

A Cross-Sectional Study on Knowledge and Attitude Towards Epilepsy Among High School Students in Asmara, Eritrea

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Abstract: Epilepsy is a kind of neurological disorder which is usually handled in a wrong way with social stigma and discrimination. This stigma arises from having lack of awareness and misinformation about the disease. Students who suffer from epilepsy are usually discriminated in school by their peers and schoolmates. Student's awareness and approach to epilepsy varies with the accuracy of their knowledge, which is often inadequate, limited, or even erroneous. Objective: The aim of this study was to assess the knowledge and attitude of high school students toward epilepsy. Methodology: The study conducted a quantitative descriptive cross-sectional study in selected High Schools of Asmara. One high school was taken for pilot study and not included in the actual study. The study population was all high school students of Asmara Secondary Schools. Sample was selected using the probability random sampling method. Hence our sample size was included 383 high school students. We adopted a questionnaire and distributed it to the eligible students. Once we have finished data collection procedure, data entry was done using CS Pro version 7.0 and analyzed by SPSS version 23. Descriptive statistics included frequency, mean, percentage and standard deviation. In addition, inferential statistics was also used. Result: The study revealed that 14.9% of the students had good level, nearly three-fourth (73.9%) of the students had moderate level, and 11.2% had poor level of knowledge. Majority (65%) of the students had moderate level of attitude and the remaining 30.3% and 4.7% of the research participants had, good and low level of attitude respectively. Conclusion: In this study the overall knowledge and attitude level of the participants was found to be moderate. Recommendation: Broad and continuous health education programs should be provided in schools to enhance the knowledge and attitude of the students related to epilepsy. Further extensive and nationwide studies should be done.

Keywords: High School Students, Epilepsy, Knowledge and Attitude

1. Introduction

Epilepsy is a common stigmatizing neurological disorder characterized by recurrent seizure [1]. Epilepsy is defined as a neurological condition which is characterized by a predisposition to generate recurrent epileptic seizures; it is

not a single disease entity but points toward multiple underlying neurological defects and structural or functional changes in the brain. This is fundamentally considered to be independent of readily identified, transient factors that can induce seizures in the normal brain. The current definition of epilepsy requires at least two unprovoked seizures occurring 24 h apart [2]. The prevalence of epilepsy is reported to vary

substantially between developed and developing countries: estimated as 4–7 per 1,000 persons in the developed countries and 5–74 per 1,000 persons in developing countries [3, 4]. Worldwide, there are an estimated at least 65 million people living with epilepsy [5]. In Eritrea, Epilepsy is one of the top 5 disorders in Saint Mary psychiatric hospital; it is the fourth one in inpatient department. The incidence of Epilepsy from 2014 to 2017 was 16 percent and the prevalence of the disease in inpatient department was 2.8 percent [6].

Even though it is one of the most common chronic diseases, epilepsy is usually beyond public knowledge and is usually associated with public erroneous beliefs [7]. The disorder is associated with superstition, discrimination and stigma in many countries [8]. Stigma is considered to be one of the most important factors that have a negative influence on people with epilepsy (PWE) and their families. It is a global issue commonly encountered in PWE in all cultures. Stigma may have deleterious effects on the patient's life, more than epilepsy itself [9]. People living with epilepsy are discriminated against in all facets of life, from education to employment and marriage [10]. Although the etiology of stigma and discrimination is complex, lack of the knowledge regarding epilepsy is purported to be an important determinant of negative attitudes [11].

Students suffering from epilepsy are often stigmatized, especially those who have seizures at school, suffer from discrimination and report feeling different from their peers. They also have fear of suffering a seizure at school [11]. When children and adolescents experience the kind of difficult social environment reflected in these expressed attitudes of peers, internalized stigma would be expected [1]. Epileptic children suffer untold social deprivations and discrimination in education, which may be more devastating than the disease itself [7].

A research conduct in Nepal high school students found that, although nearly all students (94%) were familiar with epilepsy, but the students have deficient knowledge [12]. Research conducted on knowledge, attitude and practice towards epilepsy among secondary school students in Enugu, South East Nigeria showed that, the majority of the students (87.6%) had heard of epilepsy as a disease, however Spiritual belief as a cause and means of treatment was highly prevalent. The attitude found was also unfavorable [13].

