

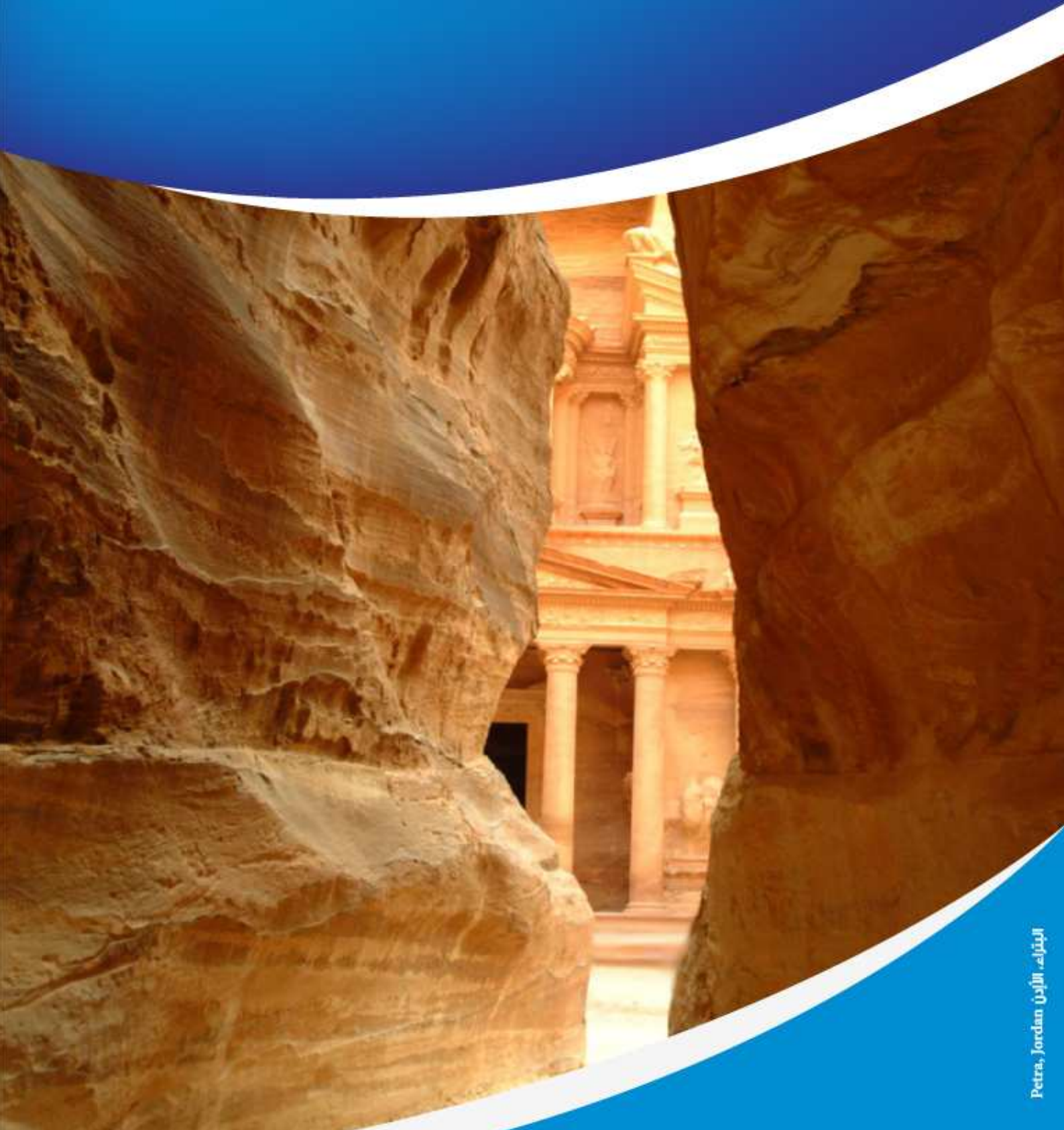
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اتحاد الأطباء النفسيين العرب  
Arab Federation of Psychiatry

# The Arab Journal of Psychiatry المجلة العربية للطب النفسي

Vol. 22, No.1, May 2011  
المجلد ٢٢، العدد الأول، أيار، مايو ٢٠١١



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The Arab Journal of Psychiatry (AJP) is published by the Arab Federation of Psychiatrists since 1989 in Jordan. The Journal is biannual published in May and November electronically and as hard copy. Original scientific reports, review articles, and articles describing the clinical practice of Psychiatry will be of interest for publication in AJP. The Articles should not be published before. The articles may be written in English or Arabic and should always be accompanied by an abstract in English and Arabic. All Papers are accepted upon the understanding that the work has been performed in accordance with national and International laws and ethical guidelines. Manuscripts submitted for publication in the Arab Journal of Psychiatry should be sent to: The Chief Editor .

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## **Editorial Letter**

Dear Colleagues

It is my pleasure to write to you in this twenty second volume of the Journal, the effort is continuous to raise the standard, encourage researchers and distribute knowledge and experience around the Arab countries and the world.

The Journal has been available on line since 2008, and every time it is published simultaneously online and in hard copies.

I am thankful to all colleagues who send papers and the reviewers who are always ready to evaluates and re-evaluate papers.

The Arab Federation of psychiatrists has made good progress in the past two decades and hopefully this will accelerate in the future.

**The Chief Editor**

**Walid Sarhan**

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## Epidemiology of Schizophrenia and Related Disorders in the Arab World

Rim Saab, Driss Moussaoui, Caroline C. Tabet, Youssef El Hamaoui, Mariana M. Salamoun, Zeina N. Mneimneh, Elie G. Karam

### وبانيات الفصام والإضطرابات المتعلقة به في العالم العربي

ريم صعب، ادريس المساوي، كارولين تابت، يوسف الحموي، مريانا سلمون، زينه منيمنه، اليكي كرم

#### Abstract

**O**bjective: Mental health research has been increasing over the past 40 years in the Arab world. Reviews on several topics in this region were conducted including suicide, substance use disorders, anxiety disorders and attention deficit and hyperactivity disorder so as to update clinicians, researchers, and students alike about such research. The aim of this paper is to address the topic of schizophrenia and related disorders. **Method:** A review was conducted up until 2007 using specific keywords and several search engines (PubMed, PsycInfo, and IDRAAC web database) to identify relevant articles. **Results:** Despite the scarcity of literature on schizophrenia and related disorders in the Arab world, a variety of topics emerged from the current research. According to the publications identified, the prevalence of psychotic disorders ranged between 0.7% and 5.6% with no highlighted gender differences. Several studies examined comorbidity among psychotic disorders and substance use or depression, and/or the burden related to psychotic disorders (stigma and discrimination, family burden, burden of criminality, burden of lack of treatment, fertility and death related issues). **Conclusion:** There is an unmet need for national studies on schizophrenia and related disorders in this region of the world to identify the magnitude of the problem, and consequently to inform the future direction of research and clinical practice.

**Keywords:** Arab, Epidemiology, Psychotic disorders, Schizophrenia

**Declaration of interest:** None

#### Introduction

A review of mental health research in the Arab world identified a steady increase in the number of publications over a 33 year period (1966-1999), despite limited funding allocated for research by Arab governments<sup>1,2</sup>. An update of this assessment will be published soon. To date, reviews on suicide<sup>3,4</sup>, substance use disorders<sup>5</sup>, anxiety disorders<sup>6</sup>, and attention deficit and hyperactivity disorder<sup>7</sup> have been published. The purpose of these reviews was to update clinicians, researchers, and students alike about current research in the Arab world. This present paper reviews the epidemiology of schizophrenia and related psychotic disorders in the Arab world.

#### Methods

The Institute for Development, Research, Advocacy and Applied Care (IDRAAC), in association with the Department of Psychiatry and Clinical Psychology at Saint George Hospital University Medical Center and Balamand University (Lebanon) has conducted an exhaustive literature review on schizophrenia and related psychotic disorders in the Arab world up until the end of 2007. The search for the articles was conducted using PsycINFO, PubMed, and IDRAAC search engine (www.idraac.org, which includes a

compilation of references from various databases). The keywords used in the search included: affective flattening, alogia, avolition, catatonic, catatonia, delusion, disorganized speech, disorganized behavior, hallucination, negative symptom, paranoid, psychosis, psychotic, residual, schizoaffective, schizophrenia, and schizophreniform. In addition to the following countries and regions: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, UAE, Yemen, Arab, Gulf, Gaza and Middle East. The search was not restricted to any language.

The exclusion criteria for references were: non-epidemiologic studies (e.g. clinical trials, case-control studies), non-Arab samples, or dissertation abstracts. After screening all the abstracts resulting from the search, full texts of relevant articles were retrieved either online or requested from the authors (via both regular and electronic mails in addition to repeated reminders). The content of these articles were either included in this review or used to back search other studies through their reference lists. At the end, 18 articles were included in the current review (Table 1).

**Table 1. List of the publications included in this review**

Country	Reference No	Date of study	Sample	Instruments (Diagnostic System)
Algeria	28	1963-1986	Cases of misdemeanor who made psychiatric consultations (n =3662)	Structured Questionnaire Classification Française des Troubles Mentaux
Bahrain	9	1988-1996	Inpatients with schizophrenia (n=325)	
Egypt	19	2001	Psychiatric inpatients (n=100)	Structured Clinical Interview for DSM-III-R Mental Disorder-I, Structured Clinical Interview for DSM-III-R Mental Disorder-II, Beck Depression Inventory,

				Positive and Negative Syndrome Scale (DSM-IV)
Egypt	34	2000	Psychiatric inpatients (n=520)	
Egypt	35	2005	Psychiatric clinical group and control group (n=765)	Arabic Scale of Death Anxiety
Kuwait	29	1992	Prisoners (n=69)	
Lebanon	18	1979-1992	Psychiatric inpatients (n=222)	Hospital charts (DSM-III-R)
Morocco	17	1999	Patients with schizophrenia (n=183)	(ICD-10)
Morocco	21	2004	Family members of psychiatric outpatients (n=100)	Structured Questionnaire
Morocco	30	2004	Outpatients with schizophrenia (n=400)	(DSM-IV)
Qatar	16	1996 -2004	Inpatients and/or outpatients that were diagnosed with acute and transient psychotic disorders (n=174)	Database of the Department of Psychiatry (Section of Medical Records) ( ICD-10)
Sudan	20	2005	Community living psychiatric patients (n=150), control group (n=211) and caregivers group (n=150)	WHO- Quality of Life Instrument (ICD-10)
Sudan	22	1978	Adult health patients & their companions (n=183)	Structured Questionnaire of Malhotra and Wig <sup>23</sup>
Sudan	24	2005	Schizophrenia caregivers (n=98) other caregivers & control group (n=189)	WHO-Quality of Life Instrument (ICD-10)
UAE	8	1989	Community sample (n=300)	Present State Examination Arabic version 9th edition (ICD-9)
UAE	10	1996	Community sample (n=1394)	Arabic Composite International Diagnostic Interview, Structured Clinical Interview for DSM-III-R Mental Disorders, Self Report Questionnaire-20 Arabic, General Health Questionnaire, (ICD-10, DSM-IV)
UAE	13	1996-1997 & 1 year later	Community sample (n=245)	Composite International Diagnostic Interview, Structured Clinical Interview for DSM-III-R Mental Disorders
UAE	33	1993	Psychiatric inpatients (n=248)	Hospital charts (ICD-10)

## Results

### Prevalence

The studies assessing prevalence and incidence of schizophrenia and related disorders were from Bahrain, Qatar, Morocco, and United Arab Emirates.

The Dubai Community Psychiatric Survey, conducted by Ghubash et al<sup>8</sup>, assessed the prevalence of psychiatric disorders and their socio-demographic correlates in 300 randomly selected women who were mainly native Arabs and third generation Iranian migrants aged between 15 and 65. The authors used the Present State Examination (PSE-ID-CATEGO) system. Women with organic mental disorders, neurological disease or mental retardation were excluded from the study. The psychiatric morbidity rate (Index of Definitions  $\geq 5$ ) was found to be 22.7% (n=68), with around three quarters of the case group (n=53) at threshold level. The prevalence of mania and psychotic disorders was found to be 1.9% (n=6), with 0.3% (n=1) having schizophrenia of the catatonic type according to ICD- 9 criteria, 0.3% (n=1) having other paranoid states, and 1.3% (n=4) having manic-depressive psychosis of manic type.

The second study was conducted by Abdul Karim and Al Haddad<sup>9</sup> and aimed at evaluating the incidence of schizophrenia at first hospital admission in Bahrain.

Three hundred twenty five patients with schizophrenic disorder were admitted between 1988 and 1996 (200 males and 125 females). The authors thus reported an average annual incidence rate in Bahrain of 1.29 per 10,000 for all ages and 2.13 for the 15 to 54 age group.

