

Magnitude of Anxiety and Associated Factors Among Epileptic Patients Attending Out-patient Department at Primary Public Hospitals in Northern Part of Ethiopia. A Multicenter Cross- Sectional Study

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Abstract

Introduction: In spite of the fact that anxiety disorders are common among individuals with epilepsy, there are no studies conducted about the prevalence of anxiety disorders among individuals with epilepsy in Ethiopia. Hence, the point of this study was to determine the magnitude and related factors of anxiety among individuals with epilepsy attending an out-patient department at Central Gondar Zone Primary Public Hospitals, Northern Ethiopia.

Method: An organizational based cross-sectional study was conducted from June - July, 2020 at central Gondar zone primary public hospitals. A total of 422 participants were chosen by systematic sampling technique. Information was collected by utilizing Amharic interviewer-administered questioners. Anxiety was assessed by using hospital depression anxiety scale. Bivariate logistic regression and multivariate logistic regression analyses were done to recognize variables related with anxiety. Association was described by using adjusted odds ratio (AOR) along with 95% Confidence interval. Finally, P-values < 0.05 in adjusted analysis were taken as a cut off for significant association.

Result: Out of 412 participants included in the study, 116 (28.2%; 95% CI: 23.9-32.5) had anxiety. Being single (AOR=1.84, 95% CI: 1.04-3.24), very frequent frequency of seizure (AOR=1.24, 95% CI; 1.55-2.80), depression (AOR=3.62, 95% CI; 1.97- 8.66), perceived stigma (AOR=2.54, 95% CI; 1.83-4.67) and hazardous alcohol use (AOR=1.18, 95% CI, 1.53-3.63), were statically significantly associated with having anxiety.

Conclusion: Nearly, one in four people with epilepsy visited out-patient treatment had anxiety. Being single, very frequent frequency of seizure, having depression, presence perceived stigma and hazardous alcohol use were significant associated with anxiety among individuals with epilepsy. Screening, early distinguishing proof and providing appropriate intervention of anxiety among individuals with epilepsy should be great concern for the wellbeing care suppliers.

Introduction

Epilepsy is a neurological condition including the brain that creates individuals more susceptible to having repetitive, unprovoked seizure, which has brief episodes of automatic development which will include a portion of the body (partial) or the complete body (generalized) and are in some cases accompanied by loss of awareness and control of bowel or bladder function(1, 2). It affects around 50 million people around the world, making it one of the foremost common neurological illnesses universally (2).

According to report of World Health Organization (WHO) about 80% of people with epilepsy live in low- and middle-income nations and it is estimated that up to 70% of people living with epilepsy might live seizure- free in the event that appropriately diagnosed and treated and the hazard of untimely death in people with epilepsy is up to three times higher than for the general population(2).

Anxiety is the presence of fear or trepidation that's out of extent to the context of a life circumstance. It can be expressed totally different ways such as uncontrollable stress, intense fear, upsetting dreams or flashbacks of a traumatic event (3). Anxiety is more common, occurs about in twenty-five percent (25%) of epileptic subjects in a community setting though in secondary care and specialist centers its magnitude surpasses 50%(4).

Anxiety disorders are the foremost frequent psychiatric disorders in people with epilepsy (PWE). In fact, one in each three people with epilepsy is expected to have endured from an anxiety disorder within the course of their life. Anxiety disorders can have a negative effect on the life of PWE at several levels: they can decline quality of life, interfere with tolerance of antiepileptic drugs, increment suicide hazard, and increase health care costs (5).

Anxiety are profoundly predominant in people with epilepsy, with prevalence rates of 55% (6). Different studies across the world revealed that the rate of anxiety in Canada was (40%), in China (22.8%) in Poland (16, 7%), in UK (20.5) and Germany (19.6%) respectively (6–12).

On the other hand, different variables were reported as significant variables with anxiety disorder among people with epilepsy. Female sex, perceived stigma, frequent seizures, poly therapy and poor seizure control were risk factors for anxiety disorders (7, 9, 13, 14).