According to the above list most of the societies of the globe have a stigma towards epilepsy, indeed as high school students are part of the society thus they tend to reflect and perform that negative perception broadly, and this makes them to have an erroneous attitude towards their peers living with epilepsy. Students mainly on their teens are greatly affected by how their peers perceive them, because it is the pivotal and influential range of age at which they begin to form their identity. Discrimination can cause more harmful effects than the disease (epilepsy) itself on students who are living with the disease. So, it is important to assess what really is the knowledge and attitude of students in order to reduce and eventually eliminate the stigma and discrimination students suffer in school. The study focuses

on the knowledge and attitude of high school students.

2. Methodology

2.1. Study Design and Study Area

The study adopted a quantitative descriptive cross-sectional study. It was conducted in randomly selected Asmara secondary Schools (Asmara comprehensive, Sembel, Halay and Adulis) from March 2021 to June 2021. Keih bahri secondary school was taken for pilot study and not included in the actual study.

2.2. Study Population

The study population was high school students of Asmara secondary Schools.

2.3. Sampling Method and Sample Size

The study involved 383 high school students. The sampling method used was probability random sampling.

2.3.1. Sampling Design

The study population was high school students of Asmara secondary schools; Asmara has four divisions; those are northern east, northern west, southern east and southern west. Then one school was selected from each division randomly. From the randomly selected schools a class and students were randomly selected from the classes and students in each class respectively.

2.3.2. Sample Size Estimation

The sampling method used was probability random sampling.

$$S = [Z^2 p q] / e^2 \quad q = 1 - p$$

$$S = Z^2 p (1 - p) / e^2$$

$$S = (1.96)^2 (0.5) (0.5) / (0.05)^2$$

$$S = 384.16 = 384$$

Where:

- 1) S= sample size for the study population.
- 2) Z = Z score (population normal standard deviation for 95 percent confidence interval) = 1.96.
- 3) P= population proportion (Assumed as 50% or 0.5).
- 4) q = 1 - P and
- 5) "e" is margin of error (defined as a small amount that is allowed for in case of miscalculation or change of circumstances. Generally, the margin of error is taken as 5% or 0.05).

2.4. Data Collection Techniques and Tools and Analysis Method

Data was collected through a questionnaire that contains questions to assess familiarity, knowledge, and attitude towards epilepsy. The questionnaire included 22 pre-validated KA questions: 2 questions on familiarity with

epilepsy, 8 questions on knowledge, and 12 questions on attitude. The questionnaire also included demographic questions. The response to KA was triple- either “yes”, “No”, or “I don’t know”. Positive response scored two points, negative response scored zero point and “I don’t know” response scored one point. The highest possible scores for knowledge (K-score) and attitude (A-score) were sixteen and twenty-four respectively. Questionnaire was adopted from a study conducted in Central Nepal (9) and translated to Tigrigna and then translated back to English and compared with the original one. The researchers adopted a questionnaire and distributed it to the eligible students. The questionnaire assessed the familiarity, knowledge and attitude of high school students towards epilepsy. After data collection was completed; data entry was done using CS Pro version 7.0 and analyzed by SPSS version 23. Descriptive statistics included frequency, mean, percentage and standard deviation. In addition, inferential statistics was used. The final result is expressed in the form of tables and graphs.

2.5. Research Variables

Dependent Variables: level of knowledge, level of attitude.

Independent Variables: demographic variables (Gender, educational level (9th, 10th & 11th), Knowing Someone with epilepsy).

2.6. Measuring Variables

Knowledge and attitude were graded and scored with generic scale. The mean of scores was compared for difference among the groups. Regarding knowledge score those who scored 11-16, 6-10 and <6 was considered as having good, moderate and poor knowledge respectively. Coming to the attitude score those who scored 16-24, 8-16 and <8 was considered as having good, moderate and poor attitude respectively. Those who had scored poor and

moderate level were considered to have inadequate KA and those who scored good level as adequate KA.

2.7. Pilot Study

A Pilot study was conducted for the aim of distinguishing the shortcomings, suitability and feasibility of the research questionnaire, in Keih bahri Secondary School on 38 students. It was directed one week before the beginning of the study project, and its sample size was calculated as ten percent of the sample size of the research.

2.8. Reliability and Validity

Validity was thoroughly checked through consultation of the advisor and research team. Test-retest method was used to check the reliability of the questionnaire, and it was analyzed using SPSS V 23. The reliability of the questionnaire was computed using the Cronbach’s alpha and the result was found to be highly reliable (Cronbach’s $\alpha=0.78$). Which is in the range considered to be good [0.65, 0.8] (Kline, 1999).

