Mental Morbidity Prevalence, Stigma and Health Care Seeking Behaviors among Non-medical Students in University of Khartoum, Sudan March 2015

Emmanuel Tanyous[1*], Suad Ali[2], Mustafa Khidir Elnimeiri[3] and Monica Salama[4]

[1]SHO Psychiatric, Mayo General Hospital, Castlebar, Ireland.
[2]Department of Community Medicine, University of Khartoum, Sudan.
[3]Department of Preventive Medicine and Epidemiology, Al-Neelain University, Sudan.
[4]SHO Pediatrics, Mayo General Hospital, Castlebar, Ireland.

Authors' contributions

This work was carried out in collaboration between all authors. Author ET designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript, managed analysis of the study, managed the literature searches, wrote discussion and conclusion. Author SA supervised the methodology, data analysis, discussion and conclusion. Author MKE co-supervised the methodology, data analysis, discussion and conclusion. Author MS wrote the final draft and designed the paper for publish. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: Young adulthood is a critical period in which mental illnesses such as anxiety, mood disorders, and comorbidities such as substance use disorders often first emerge. Mental health problems may lead to disturbed behaviours and can severely impair academic performance. Yet only one-third of young adults with mental disorders seek professional help.
Aims: To study the prevalence of mental health morbidity and the barriers to seeking mental health care among non-medical students in the University of Khartoum.
Study Design: Descriptive Cross-sectional facility-based study.

_____

Corresponding author: E-mail: emmanueltanyous@gmail.com;

Place and Duration of Study: University of Khartoum Central campus, Agriculture and Veterinary campus, and Educational campus March 2015.
Methodology: Study sample included Khartoum university non-medical students, selected using multistage sampling. Sample size 392. Data was collected by distributing self-administered questionnaire. Ethical consent from every participant was obtained. Dependent variables were measured using Standardized tools. Cronbach's alpha, univariate and bivariate analysis were used.
Results: Study revealed that 57% of students suffered from mild symptoms of depression, 13.7% moderate and 0.5% severe while 61.2% suffered from anxiety symptoms.40% Suffered from moderate to severe stigma. Females were 1.5 times suffering from depression symptoms higher than males OR = 3.4 CI (2.1-5.3) RR = 1.5 CI (1.2-1.7) Pearson Chi-Square = .000 Females were 1.3 times suffering from anxiety symptoms more than males OR = 1.8 CI (1.2-2.7) RR = 1.3 CI (1.1-1.5) Pearson Chi-Square = .008 Students. Depression symptoms are more likely associated with anxiety symptoms OR = 7.25 CI (4.4 to 11.91) RR = 1.8 CI (1.5 to 2.1) Pearson Chi-Square = 0.000
Conclusion: Majority of university students were found to be suffering from depression and anxiety symptoms, with depression being more prevalent than anxiety. Females were found to be more depressed and anxious than males but less stigmatised. Stigma was a major mental health barrier for seeking medical care.

Keywords: Anxiety; depression; prevalence; stigma; health care seeking behaviours; students.

ABBREVIATIONS

CES-D	: Center for Epidemiologic Studies Depression Scale
GAD	: Generalized anxiety disorder
GAD-7	: Generalized Anxiety Disorder 7-item
GHSQ	: General Help Seeking Questionnaire
HAM-A	: Hamilton Anxiety Scale
IQR	: Inter quartile range
MH	: Mental Health
MRI	: Magnetic resonance imaging
NIMH	: National institute of mental health
OCD	: Obsessive-compulsive disorder
PTSD	: Post-traumatic stress disorder
SSRPH	: Stigma Scale for Receiving Psychological Help
SPSS	: Statistical Package for the Social Science
WHO	: World health organization
WHO-DAS	: World Health Organization Disability assessment Scale

1. INTRODUCTION

The World Health Organization has defined mental health as a state of well-being in which every individual realizes his or her own potentials, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community [1]. Mental illnesses such as anxiety disorders, mood disorders, and substance use disorders often first emerge during adolescence or young adulthood [2]. The prevalence of mental health disorders is greatest among younger people aged between16-24 years than at any other stage of the lifespan [3]. Therefore young adulthood is a critical period for mental health. Starting university can be a stressful experience, especially among young adults who suffer from many other challenges such as complicated family dynamics, identity issues, and extreme pressure to succeed [4]. How to cope with such stresses is the key element to develop a health problem or not [5]. Such high susceptibility in adolescents and young adults to develop a mental disorder is coupled with a strong reluctance to seek professional help. Studies have found that approximately only 18 to 34% of young people with high levels of depression or anxiety symptoms seek professional help [3].

Internationally depression and anxiety are highly prevalent mental disorders with estimates indicating that they affect up to almost one-fifth of the population in high-income countries worldwide [3]. According to the WHO reports despite the availability of treatments, nearly two-thirds of people with a known mental disorder never seek help from a health professional. Stigma, discrimination and neglect were significant barriers in addition to lack of mental health system policies. Currently, More than 40% of countries have no mental health policy, and over 30% have no mental health programs, and around 25% of countries have no mental health legislation [6]. According to Ahmed Okasha, cited in Abdelgadir E, mental health resources and budgets allocated for mental health services, in many Arab countries, are still insufficient. Out of

the twenty-two Arab countries, Sudan and six other Arab countries have less than 0.5 psychiatrists per 100,000 people. Two Arab countries do not have a mental health policy, and six do not have any legislation [7].

Nationally in Sudan according to the study which was done by Shaaban and Baasher in 2003 on 1107 girls aged 12-19 years, it was a two-stage epidemiologic survey for the major depressive disorder. They found that the prevalence of major depressive disorder for the population was 4.2%. 11% of the girls reported severe depression. The depressive scores increased with age. None of the girls had sought treatment from health facilities [8]. According to another study which was done in 2014 by Prof Elnimeiri K. M and the national council for child and welfare about multiple indicators adolescents health survey in Khartoum [9]. It concluded that 40% of the male and 63% of the female adolescents ever heard about mental health and that 18% of the male and 12% of the female adolescents ever suffered from a mental health problem.The results revealed that common mental health problems such as anxiety, depression and mood swinging were prevailing among adolescents especially males. In Sudan, the total number of human resources working in mental health facilities or private practice per 100,000 populations is 0.92. The Ministry of Health expenditure represented 1.6 % of the country's budget in 2006 while the expenditure on mental health was unknown [8]. This resulted in a background of high prevalence of mental illnesses and unmet mental health needs in the insufficient mental health care facilities Sudan [8].

Justifying the importance of this study was first to discover the diversity and magnitude of mental morbidity, secondly to evaluate stigma and help seeking intensions among university students. This will lead the vulnerable students to improve their academic performances and lifestyles and certainly will help them to have successful future. The main focus was on young adult students, who are the most effective community potentials, which will eventually increase the community awareness about mental health, and ultimately will induce a huge conceptual and behavioral change in Sudan. Furthermore it will help to formulate hypothesis for further researches in the field and to develop intervention programs that may minimize the expected barriers and encourage the utilization of mental health services at early stages of the illness before conditions deteriorate. Such researches and interventions will lead to successful control programs and ultimately patients and providers' satisfaction facilitating the expansion and integration of MH to PHC services.

The general objective of this paper was to study mental health morbidity, stigma and health care seeking behaviors among non-medical students of University of Khartoum. While the specific objectives were to determine the prevalence of depression symptoms among university students using the total score of CES-D), to assess The prevalence of anxiety spectrum among university students using the total score of GAD-7, to identify the help seeking intensions using the total score of GHSQ, to measure the actual help seeking behavior by identifying the proportion of students who wrote their phone number to check for their mental health status results and finally to measure the association between public stigma and seeking formal psychological help.

2. MATERIALS AND METHODS

2.1 Study Design

This is a Descriptive Cross-sectional Institutional-based study.

2.2 Study Area and Setting

University of Khartoum is the oldest university established in Sudan in the year 1902. It was formerly called Gordon Memorial College until (1956) when Sudan gained independence it became University of Khartoum. University of Khartoum has been recognized as a top university and a high-ranked academic institution in Sudan and Africa.

