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**CLINICAL EPIDEMIOLOGY OF SCHIZOPHRENIA: THE
CASE IN SAINT MARY PSYCHIATRIC HOSPITAL DURING
THE YEAR 2013**

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CLINICAL EPIDEMIOLOGY OF SCHIZOPHRENIA: THE CASE IN SAINT MARY PSYCHIATRIC HOSPITAL DURING THE YEAR 2013

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Abstract

Purpose: The purpose of the study was to provide a systematic review on clinical epidemiology of schizophrenia at St. Mary's Psychiatric Hospital, Asmara.

Methodology: A descriptive and correlational research design was employed in this study. The study population was patients who visited St. Mary's Psychiatric Hospital for the first time in the year 2013. These include both in and out patients, though first visit is to OPD – out patient department. In this year 2,500 new patients were registered in the hospital. 148 patients were diagnosed with schizophrenia in that particular year and 126 are considered for this study, as the 22 patient cards are either misplaced or information is incomplete. Measures of central tendencies, frequency distributions, complex samples analysis, and cross tabulations were performed.

Findings: The most vulnerable age category for onset of symptoms of schizophrenia is found in late adulthood (40% on age range greater than 40). The frequency in late adulthood is found to be significantly different from early adulthood. The frequency distribution in the current study shows that urban dwellers are at high risk (57.6%) than rural dwellers. The current study revealed that both the sexes are at almost equal risk. In the cases studied, one in four has a first degree relative with either schizophrenia or other psychotic disorders.

Unique contribution to the theory, practice and policy: A community based epidemiological study gives broader and more meaningful picture of disorders. Therefore, future researchers are advised to conduct epidemiological studies of psychological disorders at community level. The second recommendation is that much deeper investigations be made to reveal the causal or exposing factors to schizophrenia. It is only when these factors are properly studied that effective planning in treatment and intervention be made.

Keywords: *Prevalence, schizophrenia, age groups, gender, residence*

1.0 INTRODUCTION

1.1 Nature of the Problem

An epidemiological study of mental health is vital to understand the size and nature of the health challenges posed by mental disorders. In this respect the current study aims to carry out clinical epidemiological study, examining the prevalence, correlates and natural history of schizophrenia as one of the mental health problems in the world. Psychiatric epidemiology is the study of the distribution and determinants of mental illness frequency in human beings, with the fundamental aim of understanding and controlling the occurrence of mental illness. Psychiatric epidemiology deals with important components such as disease/disorder, distribution and frequency of disease/disorder, determinants of disease/disorder, human population and methods employed to control the occurrence of illness (Aschengrau & Seage, 2003).

“Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.” Epidemiology is concerned with the frequency and pattern of health events in a population. Frequency includes not only the number of such events in a population, but also the rate or risk of disease in the population. The rate (number of events divided by size of the population) is critical to epidemiologists because it allows valid comparisons across different populations. Pattern refers to the occurrence of health-related events by time, place, and personal characteristics like the socio-demographic information. This research is concerned with the study of one of the top five prevalent psychopathologies in St. Mary’s Psychiatric Hospital during the year 2013. This is based on the record of the disorders on preliminary visit done by the principal investigator to see the prevalence of the disorders in the psychiatric hospital.

One of the popular approaches to measure the disease frequency in a given population is hospital catchment population approach. Hospital-based approach counts the number of cases diagnosed by a clinician and the catchment population served by the hospital facilities. As a result the present study will follow the hospital catchment population approach on an epidemiological study to evaluate the prevalence of schizophrenia in St. Mary’s Psychiatric Hospital, Asmara, the only psychiatric hospital in Eritrea. For proper planning of psychiatric services, it is essential to have reliable and accurate information on the prevalence of mental illnesses in the community. Psychiatric epidemiology lags behind other branches of epidemiology due to difficulties encountered in conceptualizing, defining a case and diagnosing, sampling technique, lack of trained manpower, poor knowledge, data collection from a single informant, systematic under-reporting, stigma, and lack of adequate funding and low priority of mental health in the health policy (Math et al., 2007).