The third study, the Al Ain Community Psychiatric Survey I<sup>10</sup>, was a community study that assessed prevalence of schizophrenia and related disorders in a general population in an Arab region. The assessment was made using the Composite International Diagnostic Interview (CIDI) version 1.1<sup>11,12</sup>. The study was based on a sample of 1394 adults drawn from the general population of United Arab Emirates nationals living in the city of Al Ain. Of that sample, 49.1% were females; most respondents were aged between 18 and 40, and two-thirds were married (68.3%). The study yielded a total lifetime prevalence rate of 8.2 % (95% CI [6.7-9.7]) for ICD-10 psychiatric disorders with a female: male ratio of 2.3. For ICD-10 schizophrenia and related disorders, the total lifetime prevalence rate was found to be 0.7% (95% CI [0.2-1.2]). The authors note, however, that this figure may be understated, given the exclusion of highly disturbed and cognitively impaired individuals from the survey and the stigma associated with mental illness (especially for men), perhaps even more so with schizophrenia and related disorders. It is worth

mentioning that the authors did not survey institutionalized individuals, which further indicates that the prevalence figure may be understated.

The same authors<sup>13</sup> had previously conducted the Al Ain Community Psychiatric Survey of Psychiatric Morbidity III, in order to estimate the incidence of mental disorders from the Al Ain Community Survey of Psychiatric Morbidity and the remission rate of the threshold and subthreshold disorders 12 months after the original assessment, as well as the effect of utilization of services on the remission rate. The final sample consisted of 245 subjects, with a mean age of 34.1 +/- 12.02. Fifty one percent (n= 125) had no DSM-III-R psychiatric disorder, 32% (n=79) had subthreshold disorders and 17% (n=41) had DSM-III-R psychiatric disorders (threshold). All subjects were assessed 12 months later for follow-up, using the Structured Clinical Interview for DSM-III-R mental disorders (SCID) version 1.0<sup>14</sup>. The annual incidence rate of all mental disorders was found to be almost 11%. At baseline, 5 out of 245 subjects suffered from schizophrenia and bipolar disorders (no data is available on each). At follow-up, 4 subjects out of the 5 were still suffering from their illness. The authors believe this indicates that spontaneous remission in their community is less likely in the case of psychotic disorders.

A national epidemiological study, unpublished but conveyed to the authors by Moussaoui, was conducted in Morocco in 2003-2004 to assess the prevalence of mental disorders in a representative sample of the general population 15 years of age and above using the Mini International Neuropsychiatric Interview (MINI) as instrument of interview<sup>15</sup>. The study found that the prevalence of psychotic disorders was 5.6%.

In a retrospective hospital based study, Shaltout et al.<sup>16</sup> assessed the occurrence of acute and transient psychotic disorders (ATPD) in the Qatari population (N= 724,125; nationals constituting about 30% of the general population) and attempted to ascertain significant socio-demographic characteristics among those diagnosed with ATPD (based on ICD-10). Medical records for all inpatients and/or out-patients (Qatari, non-Qatari Arabs and expatriate) that were diagnosed with a psychotic disorder from 01 August 1996 – 01 January 2004, and sought treatment at the Department of Psychiatry of the Rumaillah Hospital were included in the study. During the observed period, 174 patients were diagnosed with ATPD (1.4% of all psychiatric patients treated during this period). Of those diagnosed with an ATPD, the most common type of ATPDs was acute schizophrenia-like psychotic disorder (35.6%), most of whom affected were males (74.2%) and in the age group 16-29 (56.5%). The second and third most common types of ATPDs were acute polymorphic psychotic disorder without symptoms of schizophrenia (23%), and acute polymorphic psychotic disorders with symptoms of schizophrenia (20.7%), respectively.

### **Gender differences**

In the Al Ain Community Psychiatric Survey I<sup>10</sup>, unlike other ICD-10 psychiatric disorders, lifetime prevalence of schizophrenia and related disorders showed no gender differences at all (0.7% for women, 0.7% for men, with 95% CI [0.2-1.2]).

In the Qatari hospital based study, Shaltout et al.<sup>16</sup> found that of 174 individuals that were diagnosed with an acute and transient psychotic disorder over a 7- year period, 69% were males (P<0.001).

### **Comorbidity**

Moussaoui et al.<sup>17</sup> conducted a study on the comorbidity between schizophrenia, depression and suicidality, using a sample of 183 patients with a schizophrenic disorder (ICD-10 criteria). The sample's mean age was 34.3 +/- 8 years with 90% of the patients being males. The authors found a prevalence of 44.3% of depressive symptoms that did not, however, warrant a diagnosis of major depressive disorder. While 2.7% of the sample reported suicidal ideas (40% of whom had a depression or had what the authors called "a painful consciousness of their illness", that is, the patients' awareness of their illness instilled sadness in them), 5% of the sample had a specific plan to implement them. The authors also reported substance abuse in 34% of their sample, cannabis being the most highly abused substance.

A few studies were actually found that tackled comorbidity of schizophrenia and substance abuse. A study was conducted in Lebanon by Karam et al.<sup>18</sup>, who examined comorbidity of substance abuse with other psychiatric disorders (among which schizophrenia). The sample consisted of 222 inpatients admitted to the St Georges Hospital University Medical Center Psychiatry Unit in Beirut from 1979 to 1992 for substance abuse with or without other Axis I psychiatric disorders. The sample's mean age was 34.5 +/- 11.8 years. The comorbidity rate of Axis I psychiatric disorders in patients with substance abuse were found to be 64.9%, using the DSM-III-R diagnostic criteria. As for schizophrenia and schizoaffective illness, substance abuse was found to be 12.5%. Patients with schizophrenia were characterized by the highest prevalence rate of cannabis abuse (44.8%). Twenty seven point eight percent were found to have abused cocaine and 11.1% heroin. Licit substances were generally less abused, with a 5.6% prevalence of abuse of both stimulants and medicinal opiate derivatives, but none of tranquilizers or barbiturates. Alcohol had been found to be almost equally abused among different diagnostic categories, with 44.4% of schizophrenic patients abusing it. The authors attribute this high rate of alcohol abuse to the availability and the easy accessibility of alcohol in Lebanon. However, a limitation to this study would be the religious background of the patients in extrapolating the alcohol abuse rates on a national level. Another possible limitation concerns the reliability of the clinical diagnoses made, given that these were not based on structured interviews, and thus



they may lack uniformity because of changes in diagnostic criteria over the studied period. The authors note, however, that since the Lebanon Wars were at their peak during most of the study period, licit and illicit substances were easily accessible in the Lebanese market and would have provided a possible relief from the pain and suffering accompanying psychiatric illness that increased during the Lebanon Wars. The authors finally add that variability in prevalence rates of comorbidity of psychiatric and substance abuse disorders can be due to differences in perspective of the researcher (comorbidity of substance abuse in psychiatric sample or comorbidity of psychiatric disorders in a substance abusing population), methodology or population studied.

Another study was conducted in Egypt by Asaad et al.<sup>19</sup> who also examined comorbidity of schizophrenia and substance abuse, using the DSM-IV diagnostic criteria. The sample consisted of 100 randomly selected schizophrenic patients who were attending the outpatient clinic at Ain Shams University Psychiatric Institute during 2001. Patients were assessed using the Structured Clinical Interview for DSM-III-R Mental Disorders I, II (SCID-I, SCID-II), Beck Depression Inventory (BDI) and the Positive and Negative Syndrome Scale. The comorbidity rate of substance abuse in these patients was found to be 26% (n=26) with the comorbid group having a mean age of 30.59 +/- 7.15 years. Male gender, associated premorbid personality disorder, high depressive symptomatology and cigarette smoking were all risk factors found to be significantly associated with substance abuse in patients with schizophrenia. Indeed, 92.3% (n=24) of the comorbid group versus 54.1% (n=40) of the non-comorbid group were males (p<0.001). Furthermore, 65.4% (n=17) of the comorbid group versus 39.2% (n=29) of the non comorbid group had an associated personality disorder (p<0.05 and  $\chi^2=5.3$ ). Moreover, 61.5% (n=16) of the comorbid group suffered from an associated depression while 32.4% (n=24) in the non comorbid group did (p<0.01 and  $\chi^2=6.79$ ). Finally, 100% of the comorbid group engaged in cigarette smoking while 67.6% (n=50) in the non comorbid group did (p<0.001 and  $\chi^2=15.02$ ). The authors note that these risk factors (male gender, high level of depression, premorbid personality disorder, and smoking) are not all restricted to schizophrenics. The authors concluded that comorbidity of substance abuse, schizophrenia, and personality disorder favors the common vulnerability hypothesis, but the association with high levels of depression favors the self-medication hypothesis. As for the types of substances abused, anti-parkinsonians topped the list (38.5%), followed by cannabinoids, opioids, and benzodiazepines (11.5% for each). Polydrug abuse (anti-parkinsonians, cough syrups, glue, benzodiazepines) was found in 19.2% of patients. The authors explain the high prevalence of anti-parkinsonians abuse with the possible availability and acquaintance with these drugs, which could be in accordance with the "self-medication hypothesis". The

absence of cocaine abuse is inconsistent with the findings of both of the previous study from Lebanon and what is published in the literature from western countries, possibly because of the cost of cocaine in Egypt. As for alcohol, it was abused by 7.7% (n=2) of patients, again a much lower prevalence rate than that found in Lebanon and Western studies (possibly attributable to socio-religious reasons). It is important to note that no significant association was found between substance abuse in schizophrenic patients neither with type of schizophrenia, nor with nature of symptoms or the treatment prescribed. When asked for the reasons behind their substance abuse, 38.5% of the patients were divided equally in giving the following answers: better sociability, influence of others, pleasure, curiosity, or unable to give a possible reason. Additionally, 30.8% of the patients were engaged in substance abuse for more relief of psychotic symptoms (hallucinations, delusions, etc.), 19.2% mentioned more relief of depressive feelings (i.e. better mood), and 11.5% more relief of drug treatment side effects.

### **Burden**

Awadalla et al.<sup>20</sup> assessed the subjective quality of life (QOL) of a fairly large sample (N=150) of community living and mentally stable Sudanese psychiatric patients suffering from schizophrenia, major affective disorders and mild/moderate mental disorders (referred to as neuroses by the authors) (ICD-10). The patients were recruited from multiple locations representative of the mental health service clinics of Sudan. QOL was measured using the WHO 26-item Quality of Life instrument (WHO QOL-Bref). The patients' own ratings of their QOL were compared with those of a general population sample (N=211, 57.8% men and 42.2% women with a mean age of 30.2) and with the family caregivers' impressions of the patients (N=150, 50% men and 50% women with a mean age of 42.7). Patients with schizophrenia (N=99) were found to be significantly less satisfied than patients with affective disorders and neuroses, and the general population sample on items pertaining to having a meaningful life, energy for everyday life, bodily appearance, money for needs, ability to get around, work capacity, self-satisfaction, personal relationships and support from friends. On average, patients with schizophrenia tended to score significantly lower than patients with major affective disorders and neurosis, even after controlling for age, education, occupation and marital status. As for schizophrenic patients suffering from treatment side effects such as tardive dyskinesia, extrapyramidal reactions and sexual dysfunction, they did not report significantly lower QOL than patients without treatment side effects.

### **Burden of stigma and discrimination**

Kadri et al.<sup>21</sup> carried out a study in Morocco with the World Psychiatric Association (WPA) program against stigma and discrimination of people with schizophrenia. One of the study's objectives was to measure family members' attitudes towards schizophrenic patients, using a structured

questionnaire. The sample, made up of 100 family members, each accompanying and representing a schizophrenic patient, was drawn from Ibn Rushd University Psychiatric Center of Casablanca, Berrechid Hospital, and two outpatient clinics in Casablanca. Family members' mean age was 47.4 yrs (SD 10.52) and their group was predominantly female (69%), made up primarily of mothers (50%). About a third were without education and about three quarters had no professional activity. Patients, on the other hand, had a mean age of 30.4 years (SD 10.52), were predominantly male, single, and had no professional activity, with duration of illness ranging from 10 months to 30 years. The authors surveyed the family members to explore their attitudes towards the patient. They found that 63.9% did not give the patient difficult or important tasks; 34% justified this by admitting to feelings of distrust and 14% by admitting to the belief that the patient is handicapped. In general, 14% of family members reported treating the patient with distrust, 8% as if the patient were "mad", 59% with overprotection, and 15% with rejection and aggressiveness. Still, 37% thought they treated the patient just like other family members.

In 1978, Younis<sup>22</sup> led a study in Sudan to explore the attitudes of both rural and urban people towards mental illness in general, including schizophrenia. It was a psychiatric sample of 183 adult patients and their companions who came on the date of the survey to the health centers of two urban and two rural areas in Northern Sudan. The sample was predominantly Muslim, Arabic-speaking males and females ranging in age from 18 to 60 years, with a mean age of 33.5 years. The instrument used was the Arabic translation of the Malhotra and Wig<sup>23</sup> standardized vignettes. An estimated one quarter of urban and rural participants replied through self-reports that they would accept a person with schizophrenia as a neighbor prior to treatment (26.5% vs. 22.35% respectively). However, the level of acceptance increased significantly after treatment, exceeding 50% (52.04% for the urban sample versus 54.11% for the rural sample). Interestingly, there was significantly more acceptance for the schizophrenic patient living in the community than for the alcoholic. The author acknowledged that the study was limited in terms of external validity, for although four fifths of the Sudanese population lived in northern Sudan, the use of the chosen health centers may not have been uniform across this population. Although there might have been a positive self-presentation bias, which was not controlled for, nevertheless, the study offered a useful glimpse into the much needed research in this realm.