In spite of the fact that anxiety represents a considerable burden for those with epilepsy, it has gotten far less consideration compared to depression and other comorbid disorders. Besides, even there are no studies conducted about the magnitude of anxiety and correlated factors among people with epilepsy in Ethiopia. Therefore, current study was aimed to assess the prevalence and associated factors of anxiety among people with epilepsy attending out-patient treatment at primary public hospitals in northwest Ethiopia.

Methods And Materials

Study design and setting

An institutional based cross-sectional study was conducted from June-July, 2020, at selected central Gondar zone primary public hospitals. Central Gondar zone primary public hospitals are located in northwest Ethiopia and in this zone there are eight primary public hospitals. Among this hospitals this study was conducted at four selected hospitals which are named, "Wogera", "Dembia", "Aykel" and "Delgi" primary hospitals.

Study participants

Systematically selected adult Patients (age greater than eighty (18) years), who had been clinically diagnosed with epilepsy and those attended an out-patient department at, Dembia, Aykel, Delagi and Wogera primary hospitals were study population. Patients who were incapable to communicate and seriously sick at the time of the data collection were excluded.

Sampling

The adequate sample size was calculated by using a single population proportion formula ($n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$) with assumption of, 50% magnitude of anxiety since there is no study done on the magnitude and associated factors of anxiety among people with epilepsy in our country, 5% tolerable margin of error and 95% confidence interval with 10% non-response rate. Therefore a minimum 422 number of participants were required to conduct this study. A systematic random sampling method was used to select adequate number of study participants from selected hospitals during the study period. Sampling interval was determined by dividing the total study population who to follow up during the data collection period approximately 1002 by total sample size 589. The sampling fraction or $k = x/y = 1002/422 = 2.37 \approx 2$. The first study participant was selected by a lottery method from each hospital independently, and the next study participants were selected at a regular interval (every 2) individual as shown in (Figure 1).

Data collection instruments

Hospital anxiety and depression scale (HADS) were used to assess depression and anxiety. Hospital anxiety and depression scale was used and validated in Ethiopia with internal consistence of 0.78, for anxiety sub-scale 0.76, for depression sub-scale and 0.87 for the full hospital anxiety and depression scale. It is commonly used to screen anxiety and depression symptoms and it has 14 item questions which are divided into two parts, which is a 7- item sub-scale for each depression and anxiety symptoms. The items are rated on a four-point Likert scale which is ranging from 0 to 3 giving maximum and minimum score of 0 and 21 receptively. If the participants scores ≥ 8 for each depression and anxiety sub-scale questions were considered as the participant has anxiety and depression respectively (16) .The internal consistence by Cronbach's alpha of hospital and depression scale in this study was 0.84,0.82,for depression and anxiety respectively.

Hazardous alcohol use was assessed by Fast Alcohol Screening Tools, which was a 4-items brief screening questionnaire. FAST (Fast Alcohol Screening Tools), was extracted from AUDIT (alcohol use disorder identification test) which used to measures hazardous alcohol use. FAST five different item questions, each item was scored from 1 to 4, whose total score was considered weather the participants has as hazardous alcohol use or not hazardous alcohol use. A mean score of ≥ 3 was indicated hazardous alcohol use (17) . It was utilized to think about alcohol used within the east-Africa setting, including Ethiopia (18) . FAST was illustrated with sensitivity of 91% and specificity of 93% (17) .The FAST internal consistence in Cronbach's alpha of the current study was 0.81.

Social support was collected by Oslo-3 item of social support scale. It is 3 item questionnaires, commonly used to assess social support and it has been used in several studies. The sum score scale ranging from 3-14, which had 3 categories: poor support 3-8, moderate support 9-11 and strong support 12-14 (19) .The internal consistence ,Cronbach's alpha of Olso-3 items in the current study was 0.85.