The university has (37329) undergraduate students in 23 faculties, schools and graduate research institutes (2011-2012). Students of Bachelor degree constitute (21542), according to statistical report of the official site of the ministry of higher education for the scholastic year (2011-2012) [10].

There are four campuses:

- Central campus in central Khartoum, 11642 students.
- Medical campus south of central Khartoum, 5452 students.
- Agriculture and Veterinary campus at Shambat, Khartoum North. 3157 students.
- Education campus at Omdurman 15 km from central campus, 4183 students.

2.3 Study Population

Students of University of Khartoum are mixture of different social and cultural backgrounds with diversity in economic statuses. A proportion come originally from rural areas, others come from abroad. Students as such are more or less representative for the general population setting.

2.3.1 Inclusion criteria

Non-medical students from University of Khartoum who consented to participate in the study.

2.3.2 Exclusion criteria

- Students who were absent.
- Students who refused to participate in the study.
- Medical students of University of Khartoum.

2.4 Sample Size

The total sum of the students from the 3 selected campuses was 18982 students [10].

The sample size will be calculated from this equation $n = N/1 + (Nd^2)$

Variables of equation:

n = sample size
N = Population size
d = precision
$n = 18982/ 1 + 18982*(0.05)^2 = 392$

2.5 Sample Technique and Procedure Multistage Sampling

The sample was collected from 3 campuses. Each campus had been divided into colleges. Participating colleges in the study were selected using simple random Sampling technique [11,12]. The sample was distributed according to size.

2.5.1 Center campus

The total number of students in this campus was 11624 students. The calculated number of Students according to size to participate in the study was 240 students. (116249/18982)×392= 240 students. The faculty of arts was selected randomly from among 9 faculties: faculty of mathematical sciences, faculty of engineering, faculty of architecture, faculty of science, faculty of arts, faculty of law, faculty of economic and social studies, faculty of management studies, faculty of geographical and environmental sciences. The Faculty of arts includes 14 departments, of which 7 are humanistic which are Psychology, Islamic studies, Media, Philosophy, Archeology, History and Information Science. History department was randomly selected. While the other 7 are linguistic which are English, Arabic, French, Dutch, Russian, Chinese and Linguistics. Arabic department was selected randomly. 262 students were collected from both History and Arabic departments using total coverage. 127 students were from History department and 135 students were from Arabic department who were available at the time of study.

2.5.2 Shambat campus

The total number of students in campus was 3157 students, while the calculated number of students according to size to participate in the study was 65 students. (3157/18982)×392= 65 students. The faculty of Veterinary was selected randomly from among 4 faculties: Faculty of Veterinary, Faculty of Agriculture, Faculty of Animal Production and Faculty of Forests. 91 students were collected from the faculty of Veterinary who were available at the time of study by total coverage.

2.5.3 Education campus

The total number of students in campus was 4183 student, while the calculated number of students according to size to participate in the study was 86 students. (4183/18982)×392= 86 students. There are 14 departments in the campus of Education; 7 scientific (Family Science, Biology, Chemistry, Physics, Mathematics, Special Education and Education pre-school). Biology department was selected randomly. The other 7 artistic departments are (Art Education, Educational Psychology, French Language, Geography, History, Physical Education and Instructional Technology). Geography was randomly selected. 42 students were collected using total coverage. 20 students were taken from Biology department and 22 students were taken from Geography department who were available at the time of study.

2.6 Sample Frame

Multistage sampling done by simple random sample to the level of classes. Then, at the class level, total coverage for students available at the time of study.
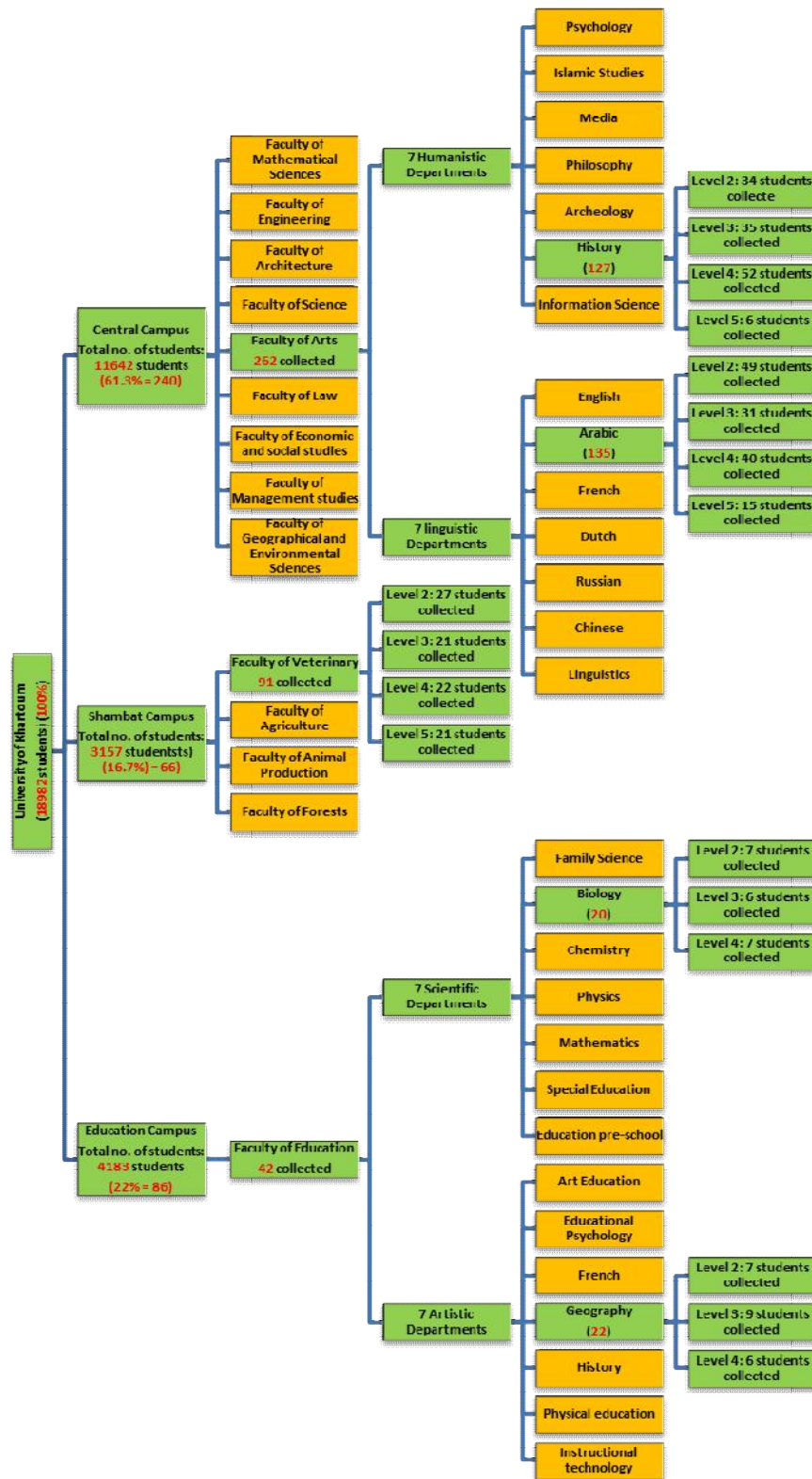
Fig. 1. Shows the selected colleges by Simple random sampling technique. The selected groups are colored in green

2.7 Study Limitation

Unavailability of students during data collection period in addition to limitations of time and resources.

2.8 Data Collection Tools and List of Variables

Demographic variables included age, gender and residence .The socio-economic variables were living with parents, monthly income, and source of income. Regarding residence background the variables were faculty, class, and perceived academic performance. Lastly drug history variables were smoking, snuffing, alcohol, cannabis, drug abuse, perception of mental disorder, and type of the disorder.

2.8.1 Center for epidemiologic studies depression scale as a screening instrument of major depressive disorder (CED-D) [13]

The 20 items in CESDR scale measure symptoms of depression in the last week. 4 Likert scale was used to assess each item, in which 0 indicates rarely or not at all, 1 indicates Sometimes, 2 for occasionally, 3 stands for most of the times . Except for the questionnaire items: 4,8,12 and 16; the scoring was inverted. The cut off for being symptomatic is 16 (16-60), any value less than 16 is considered as free from symptoms.