### **Family burden**

In their study about schizophrenia, depression and suicidality, Moussaoui et al.<sup>17</sup> reported that in 19.8% of the cases, the patients' families were practically unaware of their illness. But in 67.7% of the cases, family members had been subjected to verbal or physical violence, especially while patients exhibited active psychotic symptoms. Statistical analysis

revealed that aggressive patients had a significantly higher frequency of depressive symptoms and suicidal behavior. The main risk factors for violence were found to be anxiety and hallucinations, particularly auditory ones.

In the previously mentioned study by Kadri et al.<sup>21</sup>, Moroccan families of patients with schizophrenia were found to suffer from stigma and discrimination. 86.7% of them reporting hard lives attributed to the illness itself, and 72% reporting psychological suffering such as poor quality of life; 2% of the subjects were expelled from rental accommodation, 29% felt people were afraid of them, 15% reported experiencing distrust of others, 29% mockery, 41% maltreatment, and finally 34% report experiencing neglect, especially from neighbors and relatives, who were actually perceived as the most stigmatizing group. Furthermore, the illness was also perceived as causing relationship disturbances within the family: 7% are divorced, 6% of fathers left the family, leaving the mothers as the only caregivers. It is important to note that the authors did not compare these figures with those found in the general population (e.g. by using a control group) which limited the scope of interpretations with regard to the extent of stigmatization related to schizophrenia.

In a different study using the same sample of Sudanese patients (see above), Awadalla et al.<sup>24</sup> administered the WHO QOL-Bref to the patients' family caregivers to compare their subjective quality of life (QOL) to that of the general population. The sample of family caregivers consisted of 98 caregivers for schizophrenia, 117 caregivers for major affective disorders and 78 caregivers for neuroses, all compared to a general population sample of 189 individuals. The caregivers of schizophrenia patients tended to score lower than other caregivers on the QOL domain scores, but this difference did not reach significance ( $p>0.05$ ). For example, there were no significant differences in scores between caregivers of affective disorders and neuroses patients on one hand, and caregivers of schizophrenia on the other hand ( $P>0.05$ ). Interestingly, the sole significant predictor of caregivers' QOL was the caregiver's own estimation of the patients' QOL and their own health status. The most surprising finding was that the schizophrenia caregivers' scores were comparable to those of the general population group for four out of the six domains of QOL, with the caregivers reporting significantly higher QOL on the physical and spiritual domains ( $P=0.001$ ). These results were sustained even after controlling for sociodemographic variables. These findings were particularly unexpected in light of the previous literature, which shows that caregivers generally have lower scores on QOL than control groups<sup>25,27</sup>. The authors noted, however, that none of the previous studies involved caregivers of patients with a wide range of psychiatric disorders or stable patients. Thus, they concluded that the expectation that caregivers of mental health disorders would have lower scores on QOL still requires adequate testing. The authors claimed they could only explain the relatively

high QOL scores of the caregivers, but not why these scores were higher than those of control groups. They suggested that the factors driving up these QOL scores might be the caregivers' high rating of the patients' state, the family stability and the extended social support network that is available to them. The authors also added that hardiness and salutogenesis may have played a particularly important role in driving the scores upwards, as these principles are widely spread in Sudan's Islamic culture. Anyhow, the authors considered the findings as giving reason to be more optimistic about mental disorders' effect on family burden, particularly schizophrenia.

### ***Burden of criminality***

What may somehow provide as a basis for the stigma and discrimination directed against people with psychosis is the association of the illness with criminality, though this picture is frequently inflated in the mind of the public. For example, Moussaoui et al.<sup>17</sup> found that approximately 22% of their 183 schizophrenic patients in Morocco had prior dealings with the police or the judicial system.

Touari et al.<sup>28</sup> conducted a study on the association between criminality and psychosis in Eastern Algeria, based on 3662 male consultations made between Jan 1<sup>st</sup> 1963 and Dec 31<sup>st</sup> 1986, at the Psychiatric Clinic of the University Hospital of Constantine. In Algeria, psychiatric consultations are mandatory in criminal cases, but optional in cases of misdemeanor. The sample, though exclusively male, was reported to be representative of the larger criminal population. The authors examined the frequency of psychosis (vs. other psychiatric disorders) in perpetrators of different types of crimes or misdemeanors. The sample had a mean age of 30.1 +/- 11.3 years, and was made up of 3662 subjects, of whom 70.1% (n=2567) had committed crimes, while 29.9% (n=1095) had committed misdemeanors. The prevalence of psychosis in the criminal population was found to be 11.1% (n=284), assessed according to the Classification Française des Troubles Mentaux diagnostic criteria. Psychosis was found to be more frequent, however, in cases of misdemeanors where 18.6% (n=204) were psychotics (p<0.001). The diagnosis of schizophrenia and acute schizophrenic episodes was also greater in cases of misdemeanors than in crimes (72.5% in the former versus 59.5% in the latter, p<0.01). There were no significant differences between the crime and misdemeanor groups neither in the diagnosis of paranoia or chronic hallucinatory psychosis (39.1% in the crime group versus 25.5% in the misdemeanor group), nor in the diagnosis of manic depression (bipolar illness), which was rare (1.4% versus 2%, respectively). The presence of previous psychiatric history was twice as frequent in cases of misdemeanors (where psychiatric consultations are optional) as in crimes (29.9% vs. 13.4%, respectively, p<0.001). A strong association was found between the type of crime committed and the psychiatric diagnosis (p<0.0001). Psychosis was more prevalent among homicides and aggravated assaults than among other

types of crime. 19.9% of homicides and attempted homicides (18.4% of homicides and 25.6% of attempted homicides) and 32.7% of aggravated assaults were committed by psychotics whereas only 3.2% of sexual crimes and 1.3% of robberies were. Psychosis was more prevalent in acts of violence (33.1%) than in other types of misdemeanors, and was significantly less prevalent in infraction against property (4.1%, p<0.0001).

The authors investigated the relationship between those who committed or attempted homicides and their victims and found that the latter were more frequently direct ascendants (father, mother) or spouses and less frequently people who were known but who were not family members. When there was any sort of relationship between the offender and the victim (familial or non-familial), subjects with schizophrenia and acute schizophrenic episode committed or attempted homicide more frequently against a parent, whereas subjects with paranoia or chronic hallucinatory psychosis committed or attempted homicide more frequently against a spouse.

A Kuwaiti study was conducted by Fido et al.<sup>29</sup> on 69 men and women prisoners specifically referred for psychiatric assessment over a nine month period: 36.2% had a major psychiatric disorder. Patients with schizophrenia accompanied with active symptoms appeared to be more likely to commit violent offenses. Nine out of ten prisoners who had been referred for psychiatric assessment and who had committed murder were found to suffer from schizophrenia. The authors reported that almost all the patients with psychotic disorders had active symptoms at the time they committed their offenses, and the most likely reason behind their crimes was psychosis.

### ***Burden of untreated psychosis***

Moussaoui et al.<sup>17</sup> assessed the duration of untreated psychosis in 183 schizophrenic patients in Morocco to be 275 ± 2.66 days. According to the authors, this can partially be explained by the fact that the illness was progressive and insidious for 70% of the patients.

El Hamaoui et al.<sup>30</sup> examined the duration of untreated psychosis (DUP) and its predicting factors in a sample of 400 out-patients with schizophrenia, according to DSM IV criteria (male gender: 77.5%, mean age: 36 years). The recruitment was done in the Ibn Rushd University Psychiatric Center in Casablanca, Morocco. DUP was defined as the interval between the onset of the first positive symptom and the start of an adequate treatment. Among the 400 patients, 68% were jobless, and 43.8% had family psychiatric history of which schizophrenia represented 75.5%. The mean DUP was 148.7 weeks. Fifty two point eight percent had an antecedent of psychiatric admission with a mean duration of hospitalization of 51.7 days. The mean number of psychotic episodes was 4.3 ± 3.3. Several factors were found to be strongly related to DUP. Female gender represented the first factor. In this regard, DUP was 135 weeks in men with schizophrenia

versus 195.3 in women. The age was positively correlated with DUP ( $p < 0.001$ ). When the patient was single DUP was 120.3 weeks, but it reached 201.3 weeks in the married group ( $p < 0.001$ ). Moreover, in patients born in rural areas, DUP was 333.4 weeks versus 130.4 weeks in urban ones ( $p < 0.001$ ). DUP was also negatively correlated to level of schooling. In the illiterate group, DUP was 449.2 weeks versus 95 weeks in the literate group ( $p < 0.001$ ). Finally, the increase of DUP was correlated to prolonged duration of hospitalization ( $p < 0.001$ ) and a high number of psychotic episodes ( $p = 0.004$ ).

In the Qatari hospital based study, Shaltout et al.<sup>16</sup> observed that 43.7 % made only one hospital visit, 40.8% visited 2-10 times, 7.5% visited 11-20 times, and 8% visited more than 20 times ( $P < 0.001$ ). The most frequent types of visits were outpatient visits (60.3%), followed by those who made both in-patient and outpatient visits (24.7%), and those who only used inpatient services (14.9%) ( $P < 0.001$ ).

### **Fertility**

In light of previous literature about persons with reduced reproductivity compared to the general population<sup>31,32</sup>, Daradkeh et al.<sup>33</sup> and Abdel-Latif<sup>34</sup> sought to compare the fertility rates between schizophrenic and non-schizophrenic psychiatric patients in the United Arab Emirates and Egypt respectively.

The UAE sample<sup>33</sup> was made up of 248 patients (113 males and 135 females) who were consecutively admitted patients to the Al Ain inpatient unit. They had all been married before and also had ICD-10 diagnoses of either F1 (mental and behavioral disorders due to psychoactive substance-abuse), F2 (schizophrenia and related disorders), F3 (mood disorders) or F4 (neurotic, stress related and adjustment disorders). No significant differences in fertility rates were found between patients with schizophrenia and related disorders (2.80 children/patient with  $n=64$ ) and non-schizophrenic patients. Naturally, however, this does not imply that schizophrenic patients do not have reduced fertility rates compared to the general population. Divorce rates of schizophrenic patients in this study were lower than expected (6.4% for males and 12.8% for females), which may partly account for non-significant differences in fertility rates between schizophrenic patients and non-schizophrenic ones.

In the second study<sup>34</sup>, recruitment was conducted in the psychiatric inpatient unit in Zagazig University Hospital in Egypt. Five hundred twenty patients diagnosed with schizophrenia ( $n=180$ ), mood disorders ( $n=110$ ) or neurotic illness ( $n=230$ ), according to ICD-10 criteria, participated in this study. Married men in the group with schizophrenia produced more children than married women, which is in favor of an increased fertility in men with schizophrenia despite the decreased marital rate.

### **Burden of death-related issues**

Abdel-Khalek<sup>35</sup> compared death anxiety scores between 7 groups ( $N = 765$ ) of Egyptian participants (non-clinical, anxiety disorder patients, patients suffering from schizophrenia, and male addicts), with mean age of each group around 32 years. Female schizophrenic patients obtained the next highest mean score on the Arabic Scale of Death Anxiety (ASDA) after anxiety patients. Moreover, they reached significantly higher mean scores on the ASDA than their male counterparts. Surprisingly, male schizophrenic patients had the lowest ASDA score compared to all other groups, including the non-clinical group ( $p < 0.001$ ). This contrasts with the clinical literature, which finds that schizophrenic patients are generally burdened by death related issues. The author considers this result, however, as specific to the male sample of schizophrenic patients in this study.

## **Discussion**

As evidenced by our review, epidemiological studies on schizophrenia and related disorders in the Arab world are rare. The current review serves to update clinicians and researchers in the Arab world and other international counterparts alike since the core symptomatology of schizophrenia seem to be similar across cultures<sup>36</sup>. Data on the prevalence of psychotic disorders reported by Arab countries varied between 0.7% and 5.6% depending on the period assessed for prevalence. Studies on gender differences conducted in the UAE found no differences while that of Qatar reported that more males had acute and transient psychotic disorders than females. This range of prevalence should be interpreted with caution, keeping in mind the various diagnostic systems (e.g. ICD-10, DSM-III-R, MINI, etc) that were used. In a meta-analysis from a systematic review of 188 studies across the world, the authors reported a 4.6/1000 median point prevalence of schizophrenia<sup>37</sup>.