Perceived stigma was assessed by kilifi stigma scale (KSS) which was developed and validated in kilifi, Kenya, with high internal consistence Cronbach's alpha of 0.91 and excellent test- retest reliability with gamma 0.92. It is a simple three-point likert scoring system scored as not at all (0), sometimes (1) and always (2). A total of score was calculated by adding of all item scores. A patient who score above 66th percentile of the data measured by kilifi stigma scale of epilepsy indicate presence of perceived stigma (20) .The Cronbach's alpha, of kilifi stigma scale in the current study was 0.94.

Data collection procedures

Data were collected by face-to-face interviews using a semi-structured and a structured questionnaire and reviewed the patient chart by six trained bachelors of Science in psychiatric nurse by Amharic version questioners. The questionnaire was translated to Amharic language as to be understandable by all participants and translated back to English again to ensure its consistency. Training was given for data collectors about ethical principle, confidentiality, and how to interview and data management.

Data processing and analysis

The data was checked for completeness, consistency and entered to Epi-Data version 4.6.0.2 and was exported to SPSS (Statistical Package for Social Science) version 20 for analysis. Bivariate and multivariate logistic regression analysis was performed to identify factors associated with outcome variable. All variables with a p-value less than 0.20 in bivariate analysis were entered into the multivariate logistic regression analysis. A p-value of < 0.05 was considered as statistically significant, and the adjusted odds ratio (AOR) with 95% confidence interval (CI) was calculated. Goodness of model fitness was checked by using Hosmer-lemshow test.

Ethical approval

The study was carried out under consideration of the Helsinki Declaration of medical research ethics (34). Ethical clearance for this study was obtained from an Institutional Health Research Ethics Review Committee of College of Health and Medical Sciences, Haramaya University. The permission letter was obtained from the head of neurology unit. Confidentiality (Secrecy) of the information was kept and utilized for the study reason only. Oral consents were taken from participants before real data collection began.

Results

Socio-demographic characteristics

Out of 422 selected samples, 412 participants were included in the study with response rate of 97.6%. The median age of respondents was 29, with (IQR, 23years – 36years) interquartile range. The larger part of them 58.5% (241) was male. With respect to living condition of participants, 68.7% (283) were living

with their family. More than half of respondents 59.0% (243) were Christian religious followers' and 33.5% (138) were farmers as show below in (Table 1).

Table 1

Socio-demographic and economic distributions of adult epileptic patients at central Gondar zone primary public hospitals, northern part of Ethiopia (n = 412)

Variables	Categories	Frequency(n = 412)	Percentage (%)
Sex	Male	241	58.49
	Female	171	41.51
Age in yrs.	18-24years	123	29.9
	25-31years	145	35.2
	32-38years	60	14.6
	39-45years	39	9.5
	Greater than 45years	45	10.9
Marital conditions	Being Single	130	31.6
	Married	217	52.7
	Divorced/widowed	65	15.8
Living condition	With family	283	68.7
	Alone	129	31.3
Religion	Orthodox	243	59.0
	Muslim	96	23.3
	Protestant/catholic	73	17.7
Occupation	Government worker	34	8.3
	Merchant	86	20.9
	Framer	138	33.5
	Student	44	10.7
	Unemployed	69	16.7
	Household worker	41	10.0
Educational status	No attending education	88	21.4
	Primary (1-8)	188	45.6
	Secondary (9-12)	92	22.3
	Tertiary and above	44	10.7

*1 Ethiopian Birr = 0.023 US dollar

Variables	Categories	Frequency(n = 412)	Percentage (%)
Residence	Rural	250	60.7
	Urban	162	39.3
Monthly income in Ethiopian birr	≤ 550	89	21.6
	551–1000	142	34.5
	1001–2124	88	18.9
	≥ 2124	103	25.0
*1 Ethiopian Birr = 0.023 US dollar			

Clinical, psychosocial, and substance related factors of participants.

Around two-third, 68.9% (284) of respondents reported the age onset of epilepsy when they were \geq eighty years and over. About half 48.8 % (201) of participants reported one to six years duration of treatment whereas 65.8% (221) had up to five years duration of disease. Greater than three-fourth, 82.8% (341) of respondents were taking 1 anti-epileptic drug.