2.8.2 Generalized anxiety disorder (GAD-7) scale (screening tool) [14]

7 + 1 items scale to measure symptoms of anxiety in the last 2 weeks. 4 Likert scale was used to assess each item. 0 indicates no symptoms on any day, 1 stands for symptoms on several days, 2 stands for symptoms over half of the days of the 2 weeks, 3 stands for nearly every day. The Cut of being symptomatic were minimal 0-4, mild 5-9, moderate 10-14, and severe = 15-24 Two categories were then Developed which were not anxious 0-4 and anxious = 5-24

2.8.3 Stigma scale for receiving psychological help (SSRPH) [15]

To assess an individual's perception of how stigmatizing it is to receive psychological treatment. It consists of 5 items which are scored on a Likert-type scale in which 0 stands for strongly disagree, 1 for disagree, 2 for Agree and 3 for Strongly agree. The cutoff for low stigma is 0-5, for moderate stigma is 6-10 and for high stigma is 11-15. Then the cutoffs were re-categorized to not stigmatized 0-5 and stigmatized 6-15.

2.8.4 General help seeking questionnaire

To assess individual's intentions of seeking professionals psychological help when experiencing emotional or personal problems. It consists of 10 items of 10 different people from whom the students will seek help, which are scored on 7 Likert-type scale:1 stands for extremely unlikely, 2 for unlikely, 3 for somewhat unlikely ,4 for neutral, 5 for somewhat likely, 6 for likely, and 7 for extremely likely . The cutoffs were 1-3 unlikely while 5-7 likely. Two out of the 10 items were analyzed using crosstabs which were intentions to seek help from Mental health professional, Formal Help and intentions to seek help or not.

2.9 Data Collection Method

Data was collected using Standardized Questionnaire which was translated to Arabic, by an expert Psychiatrist, and was retested before data collection.

2.10 Data Analysis

Statistical Package for the Social Science and computer software programs were used in data analysis. Cronbach's alpha to test the internal consistency of the scales was used. Univariate, bivariate and measures of association by Pearson Chi-square with odds ratio and the test of significance were used.

Table 1. Reliability of scales used in the study

Scale	Number of items	Cronbach's alpha
Depression scale reliability	20	0.729
Generalized anxiety disorder (7 + 1) scale	7	0.841
Social Stigma of Receiving Psychological Help scale	5	0.646
General Help Seeking Questionnaire	10	0.632

≥ 0.9 Excellent, 0.7 - 0.9 Good, 0.6 - 0.7 Acceptable, 0.5 - 0.6 Poor and <5 is Unacceptable

2.11 Ethical Consideration

Ethical approval was obtained from the IRB (Institutional review board) University of Khartoum, and was obtained from the Faculty Registrars. Ethical consent from each subject was obtained and was assured of privacy and confidentiality. Students were given the free voluntary choice to write their names in case they were interested to know their results.

3. RESULTS AND DISCUSSION

3.1 Results

Total sample size was 395 students of which 66.8% were females and 33.2% were males . The following tables demonstrate the socio-demographic data, Prevalence of anxiety and depression symptoms, stigma and health care seeking behaviors.

Table 2. Characteristics of the non-medical Khartoum university students (March 2015)

Characteristics		Percentage
Sample size	395	100%
Age categories:	17-19 years	25.6
	20-22 years	50.1
	23-25 years	14.5
	>25	9.8
	total	100
Gender:	Male	33.2
	female	66.8
	Total	100
Residence	House	62.4
	Dormitory	37.6
	Total	100
Living with parents:	With both	52.2
	With mother only	10.5
	With father only	1.5
	None of them	35.8
	Total	100
Monthly Income	<1000	16.9
	1000-5000	73.5
	>5000	9.6
	Total	100
Source of income:	Self-occupied	10.8
	Parents	81.3
	Husband	5.0
	Brother	1.8
	Uncle	1.1
	Total	100
Faculty:	Art : Arabic	34.2
	Arts :History	32.2
	Veterinary	23.0
	Education science	5.1
	Education geography	5.
	Total	100
Level:	2nd year	31.6
	3rd year	26.0
	4th year	31.8
	5th year	10.6
	Total	100

Table 3. Academic performance, habits and perception of mental disorder among Non-medical Khartoum university students' (March 2015)

Variable		Percentage%
Perceived academic performance:	Yes	61.9
	No	38.1
	Total	100.
Smoking	Yes	7.6
	No	92.4
	total	100
Snuffing	Yes	4.5
	No	95.5
	Total	100
Perceived having mental disorder:	Yes	10.5
	No	89.3
	Total	100
If yes please identify:	Fear	19.4
	Depression and anxiety	2.8
	Depression	16.7
	Anxiety	22.2
	Schizophrenia	38.6
	Total	100
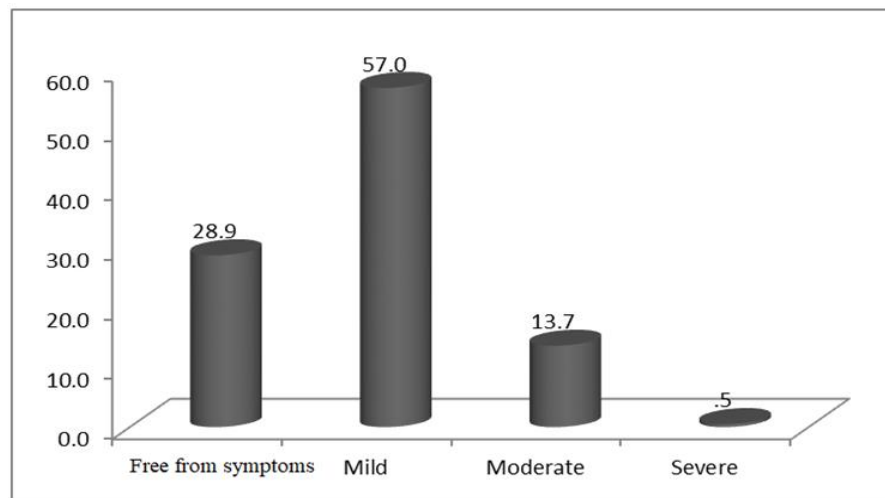
Fig. 2. Prevalence of depression symptoms among Non-medical students of the University of Khartoum March 2015

3.1.1 Associations

Chi square test was used to determine the association between Gender, academic performance, smoking and mental health morbidity.

3.2 Discussion

This study was conducted during March 2015 in three campuses of University Of Khartoum. Total sample 395 non-medical students participated voluntarily in the study. The aim of this study was to screen for depression and anxiety and to discover the degree of stigma and health seeking intensions. The actual health seeking introduced when a considerable proportion of students left their phone numbers to check for their mental health statuses.

3.2.1 Reliability

Reliability of the scales was tested by Cronbach's alpha to check for internal consistency. Results interpretation were ≥ 0.9 excellent, 0.7-0.9 good, 0.6-0.7 acceptable, 0.5-

0.6 poor and <5 is unacceptable. The 20 items depression scale showed cronbach's alpha 0.73 and GAD 7 + 1 items showed 0.84, both have good reliability. The stigma scale and the general help seeking questionnaire calculated cronbach alpha were 0.65 and 0.63 respectively, both have acceptable reliability.
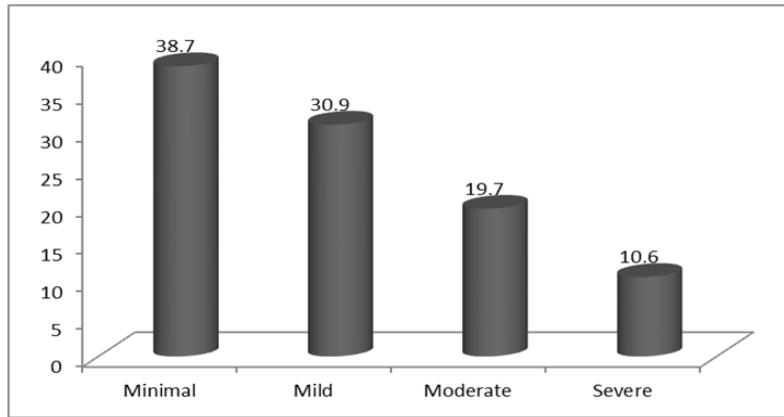