The comorbidity of schizophrenia (and related disorders) and substance abuse was investigated in Morocco, Lebanon and Egypt. In patients with schizophrenia, substance abuse ranged from 6.2% to 34%. In patients with substance abuse, schizophrenia and schizoaffective illness was found to affect 12.5%. Cannabis consistently topped the list of abused substances. Alcohol on the other hand was reported by schizophrenic patients in Lebanon and Egypt. The comorbidity of schizophrenia and depression was documented in studies conducted in Morocco and Egypt, although this was not the main focus of these studies.

There were notable efforts to gather data on the quality of life of schizophrenic patients. Patients with schizophrenia were found to have lower quality of life than their relatives/caregivers. The latter are more similar to the general population or patients with other psychiatric disorders. Others found commonality of criminal behaviors among schizophrenic patients.

Several studies have shown that the mean DUP ranged from 1 to 2 years<sup>38</sup>. The mean duration of untreated psychosis was recorded in two different studies in Morocco: 275 days and 148.7 weeks. The latter figure was clearly above what has been reported in North American and European studies. This increase in DUP in Moroccan patients could be due to cultural beliefs and intensity of stigma phenomena.

In sum, the current review showed that available data are highly fragmented across time, space and topics of interest. Additionally, they are limited in many ways with important methodological heterogeneity. For instance, one of the four epidemiological studies found to assess prevalence of schizophrenia and related disorders<sup>10</sup> and one of two studies found to assess incidence<sup>13</sup> of schizophrenia and related disorders used the Composite International Diagnostic Interview (CIDI)<sup>11,12</sup> as an instrument. However, since the questions screening for non-affective psychosis in this version of the CIDI were worded in a way that increased the false-positive responses<sup>39</sup>, the validity of the prevalence rates from these two studies on psychotic disorders was put into question and would need clinical validation. In the study by Daradkeh et al.<sup>13</sup>, the difference in assessment tools (CIDI at baseline and SCID at follow-up) affected the reliability of the diagnoses and thus the validity of the study since according to the authors the few studies that assess the level of agreement between both tools do not show a very good agreement coefficient. Moreover, the reliability of the findings and their generalizability were sometimes limited by the small sample size. Furthermore, the instruments used were not always culturally validated and it has been difficult to compare findings across the studies due to differences in methodologies used<sup>12,19</sup>. All of these combined factors limited us from drawing an integrated or coherent picture of the current state of affairs regarding schizophrenia and related disorders in the Arab world, thus limiting the utility and generalizability of the aforementioned studies.

Research activity is highly restricted to specific research teams operating in some countries, rather than being the product of national concerted efforts at gathering epidemiological mental health data. There is an unmet need for national studies with collaborative efforts for similar methodologies which allow for cross-cultural comparisons. Research on psychotic disorders in the Arab world is thus extremely insufficient. It could, of course, be argued that there are many more studies in the Arab world, but these were not published in international journals; instead, they were published in non-indexed local journals or sometimes only presented at international congresses. However, any review should ultimately focus on published studies as the publication process guarantees the generation of more reliable and useful data.

### **Acknowledgment**

The authors would like to thank Ms. Nayla Moufarrej for her help in conducting the literature review, and

Ms. Ranya Hajjar and Ms. Rima Hadi for reviewing the manuscript.

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### المخلص

إن البحوث حول الصحة النفسية في العالم العربي في ازدياد على مدى السنوات الـ 40 الماضية. وقد نشرت مراجعات بحثية منهجية عن عدة مواضيع من هذه المنطقة مثل الانتحار وتعاطي المخدرات، واضطرابات القلق واضطراب نقص الانتباه وكثرة الحركة لتوفير المعلومات اللازمة للأطباء والباحثين والطلاب على حد سواء حول تلك المواضيع. إن الغرض من هذه الورقة هو تقديم عرض منهجي حول الدراسات الميدانية حول أمراض الذهان التي تم نشرها في العالم العربي حتى نهاية العام 2007، وتم لهذا الغرض استخدام عدد من آليات البحث، PubMed و PscINFO وقاعدة بيانات IDRAAC على شبكة الإنترنت.

على الرغم من أن الدراسات حول أمراض الذهان في العالم العربي نادرة فإنها بالرغم من ذلك قد تناولت مجموعة متنوعة من المواضيع. وفقاً للدراسات التي تم تحديدها تراوحت نسبة انتشار الاضطرابات الذهانية بين 0.7% و 5.6% دون وجود فروقات تميز بين الجنسين. ناقش العديد من الدراسات التزامن بين هذه الاضطرابات وتعاطي المخدرات أو الاكتئاب، و / أو العبء المتعلق بها (وصمة العار والتمييز، العبء على الأسرة، النشاط الإجرامي، قلة الخصوبة والعلاج والموت). هناك حاجة ماسة إلى دراسات وطنية بشأن أمراض الذهان في هذه المنطقة من العالم لتحديد حجم المشكلة، وبناء على ذلك تحديد الاتجاهات المستقبلية.

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## Features of Depression in Schizophrenia

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### خصائص ظاهرة الاكتئاب في مرض الفصام

الخولي، محمود، صادق، الجعفري

#### Abstract

**Objectives:** This study examined the features of depression in different categories of schizophrenic patients as classified by both duration and ICD-10 course pattern. **Methods:** 385 schizophrenic patients were recruited from the Institute of Psychiatry Ain Shams University and Al Abassia Ministry of Health hospital, Cairo, Egypt. All cases were subjected to a Structured Clinical Interview for Diagnosis, section for schizophrenia and depression, socio demographic sheet, medical history sheet, Calgary Depression Rating Scale (CDRS), and Positive and Negative Symptoms Scale (PANSS). The studied sample was classified according to the schizophrenia duration to two groups: acute and chronic; and according to the schizophrenia course to three groups: continuous course, episodic course, and remittent course. Depression was categorized into three groups: patients with major depressive disorder (SDD), patients with depressive symptoms (SDS), and patients with no depression (ND). **Results:** Depression was found, in order of prevalence, as SDD, ND, and SDS. Depression was significantly associated with chronic duration and continuous course. Self depreciation was the most characteristic depressive symptom of acute schizophrenia, and hopelessness was the most characteristic one of chronic schizophrenia. No correlation between depressive and psychotic symptoms was found in acute schizophrenia; however, in chronic schizophrenia depression was correlated to all psychotic symptoms except positive ones. Factor analysis failed to specify selective subsets of PANSS symptoms associated with depression. Canonical discriminate analysis proved that CDRS is valid in classification of depression categories. **Conclusion:** Schizophrenia should be properly categorized in order to study its depressive features. Duration rather than course of schizophrenia is a risk factor for depression in schizophrenia.

**Key Words:** Features – Depression – Schizophrenia – Course – Duration

**Declaration of interest:** None

#### Introduction

There is increasing interest in conceptualizing schizophrenia-spectrum illnesses beyond the traditional diagnostic elements of positive and negative symptoms, moving toward a more comprehensive understanding that includes associated features such as cognitive deficits and affective symptoms<sup>13</sup>.

A review of studies examining the frequency of depressive phenomenon in schizophrenia found prevalence rates ranging from 7% to 75%<sup>8, 25,29,43,46</sup> with a negative impact on outcome<sup>13,15,35,41, 47, 51</sup>.

Though a number of studies has examined the prevalence and nature of depression at different phases of the schizophrenic illness, the precise nature of depressive symptoms present in different phases of the schizophrenic illness remains unclear<sup>12,40</sup>.

These studies had several limitations, such as: 1) lack of generalizability to variable demographic groups<sup>26</sup>, 2) undefined level of chronicity of the illness<sup>24</sup>, 3) confusion between course, outcome and duration of schizophrenia in discriminating different phases of schizophrenia<sup>23</sup>, 4) lack of cross sectional examination had led to find depressive symptoms to be prevalent during all stages of the disorder<sup>39</sup>, 5) using variety of instruments to assess the presence and severity of depressive symptoms<sup>50</sup>, 6) using standard depression rating scales designed and validated only for non psychotic populations with a diagnosed depressive illness<sup>28,33</sup>, 7) studying only one type of schizophrenia: outpatient or inpatient<sup>19,30</sup>, and 8) using patient self-rated scales measuring mainly subjective mood symptoms<sup>10</sup>.

By trying to avoid some of the limitations of other studies, we carried out this study with the objective of characterizing

and comparing the profile of depressive phenomena found in different categories of schizophrenic patients according to the duration of illness and course pattern found in ICD-10 diagnostic criteria for research.

#### Subjects and methods

Between January and December 2009, all new schizophrenic patients presented to the Institute of Psychiatry Ain Shams University Hospital were invited to participate in the study after obtaining written informed consent. Two hundred forty one (241) patients diagnosed with schizophrenia according to the ICD-10 Diagnostic criteria for research<sup>49</sup>, either outpatients or inpatients, met the study inclusion criteria and agreed to participate. During the recruitment period, 73 subjects with schizophrenia declined to participate.

In order to include the broad spectrum of different types and course patterns of schizophrenia, we invited all schizophrenic inpatients in the long term wards of Al Abassia Hospital (including patients admitted for periods up to 30-40 years) during the recruiting period to join the study. Only one hundred forty four (144) inpatients fit the inclusion criteria of the study and agreed to participate.

The study exclusion criteria were as follows: uncooperative patient, patient who could not understand the questions, mentally subnormal patient as clinically judged, history of acute fulminating physical disorder, and history of significant head

trauma and/or convulsions. Other exclusion criteria added regarding the patients from AL Abassia Hospital were patients with not enough information, with severe formal thought disorder interfering with proper clinical assessment, and patients over 85 years old to avoid comorbid organic factors.

Immediately after consenting to participate in the study, all the recruited patients were subjected to complete Structured Clinical Interview for Diagnosis (SCID-I) section for schizophrenia and depression<sup>18</sup>, socio demographic sheet, medical history sheet, Calgary Depression Rating Scale (CDRS)<sup>2,3,4,11,37</sup>, and the Scale for the Assessment of Positive and negative Symptoms (PANSS)<sup>7,27</sup>. Three catatonic patients, fifty patients presented with violence/aggression, and 10 patients presented with marked hallucinations were consented and assessed two weeks after their recruitment.

A socio-demographic sheet included: age, gender, social class scale<sup>17</sup>, years of education, marital status, original/current residence, order of birth, occupation, religion, and parental consanguinity.

Medical history sheet includes; site of recruitment whether outpatient or inpatient, past and current history of medical/psychiatric illness, past history of psychiatric admission, family history of psychiatric illness, subtype, duration and course of schizophrenia, duration of current hospitalization, current treatment, and past/current history of ECT.

In this study, sub grouping depressive phenomenon according to CDRS was as follows<sup>3</sup>: 0 = No depression (ND),  $\leq 6$  = Sub syndrome depressive symptoms (SDS), and  $\geq 6$  = Syndrome depressive disorder (SDD).

The schizophrenic patients in the studied sample were classified according to the duration of their illness into two groups: a) acute if the duration of schizophrenia  $\leq 2$  years, and b) chronic if the duration of schizophrenia  $> 2$  years. Another three groups of schizophrenic patients were determined according to the course pattern of ICD-10, a) continuous course, b) episodic course correspond to episodic with progressive deficit, episodic with stable deficit, and episodic remittent, and c) remittent course correspond to incomplete and complete remission. The latest two types of course present in ICD-10 classification were dropped for non clinical significance. Sixteen patients were dropped as their illness duration was less than one year which is the observational period needed in the research diagnostic criteria of ICD-10 to evaluate schizophrenia course.

### Statistical analysis

Data coded and revised were introduced to an EXCEL database to be later manipulated and analyzed using SPSS version 16.0. For the sake of description, categorical data were presented as number and percent; and continuous data were presented as means, standard deviation and 95% confidence limit. One way ANOVA was used to test any significant differences between more than two groups. Continuous variables and post

hoc LSD were used to test individual groups' significance, while Student-t test was used to test the same condition for two groups. Chi-square test was used to test association between two categorical variables. Fisher Exact was used to test variables' association, if less than five variables were encountered in a 2x2 table. Spearman's Rank Correlation Coefficient was used to test the correlation between scores of different measured variables. Factor analysis was conducted to identify main psychotic symptoms related to the principal component for symptoms and/or disorder of depression in schizophrenic patients. Discriminate analysis was conducted to discriminate between the three depression groups (ND, SDS, and SDD) for the different psychotic symptoms (positive, negative, general PANSS symptoms). Scatter plot of cases according to the obtained functions was generated with the discriminate analysis. Significance level was set at  $<0.05$  and high significance at  $<0.01$ .

### Results

385 patients were recruited to the study. Their mean age was  $42.3 \pm 14.2$  ranging between 17 and 84 years and 63.4% of them were males. Their average education years were 10.7 ranging between 0 and 19 years. The majority was in low social class 44.4% and 69.6% were single. 54.3% were jobless and 15.3% reported parental consanguinity. 60.3% were inpatients. Past history of psychiatric illness was reported in 2.3% of patients. Family history of similar condition or addiction or depression was reported by 21.5% of patients. The average duration of schizophrenia was 14.6 years (95% Confidence Interval 13.4 – 15.7 years). 14.3% of patients had been subjected currently to ECT and 32.2% had been subjected to it in the past. As regard type of schizophrenia, 148 (38.4%) patients were paranoid, 98 (25.5%) undifferentiated, 91 (23.6%) residual, 43 (11.2%) hebephrenic, 3 (0.8%) catatonic, and 2 (0.5%) simple schizophrenia. Typical and atypical antipsychotic drugs were received by 62.1% and 61% of patients respectively, 11.4% received anti-depressant, 55.8% received anti-cholinergic and 17.9% received anti-epileptics.