2.9. Ethical Consideration

We took an ethical clearance paper from the research committee of ACHS, and then submitted to the Ministry of Education, and authorities and administrative officers of the three selected secondary schools. The school directors and participants of the research were fully informed regarding the research objectives, methods and expected goals and benefits of the research. Before they begin to reply the research questionnaire, the participants of the research were asked for written and verbal consent. Privacy of the respondents was safely assured by excluding their names, instead they were given numerical code. The participants were also enlightened that they had full right to withdraw from the research at any time.

3. Result

3.1. Sociodemographic Variables of the Students

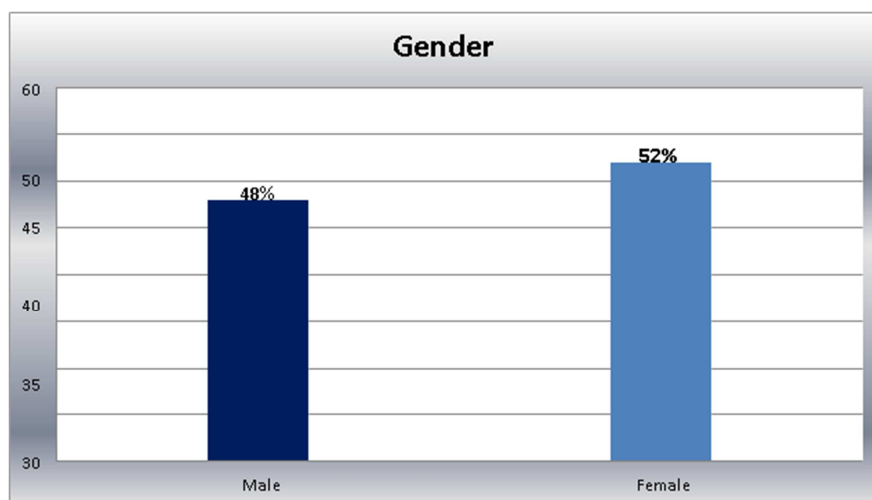


Figure 1. Gender of the Students.

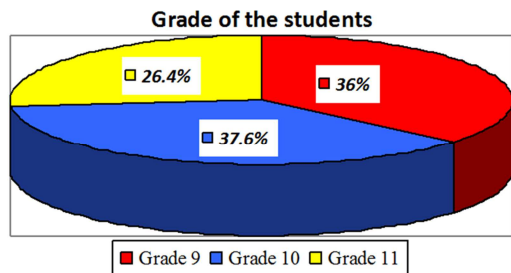


Figure 2. Grade of the Students.

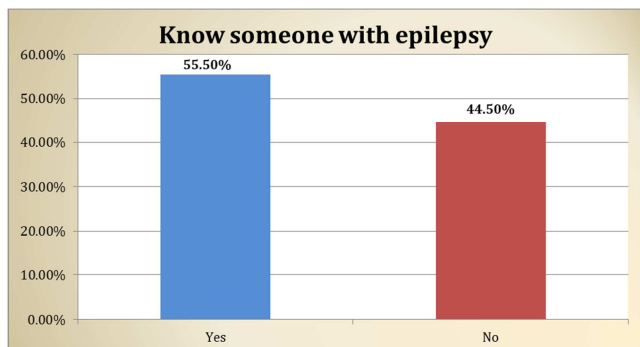


Figure 3. Percentage of those who personally know and do not know someone with epilepsy.

The above three figures manifest the Sociodemographic characteristics of the research participants. Hence Figure 1 illustrates the gender ratio of the participants was almost equal with females being 52% and males 48%. And Figure 2 shows the participant amount from each grade, that is grade