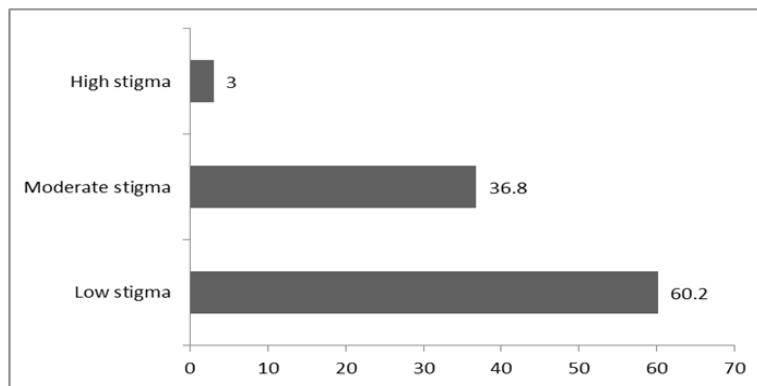**Fig. 3. Anxiety spectrum among non-medical students of the University of Khartoum March 2015**

Fig. 4. Social stigma spectrum among non-medical students of the University of Khartoum March 2015
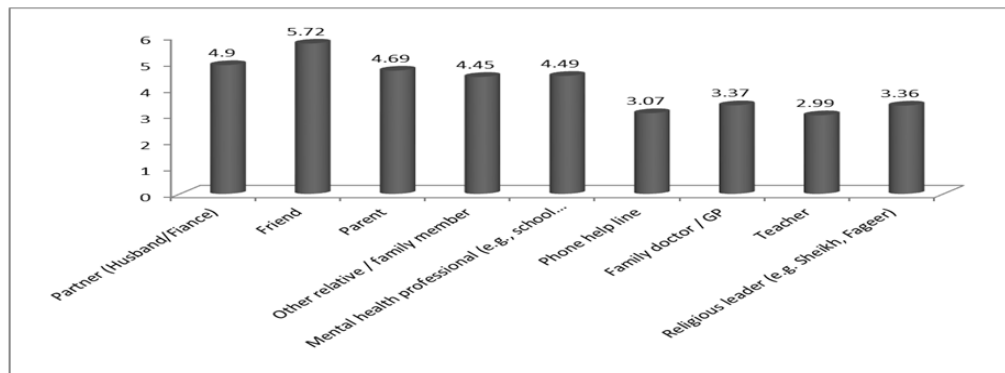
Fig. 5. Choice for seeking help for non-medical students of the University of Khartoum March 2015 (1-3 = unlikely, 5-7 = likely)

9
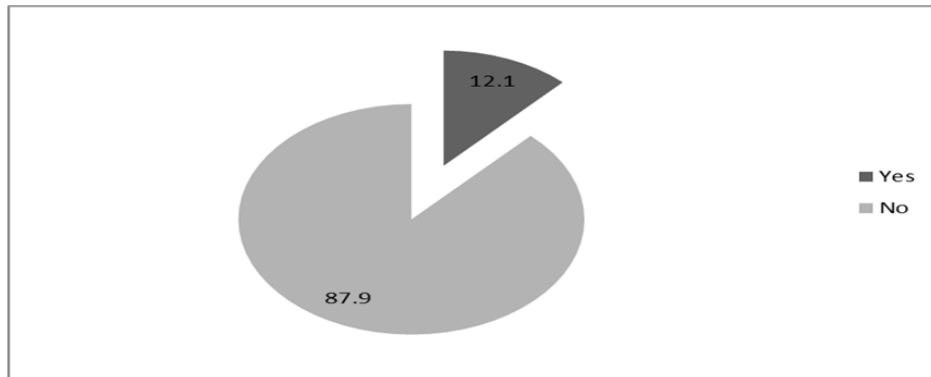
Fig. 6. Non-medical students of the University of Khartoum March 2015 who has ever seen a mental health professional (e.g., school counselor, counselor, psychologist, and psychiatrist) to get help for personal problems
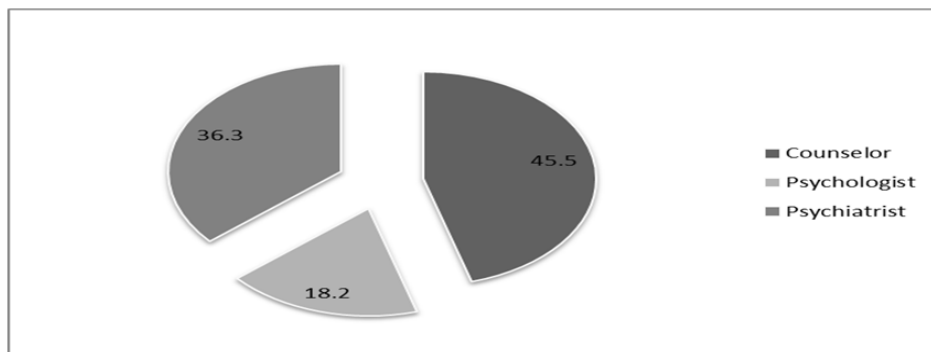
Fig. 7. Types of mental health professionals met by non-medical students of the university of Khartoum March 2015 who has ever seen a mental health professional
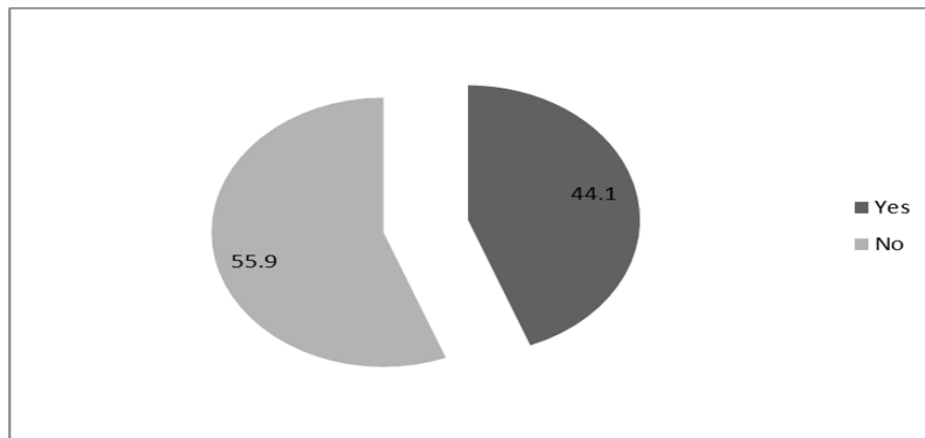

Fig. 8. Proportion of non-medical Khartoum University students (march 2015) who wrote their phone numbers to receive questionnaire results (actual help seeking behavior)

Those who were depressed were more likely to be anxious as proved by the literature [3,16,17]. Stigma and formal help seeking intensions were also found to be significantly associated, i.e. those who are not stigmatized were more likely to seek formal help as it is plausible and consistent with the literature [18,19,20].