Five categories of schizophrenic patients were specified in our sample, 1) acute schizophrenia (n = 48, 12.5%), 2) chronic schizophrenia (n = 337, 87.5%), 3) continuous course of schizophrenia (n = 148, 38.4%), 4) episodic course of schizophrenia (n = 166, 43.1%), and 5) remittent course of schizophrenia (n = 55, 14.3%).

Regarding the categories of depressive phenomenon in our schizophrenic sample, we have three groups according to CDRS as follows; 1) ND (n = 128, 33.2%), 2) SDS (n = 106, 27.5%), and 3) SDD (n = 151, 39.2%).

In comparing the demographic characteristics of schizophrenic patients in relation to the level of depression whether ND, SDS, or SDD as measured by CDRS, schizophrenic patients with SDD were



significantly older (45.9±14.8) than both SDS (40.5±13.2) and ND (39.5±13.3) groups (P<0.001). Females were significantly more presented in the SDD (47.7%) compared to the SDS (36.8%) and ND (23.4%) groups (P<0.001). Urban original residence was significantly more frequent in ND (90.6%) group compared to the SDS (83%) and SDD (74.8%) groups (P=0.001). Unemployment was significantly more frequent in the SDD (63.6%) group compared to the SDS (47.2%) and ND (49.2%) groups (P=0.013). 67.9% of inpatients had SDS, and 64.2% had SDD and 49.2% had ND (P=0.006). No significant difference had been found between depression subgroups regarding social class (P=0.910), education years (P=0.804), marital status (P=0.362), past history of psychiatric illness (P=0.291), current co-morbid medical illness (P=0.597), past / current history of ECT (P=0.516 & 0.058 respectively), past history of psychiatric admission (P=0.093), and current treatment (P>0.05).

Regarding the mean score of CDRS in relation to

duration and course of schizophrenia, chronic schizophrenic patients had significantly higher mean of CDRS score (6.36±6.0) with a range of 0.1 to 23 than acute ones (1.88±4.1) with a range of 0.1 to 18 (P<0.001). Continuous schizophrenia course was significantly associated with a higher CDRS score (7.0±5.9 with a range of 0.1-21) than both episodic (5.4±5.9 with a range of 0.1-23) and remittent courses (4.8±5.7 with a range of 0.1-18) (P0.017).

In comparing depression among schizophrenic patients in relation to the duration of schizophrenia, SDD was more manifest in the chronic schizophrenia group than in the acute one and vice versa for ND group. However, SDS group was more manifest in chronic schizophrenia. On the other hand, comparing depression among schizophrenic patients in relation to the course of schizophrenia, it was found that SDS was more manifest in continuous course and ND was more manifest in remittent course. In contrast, SDD was more manifest in continuous course and least manifest in episodic course (Table 1).

**Table (1): Depression categories, as measured by CDRS, among schizophrenic patients in relation to duration and course of schizophrenia**

	ND	SDS	SDD	P value
<b>Duration of Schizophrenia</b>				
Acute	32 (66.7)	11 (22.9)	5 (10.4)	<0.001
Chronic	96 (28.5)	95 (28.2)	146 (43.3)	
<b>Course of Schizophrenia</b>				
Continuous	33 (22.3)	45 (30.4)	70 (47.3)	0.004
Episodic	59 (35.5)	48 (29)	59 (35.5)	
Remittent	26 (47.3)	8 (14.5)	21 (38.2)	

ND means No Depression neither symptoms nor disorder, SDS means Sub Syndrome Depressive Symptoms, SDD means Syndrome Depressive Disorder, CDRS means Calgary Depression Rating Scale, P value is significant at < 0.05 and highly significant if <0.01.

Comparing quality of individual depressive symptoms as described in CDRS in relation to duration of schizophrenia illness (whether acute or chronic), the least frequently encountered symptom in acute schizophrenia was pathological guilt (6.2%) and the highest was self depreciation (21.9%). For chronic schizophrenia, suicide was the least frequently met symptom (33.2%) and the most frequently reported symptom was hopelessness (53.7%). All symptoms were significantly more frequently encountered in chronic than acute schizophrenia (P<0.05). As regards the course of schizophrenia, depressed mood, guilt, ideas of reference, morning depression and observed depression did not differ significantly in continuous course when compared to episodic and remittent courses of schizophrenia. For other symptoms, they were more manifest in continuous, less in episodic and least in remittent courses of schizophrenia and this trend was statistically significant (P<0.05).

Comparing quantity of individual depressive symptoms as described in CDRS in relation to duration of schizophrenia illness, the average number of depressive symptoms in acute schizophrenic patients was one compared to four in the chronic patients (P<0.05). According to course, on the average, four symptoms were usually evident in the continuous course of schizophrenia compared to three on the average in episodic and remittent courses (P>0.05).

In testing the correlation between depression and the core symptoms of schizophrenia as measured by the PANSS scale, the average score for the positive PANSS subscale did not differ between the three categories of depression, whereas the negative, general and total subscales scores were significantly lower in the ND compared to both SDS and SDD groups (Table2).

**Table (2): Depression categories among schizophrenic patients as measured by CDRS in relation to PANSS schizophrenia symptoms**

CDRS	ND <sup>♦</sup>	SDS <sup>*</sup>	SDD <sup>*</sup>	P value
Positive	18.3 (16.4 – 20.1)	19.1 (17.3 – 20.9)	16.8 (15.4 – 18.2)	0.154
Negative	13.9 (12.3 – 15.4)	18.4 (16.7 – 20.1) <sup>♦</sup>	17.0 (15.5 – 18.5) <sup>♦</sup>	<0.001*
General	29.9 (26.8 – 33.0)	34.7 (32.5 – 36.9) <sup>♦</sup>	36.1 (33.6 – 38.6) <sup>♦</sup>	0.003*
Total	62.0 (56.2 – 67.9)	72.0 (67.6 – 76.4) <sup>♦</sup>	69.7 (64.8 – 74.6) <sup>♦</sup>	0.023*

ND means No Depression neither symptoms nor disorder, SDS means Sub Syndrome Depressive Symptoms, SDD means Syndrome Depressive Disorder, CDRS means Calgary Depression Rating Scale, P value is significant at <0.05 and highly significant if <0.01. Values are means (95% confidence interval)

No significant correlation was found between CDRS and a psychotic symptom scores (positive, negative, general and total PANSS scores) neither in SDS nor SDD categories of schizophrenic patients (Table3).

**Table (3): Correlating CDRS score to PANSS subscales scores in schizophrenic patients with SDS and SDD**

	CDRS Score
<b>SDS</b>	
Positive	<b>0.169</b>
Negative	<b>-0.155</b>
General	<b>0.051</b>
Total	<b>0.032</b>
<b>SDD</b>	
Positive	<b>-0.122</b>
Negative	<b>0.098</b>
General	<b>0.092</b>
Total	<b>0.048</b>

SDS means Sub Syndrome Depressive Symptoms; SDD means Syndrome Depressive Disorder, CDRS means Calgary Depression Rating Scale, PANSS means Positive and Negative Symptoms Scale; P value is significant at <0.05 and highly significant if <0.01

In testing the previous correlation against duration and course of schizophrenia, no significant correlation has been found between CDRS total score and any of the psychotic symptoms in acute schizophrenia. All PANSS subscales scores except for the positive subscale were significantly correlated with CDRS total

score in chronic schizophrenia. In remittent schizophrenia, CDRS total score was not significantly correlated with any of the psychotic symptoms subscales scores. In continuous schizophrenia, positive, general and total PANSS scores were significantly correlated with CDRS total score (Table4).

**Table (4): Testing the correlation between CDRS score and PANSS subscales scores against duration and course of schizophrenia**

	CDRS Score
<b>Acute Schizophrenia</b>	
Positive	0.044
Negative	0.158
General	0.076
Total	0.096
<b>Chronic Schizophrenia</b>	
Positive	-0.057
Negative	0.147
General	0.198
Total	0.129
<b>Continuous Schizophrenia</b>	
Positive	-0.181
Negative	0.173
General	0.176
Total	0.080
<b>Episodic Schizophrenia</b>	
Positive	0.006
Negative	0.128
General	0.251

Total	0.175
<b>Remittent Schizophrenia</b>	
Positive	-0.099
Negative	0.072
General	-0.005
Total	-0.018

CDRS means Calgary Depression Rating Scale. PANSS means Positive and Negative Symptoms Scale; P value is significant at <0.05 and highly significant if <0.01.

Factor analysis was carried out on PANSS symptoms in the SDS group of patients as measured by CDRS in order to ascertain if a smaller number of symptoms than the individual scale items could still account for the variance seen. Values are correlation coefficients to the principal component. The higher the value of the coefficient the more the contribution of this variable to the corresponding principal component is found. It was apparent that conceptual disorganization, all negative symptoms except for blunted affect and poor rapport, and all general symptoms except for guilt feelings, mannerisms and posturing, depression, motor retardation, unusual thought content, disorientation, and active social avoidance were significantly correlated to the first component. Only delusions and suspiciousness/persecution were correlated significantly to the second component. No PANSS symptoms were correlated to the third components. Conceptual disorganization to be the highest positive psychotic symptom, emotional withdrawal to be the highest negative psychotic symptom and disturbance of volition to be the highest general psychotic symptom correlated to the principal component. Delusions were the least positive psychotic symptom, blunted affect was the least negative psychotic symptom, and motor retardation was the least general psychotic correlates to the principal component.

In contrast, factor analysis done on PANSS symptoms in the SDD group of patients as measured by CDRS revealed that all negative psychotic symptoms, general psychotic symptoms, and positive psychotic symptoms except for delusions and grandiosity were significantly correlated to the first component. No PANSS symptoms were correlated to both the second and third components. Conceptual disorganization to be the highest positive psychotic symptom, lack of spontaneity and flow of conversation to be the highest negative psychotic symptom and disturbance of volition to be the highest general psychotic symptom correlated to the principal component. Grandiosity was the least positive psychotic symptom, blunted affect was the least negative psychotic symptom, and mannerisms and posturing were the least general psychotic correlates to the principal component. Discriminate canonical analysis extracted two functions to discriminate between the ND and SDS groups (Function 1) and SDS versus SDD groups (Function 2) in function of psychotic symptoms (positive, negative, general and total PANSS score)

using CDRS classification cut off points. Delusions, guilt feelings, depression, motor retardation, disturbance of volition, active social avoidance can significantly discriminate between different types of depression among schizophrenic patients. Function 1 discriminating ND from SDS is dominated by delusions and disturbance of volition that were more evident in SDS than in ND group (canonical discriminate function coefficient (C) =-0.340 and -0.437 respectively), whereas guilt feelings, depression, motor retardation and active social avoidance were more evident in the ND. Function 2 discriminates between SDS and SDD revealing guilt feelings and motor retardation less represented in SDS group and more evident in SDD group (C=-0.596 and -0.389 respectively). (Table5).

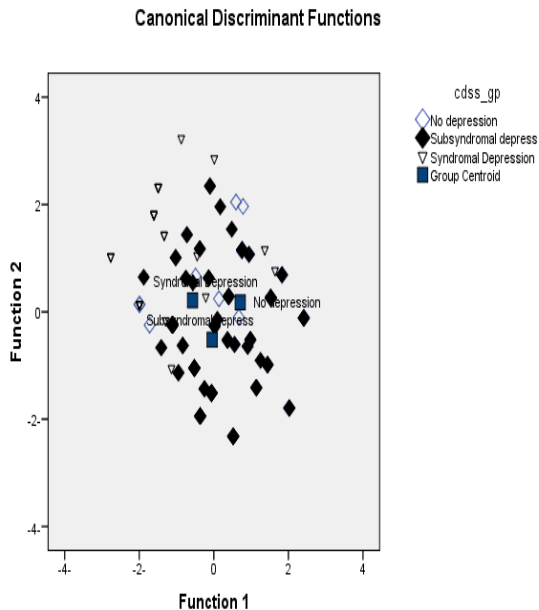
**Table (5) shows standardized canonical discriminate function coefficients for discriminant analysis including psychotic symptoms for the 3 depression groups (ND, SDS, and SDD) by CDRS among schizophrenic patients**

CDRS	Function	
	1	2
Delusions	-.340-	.392
Guilt Feelings	.489	-.596-
Depression	.685	.241
Motor Retardation	.282	-.389-
Disturbance of Volition	-.437-	.188
Active Social Avoidance	.183	.791
Wilks' Lambda	.699	.906
<b>P value</b>	<b>.000</b>	<b>.000</b>

ND means No Depression neither symptoms nor disorder, SDS means Sub Syndrome Depressive Symptoms, SDD means Syndrome Depressive Disorder, CDRS means Calgary Depression Rating Scale, Function (1) discriminates between ND and SDS. Function (2) discriminates between SDS and SDD. P value is significant at <0.05 and highly significant if <0.01

The discriminating ability of the canonical extracted functions, could correctly classify 60.3% of cross-validated depressive grouped cases as measured by CDRS. The functions shown on the graph are linear combinations of the best group of predictors as selected by the step-wise discriminate function analysis (Figure1).