3.3. Knowledge About Epilepsy

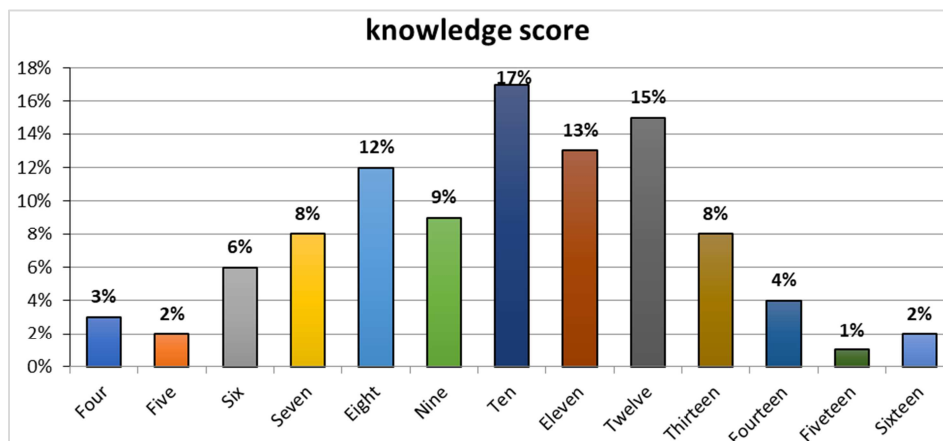


Figure 5. Knowledge score of the Students.

This figure shows the knowledge score of the participants. From eight questions the minimum score was 4 (for the scoring method used see on the methodology). Majority of the participants score was between seven and thirteen.

Majority of the students 64 (16.7%) responded five out of eight knowledge questions correctly. Most participants responded that epilepsy is neither mental disease (168, 43.9%), nor a brain disease (169, 44.1%), a hereditary disease (177, 46.2%) and a contagious disease (293, 76.5%).

nine 138 (36%), grade ten 144 (37.6%), which both have almost equal number of participants. The respondents from grade eleven were 101 (26.4%) which is slightly lower than the above-mentioned participants. Whereas Figure 3 demonstrates more than half (55.5%) of the participants were already knew someone with epilepsy.

3.2. Familiarity with Epilepsy

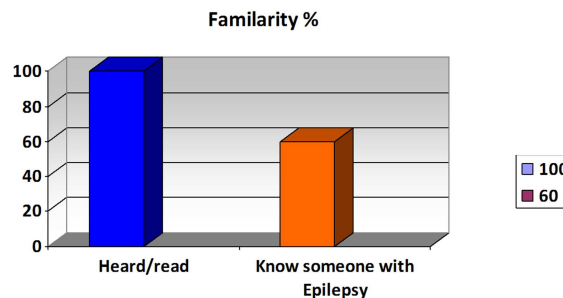


Figure 4. Familiarity of the Students regarding Epilepsy.

There were two questions to assess the participants' familiarity with epilepsy. One of the questions was if the participants have ever heard or read about epilepsy the result was that, all of them (100%) responded positively. The second question was if they had personally known someone with epilepsy. Majority of the participants 212 (55.6%) had personally known someone with epilepsy.

Moreover, most of the participants were aware of the role of medication on epilepsy 197 (51.8%) whereas only (53, 13.9%) responded that allopathic treatment could be used as a treatment modality. The rest of the questions were effect of missing the drugs, side effect of epilepsy medications and its curability with a positive response of (178, 70.1%), (71, 28%), and (211, 56%) respectively. The overall knowledge level of the participants was found to be moderate.

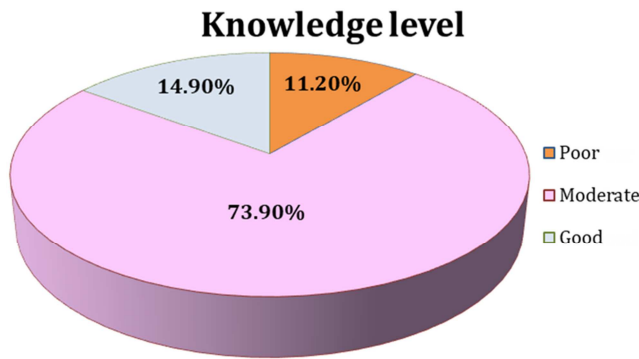


Figure 6. Knowledge level of the participants.

3.4. Attitude Regarding Epilepsy

Majority of the response was positive to the attitude questions towards epilepsy including could lead a married 327 (85.7%), normal sexual life 265 (69.5%) and could be employed 242 (63.4%). Moreover, 123 (32.1%) believe that it could be a hindrance to a happy life, and would affect a person's education 174 (45.5%). More than half

(56.8%) of the students, that is 217 were convinced that the society should not discriminate against individuals with epilepsy. However, 55 (14.4%) responded that they would object to sitting in the classroom adjacent to a child with epilepsy. The overall attitude level of the participants was moderate.