3.2.2 Background variables and its relation with the mental health morbidity, stigma and help seeking intensions

Females who participated in the study comprised 66.8 % while males were 33.2 % which reflects the real situation of the students in universities with a gender ratio of at least 2:1 in most colleges. Males usually prefer working at a younger age rather than studying, and they participate financially to provide the family. This can be due to the overall financial problems affecting the country. This ratio is not consistent with studies done in Zurich, Switzerland 2005 mental health literacy online survey among university students who showed no difference between male and female frequencies which were 52% and 48% respectively [21]. Another study was done in 2005 among college students in Turkey also showed different male: female
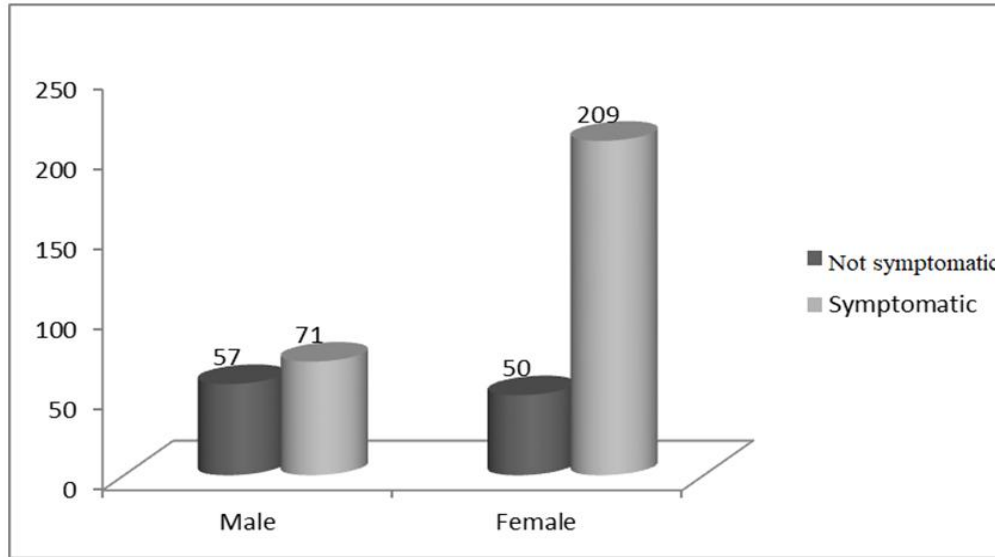

Fig. 9. Gender and depression among non-medical Khartoum university students (March 2015)
Pearson chi-square = .000 (significant) OR = 3.4 CI (2.1-5.3) RR = 1.5 CI (1.2-1.7) females are 1.5 times with depression symptoms than males
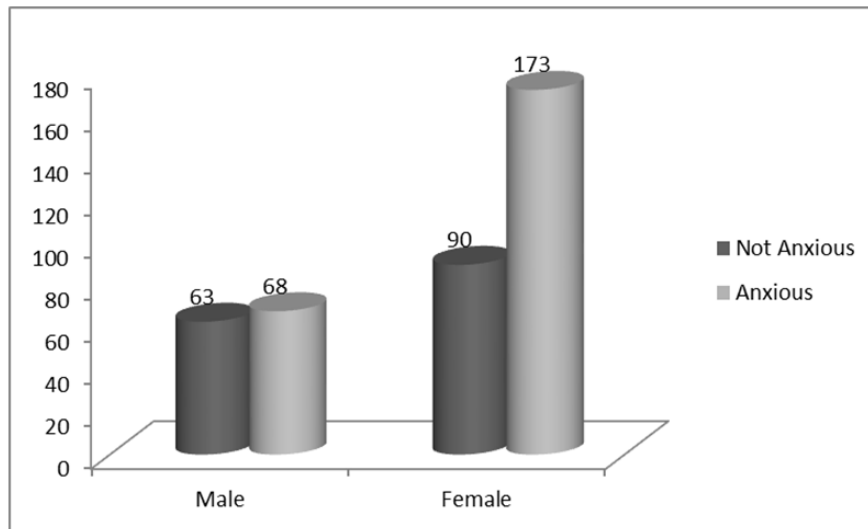

Fig.10. Gender and anxiety among non-medical Khartoum university students (March 2015)
Pearson chi-square = .008 (significant) OR = 1.8 CI (1.2-2.7) RR = 1.3 CI (1.1-1.5) Females are 1.3 times suffering from anxiety symptoms more than males

Ratio [22]. Females were found to be more depressed and anxious than males but less stigmatized. However there was no significant association that they would seek help more than males. A possible explanation is that males are able to cope with stresses in many different ways, which are very restricted to females due to Eastern cultural backgrounds. Males are prone to engage in different behavioral deviations and drug abuse more likely than females. This was consistent with a study conducted by E. Globerestien in October 2005 among undergrad and postgrad students in Midwestern Public University, which found that males were more stigmatized than females[23]. This can be attributed to the higher tendency of females to share their problems and secrets compared to males.
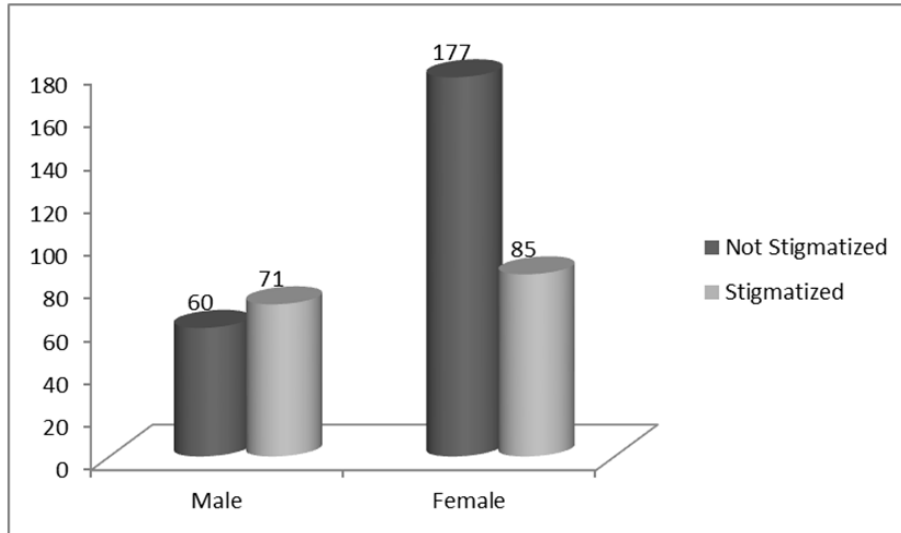

Fig. 11. Gender and stigma among non-medical Khartoum university students (March 2015)
Pearson chi-square = .000 (significant) OR = 2.5 (1.6-3.8) RR = 1.5 (1.3-1.8) Females are 1.5 times less stigmatized than males
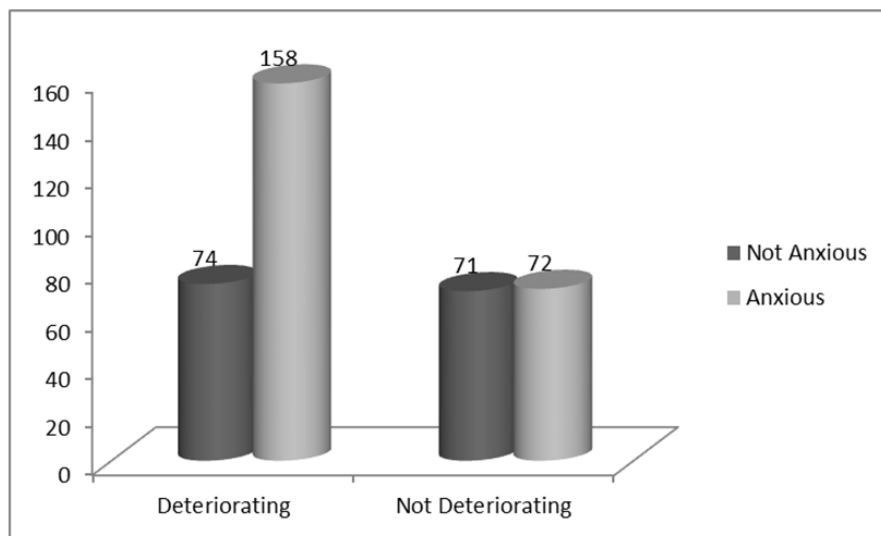