**Figure (1): Discriminate function graph classifying depression groups of schizophrenia patients according to psychotic symptoms**



The functions of the discriminate analysis are such that all the subjects in one group will have high values of the function whereas all the subjects in the other group will have low values.

### Discussion

The present study extends previous research in a number of significant ways. First, it employs a cross sectional design to compare depression in different courses and duration of schizophrenia at the same time in order to be specific and accurate in characterization of each. Overall, research indicates that schizophrenia's course over time varies considerably from person to person<sup>48</sup> and varies for any one person<sup>34</sup>. Comparing depressive symptoms longitudinally in the same person led to finding depressive symptoms highly prevalent in all courses the same<sup>32</sup>.

Second, it adopted the ICD-10 research diagnostic criteria in determining the schizophrenic course and differentiated between course, outcome, and duration in categorizing schizophrenic patients. Previous studies confused those categories by defining acute schizophrenia as first episode or psychotic relapse or exacerbation of psychotic symptoms<sup>6</sup>, and by defining chronic schizophrenia as stable patients free of psychotic symptoms or remittent patients or patients resistant to treatment<sup>42</sup>.

Third, it widens the scope of the schizophrenic sample allowing the inclusion of different ages, duration, courses, placements, and types of schizophrenia. Some studies specified the studied sample of schizophrenic patients by certain demographic and clinical groups<sup>23</sup>. Fourth, it used depression measuring scale specifically designed for the assessment of depressive symptoms in schizophrenia (CDRS). In addition, our study depended on clinician rating scales taking into account

observable signs, as most schizophrenic patients had impaired ability to recognize their symptoms and functional deficits<sup>33</sup>. Previous research depended mainly on patient self-rated scale which focused on measurement of changes in subjective mood rather than objective observed one<sup>10</sup>.

Finally, no previous study was concerned with such features of depression in schizophrenia, e.g. what are the categories of depression in schizophrenic patients and are the schizophrenic patients differing according to their depression? Can depressive symptoms differentiate between acute and chronic schizophrenia and between different courses of schizophrenia? Are depressive symptoms correlated with psychotic symptoms in schizophrenia? Could Psychotic symptoms discriminate between different categories of depression in schizophrenia?

The most common type of schizophrenia was paranoid, followed by undifferentiated, residual, catatonic and simple schizophrenia in order of prevalence. Typical and atypical antipsychotic drugs were nearly equally used (62.1% and 61% respectively), and only 11.4% received anti-depressants and 17.9% received mood stabilizers. Only 14.3% of patients had been subjected to current ECT and 32.2% to past ECT. This reflects our practice in management for schizophrenia which neglects detection and treatment of depression of schizophrenia. In other studies, 30% of inpatients and 43% of outpatients with schizophrenia receive antidepressant treatment. Recent evidence suggests that combination antidepressant treatment and ECT may not be any more effective than antidepressant treatment alone and ECT may be more efficacious overall<sup>26</sup>.

The most common depressive category in our schizophrenic sample was the depressive disorder (SDD, 39.2%), followed in order of prevalence by the no depression category (ND, 33.2%) and the depressive symptoms category (SDS, 27.5%). This means that, depression as a disorder was more frequent than as symptoms in our schizophrenic sample. This goes with Buckley et al.<sup>12</sup> who estimated that comorbid depression occurs in 50% of schizophrenic patients and Müller et al.<sup>37</sup> who found no depression in 31% of schizophrenic patients.

In comparing schizophrenic patients with the three categories of depression, patients with depressive disorder (SDD) were significantly characterized by being older, of female sex, jobless, and significantly associated with chronic duration and continuous course. This pointed to its closeness to primary depression and its association with poor outcome in schizophrenia<sup>5,36</sup>.

On the other hand, schizophrenic patients with depressive symptoms (SDS) in our sample were significantly characterized by being inpatients and significantly associated with continuous course. This may conclude that, depression even in its sub-threshold form could be a clinical marker for severity in schizophrenia. In addition, nature of depressive symptoms may warrant psychiatric admission even in the presence of cold psychotic symptoms<sup>51</sup>.

No previous study characterized schizophrenic group with zero score on depression scales. However, in our sample those patients were significantly characterized by being of urban original residence, more associated with acute duration and remittent course with the lowest negative, general and total PANSS subscales scores. Again, this supports the association between depression and poor outcome and increased severity in schizophrenia<sup>31</sup>. Being not characterized by the lowest positive subscale score on PANSS denotes that pathogenesis of depression in schizophrenia is not secondary to the presence and/or nature of positive psychotic symptoms<sup>13</sup>.

The three groups of depression (SDD, ND, SDS) did not differ in social class, years of education, marital status, past history of psychiatric illness, current comorbid medical illness, past / current history of ECT, past history of psychiatric admission, current psychotropic treatment, and positive PANSS subscale score. This means that depression in schizophrenia was neither accurately detected nor properly treated and it is related to the core of schizophrenic process rather than being a reflection of other social, demographic and/or other clinical factors<sup>20</sup>. Again as previously mentioned, it assures that depression in schizophrenia is not secondary to the presence and/or nature of positive psychotic symptoms<sup>36, 43</sup>.

The clinical depression seen in acute schizophrenia (12.5%) differed significantly from that seen in chronic schizophrenia (87.5%) both in quantity and quality. Depression was significantly positively correlated with duration of schizophrenia, i.e. the more the duration, the higher the depression both in quantity and quality. This was evident from our findings that, all depressive symptoms were more frequent in chronic schizophrenic patients who also had significantly higher means of CDRS (6.36±6.0 to 1.88±4.1) depression scores with significantly more numbers of depressive symptoms (4 to 1) than acute one. This disagreed with Heald et al<sup>23</sup> who found that total Hamilton Depression Scale (HAMD) and Beck Depression Inventory (BDI) scores were significantly greater for both the acute schizophrenic and primary depression groups compared with chronic schizophrenic group with the total scores for acute schizophrenia and primary depression being similar. This could be explained by the conflicted definition used for what acute and chronic means in both studies. In our study it depended on duration of schizophrenic illness, in their study, the discrimination between what is acute and what is chronic was poorly defined<sup>42</sup>.

Quality of depressive symptoms was significantly different between chronic and acute schizophrenia. Self depreciation was the most characteristic depressive symptoms of acute schizophrenia and hopelessness was the most characteristic one for chronic schizophrenia. On the other hand, pathological guilt was the least characteristic depressive symptoms of acute schizophrenia and suicide was the least characteristic one for chronic schizophrenia. This highlights an observation that, depression in schizophrenia followed the cognitive theory of depression "learned helplessness hopelessness" which

stated that inferred negative characteristics about the self are postulated to contribute by time and interaction with stress to the formation of hopelessness<sup>1, 14</sup>. In addition, it is apparent that pathogenesis of depression in schizophrenia differ from that of "post psychotic depression" which mainly depend on regaining insight and sense of demoralization<sup>36</sup>. Guilt and suicide are usually depressive symptoms related to recovering insight in schizophrenic patients<sup>9, 38</sup>.

In this study, careful analysis of depressive symptoms showed quantitative rather than qualitative difference between the three courses groups of schizophrenia. The most common course in our sample was the episodic (43.1%), followed in order of prevalence by the continuous (38.4%) and the remittent (14.3%). Continuous course had the highest depression score than other courses. All depressive symptoms were more frequent than in episodic and/or remittent courses. The number of depressive symptoms was 4 to 3 to 3 in continuous, episodic, and remittent course respectively. Comparing the quality of depressive symptoms in the three courses of schizophrenia, we had found that, no statistical significant difference regarding the prevalence of the following symptoms; depressed mood, guilt, ideas of reference, morning depression and observed depression. This highlighted the association between depression and duration rather than course of schizophrenia, however it needs further evaluation.

Regarding the correlation between depression and psychotic symptoms, it was only found with the continuous course and chronic duration of schizophrenia. In continuous schizophrenia, positive, general and total PANSS scores were significantly correlated with CDRS total score. In chronic schizophrenia, depression was correlated to all psychotic symptoms except positive ones. This was against the research statement that, by time many schizophrenic people learn successful ways of managing even severe symptoms to moderate their disruptiveness to daily life<sup>21</sup> and the clinical observation that earlier years with the schizophrenic illness are often more difficult than later ones<sup>48</sup>. However, this goes with Heald et al<sup>23</sup> who found a significant association between the BDI total score and negative subscale on PANSS and between the HAMD total score and PANSS general symptoms subscale score in chronic schizophrenia.

It was apparent that studies examining the overlap between depression and classical schizophrenia symptoms total scores have reported contradictory findings. One possible explanation for inconsistent findings is the fact that depression may be a multidimensional entity, with potentially different dimensions in schizophrenia and other psychiatric disorders<sup>13, 45</sup>.

Principal components factor analysis was performed with the PANSS items. Principal components extraction estimated three components. The second and third components were poorly defined as only zero to two items was defined. It revealed some qualitative differences between SDD and SDS regarding PANSS

symptoms, however failed to specify selective subsets of PANSS symptoms associated with each.

It was observed that conceptual disorganization, delusions, suspiciousness/persecution, grandiosity, blunted affect, mannerisms and posturing, poor rapport, and motor retardation are psychotic symptoms sensitive to depression, yet it need further analysis. However, these symptoms were far away from those differentiated negative from depressive symptoms which include hopelessness, suicidal thinking, subjective low mood, retardation, anxiety<sup>36</sup>.

Discriminate canonical analysis confirmed that, by finding delusions, guilt, depression, motor retardation, disturbance of volition, and active social avoidance as PANSS symptoms, we can significantly discriminate between different types of depression as measured by CDRS. In addition, canonical analysis proved that, SDS group was correlated to delusions and disturbance of volition; ND group was correlated to guilt, depression, motor retardation and active social avoidance, and SDD group was correlated to guilt and motor retardation.

Our results from both factor analysis and discriminate canonical analysis supported El Yazaji et al<sup>16</sup> who concluded that PANSS evaluation itself may be sufficient to give a correct approximation of the depression in patients with schizophrenia. However, depression scales are of course needed to assess specifically depressive symptoms in patients with schizophrenia; hence, the CDSS could be a more specific instrument than other scales like HAMD and/or BDI<sup>22,44</sup>.

### Limitations

This study had some limitations: 1) the relative small sample size in relation to the objectives of the study, 2) not using BDI and/or HAMD as a comparable scale for measuring depression, as they were found to be effective with specific pattern of schizophrenia, 3) the gathering of some types of courses of schizophrenia as the number in each course type was not enough for statistical comparison.

### Conclusion

Schizophrenia should be properly categorized in order to study its depressive features. Duration rather than course of schizophrenia is a risk factor for depression in schizophrenia. CDRS is sensitive and specific instrument for assessing depressive symptoms in schizophrenia.

### Recommendations

CDRS should be considered as an essential step in evaluation of schizophrenic patients in order to detect true positive depression so appropriate early intervention provided. Sub-threshold psychiatry still needs further analytical rather than descriptive research.