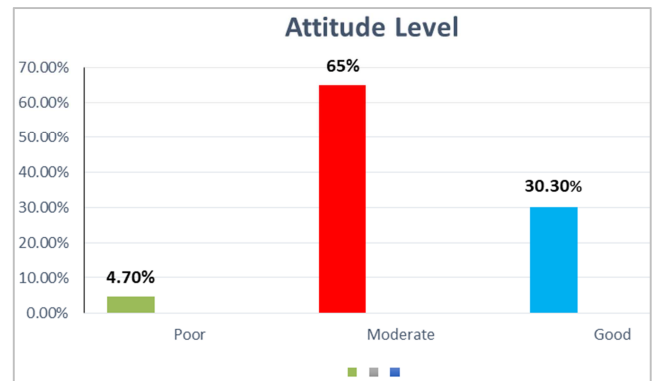


Figure 7. Attitude Level of the Students.

Table 1. Percentage response of the Knowledge and Attitude questions with Positive Response.

List of questions	Yes (%)	No (%)	I don't know (%)	Positive Response
Is epilepsy a mental disease?	22.5	43.9	33.6	No
Is epilepsy a brain disease?	20.6	44.1	35.3	Yes
Is epilepsy a hereditary disease?	23.0	46.2	30.8	No
Is epilepsy a contagious disease?	7.0	76.5	16.5	No
Do you think traditional treatment is beneficial for epilepsy?	13.9	58.4	27.7	No
Do you think epilepsy needs long-term treatment?	50.4	15.0	34.6	Yes
Do you think that medication has a role in treating epilepsy?	51.6	33.0	15.4	Yes
Do you think missing the drugs ones in a while is harmful?	70.1	13.4	16.5	Yes
Do you think most of the drugs used in epilepsy treatment Cause side effects?	28.0	34.6	37.4	Yes
Do you think that epilepsy affects the education of a person?	45.5	42.4	12.1	No
Do you think that epileptic patients can be employed?	63.4	23.0	13.6	Yes
Do you think society should discriminate against individuals With epilepsy?	56.8	31.4	11.8	No
Would you object to sitting in the classroom adjacent to a Child with epilepsy or to playing with a child having epilepsy?	14.4	82.2	3.4	No
Do you think epilepsy is caused by ancestor's sin?	2.9	73.6	23.5	No
Do you think epilepsy is a hindrance to a happy life?	32.1	59.0	8.9	No
Is it possible for people with epilepsy to lead a married life?	85.4	7.6	7	Yes
Can people with epilepsy lead a normal sexual life?	69.5	10.8	19.7	Yes
Do you think epilepsy can be cured?	56.0	14.9	29.1	Yes
Do you think visiting religious places help in curing epilepsy?	68.9	11.6	19.5	No
Do you think exorcism helps to drive away epilepsy spirits From the body?	23.5	36.4	40.1	No

3.5. Association of Gender with Knowledge and Attitude Towards Epilepsy

In this study the researchers also assessed the association between the sociodemographic and KA. Regarding gender, male or female didn't have any significant association with knowledge and attitude with p value of 0.118 and 0.182 respectively as computed by ONE WAY ANOVA. (See table 2).

Table 2. Association of gender with knowledge and attitude towards epilepsy.

Descriptive		ANOVA							
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		F	Sig.
						Lower Bound	Upper Bound		
Knowledge	Male	184	9.69	2.767	.204	9.29	10.09	2.450	.118
	Female	199	10.11	2.488	.176	9.76	10.46		
	Total	383	9.91	2.631	.134	9.64	10.17		
Attitude	Male	184	14.42	3.263	.241	13.94	14.89	1.789	.182
	Female	199	14.87	3.395	.241	14.40	15.35		
	Total	383	14.66	3.336	.170	14.32	14.99		

3.6. Association of Grade with Knowledge and Attitude Response

Grade as sociodemographic variable was also assessed for association with KA. The difference in grade of the students was found to have no significant association in the knowledge and attitude of the students with p value of 0.224 and 0.093 respectively as computed by ONE WAY ANOVA. (See table 3).

Table 3. Association of grade with Knowledge and Attitude response.