Fig. 12. Academic deterioration and anxiety among non-medical Khartoum University students (March 2015)
Pearson chi-square = .000 (significant) OR = 2.1 (1.4 to 3.2) RR = 1.3 (1.1-1.6)
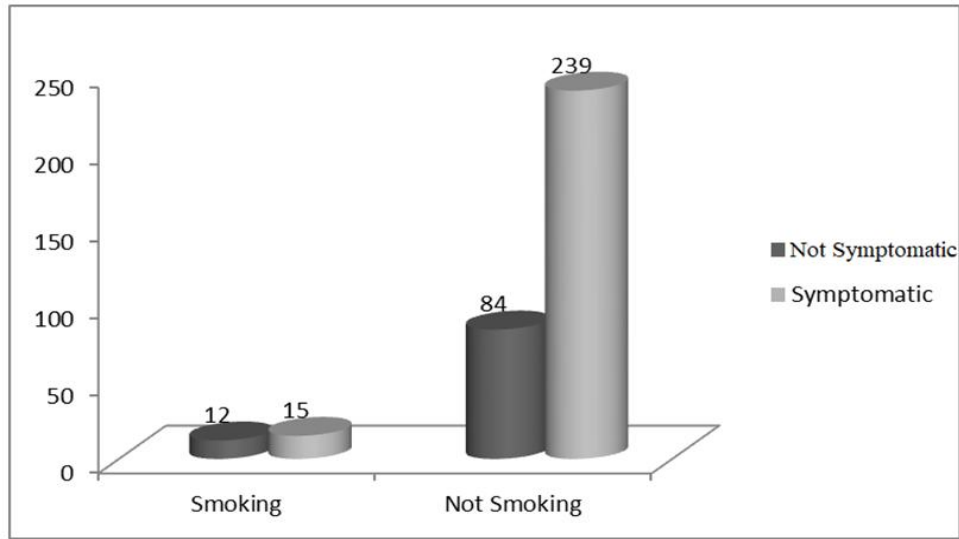*Performance deteriorating students are 1.3 times more suffering from anxiety symptoms*

Fig. 13. Smoking and depression among non-medical Khartoum University students (March 2015)
Pearson chi-square = .037 (significant) OR = 0.44 (0.198 to 0.98) RR= 0.75 (0.5-1.05) Smokers showed less depressive symptoms in comparison to non-smokers (protective)
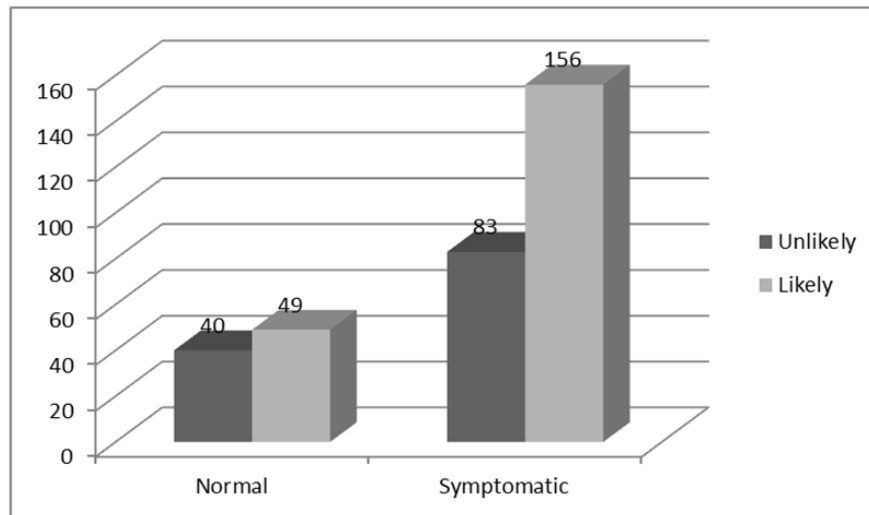

Fig. 14. Depression symptoms and seeking formal help among non-medical Khartoum university students (march 2015)
Pearson chi-square = 0.089 (not significant) OR= 1.53 CI(0.94 to 2.52)

Age was categorized into groups (17-19 years) and (20-22years) consisted the highest percentage of 50%, while (23-25years) and >25 years comprised only 10% of the sample. Age was not found to be associated with any of the dependent variables, Stresses and consequently mental disabilities can be equally distributed throughout the age groups included in the sample.

One of the most important indicators of mental health disorders is the academic performance deterioration among students. Yet other factors can contribute to this deterioration such as educational system deficits. In this study, the academic performance was compared using objective results of the last semester and the semester of the year before. Thus the self-reported perception of academic deterioration

was more likely to be just a comparison between the two close periods eliminating the educational system effect. In this study 61% of the sampled students perceived self-reporting academic deterioration, such a very high proportion can be attributed to other different factors besides mental disability. Self-reported deterioration was found to be significantly associated with anxiety and high stigma thus interprets the need of those students to seek mental help. Unfortunately there was no significant association between the self-reported deterioration and actual help seeking intentions. These results were consistent with a previous study by M. Chapell et al. in 2005 among 4000 undergraduate students and 1414 postgraduate students, where low-test-anxious female graduate students had significantly higher GPAs (graded point average) than high-test-
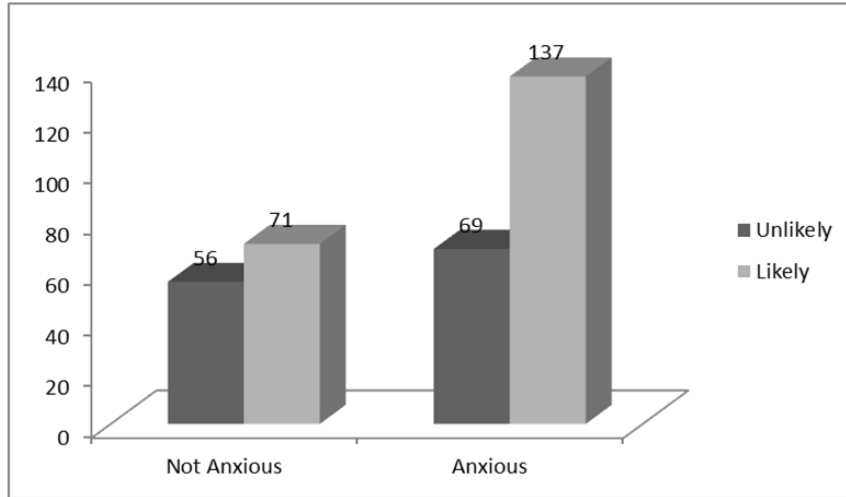

Fig. 15. Anxiety symptoms and seeking formal help among non-medical Khartoum University Students (March 2015)
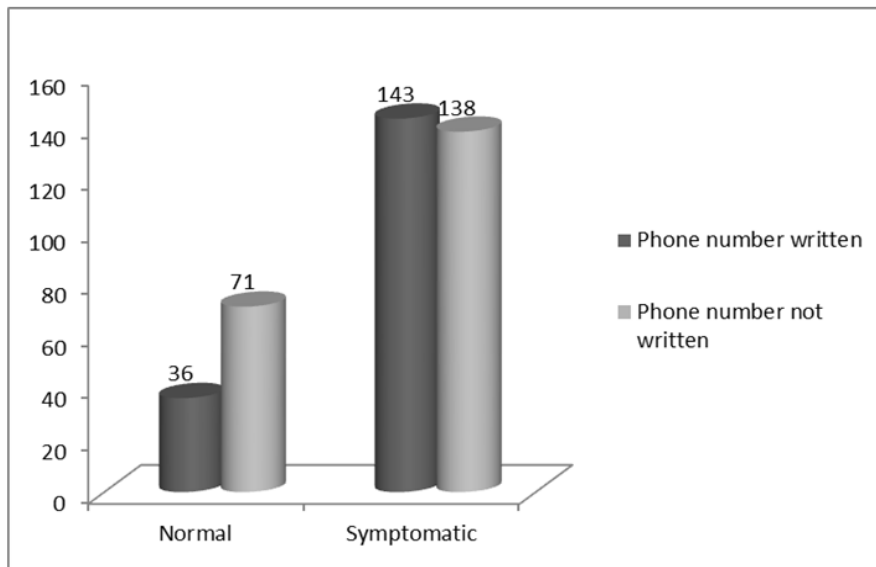*Pearson chi-square = 0.052 (not significant) OR = 1.57 ci (0.99 to 2.45)*