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## المخلص

**أهداف البحث:** يهدف البحث إلى دراسة ظاهرة الاكتئاب في مجموعات من مرضى الفصام، مقسمة تبعاً لمدة الفصام الزمنية و مسار الفصام كما هو موجود بالتصنيف الدولي العاشر. **طريقة البحث:** تضمن هذا البحث دراسة 385 مريضاً بالفصام من المترددين على مركز الطب النفسي بجامعة عين شمس و نزلاء مستشفى العباسية بوزارة الصحة، القاهرة - جمهورية مصر العربية. جميع المرضى المشتركين في البحث تم إخضاعهم لعدة فحوص و هي: المقابلة السريرية المصممة للتشخيص- قسم الاكتئاب و الفصام - و تقرير إجماعي و ديموجرافي، و تقرير عن التاريخ الطبي، و مقياس كالجاري للاكتئاب، و مقياس الأعراض الإيجابية و السلبية للفصام. و قد تم تقسيم المرضى إلى مجموعتين تبعاً لمدة مرض الفصام: حاد و مزمن. كما تم تقسيمهم لثلاث مجموعات تبعاً لمسار الفصام: فصام مستمر و فصام يحدث على نوبات و فصام في مرحلة التشافي. أما ظاهرة الاكتئاب فقد تم تقسيمها في عينة البحث إلى ثلاث مجموعات حسب شدة الاكتئاب. **نتائج البحث:** أظهرت نتائج الفحوص أن الاكتئاب في مرضى الفصام يظهر بالترتيب من أكثر إلى أقل كالتالي: أولاً كاضطراب الاكتئاب، ثم مرضى الفصام بدون اكتئاب، ثم مرضى الفصام مع وجود أعراض للاكتئاب. و قد أظهرت مقارنة نتائج المجموعات الثلاث أن الاكتئاب أظهر ارتباطاً ذا دلالة إحصائية مع الفصام ذي المدة المزمنة، و المسار المستمر. كما أن عرض الاكتئاب و المعروف "بتحفير و تهيمش الذات" كان الأكثر ارتباطاً بالفصام الحاد، و "فقدان الأمل" كان الأكثر ارتباطاً بالفصام المزمن. أما في الفصام الحاد فلم يوجد ارتباط بين أعراض الاكتئاب و أعراض الفصام، على عكس الفصام المزمن حيث ارتبطت جميع أعراض الفصام ما عدا الإيجابية منها مع أعراض الاكتئاب. و قد فشل إخضاع مقياس الأعراض الإيجابية و السلبية للفصام للتحليل الإحصائي و حصر مجموعة من أعراضه كالأكثر تعرضاً للتزامن مع الاكتئاب في مرضى الفصام. كما أثبتت الدلالات الإحصائية على أن مقياس كالجاري للاكتئاب لديه مصداقية في تصنيف الاكتئاب إلى مجموعات في مرضى الفصام. **الاستنتاج:** خلص البحث إلى أن دراسة ظاهرة الاكتئاب في مرض الفصام تحتاج إلى الاهتمام بالتقسيم النوعي لمرضى الفصام، و إلى أن مدة مرض الفصام أكثر أهمية من مساره في وجود ظاهرة الاكتئاب.

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## Predictors and Consequences of Post-Stroke Depression in a Sample of Egyptian Patients

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العوامل المنبئة بحدوث اكتئاب ما بعد السكتة الدماغية وعواقبها في عينة من مرضى السكتة الدماغية من المصريين

صفية عفت، منى محمد، هبة العيساوي، منى الشيخ، هويدا عبدالعال

### Abstract

**B**ackground and objectives In spite of its high incidence, post-stroke depression (PSD) is still under diagnosed and the risk factors for its development have not been clearly delineated. The present study was set to detect different predictors for the development of PSD and assess potential risk factors influencing the occurrence of the condition while also examining the consequences of its severity. **Patients and methods:** 120 Egyptian stroke patients were administered the Mini International Neuropsychiatric Interview (M.I.N.I.) and a thorough neurological examination and CT scan or MRI for localization of the lesion. Other measurements were Hamilton Rating Scale for Depression (HAM-D), Barthel Index (B.I) for activity of daily living assessment, Quality of Life Depression Rating scale (QLDR) and Caregiver Strain Index (CSI) for assessment of the stress level. **Results:** We report that the main risk factors for the development of PSD in the study sample were male gender (63%), younger age group, frontal lesions irrespective of the side (35%), presence of stressful life events (22%) and presence of post-stroke functional impairments (73%), whereas the main factors affecting the severity of PSD included female gender (77.2%), lower socioeconomic class (70.4%) and the severity of post-stroke functional impairments (90.9%). We also report that the main consequences of PSD encountered were significant impairment of the quality of life (QOL) and significant increase of caregiver stress compared to a non PSD group ( $p < 0.001$ ). **Conclusion:** We conclude that PSD should be carefully evaluated in all stroke patients and recommend further prospective studies targeting the immediate and remote complications of PSD.

**Key words:** post stroke, depression, risk factors, cerebrovascular stroke, quality of life, localization.

**Declaration of interest:** None.

### Introduction

The most commonly reported psychiatric illnesses complicating the post-stroke period in the literature are post-stroke depression (PSD) and post-stroke dementia (PSDem), which may present simultaneously with overlapping mood and cognitive symptoms.<sup>1</sup>

Previous studies have shown a large variation concerning the frequency of PSD, depending on whether patients are examined in hospital or in community surveys and whether they are studied during the acute post-stroke period or many months after stroke.<sup>2</sup> This indicates that prevalence clearly varies over time with an apparent peak between three to six months after stroke and subsequent decline in prevalence at one year reaching about 50% of initial rates.<sup>3,4</sup>

Patients assessed during the sub-acute phase may be in a period of transition during which they are attempting to adjust to the consequences of stroke. Depression then may simply be a reflection of the difficulties associated with this transition.<sup>5</sup>

The etiology of PSD seems to be multi-factorial including both pre-stroke personal and social factors, stroke induced psychological reactions and organic backgrounds. Understanding PSD in terms of causal complexes would allow clinicians to monitor patients at risk of developing PSD.<sup>6</sup>

Nevertheless, the risk factors for the development of PSD have not been clearly delineated. Hackett and Anderson<sup>7</sup> reported data from a total of 21 studies pointing to physical disability, stroke severity and cognitive impairments as most consistently associated with depression. At the same time, evaluation of the patient's living situation, level of social support and

cultural variables are also critical. Careful attention to caregivers and family members is crucial.<sup>7</sup>

Others reported that the risk for depression among individuals aged 65 or over, living in the community and who have experienced a stroke two years previously, is six times greater than for their stroke-free counterparts.<sup>8</sup>

Many studies have shown that left anterior brain lesion is the most important predictor of major depression in the acute phase, but there were also opposite claims that anatomical regions have no effect on the prediction of stroke. Even if the site and size of the brain lesion in stroke were significantly correlated with depression, it is difficult to determine whether depression is due to the clinical consequences of stroke or due to neurophysiological changes that may lead to depression.<sup>6</sup>

Other reports have suggested that psychosocial risk factors including age, sex and functional impairments are greater contributors to the development of PSD than lesion location.<sup>3,9,10</sup>

Furthermore, research reported conflicting results regarding marital status as some studies suggested that marital status was significant on depression severity index<sup>11</sup>. However, Morris et al.<sup>12</sup> reported that marital status was not a risk factor for PSD<sup>12</sup>.

Similarly, Andersen et al.<sup>13</sup> reported that socioeconomic status (SES) had no influence on the risk for post-stroke depression while other researchers found lower SES was a risk factor for PSD<sup>14,15</sup>.

Concerning gender, the results of some studies supported the association between female sex and PSD<sup>16,17</sup> whereas others do not<sup>8,18</sup>. However, there may be real differences between men and women in the relative importance of risk factors for PSD. Among men, physical impairment may be a more influential



risk factor while among women previous history of psychiatric disorder may be more important<sup>3</sup>.

While prior social distress was positively associated with PSD in one study, defined in terms of "social loss" in the six months prior to stroke<sup>13</sup> others reported that the severity of initial neurological deficit is the single most important predictor of the development of depression within one year of stroke<sup>10</sup>.

In most of the studies on quality of life (QOL) in stroke patients, depression and physical disability were found to be the main predictors of poor QOL<sup>19</sup>. For improving QOL, a comprehensive care plan for patients aimed at reducing physical dependence and ameliorating depressive symptoms could be recommended<sup>20</sup>.

The importance of understanding the complex relationships between caregiver and patient outcomes is increasingly realized. As it is possible caregivers may affect stroke patients' recovery and, conversely, stroke patients may affect caregivers' strain. Other factors that may influence caregiver strain include amount of time spent helping the patient.<sup>21</sup>

In this study, we will assess different predictors of PSD, study the contributions of these factors to the severity of depression and investigate the impact of PSD on the quality of life of patients and the stress of care givers in an Egyptian sample of stroke patients.

## Subjects and Methods

### Patient selection

120 unilateral stroke patients and their primary care givers were recruited from the inpatient wards and outpatient clinic of the neuropsychiatry department of Ain Shams University Hospitals. Patients were selected based on the site of the lesion into right hemiplegic and left hemiplegic groups then according to the presence of depression into PSD group and non-depressed group to yield a final of four groups each consisting of 30 patients, which was a pre determined number set by the researchers of the study beforehand that was deemed to give valid results. Therefore, each stroke patient was subjected to clinical and radiological assessment and was placed accordingly in the right or left hemiplegic groups. Diagnosis of depression was done through psychiatric interviewing using the Mini International Neuropsychiatric Interview (MINI, 22) to place each patient in the right hemiplegic depressed/non-depressed groups or left hemiplegic depressed/non-depressed groups. All patients fulfilling the inclusion criteria and consenting to participate in the study were included. When each group reached the agreed number of 30 patients, the researchers stopped recruiting patients for that specific group. A total of 187 patients were seen before the preset number in all four subgroups was attained.

All patients fulfilled the following criteria: they gave informed consent to participate in the study together with their caregivers; they were Egyptians; they had a cerebro-vascular stroke in the past one to six months; and, their age ranged from 40-65 years. Both sexes were included. Patients having history of mood disorder or any other psychiatric disorder, history of dementia or non-communicable aphasia, severe medical diseases that affect the general condition,

double stroke, or neurodegenerative disorders were excluded from the start. Selected patients were subjected to the following: thorough neurological clinical examination, CT scan (Brain Computerized Tomography) or MRI (Magnetic Resonance Imaging) for localization of the lesion, structured psychiatric interview using MINI (Mini International Neuropsychiatric Interview) for diagnosis of depression<sup>22</sup>. The Hamilton Rating Scale for Depression was used for assessment of the severity of the disorder in depressed patients<sup>23</sup>. Assessment of activity of daily living was via the Barthel Index (BI)<sup>24</sup> and assessment of Quality of Life was via Quality of Life Depression Rating scale (QLDR)<sup>25</sup>. Patients were divided into five distinct social classes based on the occupation according to Davies classification of 1975.<sup>26</sup>

The study lasted for three years from May 2006-May 2009. All patients who fulfilled the inclusion criteria, matched the required profile for each specific group (i.e. right/ left sided, depressed/ non-depressed) and consented to participation in the study along with their caregivers were included in the study.

**Care givers:** The closest family member caregiver who spent at least 12 hours daily with the patient was selected and subjected to the Caregiver Strain Index (CSI) for assessment of the stress level.<sup>27</sup>

### Psychometric tools used in the study

- Mini International Neuropsychiatric Interview (M.I.N.I) is a short structured diagnostic interview to diagnose post-stroke depression. MINI-Arabic was validated by Ghanem et al., in 2002.<sup>22, 28</sup>
- The Barthel Index (BI) measures functional independence in the domains of personal care and mobility. It is a 10 item questionnaire with 4 point scoring. The maximum score is 100 with scores 0-20 indicating totally dependent, 25-50 severely dependent, 55-75 moderately dependent, 80-95 slightly dependent, 100 non-dependent.<sup>24</sup>
- Quality of Life Depression Rating scale (QLDR) is a self assessment rating scale, which was either read aloud to the patients or filled directly by them depending on their neurological condition. This scale consists of 34 items assessing different aspects of quality of life. The Arabic version used was translated by Magda et al., 1997.<sup>25</sup>
- The Hamilton Rating Scale for Depression (HAM-D) is utilized to assess severity of depression for those diagnosed as having a depressive disorder. It is a commonly used -observer rated- depressive symptoms rating scale.<sup>23</sup>
- The Caregiver Strain Index (CSI) is a 13-question tool that measures strain related to care provision in the following domains: Employment, Financial, Physical, Social and Time. Positive responses to seven or more items on the index indicate a greater level of strain.<sup>27</sup>
- Davies Social Class Classification divides patients into five social classes based on the occupation of patients as: Class I: professional, Class II: intermediate or semi professional, Class III: skilled, Class IV: semi-skilled, Class V: unskilled.<sup>26</sup>

**Statistical Analysis**

Data were collected and analyzed using Primer of Biostatistics, version 5. The statistical procedures included: Descriptive statistics using mean and standard deviation, analytical statistics using mean and Student's t-test and Chi square, Pearson Correlation coefficient for independent variables, analysis of variance (ANOVA) for three or more values. The P value identifies the level of significance as  $p < 0.05$  significant,  $p < 0.001$  highly significant.

**Results**

Our results showed that in the depressed group (both

right and left hemiplegics), 63.3% were males ( $n=38$ ) compared to 36.6% who were females ( $n=22$ ). There was a highly significant difference in gender distribution with males being predominant in the depressed group. The mean age of the post-stroke depression group was  $54.96 \pm 4.8$  compared to  $58.43 \pm 4.4$  showing a statistically significant younger age in the depressed group ( $p < 0.05$ ). No statistical significance was detected regarding social class or marital status. The demographic data of the sample is shown in table 1.

**Table 1 showing the demographic characteristics of the studied groups**

Variable		Depressed patients group		Non-depressed Patients group		X <sup>2</sup>	P value
		Number	%	Number	%		
Gender	Male	38	63.33	18	30	13.39	<0.001
	Female	22	36.67	42	70		
Social Class	Class I	0	0.0	0	0.0 %	---	---
	Class II	3	5%	4	6.6	0.54	>0.05
	Class III	7	11.67	11	18.3	1.04	>0.05
	Class IV	25	41.67	22	36.3	0.56	>0.05
	Class V	25	41.67	23	38.3	0.13	>0.05
Marital Status	Single	1	1.67	0	0.0	1.0	>0.05
	Married	56	93.3	57	95	0.15	>0.05
	Divorced	0	0.0	1	1.67	1.0	>0.05
	Widowed	3	5.0	2	3.33	0.2	>0.05

When analyzing any possible relation of the anatomical site of the lesion to depression, the depressed group had a statistically significant frontal lesion compared to the non-depressed patients  $p < 0.05$ . However, when comparing right to left depressed

hemiplegic patients, no significance was found related to the side of the lesion, denoting the importance of frontal lesion irrespective of right or left sided as shown in table 2.