From all study respondents, 10.2% (42), &10.1% (41) had family history of mental illness and family history of epilepsy respectively whereas 9.5 % (39) had history of other medical diseases. With respect of social support status nearly 2/3, 66.3% (273) of them had moderate social support. From all study respondents 68.2% (281) & 26.9% (111) were no perceived stigma & current substance use respectively as shown below in (Table 2).

Table 2
 clinical, substance use, psychosocial features of adult epileptic patients at central Gondar zone
 primary public hospitals, northern part of Ethiopia (n = 412)

Variables	Categories	Frequency (n = 412)	Percent (%)
Onset of epilepsy	< 18 age	128	31.1
	≥ 18 age	284	68.9
Duration of treatment (years)	Up to 1	78	18.9
	1–6	201	48.8
	7–12	95	23.1
	> 12	38	9.2
Duration of illness (in yrs.)	Up to five.	221	65.8
	six-ten	83	20.1
	Twelve – fifty	44	10.7
	≥sixty	14	3.4
No. AEDS medication	1	341	82.8
	≥ 2	71	17.2
Types of medication	Phenobarbitone	232	56.3
	Phenytoin	91	22.1
	Na valproate	69	16.7
	Carbamazepine	20	4.9
Frequency of seizure	Very frequent	77	18.7
	Frequent	111	26.9
	Occasional	156	37.9
	Rare	68	16.5
Comorbid medical illness	Yes	39	9.5
	No	373	90.5
Any family members with of mental disorders	Yes	42	10.2
	No	370	89.8
Any family with epilepsy	Yes	41	10.0
	No	371	90.0

Variables	Categories	Frequency (n = 412)	Percent (%)
Drugs for other mental disorders	Yes	35	8.5
	No	377	91.5
Depression	Yes	116	28.2
	No	296	71.8
Social support	Poor	83	20.1
	Moderate	273	66.3
	Strong	56	13.6
Perceived stigma	Yes	131	31.8
	No	281	68.2
Ever substance use	Yes	169	41.0
	No	243	53.0
Current substance use	Yes	111	26.9
	No	301	73.1
Hazardous alcohol use	Yes	62	15.00
	No	350	85.0

Associated Factors to anxiety among epileptic patient

In the bivariate logistic regression analysis, single, divorced/widowed, being living alone, very frequent frequency, taking two and above antiepileptic medication, 12 and above year duration of treatment, having depression, ever substance use, current substance use, perceived stigma and hazardous alcohol use were statistical associated with anxiety. However, in multivariable logistic regression analysis, only being single, very frequent seizure frequency, depression symptoms, having perceived stigma, and hazardous alcohol use were statistically significantly related with anxiety with p-value less than 0.05 as show below in (Table 3).

Table 3

Factors associated with anxiety in bivariable and multivariable logistic regression analysis among epileptic patients at central Gondar zone primary public hospitals, northern part of Ethiopia (n = 412)

Independent variables	Anxiety		COR (95%CI)	AOR(95%CI)
	Yes	No		
Marital status				
Married	46	171	1	1
single	45	85	1.97 (1.28–3.20)	1.84 (1.04–3.24) **
Divorced/widowed	25	40	2.32 (1.28–4.22)	0.92 (0.44–1.92)
Living conditions				
With family	64	219	1	1
Alone	52	77	2.31(1.48–3.62)	1.53 (0.64–2.06)
Frequency				
Very frequent	40	37	2.39 (1.19–4.77)	1.24 (1.55–2.80)**
Frequent	29	82	0.91(0.46–1.79)	0.76 (0.35–1.65)
Occasional	31	125	0.64 (0.33–1.24)	0.86 (0.42–1.78)
Rare	19	49	1	1
Number of medications				
One	84	257	1	1
Two and above	32	39	2.51(1.48–4.26)	1.65, (0.87–3.12)
Duration of treatment				
Up to 1 years	15	63	1	1
1–6 years	60	141	1.80 (0.94–3.39)	1.70 (0.84–3.14)
1–12 years	27	68	1.67 (0.81–3.42)	1.89 (0.84–4.28)
12 and above	14	24	2.45 (1.03–5.83)	2.08 (0.73–5.94)
Depression yes				
Depression yes	64	52	5.78 (3.60–9.27)	3.62 (1.97–6.66) ***
No	52	244	1	1
Ever substance use yes				
Ever substance use yes	63	106	2.13 (1.38–3.29)	0.83 (0.39–1.76)
No	53	190	1	1