Fig. 16. Depression symptoms and writing the phone number (actual behavior to seek help) among non-medical Khartoum university students (March 2015)
Pearson chi-square = 0.000 (significant) OR= 7.25 CI (4.4 to 11.91) RR = 1.8 CI (1.5 to 2.1) students with depression symptoms are 1.8 times likely to actually seek help by writing their phone numbers
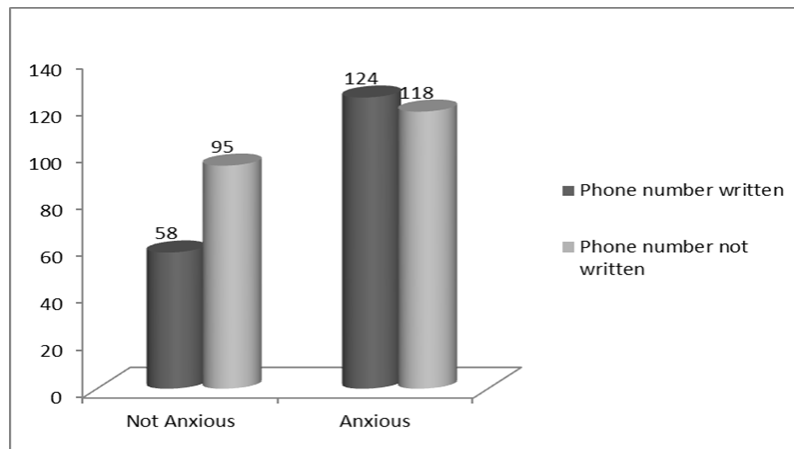
Fig. 17. Anxiety symptoms and writing the phone number (actual behavior to seek help) among non-medical Khartoum University students (march 2015)
Pearson chi-square = 0.01 (significant) OR = 1.7 CI (1.1 - 2.6) RR = 1.4CI (1.1 - 1.7) students with anxiety symptoms are 1.4 times likely to actually seek help by writing their phone numbers
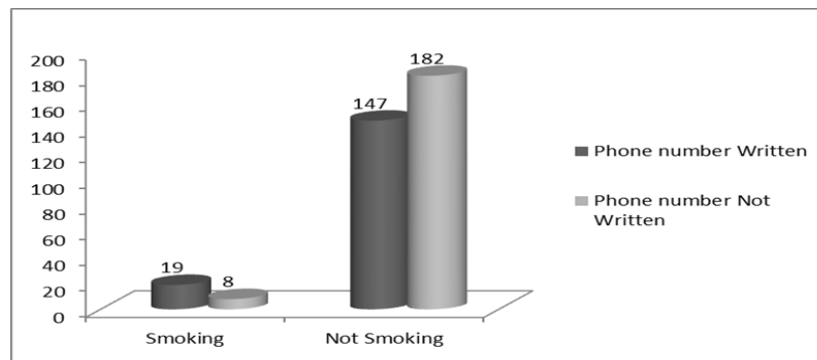

Fig. 18. Smoking and writing the phone number among non-medical Khartoum university students (March 2015)
Pearson chi-square = .009 (significant) OR = 2.94 (1.3 to 6.9) RR = 1.6 (1.2-2.1) smokers are 1.6 times more likely to actually seeking help by writing their phone numbers

anxious female graduate students [24]. In the above mentioned study, the academic deterioration was not associated with depression in contrast to a study done by D. Eisenberg et al. in 2009 which identified depression as an important predictor to academic performance (50). Anxiety was more likely to be associated with academic deterioration than depression. Logically this can be explained that chronic depression (dysthymia) can keep the patient productive with minimal performances. Therefore a considerable proportion of the sampled students with symptomatic depression maybe suffered from dysthymia which rendered their performance to be stable for two years and thus not reporting any deterioration [25].

Only 7.6% admitted to be smokers, who were all males except one was a female. According to this study, smokers showed less depressive symptoms in comparison to non-smokers, but were associated with higher stigma level, which might reflect the use of smoking to cope with stresses rather than seeking help. However those who sought medical help wrote their phone numbers to receive their mental health situation results. Drug and smoking abuse in the Sudanese culture are highly stigmatizing. Consequently people tend to deny the abuse of drugs and consequently only one student in the whole sample admitted to use drugs. Opposite to the study which was done by R. Hussein in 2013 among the rural students, which found that almost 20 % of the students were smokers [26].

Only 10.5% of students perceived themselves as having a mental health disorder, of those more than one third (38.6%) reported schizophrenia as the most common mental disorder. This might be explained that they misunderstood the medical term, as the Arabic meaning commonly used by lay people for Schizophrenia is hesitative personality, low self-esteem, and double personalities instead of the scientific diagnostic meaning of schizophrenia as one of the psychotic spectrum. Almost 22% of the students reported anxiety as the 2nd most common problem. 20% stated fear as a third cause which has been a symptom of many mental disorders such as: phobias, panic attacks, obsessive compulsive disorder, even depression and anxiety etc. fear is very distressing and thus well perceived by the students. Fourthly depression represented 16.7% and only depression and anxiety combined together represented 2.8%.

3.2.3 Mental health morbidity among the non-students and its relation with stigma and help seeking intensions

More than two thirds of the students suffered from various symptoms of depression. When categorized into 4 groups: Free from symptoms 28.9% (0-15), mild depression 57% (16-30), moderate depression 13.7% (31-45) and severe depression 0.5% (46-60). This huge proportion of students suffered from symptoms that range from mild blues to dysthymia or chronic depression that continued for years.

Depression was found to be more prevalent than anxiety. This can be explained by the students' ability to perceive anxiety symptoms more than depression symptoms. a systematic review of 24 studies by Ibrahim 2013 estimated mean prevalence of depression among medical students is 30% [27]. Many studies were done among students screening for depression. a screening study done among Oman university in 2011, students showed 28% symptomatic depression [28]. Another study from Arabian setting among medical students in Riyadh, Saudi Arabia showed 48.2% were symptomatic [29] prevalence of depressive symptoms among Turkish university students was found to be 48% [30].

Regarding students who had anxiety symptoms for the last 2 weeks they were categorized according to the scoring system into 4 groups: minimal 38.7%, mild 30.9%, moderate 19.7 % and severe 10.6 %. In summary more than half of the students 61% had mild to severe

symptoms which can also be attributed to acute stresses. These results were consistent with a study done among Turkish students 2008 which showed that 60% had anxiety symptoms [30]. systematic review done by J. Somers et al. included a total of 41 prevalence and 5 incidence studies about anxiety disorders found that 10-16 % was 1-year lifetime prevalence [31]. Different methodological tools and different student's settings might have contributed to the differences in the results.

Extended likert scale from 1 (extremely unlikely) to 4 (neutral) to 7 (extremely lightly) was used to measure the intentions to seek help due personal or emotional problem. Students were most likely to seek help from friends, followed by partner, then parents, and other relative or family member, 4th in order to friends, partner and parents. The students' were likely to seek formal mental health professional help, mean = 4.49.This demonstrates that non-formal help seeking is more common among students who seek help. Students were less likely to seek non formal non relative help such as from family doctors, religious leaders, phone help lines and teachers respectively .These results were closely consistent with a study done by B. Avanzo et al (2012) among Italian students who preferred to seek help mostly from friends, then parents, partners and professional help [32]. Alternating order in parents and partners was the only difference.

12% of students actually sought formal help previously. Nearly half of them of went to counselors, one third went to psychiatrists and the remaining went to psychologists. This can verify counseling and psychotherapy are very beneficial for coping with stresses among the students. The Proportion of students who actually sought help and wrote their phone number was 44.1 %. This proportion was significantly unassociated neither with stigma nor with formal help seeking intentions. This reflects that there were no associations between mental health disability, stigma and formal help seeking.

Students with depression and anxiety symptoms were found to be more likely to have actual help seeking intensions (RR 1.8 and 1.4) respectively, but were not associated with intention to seek formal psychological help. This indicates that symptomatic students were ready to receive help, when a mental health service outreached them instead. Public stigma has its strong impact

on people of Sudan. The social power and effect has its fingerprints in every single aspect of the individual behaviors. Thus can direct and predict many behavioral aspects and may become barriers to others. In this study sample, students who were affected by such public stigma were unable to seek formal help. There was a significant association between anxiety and high stigma.