In Eritrea, yet, there is no literature on epidemiological studies on mental disorders. So the present study will provide an accurate data on the clinical prevalence of schizophrenia and its nature and the groups at risk in the psychiatric hospital. Ultimately this will help in planning and implementing the appropriate services provided in the hospital and other institutions.

1.2 Purpose of the Study

The goal of this paper is to provide a systematic review on clinical epidemiology of schizophrenia at St. Mary’s Psychiatric Hospital, Asmara, based on the data found in the hospital

in the year of 2013. The status of mental health problems in Eritrea is unknown. There are almost no such studies; if there are, they are very limited; due to frequent demographic changes a new study is important. This study examines the development of a screening technique in the health care system and to determine the types and prevalence of schizophrenia in the hospital. By doing so it provides reliable information for policy making and health care planning.

1.3 Specific Objectives

- I. Explore prevalence of schizophrenia in St. Mary's Psychiatric Hospital in the year 2013.
- II. Evaluate the stability or changing trend of the prevalence of schizophrenia over time based on the hospital records of the previous years and provide predictions on the future trend of the disorder in the hospital.
- III. Find out if there are associations between socio-demographic conditions and the occurrence of schizophrenia, such as to see the correlation between male and female in the occurrence of the disorder.
- IV. Find any population subgroups which are at high risk of developing schizophrenia, and
- V. Provide the focus of future epidemiological studies.

2.0 REVIEW OF LITERATURE

2.1 Epidemiology

Psychiatric epidemiology is the study of the distribution and determinants of mental illness frequency in human beings, with the fundamental aim of understanding and controlling the occurrence of mental illness. Psychiatric epidemiology deals with important components such as disease/disorder, distribution and frequency of disease/disorder, determinants of disease/disorder, human population and methods employed to control the occurrence of illness (Aschengrau & Seage, 2003).

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2.2 Schizophrenia

The word schizophrenia was derived from the Greek words “skhizo” which means ‘split’ and “phren,” which means ‘mind.’ – split of mind (Aschengrau & Seage, 2003). The DSM-V has defined schizophrenia as a group of disorders characterized by psychosis – condition involving

loss of contact with or distorted view of reality. It is characterized by severely impaired cognitive processes, personality disintegration, affective disturbances, and social withdrawal.

2.2.1 Prevalence

The life time prevalence of this disorder in the USA is 1% of the population, and the cost for taking care of patients with this disorder is estimated at 62.7 billion dollars annually. Even though, it is a chronic disorder; recovery or improvement is possible; and healing involves separating identity from illness and developing coping strategies, empowering the individual, and establishing or strengthening social connections.

A recent review shows that schizophrenia is not distributed equally across cultures and countries. From 132 core studies, 15 migrant studies, and 41 studies based on other special groups, the median values per 1,000 persons for the distributions for point and lifetime prevalence were 4.5 and 4.0, with a very large range in different studies (Saha et al., 2005). Prevalence rate may be influenced by different length of disease course in different countries, so it may not be conclusive concerning the stability of incidence.

2.2.2 Gender, age and marriage

Recent Meta analyses of third generation epidemiological studies have clarified the gender difference like this: for every three males with schizophrenia there are two females with the disease (Aleman, Kahn, & Selten, 2003). A study of marriage and fertility rates of individuals with schizophrenia compared with the general population showed that, on average, by the age of 45 years, three times as many of those with schizophrenia as of the general population are still unmarried (40% of men and 30% of women with schizophrenia are still single by age 45). (Jerald and Allan, 2006)

2.2.3 Groups at risk

Earlier report on high risk groups showed that offspring of schizophrenic parents were more likely to have lower IQ, poor attention skills, thought disorder-like symptoms, poor social adjustment and psychiatric symptoms compared to offspring of controls (Niemi et al., 2003). First indication on a role of parental age was based upon the family background data of 1000 patients in the Ontario Hospital, Canada. (Gregory 1959 as cited in Mura et. al., 2012) reported that parents of patients with schizophrenia were, on average, 2–3 years older than those of the general population. For many years, epidemiological studies revealed a higher incidence and prevalence of schizophrenia in groups with lower socioeconomic status. (Jerald and Allan, 2006).