****p < 0.05 and ***= p < 0.001; Chi-square = 9.06 DF = 8 and 0.51 of Hosmer-lemshow goodness of model fitness test.**

Independent variables	Anxiety		COR (95%CI)	AOR(95%CI)
	Yes	No		
Current substance use				
Yes	45	66	2.21(1.39–3.51)	1.22 (0.53–2.81)
no	71	230	1	1
Perceived stigma				
Yes	57	74	2.90 (1.85–4.54)	2.54 (1.89–4.67) ***
No	59	222	1	1
Hazardous Alcohol use				
Yes	29	33	2.66(1.53–4.63)	1.18 (1.53–3.63)**
No	87	263	1	1
<i>**p < 0.05 and ***= p < 0.001; Chi-square = 9.06 DF = 8 and 0.51 of Hosmer-lemshow goodness of model fitness test.</i>				

Discussion

This article was carried out in order to assess magnitude and identify factors correlated with anxiety among epileptic patients at central Gondar zone primary public hospitals, northern part of Ethiopia. The magnitude of the anxiety among epileptic patients in article was (116)28.2 %, (95% CI, 23.9 -32.5).

The result of this finding was less than studies carried out in Canada (21). The variation might be due to a discrepancy in selection method of participants, which is a systematic random sampling (probability method) was used for this finding whereas; consecutive method (non-probability method) was used in the study conducted in Canada (21) . In addition, a difference might be due to variation in duration of data collection time, almost half year (five months) data collection time was used in a study conducted in Canada whereas data was collected for one month only in this study. Again, there is difference in study setting, primary hospital in this study whereas tertiary care center in a study conducted in Canada (21).

On the other way, the prevalence of anxiety in the current finding was higher than study done in Nigeria (4.1) (22) china (22.8%) (23),Germany (11) (19.6%), Poland (16.7%) (24) and UK (20.5%) (25) among people with epilepsy. The discrepancy might be due to; difference in instrument used (Structured Clinical Interview for Diagnostic Statistical Method -four-TR Axis one Disorders) was used in a study conducted in Nigeria and Poland whereas HADS was used in this article (24). In addition, the discrepancy might be due to the variation in a study design used, which was community based study in a study carried out in UK whereas an institutional based cross-sectional was used in a current study (25). Method of selection of the study participants, consecutive sample of patients in Poland whereas systematic sampling in our study, difference in study setting (tertiary referral center in Poland whereas primary hospital in current study) and sample size difference might also be contributed for this discrepancy, which was 96 and 515

in Poland and UK respectively (24, 25). Another possible difference might be due to study participants, which was among both general and focal epilepsy in this study whereas only among refractory focal epilepsy in Germany(11).

Regarding marital status, in this study, the odds of having anxiety was, 1.84 times more likely among single participants as compared to married participants and this finding was similar with a previous study (26). The possible justification could be, those married was a protective factor to different mental illnesses including anxiety because those married individuals can share their feelings to their couples and they can get feedback especially advice from their couples which could prevent them from developing anxiety.

A client with very frequent frequency of seizure (a seizure frequency of several times a day or shorter than seven day) was 1.24 times more likely to develop anxiety as compared to client with rare frequency of seizure (a seizure frequency occurring at interval longer than one year). This was a similar to the finding of study done in (22, 27, 28), where a short seizure frequencies were correlated with emotional distress. The brief seizure-free periods may be troubling to patients and may bring approximately feeling of powerlessness in them as the illness still happens in spite of medicines. Moreover, they may too feel overpowered by the sickness as they progressively gotten to be unwell inside a short-term interval which may interfere with their social working.