Descriptive						ANOVA		
Grades		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		
						Lower Bound	Upper Bound	
Knowledge	9 th	138	9.98	2.510	.214	9.56	10.40	1.502
	10 th	144	9.63	2.636	.220	9.20	10.07	
	11 th	101	10.21	2.769	.276	9.66	10.75	
	Total	383	9.91	2.631	.134	9.64	10.17	
Attitude	9 th	138	14.33	3.349	.285	13.77	14.90	2.389
	10 th	144	14.54	3.532	.294	13.96	15.12	
	11 th	101	15.26	2.962	.295	14.67	15.84	
	Total	383	14.66	3.336	.170	14.32	14.99	
								Sig.

3.7. Association of Person Who Had Known Someone with Epilepsy with Knowledge and Attitude Response

The association of knowing someone with epilepsy with the knowledge and attitude of the students was found to be highly insignificant with p-value of 0.308 and 0.813 respectively as computed by ONE WAY ANOVA. (See table 4).

Table 4. Association of Person Who Had Known Someone with Epilepsy with Knowledge and attitude response.

Descriptive						ANOVA		
Knowing someone with epilepsy		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		
						Lower Bound	Upper Bound	
Knowledge	Yes	212	9.79	2.868	.197	9.40	10.18	1.043
	No	170	10.06	2.308	.177	9.72	10.41	
	Total	382	9.91	2.634	.135	9.65	10.18	
Attitude	Yes	212	14.69	3.369	.231	14.24	15.15	.056
	No	170	14.61	3.312	.254	14.11	15.11	
	Total	382	14.66	3.340	.171	14.32	14.99	
								Sig.

3.8. Association Between Knowledge and Attitude

The correlation between knowledge and attitude of the high school students towards epilepsy was found to be highly significant with a value of 0.000. This indicates that the level of knowledge (independent variable) of the students greatly affects the attitude (dependent variable) towards epilepsy. (See table 5).

Table 5. Association between knowledge and attitude of the high school students towards Epilepsy.

Correlations			
		Attitude	Knowledge
Attitude	Pearson Correlation	1	.206**
	Sig. (2-tailed)		.000
	N	383	383
Knowledge	Pearson Correlation	.206**	1
	Sig. (2-tailed)	.000	
	N	383	383

**. Correlation is significant at the 0.01 level (2-tailed).

4. Discussion

This study is the first research done on Knowledge and Attitude regarding to epilepsy among high school students in Asmara. Though all of the students were familiar with

epilepsy, there was misconceptions about the cause, treatment and attitude towards epilepsy.

4.1. Familiarity with Epilepsy

The highest rate of familiarity of the high school students regarding epilepsy observed in our study (100%) was found to be much similar with those studies done in Nepal (94%) [12], in South India (98%) [11], Canada (100%) [20], Malaysia (87%) [21], Cameroon (95%) [19] and Nigeria (87%) [13]. In contrast to this findings, a study surveyed at United States on adolescents' familiarity regarding epilepsy was found to be low (52%) [22].

4.2. Knowledge About Epilepsy

In this study less than a quarter (22.5%) of the students believe that epilepsy is a mental disease. Similar result was observed in Cameroon (14.3%) [19], United States (19%) [22] and Canada (9%) [20]. Contrary to this results, there were higher proportion of students in Tanzania (90%) [17] and Italy (64%) [18], and moderate proportion in Nepal (43%) [12], India (59%) [11], and Nigeria (51.9%) [13], who believe the opposite conviction. Likewise a small percentage (20.6%) of the research participants considered epilepsy as a brain disease, this is almost consistent with the findings of Cameroon (18.5%, 25.7%) [15, 19] and Egypt (8.5%) [23],

but lower than that of Nepal (45.7%) [12].

Less than one third (23%) of the participants in this study thought epilepsy as a hereditary disease. This proportion was similar to that of Italy (20%) [18], Cameroon (12.4%) [19] and Nigeria (22.5%) [14], and lower than central Nepal (64.7%) [12] and Malaysia (67%) [21]. Few proportion of the participants thought that epilepsy is a contagious disease (7%) which is more consistent with the findings of Yemen (2.1%) [24], but was lower than Nepal (68.8%) [12], India (14%) [11], Cameroon (57.96%, 49.89%) [15, 19], Italy (17%) [18] and Nigeria (40.6%) [13]. In the current research less than one fifth (13.9%) of the students preferred a traditional medicine to treat epilepsy, but nearly more than half (51.6%) responded positively to the role of medication. The students in this study had lower knowledge on the proper method/mode of treatment as compared to Central Nepal students (85.7%) [12]. Almost half (50.4%) of the students in our research thought that patients with epilepsy required a long-term treatment, this is slightly lower when compared with the result of Central Nepal (69%) [12], but greater than the result of the research conducted in India (35%) [11]. Majority (70.1%) of the students in this research believed that medication needs to be taken regularly to prevent harm, which is almost pertinent to the discoveries reported from Central Nepal (79%) [12], and India (60.9%) [11].