More recently, several population-based epidemiological studies in Denmark, Israel, Sweden, France and the United States have provided stronger evidence on role of paternal age in schizophrenia (Mura et al., 2012). A population based birth cohort study found that relative risk of schizophrenia is 2.96 in the group of fathers aged 55 or above at the time of offspring birth; once paternal age was accounted for statistically, maternal age no longer was a significant predictor of schizophrenia (Malaspina, et al., 2001).

Moreover, there are numerous case-control studies showing that persons with schizophrenia are more likely to have taken, or be using, cannabis (Casadio et al., 2011). Recently there have been

prospective studies in Sweden (Zammit, et al., 2002), the Netherlands (Dragt, et al., 2012), New Zealand (Swadi, et al., 2003), and Israel (Weiser, et al., 2005) showing higher risk, ranging from 2 to as high as 25, for cannabis smokers. It could be that individuals in the premorbid phase of schizophrenia are responding to initial, mild symptoms of schizophrenia by using drugs. On the other hand, it could be that cannabis precipitates, or even causes, an episode of schizophrenia.

A later study from Europe provides persuasive evidence that risk for schizophrenia increases with urban birth and/or upbringing, especially among males. 67 poor environmental conditions of underdeveloped areas, such as infectious agents, unemployment, poor quality of maternal and obstetrician care, psychosocial stress, can be breaking factors for disease onset. Epidemiological literature, since few years ago, has reported a peak of onset in males between 15 and 25 years of age and for females between 25 and 35 years of age, with a strong difference in sex ratio starting at 15 years of age. Yet, it's difficult to compare the data mentioned above with the last researches, due to the selection of the cohort subjects using different diagnostic criteria in comparison with the present criteria (Mura et al., 2012).

2.2.4 Symptom categories

Schizophrenia has four symptom categories which are presented below:

- i. Positive symptoms – involve unusual thoughts or perceptions such as delusions, hallucinations, disordered thinking, and bizarre behavior.
- ii. Negative symptoms – involve associated with inability or decreased ability to initiate actions or speech, express emotions, or feel pressure.
- iii. Cognitive symptoms – associated with problems with attention, memory, and difficulty in developing a plan of action. Impairment involve from moderately severe to severe such as poor executive functioning, inability to sustain attention, and difficulty retaining and using recently learned information.
- iv. Psychomotor abnormality – poor mind body coordination. (Sadock and Sadock, 2000)

2.2.5 Course of Schizophrenia

The symptoms of schizophrenia develop through time, and three phases are identified (DSM V, 2013).

- i. Prodromal Phase – onset and buildup of symptoms like social withdrawal and isolation, inappropriate affect, poor communication patterns, and neglect of personal grooming.
- ii. Active Phase – development of full-blown symptoms such as severe disturbances in thinking, deterioration in social relationship, and flat or inappropriate affect.
- iii. Residual Phase – at this stage symptoms are no longer prominent, severity declines and individuals show mild impairments, and complete recovery is rare, but schizophrenia can lead productive lives.

One of the popular approaches to measure the disease frequency in a given population is hospital catchment population approach. Hospital-based approach counts the number of cases diagnosed by a clinician and the catchment population served by the hospital facilities. As a result the present study will follow the hospital catchment population approach on an epidemiological

study to evaluate the prevalence of schizophrenia in St. Mary Psychiatric Hospital, Asmara the only psychiatric hospital in the country.

For proper planning of psychiatric service, it is essential to have reliable and accurate information on the prevalence of mental illnesses in the community. Psychiatric epidemiology lags behind other branches of epidemiology due to difficulties encountered in conceptualizing, defining a case and diagnosing, sampling technique, lack of trained manpower, poor knowledge, data collection from a single informant, systematic under-reporting, stigma, and lack of adequate funding and low priority of mental health in the health policy (Math et al., 2007). In Eritrea, yet, there have been very limited epidemiological studies on mental disorders. So the present study will provide an accurate data on the prevalence of schizophrenia and its nature in the psychiatric hospital. Ultimately this will help in planning and implementing the appropriate service provided in the hospital and other institutions.