Depression was strongly associated with anxiety in this study, which is those participants had who depression were 3.62 times more risk to develop anxiety as compared to those who had not depression. It was similar with the study carried out in (10, 23). This advance supplier prove that supports the coexistence of uneasiness and sadness, as has broadly been reported within the different literature for individuals with epilepsy (13, 29).The possible justification might be due to, as studies shown depression will decrease the serotonin neurotransmitter and its metabolites that have been indicate a correlation between decrease level of (5-HT) serotonin and its (serum level)metabolite and anxiety(30). Another possible reason might be depression had a direct impact on the feeling of anxious and useless.

Participants who had perceived stigma were 2.54 times risk to develop anxiety than those who hadn't perceived stigma. It was support by article carried out at central Ethiopia and Mangalore city of south India (31, 32). The possible justification might be due participant may not create disgrace resistance through their life that offer assistance them to cope different social norms, social conviction and effect of illness that leads to felt stigma.

Epileptic Patients who had hazardous alcohol use were 1.18 times risk to develop anxiety. A result was similar with study carried out in Canada (10).An alcohol induced anxiety can be occur through either psychosocial or physiological mechanisms(26, 33). Psychosocially, it is suggested that liquor may direct impact to ordinary adaptation to stressful stimuli (that negative results) delivered by excessive drinking can lead to anxious symptoms and increased risk of creating uneasiness. Physiologically, liquor withdrawal can frequently create anxiety side effects such as shakiness or expanded startle. In

expansion, neural adaptation can occur with those frequent and excessive alcohol utilize Passover such that rehashed liquor withdrawals really sensitize this withdrawal induced anxious (26, 33)

Study limitation

Retrospective items within the questionnaire may have caused review inclination like length of sickness and length of treatment and it is not address types of epilepsy. Nature of the study, which is cross-sectional type, is a main limitation as it cannot clarify the cause-effect correlation between dependent variables and predictive variables. Ethiopia has recognized the coronal virus infectious disease (COVID-19) case on March/13/2020; the time before this study was carried out. Since this study was carried out an instructional this might affect the result of this study.

Conclusion

The result of this study showed that anxiety was common among epileptic patients. Its magnitude was higher as compared to the general population. Being single, experienced a seizure frequency of several times a day or shorter than seven day, duration of treatment, depression and presence perceived stigma were statistically correlated with anxiety. Screening, early identification and providing appropriate intervention of anxiety among individual with epilepsy should be great focus (concern) for the health care service givers. Besides, while assessing individuals with epilepsy for anxiety, giving attention to the identified above associated factors were very important.

List Of Abbreviation

AEDS = Antiepileptic drugs, HADS=Hospital Anxiety & Depression-Scale, AOR= Adjusted Odds Ratio, FAST= Fast alcohol screening test, PWE= people with epilepsy, WHO=World Health Organization and COVID -19= Coronal Virus Infections Disease.

Declarations

Ethical approval and consent to participate

The studies involving human participants were reviewed and approved by an Institutional Health Research Ethics Review Committee of College of Health and Medical Sciences, Haramaya University. Oral consents were taken from participants before real data collection began.

Consent for publication

Author certify that we have participated sufficiently in contributing to the intellectual content, concept and design of this work or the analysis and interpretation of the data, as well as writing of the manuscript, to take public responsibility for it and have agreed to have our name listed as a contributor. This manuscript had not published and not submitted to any other journal so far.

Data Availability Statement

The original contributions presented in the study are included in the article/supplementary material; further inquiries can be directed to the corresponding author/s.

Competing of interest

The authors declare that they have no competing interests.

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Author Contributions

KN was the principal investigator of the study and was involved from inception to design acquisition of data, analysis, and interpretation, and drafting and editing of the manuscript. **AS**, was involved in the reviewing of the proposal, tool evaluation, interpretation, and critical review of the draft manuscript. All authors read and approved the final manuscript.

