWEs without common mental disorder (*n*=184), *n* (%)	Unadjusted odds ratio (95% confidence interval)	*P*-value
Age					
18–24 years	135	55 (40.7)	80 (59.3)	1.5 (0.6–3.8)	0.4626
25–29 years	81	33 (40.7)	48 (59.3)	1.5 (0.6–4.0)	0.4977
30–34 years	28	10 (35.7)	18 (64.3)	1.3 (0.4–3.9)	0.9232
35–44 years	32	12 (37.5)	20 (62.5)	1.4 (0.5–4.0)	0.5917
≥45 years	26	8 (30.8)	18 (69.2)	1.0	
Gender					
Female	130	54 (41.5)	76 (58.5)	1.2 (0.8–1.9)	0.4452
Male	172	64 (37.2)	108 (62.8)	1.0	
Educational level					
Illiterate	67	24 (35.8)	43 (64.2)	1.2 (0.5–3.0)	0.9148
Primary	84	30 (35.7)	54 (64.3)	1.2 (0.5–2.9)	0.9088
Secondary	123	55 (44.7)	68 (55.3)	1.7 (0.7–4.1)	0.3158
Higher/University	28	9 (32.1)	19 (67.9)	1.0	
Marital status					
Married	60	25 (41.7)	35 (58.3)	1.2 (0.7–2.1)	0.7104
Single	229	87 (38.0)	142 (62.0)	1.0	
Divorced/Widowed	13	6 (46.2)	7 (53.8)	1.4 (0.5–4.3)	0.7676
Religion					
Catholic	126	53 (42.1)	73 (57.9)	1.3 (0.8–2.0)	0.4169
Protestant	161	59 (36.6)	102 (63.4)	1.0	
Others	15	6 (40.0)	9 (60.0)	1.1 (0.4–3.4)	1.0000
Occupation status					
With	106	36 (34.0)	70 (66.0)	1.0	
Without	196	82 (41.8)	114 (58.2)	1.4 (0.8–2.3)	0.2243

PWE: People with epilepsy

Table 2: Clinical characteristics of the respondents.

Variable	Total (*n*=302)	PWEs with common mental disorder (*n*=118), *n* (%)	PWEs without common mental disorder (*n*=184), *n* (%)	Unadjusted odds ratio (95% confidence interval)	*P*-value
Duration of epileptic illness					
<5 years	147	55 (37.4)	92 (62.6)	1.0	
5–10 years	68	30 (44.1)	38 (55.9)	1.3 (0.7–2.4)	0.4326
>10 years	87	33 (37.9)	54 (62.1)	1.0 (0.6–1.8)	1.0000
Number of seizure attack in the past 30 days					
0	73	18 (24.7)	55 (75.34)	1.0	
1–4	171	66 (38.6)	105 (61.40)	1.9 (1.0–3.6)	0.0358
≥5	58	34 (58.6)	24 (41.38)	4.3 (2.1–9.1)	<0.0001
Antiepileptic medication					
Monotherapy	138	44 (31.9)	94 (68.12)	1.1 (0.5–2.5)	1.0000
Bitherapy	33	10 (30.3)	23 (69.70)	1.0	
None	131	64 (48.9)	67 (51.15)	2.2 (1.0–5.0)	0.0499
Medical comorbidity					
No	259	90 (34.7)	169 (65.3)	1.0	
Yes	43	28 (65.1)	15 (34.9)	4.0 (2.0–7.9)	<0.0001
Alcohol consumption					
No	267	98 (36.7)	169 (63.3)	1.0	
Yes	35	20 (57.1)	15 (42.9)	2.3 (1.1–4.7)	0.0198
Smoking					
No	289	109 (37.7)	180 (62.3)	1.0	
Yes	13	9 (69.2)	4 (30.8)	3.7 (1.0–16.8)	0.0380
Family history of epilepsy					
No	202	74 (36.6)	128 (63.4)	1.0	
Yes	100	44 (44.0)	56 (56.0)	1.4 (0.8–2.2)	0.2169

PWE: People with epilepsy

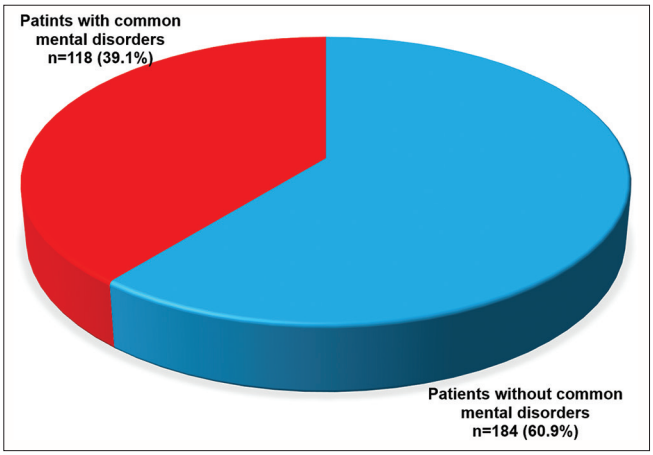

Figure 1: Prevalence of common mental disorders in people with epilepsy attending the Neuropsychiatric Hospital Center in Goma, in the Democratic Republic of the Congo (*n* = 302).