3.0 METHODOLOGY

3.1 Research Design

A descriptive and correlational research design is employed in this study. The description is based on the measures of central tendencies of the different variables (biographic data) such as age groups, age groups for onset, sex, residence, etc. in addition to this, these variables are correlated to see the trends in the relationships.

3.2 Research hypotheses

The following hypotheses are forwarded and the discussions later will be guided by these hypotheses.

1. Age and risk to schizophrenia are directly correlated – the older age is at most risk.
2. Age of onset peaks at adolescence.
3. Urban dwellers are at most risk to schizophrenia than rural dwellers.
4. Women are more at risk to schizophrenia than men

3.3 Study population

The study population is patients who visited St. Mary's Psychiatric Hospital for the first time in the year 2013. These include both in and out patients, though first visit is to OPD – out patient department. In this year 2,500 new patients are registered in the hospital.

3.4 Sampling

All patients who visit the hospital in 2013 for the first time and are diagnosed for schizophrenia are the sample for this study. 148 patients were diagnosed with schizophrenia in that particular year and 126 are considered for this study, as the 22 patient cards are either misplaced or information is incomplete

3.5 Measurement

Data was collected from patients' cards. A form is prepared to make the data collection smooth. This sheet is attached in Appendix I.

3.6 Procedure

The first step in data collection was to identify patient card numbers diagnosed for schizophrenia. This was not an easy task as all patient cards needed to be checked. All patient cards under diagnosis of 'psychosis' were also checked for this diagnosis includes schizophrenia and other psychotic disorders – those for schizophrenia were identified. Later on, the data collection sheets were filled from the reports of the practitioners. The data was later transcribed and entered into SPSS.

3.7 Analysis

Data was analyzed with the help of a statistician. Measures of central tendencies, frequency distributions, complex samples analysis, and cross tabulations were performed.

4.0. RESULTS

4.1 Frequency distributions

To have a clear picture of the subjects, frequency distribution of the variables (with their categories) is computed. Table 1 depicts the frequency distribution of the cases in relation to the categories of the variables. The description of the distributions follows the table.

Table 1: Frequency distribution of the variables with their categories

Variables	Age group				Age of onset				Sex		Residence		Family history	
	<18 years	19-25 years	26-40 years	>40 years	<18 years	19-25 years	26-40 years	>40 years	Male	Female	Rural	Urban	Yes	No
Percentage	8.1	11.3	34.7	46	24.3	13	22.6	40	48	52	42.4	57.6	25.7	74.3

4.1.1 Age group

Age of two cases was missed, and computations were made with the 124 valid cases. The mean/average age of the participants is 43 years. For better statistical computations and cross-tabulations with other variables, the subjects are categorized into four groups – adolescents (less than 18 years), early adults (between 19 and 25 years), middle adults (between 26 and 40 years), and late adults (greater than 40 years). The frequency distribution shows that majority of the subject (46%) are in their late adulthood. In the hierarchy this is followed by middle adulthood (34.7%), early adulthood (11.3%), and adolescence (8.1%). This shows that the risk increases with an increase in age, the late adults being at most risk. To see whether this difference in the distribution is statistically significant, a complex samples computation is performed. As can be seen in table 2, there is no significant difference between the distributions of adolescence and early adulthood – they both are at minimal risk. There also is no significant difference between the distributions of middle and late adulthoods – they both are at high risk. The distributions of

middle and late adulthoods are statistically significant from both distributions of adolescence and early adulthood. This shows that middle and late adults are at high risk to schizophrenia.