4.3. Attitude Towards Epilepsy

Majority of respondents in this study (85.4% and 63.4%) believed that patients with epilepsy could be happily married and employed respectively, which is similar to the survey engaged among Canadian university students that showed 84% of them expressed favorable beliefs towards both [20]. Conversely, the study conducted in Nepal showed that about one third of students had negative belief towards married life and employment [12], the study in India showed that higher number of students had positive beliefs towards married life (60%) than towards employment (30%) [11].

However, this study showed similar results with the studies done on Nepal [12] and India [11] on the concept of positive beliefs towards the impact of epilepsy on education of a person. The percentage of the participants in this study objected to sitting near or playing with a child suffering from epilepsy was comparatively less (14.4) than those of Nepal (27%) [12] but more than Canada (5%) [20] and South India (13%) [11]. Twenty-three percent of the students strongly believe that Exorcism helps to drive away epilepsy from the body, this is comparatively similar to the finding of India (22%) [11], and higher to that of Nepal (8%) [12]. More than half (56%) of the students in this research believed that epilepsy is curable, this is slightly lower than that of Nepal (79%) [12]. Hence we conclude that in this study there is positive attitude.

4.4. The Influence of Personally Knowing Someone with Epilepsy, Gender and Grade Level on Their Knowledge and Attitude

This study showed that the Knowledge and Attitude level

of those who do not personally know someone with epilepsy is the same as those who do. Study in Nepal showed that the Knowledge, Beliefs, and Practices score in those who do not personally know someone with epilepsy is better than those who do, but this influence was only statistically significant with regard to knowledge [12]. Contrary to the above research results, a community-based study in Ethiopia concluded knowing someone with epilepsy is positively associated with their level of knowledge and practices related to epilepsy [16]. We also found that the Knowledge and Attitude score was not influenced by gender. Likewise in this study grade level was found to have no influence on KA towards epilepsy.

5. Conclusion

The study has entirely assessed the level of knowledge and attitude of the high school students regarding epilepsy, the association of socio-demographic factors with knowledge and attitude, as well as the association between knowledge and attitude.

Therefore, in this study the overall knowledge and attitude of the high school students towards epilepsy was proved to be moderate, hence the assumptions stating that the students have low level of knowledge and attitude was proven to be incorrect. Moreover we concluded Sociodemographic variables such as grade level, gender and knowing someone with epilepsy does not have association with the knowledge and attitude level of the high school students regarding epilepsy. However we certainly found a significant association among knowledge and attitude level of the students.

6. Recommendation

Ministry of health and ministry of education should strongly collaborate and provide persistent school based health interventions and health education training programs regarding epilepsy to promote the magnitude of knowledge and attitude of the students. This could be offered by health professionals in schools via conferences, seminars, workshops and other meetings and methods. Teachers should also be given some courses related to epilepsy. Putting up posters on every class room that clearly illustrate methods of supporting and giving 1st Aid for epileptic child during condition of seizure and convulsion. Furthermore, this research can be recommended to be used as a baseline for further broad nationwide studies.

7. Limitation

This study failed to include the Sociodemographic variable religion.

Abbreviations

ACHS: Asmara College of Health Sciences; KA:

Knowledge and Attitude; SPSS: Statistical Package for the Social Sciences; PWE: people with epilepsy.

Conflict of Interests

All the authors do not have any possible conflicts of interest.

Authors' Contributions

All authors participated in all phases of the study including topic selection, design, data collection, data analysis, interpretation and presentation. Aster, Elsa, Bietiel, Aklilu and Semere has contributed to write this manuscript. All authors have read and approved the final manuscript.

Availability of Data and Materials

The complete data set supporting the conclusions of this article is available from the corresponding author and can be accessed up on reasonable request.

Consent for Publication

This manuscript has not been published elsewhere and is not under consideration by another journal. All authors have approved the final manuscript and agreed for its publication.

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