4. CONCLUSION

The majority of university students were found to be suffering from depression and anxiety symptoms, with depression being more prevalent than anxiety. Females were found to be more depressed and anxious than males but less stigmatised. Only a few students perceived themselves as having a mental disorder. Students were most likely to seek help from friends followed by partners, parents, and then a mental health professional. Only a small proportion of students thought formal help previously, half of them went to counsellors. Almost half of the students were interested to know their mental health status by providing their phone numbers. Stigma and formal help-seeking intentions were found to be significantly associated; those who were not stigmatised were mmore likely to seek formal help, which indicates that stigma is a mental health barrier. It is strongly recommended to increase the public perception about mental health status, indicators, causes of deterioration, the different methods of help-seeking and stress coping mechanisms through educational media programs, lectures and seminars. Further studies are needed to significantly determine the real burden of mental health disability, using diagnostic techniques, in addition to evaluating the risk factors that participated in provoking stresses, specifically among females. Furthermore, evaluation studies are needed to assess risky behaviours used by students to cope with their stresses as well as Suicidal attempts. It is also preferred to encourage students to change their behaviour towards seeking professional psychological help, thus the availability of well-trained counsellor or psychotherapist is vital in colleges since Psychotherapy is the most commonly preferred technique by students.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. WHO | Mental health: A state of well-being. World Health Organization.
    [Cited 2014 Aug 20]
    Available:http://www.who.int/features/factfiles/mental_health/en/
2. Vanheusden K. Mental health problems and barriers to service use in dutch young adults. Rotterdam, Netherlands: Optima Grafische Communicatie; 2007.
3. Gulliver A, Griffiths KM, Christensen H. Perceived barriers and facilitators to mental health help-seeking in young people: A systematic review. BMC Psychiatry. 2010;10:113.
4. Mental Health Issues and the University Student [Internet]. [cited 2015 Feb 18]. Available:https://jhupbooks.press.jhu.edu/content/mental-health-issues-and-university-student
5. Choices N. Student stress - Live Well - NHS Choices. Department of Health; [cited 2015 Feb 18].
    Available:http://www.nhs.uk/Livewell/studenthealth/Pages/Copingwithstress.aspx
6. WHO. WHO | Mental disorders affect one in four people [Internet]. World Health Organization; 2001 [cited 2014 Dec 2]. Available:http://www.who.int/whr/2001/media_centre/press_release/e n/
7. Abdelgadir E. Exploring barriers to the utilization of mental health services at the policy and facility levels in Khartoum State, Sudan [Internet]; 2012.

Available:https://dlib.lib.washington.edu/researchworks/bitstream/handle/1773/20682/Abdelgadir_washington_0250O_10393.pdf?sequence=1

8. Shaaban K, Baashar T. A Community study of depression in adolescent girls: Prevalence and its relation to age. Medical Principles and Practice. 2003;12(4):256-259.

9. Mustafa Khidir Mustafa Elnimeiri. Survey Adoles Report. Khartoum state; 2014.

10. Ministry of Higher Education. احصاءات التعليم العالي للعام الدراسي *2011-2012* [Internet]. [cited 2015 Jun 9].
Available:http://www.mohe.gov.sd/index.php/information-and-statistics/reports-and-statistics/98-statistics-of-he2011-2012

11. University of Khartoum. Faculties and Schools [Internet]. 2015 Jun 12.
Available:http://www.uofk.edu/faculties-and-schools

12. Wikipedia: The free Encyclopedia. University of Khartoum [Internet].
Available:https://en.wikipedia.org/wiki/University_of_Khartoum

13. CESD-R: Center for Epidemiologic Studies Depression Scale Revised Online Depression Assessment » CESD-R Explanation [Internet]. 2014 Nov 27.
Available:http://cesd-r.com/cesdr/

14. GAD7 Anxiety Test Questionnaire | Patient.co.uk [Internet]. 2014 Nov 27.
Available:http://www.patient.co.uk/doctor/generalised-anxiety-disorder-assessment-gad-7

15. Komiya N, Good GE, Sherrod NB. Emotional openness as a predictor of college students' attitudes toward seeking psychological help. J Couns Psychol [Internet]. 2000 Dec 31 [cited 2014 Dec 2];47(1):138–43.
Available:http://www.researchgate.net/publication/232460432_Emotional_openness_as_a_predictor_of_college_students'_attitudes_toward_seeking_psychological_help

16. Ballenger JC, Davidson JR, Lecrubier Y, Nutt DJ, Borkovec TD, Rickels K, et al. Consensus statement on generalized anxiety disorder from the International Consensus Group on Depression and Anxiety. J Clin Psychiatry [Internet]. 2001 Jan;62(Suppl 1):53–8.
Available:http://www.ncbi.nlm.nih.gov/pubmed/11414552

17. Eisenberg D, Gollust SE, Golberstein E, Hefner JL. Prevalence and correlates of depression, anxiety, and suicidality among university students. Am J Orthopsychiatry. 2007;77:534–42.

18. Pheko M, Chilisa R, Balogun S, Kgathi C. (). Predicting Intentions to Seek Psychological Help Among Botswana University Students. SAGE Open. 2013;3(3):215824401349465.

19. Wrigley S, Jackson H, Judd F, Komiti A. Role of stigma and attitudes toward help-seeking from a general practitioner for mental health problems in a rural town. Aust N Z J Psychiatry. 2005;39:514–21.

20. Topkaya N. Gender, Self-stigma, and Public Stigma in predicting attitudes toward psychological help-seeking. Educ Sci Theory Pract [Internet]. 2014;14(2):480–8.
Available:http://www.edam.com.tr/kuyeb/tr/makale.asp?ID=957&act=detay

21. Lauber C, Ajdacic-Gross V, Fritschi N, Stulz N, Rössler W. Mental health literacy in an educational elite -- an online survey among university students. BMC Public Health. 2005;5:44.

22. Seyfi F, Poudel KC, Yasuoka J, Otsuka K, Jimba M. Intention to seek professional psychological help among college students in Turkey: influence of help-seeking attitudes. BMC Res Notes [Internet]. 2013;6:519.
Available:http://www.ncbi.nlm.nih.gov/pubmed/24313965

23. Golberstein E, Eisenberg D, Gollust SE. Perceived stigma and mental health care seeking. Psychiatr Serv [Internet]. 2008 Apr;59(4):392–9.
Available:http://www.ncbi.nlm.nih.gov/pubmed/18378838

24. Chapell MS, Blanding ZB, Silverstein ME, Takahashi M, Newman B, Gubi A, et al. Test Anxiety and Academic Performance in Undergraduate and Graduate Students. Journal of Educational Psychology. 2005; 268–74.

25. University of Khartoum. Faculties and Schools [Internet]. 2015 Jun 12.
Available:http://www.uofk.edu/faculties-and-schools

26. Hussain R, Guppy M, Robertson S, Temple E. Physical and mental health perspectives of first year undergraduate rural university students. BMC Public Health [Internet]. 2013;13:848.
Available:http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3847612&tool=pmcentrez&rendertype=abstract

27. Ibrahim AK, Kelly SJ, Adams CE, Glazebrook C. A systematic review of

studies of depression prevalence in university students. Journal of Psychiatric Research. 2013;391–400.

28. Al-Busaidi Z, Bhargava K, Al-Ismaily A, Al-Lawati H, Al-Kindi R, Al-Shafaee M, et al. Prevalence of depressive symptoms among university students in Oman. Oman Med J. 2011;26(4):235–9.

29. Al-faris EA, Irfan F, Van Der Vleuten CPM, Naeem N, Alsalem A, Alamiri N, et al. The prevalence and correlates of depressive symptoms from an Arabian setting: A wake up call. Medical Teacher. 2012;S32–6.

30. Bayram N, Bilgel N. The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. Soc Psychiatry Psychiatr Epidemiol. 2008; 43(8):667–72.

31. Somers JM, Goldner EM, Waraich P, Hsu L. Prevalence and incidence studies of anxiety disorders: A systematic review of the literature. Can J Psychiatry. 2006; 51(2):100–13.

32. D'Avanzo B. Formal and Informal Help-Seeking for Mental Health Problems. A Survey of Preferences of Italian Students. Clin Pract Epidemiol Ment Heal. 2012; 8(1):47–51.