Table 2: Complex samples table

	Estimate	Standard error	95% confidence interval	
			Lower	Upper
% of total adolescents	8.1%	2.5%	4.4%	14.6%
early adults	11.4%	2.9%	6.8%	18.5%
middle adults	35.0%	4.3%	26.9%	43.9%
late adults	45.5%	4.5%	36.8%	54.5%
Total	100.0%	0.0%	100.0%	100.0%

4.1.2 Age of onset

Eleven cases were missing and computations were made with the rest valid 115 cases. The mean/average age of onset is 35 years. For same logic, similar categorization is applied as of the age of the subjects. The frequency distribution (table 1) shows that 40% of the subjects had the onset on their late adulthood followed by adolescence (24.3%), middle adulthood (22.6%), and early adulthood (13%). To check whether these differences in the frequencies are significant or not, a complex samples analysis is performed. And the results reveal (table 3) that the difference between late adulthood and early adulthood is the only significant difference. Therefore, late adulthood is the most risky age for the onset of schizophrenia than the other groups, particularly early adulthood.

Table 3: Complex samples table.

	Estimate	Standard error	95% confidence interval	
			Lower	Upper
% of total adolescence	24.6%	4.1%	17.4%	33.4%
early adulthood	13.2%	3.2%	8.0%	20.8%
middle adulthood	22.8%	3.9%	16.0%	31.5%
late adulthood	39.5%	4.6%	30.8%	48.9%
Total	100%	0.0%	100.0%	100.0%

4.1.3 Sex

Three variables were missing and the valid 123 cases were taken into account for computations. As can be seen in table 1, no big difference is observed in frequency distributions of schizophrenia in both sexes – 52% of females and 48% males. Though the difference is small, females are at more risk than males.

4.1.4 Current residence

Subjects are categorized into two groups based on their dwelling – rural and urban dwellers. Only one value is missing, computation is made with the 125 valid values. The frequency distribution (table 1) shows that more than half (57.6%) are urban dwellers, and the rest 42.4% are rural dwellers.

4.1.5 History in the family

This data has to do with whether anyone in the family or close relative has schizophrenia or other psychological disorders. For unknown reasons (that part was blank in most patient cards) 25 values were missing. Computation was done with the rest 101 valid cases and it was found that almost three in four have no history of the illness in their families. This shows that schizophrenia in this sample is more of acquired than inherited.

4.1.6 Number of siblings and birth order

Table 4 depicts the frequency distribution of the number of siblings and birth order, 16 and 47 items respectively were missed and computation was done with the remaining cases. It was found that majority of the subjects had siblings ranging from 3 to 7, these added are 69.9% of all the cases. Very few have no, 1 and 2 siblings – 7.3%, 2.7% and 3.6% respectively. Approximately one in three of the subjects are first born in their families. From second to fifth orders are roughly evenly distributed – 19%, 16.5%, 10.1%, and 10.1% respectively. Almost half (50.5%) of the subjects have orders from 6 and more. Subjects with multiple siblings and those in first order are at most risk of having schizophrenia compared to the other subjects.

Table 4: Frequency distribution of the number of siblings and birth order

Variables	Number of siblings									Birth order					
	0	1	2	3	4	5	6	7	8 >	1st	2nd	3rd	4th	5th	6 th >
Percentage	7.3	2.7	3.6	14.5	13.6	14.5	15.5	11.8	8.1	34.2	19	16.5	10.1	10.1	50.5

4.2 Cross tabulations of Age groups with sex and residence

The frequency distributions reveal that some groups are at high risk than others – eg., middle and late adults from the age group categories, females from the sex categories, and urban dwellers from residence categories are at high risk. In this section age groups will be cross tabulated with sex and residence to fine tune the groups at risk. First age groups are cross tabulated with sex and then with residence.

4.2.1 Age group and sex

Age group is cross tabulated with sex to narrow down the groups at risk. In the computations 123 valid cases are included, 3 were missing. As can be seen in table 5, adolescents and early adults of both sexes are equally affected by schizophrenia. In middle adulthood, more males (55.8%) are affected by schizophrenia than females (44.2%). In addition, more female late adults (58.9%)

are affected than male adults (41.1%). To see whether these differences are statistically significant or not, chi-square test is administered and results of which follows.