The study found that the most prevalent symptoms of CMDs among participants were headache (50.0%), difficulty working daily (40.1%), nervousness (39.7%), lack of appetite (31.5%), poor sleep conditions (29.5%), and constant fatigue (29.5%). Suicidal ideation was reported by 43 (14.2%) of the participants [Table 3].

Determinants of CMDs in PWE

Table 1 shows that none of the sociodemographic characteristics studied were significantly associated with CMDs. However, correlations between clinical characteristics and CMDs are shown in Table 2. The study found that the number of seizures in the month preceding the survey, absence of antiepileptic medication, presence of medical co-morbidity, alcohol consumption, and smoking were significantly associated with CMDs ($P < 0.05$).

Figure 2 displays the findings of multiple logistic regression. Those who experienced 5 or more seizures were approximately 4 times more prone (aOR = 3.8; 95% CI: 1.7–8.3) to developing CMD compared to those who had <5 epileptic seizures. In addition, participants were 3 times more likely to develop CMD if they had medical co-morbidity than those without medical co-morbidity (aOR = 3.1; 95% CI: 1.5–6.4).

Table 3: Self-reporting questionnaire-20.

Items	Yes	No
Do you often have headache?	151 (50.0)	151 (50.0)
Is your appetite poor?	95 (31.5)	207 (68.5)
Do you sleep badly?	89 (29.5)	213 (70.5)
Are you easily frightened?	90 (29.8)	212 (70.2)
Do your hands shake?	93 (30.8)	209 (69.2)
Do you feel nervous, tense, or worried?	120 (39.7)	182 (60.3)
Is your digestion poor?	26 (8.6)	276 (91.4)
Do you have trouble thinking clearly?	93 (30.8)	209 (69.2)
Do you feel unhappy?	96 (31.8)	206 (68.2)
Do you cry more than usual?	60 (19.9)	242 (80.1)
Do you find it difficult to enjoy your daily activities?	95 (31.5)	207 (68.5)
Do you find difficult to make decision?	84 (27.8)	218 (72.2)
Is your daily work suffering?	121 (40.1)	181 (59.9)
Are you unable play a useful part in life?	88 (29.1)	214 (70.9)
Have lost interest in things?	61 (20.2)	241 (79.8)
Do you feel that you are a worthless person?	66 (21.9)	236 (78.1)
Has the thought of ending your life been on your mind?	43 (14.2)	259 (85.8)
Do you feel tired all the time?	74 (24.5)	228 (75.5)
Do you have unpleasant sensations in the stomach?	42 (13.9)	260 (86.1)
Are you easily tired?	89 (29.5)	213 (70.5)

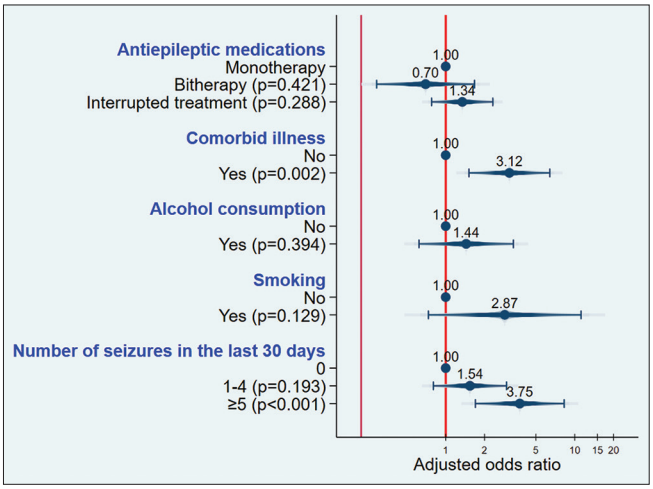

Figure 2: Multiple logistic regression of determinants of common mental disorders in people with epilepsy.