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Figures

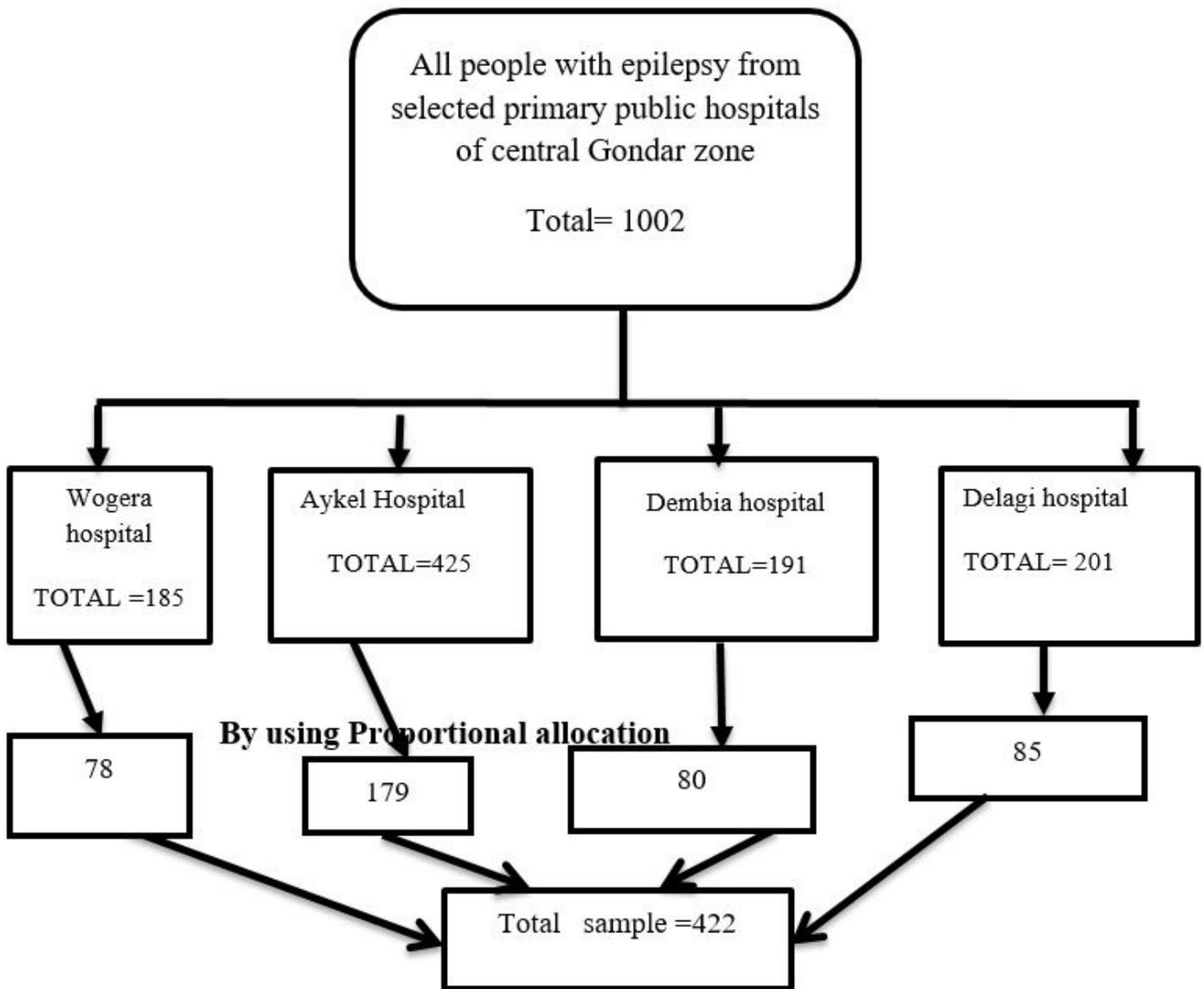


Figure 1

Schematic presentation of sampling procedure for assessment of magnitude and associated factors of anxiety among people with epilepsy at out-patients treatment at central Gondar zone public hospitals, northern part Ethiopia.