Table 5: Frequency distribution of age groups cross tabulated with sex and residence

Age group	Sex		Residence	
	Males	Females	Rural	Urban
Adolescence	50%	50%	40%	60%
Early adulthood	50%	50%	42.9%	57.1%
Middle adulthood	55.8%	44.2%	46.5%	53.5%
Late adulthood	41.1%	58.9%	41.1%	58.9%

The chi-square tests for age group and sex reveal (table 6) that the risk is evenly distributed – $f(3,1) = 2.167$, at alpha level of .05, $p = .538$. The linear-by-linear association (correlation) is .777. This is a positive and high (though not significant) correlation. Nominal values are assigned to males and females – 1 and 2 respectively. The frequency distributions revealed that middle and late adults are at high risk, specifically male middle adults and female late adults are at high risk.

Table 6: chi-square tests for age group and sex

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	2.167	3	.538
Likelihood ratio	2.175	3	.537
Linear-by-linear association	.777	1	.378

4.2.2 Age group and residence

The frequency distribution in table 5 reveals that urban dwellers of all age groups are at high risk than those of rural dwellers. The computation is made with the valid 123 cases, 3 were missing. To see whether these differences in frequency distributions are statistically significant or not, chi-square tests are administered. The chi-square tests for age group and residence reveal (table 7) that the risk is evenly distributed – $f(3,1) = .338$, at alpha level of .05, $p = .953$. The linear-by-linear association (correlation) is .009. This is a positive and weak correlation. Therefore, urban dwellers of all age groups are at high risk though not statistically significant differences exist.

Table 7: Chi-square tests for age group and residence

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	.338	3	.953
Likelihood ratio	.337	3	.953
Linear-by-linear association	.009	1	.925

4.3 Cross tabulations of Age of onset with sex and residence

The frequency distribution in table 1 depicts that 2 in 5 of the subjects had the onset in late adulthood, followed by 1 in 4 in adolescence, and early and middle adulthoods are the age ranges where in onset is less frequent. To narrow this down and look at which age group is most risk to subjects, sex and residence are cross tabulated with age of onset. As the display in table 8 shows, the rates of onset for females are high at adolescence, middle and late adulthood, and less in early adulthood. Likewise, rate of onset for urban dwellers is high at adolescence and early and late adulthood, and less in middle adulthood. Whether these differences on rates of onset are statistically significant or not, chi-square tests are administered.

Table 8: Frequency distribution of age of onset cross tabulated with sex and residence

Age of onset	Sex		Residence	
	Males	Females	Rural	Urban
Adolescence	48.2%	51.8%	39.1%	60.9%
Early adulthood	66.7%	33.3%	33.3%	66.7%
Middle adulthood	46.2%	53.8%	53.9%	46.1%
Late adulthood	42.2%	57.8%	40%	60%

4.3.1 Age of onset and sex

Cross tabulation between age of onset and sex is computed with the 113 valid cases, 13 being missed. No significant difference in the sub categories distribution is observed - $f(3,1) = 2.731$, at alpha level of .05, $p = .435$. The linear-by-linear association (correlation) is .746. This implies that as age increases women are at most risk having the onset than men, though statistically not significant.

Table 9: Chi-square tests for age of onset and sex

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	2.731	3	.435
Likelihood ratio	2.762	3	.430
Linear-by-linear association	.746	1	.388

4.3.2 Age of onset and residence

Age of onset was cross tabulated with residence to see if the frequency distributions are significant or not; and it was found that no significant difference is observed - $f(3,1) = 2.117$, at alpha level of .05, $p = .549$. The linear-by-linear association (correlation) is .093. This shows that age of onset is weakly correlated with residence.

Table 10: Chi-square tests for age of onset and residence

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	2.117	3	.549
Likelihood ratio	2.107	3	.551
Linear-by-linear association	.093	1	.761

4.4 Sex and residence cross tabulated

The frequency distributions in table 1 reveals that urban settlers are more affected by schizophrenia than rural settlers; and females more than males. The categories are narrowed down to see if significant differences are observed. In both sexes, frequency of the urban settlers is high and the female urban settlers outnumber the rest (table 11). To see if these differences are significant or not, chi-square tests are administered. Still no significant difference is observed – $\chi^2(1, 1) = .250$, at alpha level of .05, $p = .617$. The linear-by-linear association (correlation) is .248. The correlation is still weak.