DISCUSSION

This study aimed to estimate the prevalence and risk factors of CMDs using SRQ-20 in PWEs in Goma (DRC). The results indicate that CMDs were prevalent in 39.1% of PWEs in the study. The presence of medical co-morbidity and a high number of seizures (≥5) were identified as determinants of CMDs. These findings suggest the need for medical and psychological care to be provided specifically for CMDs when treating PWEs. Therefore, establishing a link between psychiatric and neurological services for PWEs is crucial. The presence of CMDs may negatively impact the outcome of the management of PWEs. As epilepsy is the most common neurological problem with an organic origin that is not always recognized due to mistaken beliefs, assessing the extent of CMDs and their determinants is essential in developing countries such as the DRC.[19]

Several previous studies have reported comparable prevalences to those found in this study, such as 35–35.8% in Ethiopia,[16,20] 35.5% in Iceland,[21] 36.5% in the United States,[12] and 37% in Europe.[22] However, some studies found significantly higher prevalence rates, ranging from 45% to 80%.[15,23-30] while other studies reported lower prevalences ranging from 5.9% to 29%.[11,31-33] Differences in sample size, assessment instruments used, and epilepsy patterns may explain the variation in prevalence across studies. Unlike other studies that focused only on temporal lobe epilepsy, which has a higher risk of CMD,[25] this study assessed all types of epilepsy.

Numerous studies have unanimously shown that the most common CMDs in PWEs are anxiety and depression.[4,34-36] The prevalence of these disorders differs from study to study. This could be explained by methodological differences, mainly concerning the choice of measuring instruments used and the scores used to assess the severity of anxiety and depression symptoms. However, the results of this study showed that the prevalence of CMDs was nearly 3 times that of the World Health Organization report on the global burden of CMDs (14%) in the general population,[37] indicating that the burden of CMDs in PWEs in the eastern DRC is higher than in the general population. This would be the result of problems faced by PWEs, including the state of epileptic seizures, the financial burden of treatment, the side effects of medicines, and community discrimination related to an epileptic seizure.

The study confirms that the development of CMDs in PWEs is associated with the presence of co-morbid medical conditions (aOR = 3.1; 95% CI: 1.5–6.4). This finding is consistent with a similar Ethiopian study, which reported that PWEs with medical co-morbidities were 3 times more likely to experience CMDs than those without medical co-morbidities (aOR = 2.99; 95% CI: 1.95–9.39).[16] This could be attributed to the negative impact of medical conditions on the quality of life of PWEs, as suggested by other studies.[38]

Participants with 5 or more seizures were nearly 4 times more likely to develop a CMD compared to those with fewer than 5 seizures in the month before the survey (aOR = 3.8; 95% CI: 1.7–8.3). Consistent with our study, Mekuriaw *et al.*[39] reported in a recent Ethiopian study that PWEs who had uncontrolled seizures in the year before the survey were more likely to have CMDs than their counterparts (aOR = 1.96; 95% CI:

1.21–3.18). This association could be explained by the fact that people with uncontrolled epileptic seizures usually become desperate and may lack confidence in drug therapies.[40]

The persistence of seizures, often due to poor adherence, can lead PWEs to develop additional physical conditions or co-morbidities, as well as feelings of desperation due to the incurability of the disease and medication fatigue.[39] Non-compliance with medication can result in reduced seizure control, decreased quality of life, decreased productivity, or even job loss due to seizures, as stated by Mekuriaw *et al*.[39] Recurrent epileptic seizures that complicate CMDs establish a bidirectional interaction between epilepsy and CMD.

This study has several limitations. The findings may not be applicable to the entire Congolese population, as the research was conducted in only one city. Self-reported questionnaires used to assess mental health issues may be influenced by a positivist bias, overestimating actual mental health values, and recall bias. In addition, due to the cross-sectional nature of the study design, it is difficult to establish causality between CMDs and their associated risk factors.

CONCLUSION

The present study showed that CMDs are common in PWEs in Goma (eastern DRC) and that the number of epileptic seizures ≥5 and the presence of medical co-morbidity are determinants. The management of PWEs must integrate psychosocial support and psychotherapeutic approaches as a complement to the pharmacological intervention of epilepsy while placing greater emphasis on the risk factors of these CMDs. It can also be used as a means to improve treatment adherence, therapeutic relationships, and the overall outcomes of PWE treatment with feasible and cost-effective services.

Availability of data and materials

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

Authors' contributions

FMP and OM were the principal investigators; they conceived and designed the survey and critically reviewed the manuscript. FMP, OM, SOW, and ZKT collected data and reviewed the manuscript development, revised the methodology, and critically reviewed the manuscript. All authors read and approved the final manuscript.

Ethical approval

The research/study approved by the Institutional Review Board at Medical Ethics Committee of the University of Goma, number UNIGOM/CEM/002/2022, dated January 14, 2022.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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