Table 11: Frequency distribution of sex cross tabulated with residence

Sex	Residence	
	Rural	Urban
Male	45.8%	54.2%
Female	41.3%	58.7%

Table 12: Chi-square tests for sex and residence

	Value	Df	Asymp. Sig. (2-sided)
Pearson chi-square	.250	1	.617
Likelihood ratio	.250	1	.617
Linear-by-linear association	.248	1	.618

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Age groups

Late adulthood is the age category wherein most cases (46%) are found. This is followed by middle adulthood, early adulthood, and adolescence and childhood. These differences in frequency distributions in age categories tells us that frequency and age in relation to schizophrenia are directly correlated – as age increases so does frequency. The differences are found to be statistically significant. The differences in frequency distribution are statistically significant between middle and late adulthood and both early adulthood and adolescence and

childhood. Therefore, hypothesis 1 (Age and risk to schizophrenia are directly correlated – the older age is at most risk) is supported.

A study conducted in Nepal (Khattari, *et al.*, 2013) revealed similar results that maximum cases were reported above the age of 30 years. In the case of the current study, middle adulthood begins at age of 25 years. The same report from Nepal cited some articles and reported that in India maximum cases are found between ages of 30 to 44 years and declines in ages after 44 years. But in the West there is a gradual increase in prevalence with age, even with the very old age. The increase with age (especially with middle and late adulthood) might be explained by less social security and protection from psychiatric disturbances.

Wikipedia also reported similar findings. The incidence of schizophrenia is much less in childhood, but there are certain indicators for the disorder (exposure to). These include – aggressiveness, introversion, difficulties in interpersonal relationships, anxiety, eccentricity or formal thought disorder. These indicators are defective attunement between the individual and the outer world, so is schizophrenia – detachment from reality.

5.2 Age of onset

The most vulnerable age category for onset of symptoms of schizophrenia is found in late adulthood (40% on age range greater than 40). This is followed by adolescence, middle adulthood and early adulthood respectively. The frequency in late adulthood is found to be significantly different from early adulthood. Peak of onset for males is in early adulthood and for females is in late adulthood, though the difference is not that significant. In this case hypothesis 2 (Age of onset peaks at adolescence) is rejected. But adolescence is the second most peak next to late adulthood, though the difference is not statistically significant.

In most of the literature the peak of onset for males is between 15 and 25 years of age and for females is between 25 to 35 years of age. The current study reveals similar age of onset with males and is a bit different with females.

Least vulnerable for onset of symptoms of schizophrenia in this study is found in early adulthood. But reports in Wikipedia reveal that least onset for the symptoms is in childhood. This difference might be due to considering childhood and adolescence in the same category in the current study. But the overall picture shows that it is rare in childhood. This does not mean that schizophrenia does not affect children. The manifestations are different from that of adults. There are some indicators which expose them in adult life to schizophrenia (the indicators are discussed under the ‘age groups’).

The literature tells us that early onset (in childhood) is associated with poor prognosis. In this case/current study, rate of onset is higher in adulthood, prognosis is expected to be good. Rapid treatment, immediate after onset with fewer negative symptoms, prevents relapse.

5.3 Environment (residence)

The frequency distribution in the current study shows that urban dwellers are at high risk (57.6%) than rural dwellers. More than half are urban dwellers and the rest 42.4% are rural dwellers. Hypothesis 3 (Urban dwellers are at most risk to schizophrenia than rural dwellers) is accepted though the difference is not statistically significant. More socio economic differences

are observed in urban areas than rural. This difference might be attributed to the difference in living conditions which is magnificent in urban areas. Some research findings also report that prevalence is high in rural than urban areas (eg. Jerald and Allan, 2006).

The difference in the frequencies in rural and urban dwelling in the current study is not that big. The study conducted in Nepal (Khattari, et al., 2013) came up with high prevalence in rural community. The prevalence in rural community is accounted for low socio-economic status and poor living conditions. On the other hand, opium and cigarette consumptions in urban communities are risk factors for developing schizophrenia. Alcohol is a common factor in both. High frequency is found among urban dwellers of both sexes. This might also be explained by easy access to drugs, alcohol, and other substances.

Similar explanation for this could also be that more addictive drugs or substances are easily available in urban areas. This availability and exposure might aggravate the symptoms of schizophrenia, especially the positive symptoms like hallucinations and delusions. Similar was an explanation by Casadio and colleagues (2002) in their case-control studies that persons with schizophrenia are more likely to have taken or be using cannabis. The explanation is that there is high risk for cannabis smokers. Individuals in the pre-morbid phase are responding to initial, mild symptoms by using drugs; and cannabis precipitate or even cause an episode of schizophrenia.

5.4 Sex or gender

Most studies report that male ratios are higher than female (eg., Aleman, Hahn, and Selten, 2003). This result is similar to the findings by Aleman and colleagues (2003) which says that for every 3 males there are 2 females with schizophrenia. But the current study revealed that both the sexes are at almost equal risk. Therefore, hypothesis 4 (Women are more at risk to schizophrenia than men) is rejected.

5.5 Family history

In the cases studied, one in four has a first degree relative with either schizophrenia or other psychotic disorders. Literature tells us that schizophrenia is the most heritable psychological disorder. The literature also explain that off-springs of schizophrenic parents were more likely to have lower IQ, poor attention skills, thought disorder like symptoms, poor social adjustment, and psychotic symptoms compared to controls of off-springs of normal parents (Niemi et al., 2003). A significant difference in paternal age was found among schizophrenics – average paternal age was 55 years and above (Malaspina et al., 2001). The heritability ration in this study has clinical significance.

All psychotic disorders have genetic vulnerability though no single gene is implicated in the causation. The following are factors identified in heritability of the disorder – family history of psychosis, CNS damage, prenatal bereavement, Rubella infection, CNS infection, etc.

5.6 Conclusion

No literature (or very few if any) literature is available on epidemiology of psychological disorders in Eritrea. This research might serve as an ice-breaker or a stepping stone to other researches. Objectives of the study were to see how prevalent schizophrenia is among the other

psychiatric disorders in St. Mary's Psychiatric Hospital, Asmara. The prevalence rates from the records of the hospital (between 2012 and 2014) show that schizophrenia was one of the top five disorders. The researcher hypothesized that it will remain among the top prevalent disorders in coming few years until the risk factors are properly identified and controlled. Mood disorders were the most prevalent, but an epidemiological study of which was conducted by students of Psychology at EIT as a senior research paper under the supervision of the researcher (principal investigator of this study). The need felt to study epidemiology of schizophrenia this time.

Another, and important, objective of this study is to identify groups at risk to schizophrenia. Following are the groups identified to be at most risk:

- Individuals at their middle and late adulthood
- Though not significant differences, following are at relatively most risk:
 - ❖ Females (adults in particular)
 - ❖ Urban dwellers
 - ❖ Females of urban residents
 - ✓ Adult females of urban residents
 - ❖ Adolescents of urban dwellers
 - ❖ Female urban dwellers
 - ✓ Female adolescents of urban dwellers

5.7 Recommendations

The following recommendations are made by the researcher.

1. A community based epidemiological study gives broader and more meaningful picture of disorders. Therefore, future researchers are advised to conduct epidemiological studies of psychological disorders at community level.
2. The second recommendation is that much deeper investigations be made to reveal the causal or exposing factors to schizophrenia. It is only when these factors are properly studied that effective planning in treatment and intervention be made.
3. The following two suggestions are forwarded to mental health professionals in hospitals and clinics:
 - i. Patient cards should be properly recorded. No information should be missed.
 - ii. Because records are hand-written, professional should try their best to make the hand-writings as legible (readable) as possible.

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