**Table 2 showing the anatomical site of the lesion in the studied group**

Variable	Depressed patients		Non-depressed patients		X <sup>2</sup>	P
	Number	%	Number	%		
Frontal	21	35	8	13.33	5.07	<0.05
Parietal	12	20	10	16.67	0.22	>0.05
Temporal	13	21.67	19	31.67	1.53	>0.05
Occipital	10	16.67	18	30	2.98	>0.05
sub cortical	4	6.67	5	8.33	1.20	>0.05
Variable	Depressed Rt. Hemiplegics		Depressed Lt. Hemiplegics		X <sup>2</sup>	p
	Number	%	Number	%		
Frontal	9	30	12	40	0.66	>0.05
Non frontal	21	70	18	60		

On comparing the effect of other medical comorbidities (cardiac diseases or diabetes mellitus) on depression, no statistical significance was found between the depressed group and the non-depressed group. However, when comparing the presence of psychological stressor prior to the onset of depression

(Patients were asked about the presence of social, occupational or life stressors that they perceived) 21.7% of the depressed patients reported a previous stressor compared to 8.3% of the non-depressed group as shown in table 3.

**Table 3 showing the effect of medical and psychological stressors on the studied groups**

Variable	Depressed patients		Non-depressed patients		Total		X <sup>2</sup>	P value
	Number	%	Number	%	Number	%		
Cardiac	13	21.67	7	11.67	20	16.67	2.16	>0.05
Non-cardiac	47	78.33	53	88.33	100	83.33		
Diabetic	21	35	23	38.33	44	36.33	0.14	>0.05
Non-diabetic	39	65	37	61.67	76	63.33		
Psychological stress	13	21.67	5	8.33	18	15	4.18	<0.05
No stress	47	78.33	55	91.67	102	85		

When analyzing the effect of functional independence as measured by Barthel's Index, the mean score of the depressed group was 37.18±15.15 compared to 74.25±14.04 showing a highly significant statistical difference between both groups (p<0.001) with the depressed group showing much lower scores denoting more dependence. We stratified patients of both groups

by their functional abilities. It was found that a statistically higher number of patients of the depressed group was in the totally to moderately dependent level (p<0.05 and<0.001) compared to higher number of non-depressed patients in the non-dependent level as shown in table 4.

**Table 4 showing the functional levels detected by Barthel's Index of both groups**

Variable	Depressed Patients		Non-depressed pts		X <sup>2</sup>	P
	Number	%	Number	%		
Totally dependent B.I (0 - 20)	11	18.33	3	5	5.17	<0.05
Severely dependent B.I (25 - 50)	33	55	12	20	15.68	<0.001
Moderately dependent B.I(55 -75)	10	16.67	36	60	23.83	<0.001
Slightly dependent B.I(80 - 95)	6	10	4	6.67	0.43	>0.05
Non dependent B.I(100)	0	0.0	5	8.33	5.21	<0.05

On comparing the quality of life of depressed versus non-depressed patients, it was found that depressed patients had a mean score of 28.75±2.39 whereas the non-depressed patients had a mean score of 7.78± 3.59 demonstrating a very highly significant difference where higher scores denoted worse quality of life compared to non-depressed patients (p<0.001).

Similarly, when stratifying patients according to their impairment in quality of life, it was evident that 95% of depressed patients had severe to very severe impairment in their quality of life compared to 100% of non-depressed patients having mild to moderate impairment detailed in table 5.

**Table 5 showing the levels of impairment among both groups measured by the quality of life depression rating scale**

Impairment	Depressed patients		Non-depressed		X <sup>2</sup>	P
	Number	%	Number	%		
Mild (0-10)	0	0.0	45	75	72	<0.001
Moderate (11-20)	3	5	15	25	9.4	<0.001
Severe (21-30)	41	68.33	0	0.0	62.3	<0.001
Very Severe>30	16	26.67	0	0.0	18.5	<0.001

When comparing the stress of the caregivers among both depressed and non-depressed groups by the Caregiver Strain Index, it was evident that there was a highly significant higher mean stress score among care givers of the depressed group 9.23±2.77 compared to

3.46±2.05 in the caregivers of the non-depressed group (p<0.001).

Within the depressed group, we compared the severity of depression (via HAM-D) to the gender of the patients and found that 77% of the females included in

the study fell in the moderate to severe depression grade; shown in table 6(a).

**Table 6(a) showing the relationship between severity of depression and gender**

Depression severity		Mild	Moderate	Severe	Total
		10-13	13-17	>17	
Male	No	9	12	17	38
	%	23.68	31.58	44.74	63.66
Female	No	3	2	17	22
	%	13.64	9.09	77.27	36.67
Total	No	12	14	34	60
	%	20	23.33	56.67	100
X <sup>2</sup>		0.88	3.94	6.01	
P		>0.05	<0.05	<0.05	

Similarly, we compared the severity of depression to the social class of the patients and found a very highly significant association between moderate to severe depression and lower social classes as 100% of those

having moderate depression and 70.4% of those having severe depression belonged to classes IV and V as shown in table 6 (b).

**Table 6(b) showing the relationship between severity of depression and social class**

Social class	Mild depression		Moderate depression		Severe depression		Total		X <sup>2</sup>	P value
	Number	%	Number	%	Number	%	Number	%		
I	0	0.0	0	0.0	0	0.0	0	0.0		
II	0	0.0	0	0.0	3	8.82	3	5	2.42	>0.05
III	0	0.0	0	0.0	7	20.59	7	11.67	6.06	<0.05
IV	2	16.67	3	21.43	20	58.82	25	41.67	9.56	<0.001
V	10	83.33	11	78.57	4	11.67	25	41.67	28.9	<0.001
total	12	20	14	23.33	34	56.67	60	100		

Finally, we compared the severity of depression to the degree of functional impairment and we found that 100% of moderately to severely depressed patients (N=34) were totally to severely dependent in activities of daily living. By simple linear correlation between

severity of depression by (HAM-D) score and activity of daily living according to Barthel Index, a negative statistical correlation was found (r=-0.76, p<0.05) as shown in table 7.

**Table (7) showing the relationship between severity of depression and impairment of functioning**

Depression severity Functional severity	Mild		moderate		Severe		Total		X <sup>2</sup>	P
	10 -13	%	13 -17	%	>17	%	Number	%		
Totally dependent B.I (0 - 20)	1	9.1	0	0.0	10	90.9	11	18.3	6.73	<0.05
Severely dependent B.I (25 - 50)	3	9.1	6	18.2	24	72.7	33	55	8.54	<0.05
Moderately dependent B.I(55 - 75)	4	40	6	60	0	0.0	10	16.6	16.1	<0.001
Slightly dependent B.I(80 - 95)	4	66.7	2	33.3	0	0.0	6	10	11.3	<0.0001
Non-dependent B.I(100)	0	0.0	0	0.0	0	0.0	0	0.0		
Total	12	20	14	23.3	34	56.7	60	100		

## Discussion

In our study we found a statistically significant higher prevalence of PSD in males (63.3%) compared to females (36.6%) indicating that male gender represented a risk factor for post-stroke depression. This finding concurs with the results of Morris et al. <sup>29</sup> who suggested that men were at higher risk for PSD

than women. Indeed, they found a greater frequency of depression among men with greater physical disability than among men with less severe impairment. On other hand, it contradicted previous studies which suggested that female gender is associated with an increased risk of PSD. <sup>16, 30, 31, 32</sup> Nevertheless, we would wish to highlight that most of the studies discussing this issue were conducted in western countries where gender

roles are culturally different when compared with Egyptian society where men are regarded mostly as the sole supporters of the family.

To investigate this point about gender further, we analyzed the severity of depression compared to the gender of the patients. We found a higher degree of severe depression in females (77.2%) as compared to males (44.7%). Additionally, 54.2% of the studied males had mild to moderate depression. These findings indicate that the severity of depression but not its occurrence may be related to female gender. Our findings were similar to Kornstein et al.<sup>33</sup> who concluded that women report more severe and/or a higher number of depressive symptoms, especially on self-report instruments; yet others, such as Van Zandvoort et al.<sup>34</sup> reported no association between severity of depressive symptoms and gender. Plausible explanations for this observed gender difference ranges from the effects of recall, social roles and cultural norms, and adverse life events to different exposure to gonadal hormones, dysregulation of the adrenal axis, and genetic factors<sup>35</sup>. We agree with those authors who point out that females are generally more prone to depression and postulate further that Egyptian PSD females might be expected to suffer more depression-related, help-seeking behavior because societal expectations are that males are "stronger".

In relation to age, our study found a statistically significant association between young age and post-stroke depression. Our findings agree with authors reporting that younger age was linked to PSD.<sup>10,16</sup> Yet research results are still contradictory regarding age as a risk factor for post-stroke depression as Van Zandvoort et al.<sup>34</sup> found that there was no association between severity of depressive symptoms and age. Our explanation for the results are that younger patients are more responsible for increasing the income of the family while older patients are usually dependent on their fixed pension making the impact of physical disability due to stroke less stressful also the difference of definition of old and young age groups between various studies can be accountable.

In our study, there was no statistically significant association between the presence of post-stroke depression and social class among depressed and non-depressed patients, while depression severity did associate with social class as all (100%) moderately depressed patients and 70.4% of severely depressed patients belonged to the lower social classes (III and IV), this finding agrees with Rugulies et al.<sup>14</sup> who reported that among men, job insecurity predicted severe depressive symptoms. This finding indicates that work and income influenced the risk of developing severe depressive symptoms and that different factors play a role for men and women. Vincent<sup>15</sup> found a clear relationship between worsening socioeconomic circumstances and depression in a prospective cohort study. In his study, socioeconomic factors were assessed with regard to material standard of living, education, employment status and social relationships. A lowering in material standard of living was associated with increases in depressive symptoms.

Our results showed no differences regarding the marital status and the occurrence of depression in post-stroke patients. This result contradicted findings that married people enjoy the benefits of social support, immediate intimate emotional support, and economic support, as well as having lower morbidity and mortality rates<sup>36</sup> and that scores on depression scales were lower in the married patients than in the non married patients.<sup>11</sup> However, this can be attributed to our sample characteristics as more than 90% of both depressed and non-depressed groups were married. Equal representation of the single, divorced and widowed groups is needed before reaching solid conclusions.

Furthermore, we found that 35% of the post-stroke, depressed patients had frontal lesion compared to 13% of post-stroke, non-depressed patients which indicates that frontal lesion did associate significantly with the presence of depression. However, it did not significantly associate with the lateralization of the lesion. This was in accordance with other studies reporting that the proximity of the lesion to the inferior frontal region of the hemisphere, irrespective of the side, is associated with increased incidence of PSD and that injuries to the frontal region of the cortex produce the greatest vulnerability to post-stroke mood disorder.<sup>34</sup>

In addition, we found that 21% of the post-stroke, depressed patients had cardiovascular disease compared to 13% of post-stroke, non-depressed patients showing no significant difference. This agrees with many authors who reported no association between heart diseases and PSD<sup>30, 37, 38</sup> and contradicts other authors who reported increased incidence of depression.<sup>39, 40</sup> However, this might be attributed to the fact that patients with severe cardiovascular diseases were excluded from the beginning of the study to prevent confounding effects. Similarly, we could not find any significant association between pre-stroke diabetes mellitus and presence of PSD which was in accordance with Kales et al.,<sup>41</sup> who reported no significant association between PSD and pre-stroke physical illness as diabetes mellitus in a sample of elderly cerebrovascular stroke patients.<sup>41</sup>

Nevertheless, when investigating pre-stroke stressful life events we found that 22% of the post-stroke, depressed patients had pre-stroke stressful major life events such as deaths, divorce, excess responsibilities, lack of money, unemployment, etc, compared to only 8% of post-stroke, non-depressed patients. These findings indicated that post-stroke depressive disorder is significantly associated with the presence of psychological stress. Our finding supported other studies reporting that moderate to severe life events predicted greater severity of major depression;<sup>42</sup> and, that patients with major depression differed from those with minor depression, not only on number and severity of depressive symptoms, but also on life stressors and social support.<sup>43</sup>

On studying the effect of functional impairment on PSD, we found that 73% of stroke patients with depression were totally to severely dependent in activities of daily living compared to only 25% of non-

depressed stroke patients, which represents a three-fold increase. Our findings indicate that depressive disorder is highly prevalent among patients with greater functional impairment. This was consistent with previous studies<sup>10,16</sup> that reported the severity of initial neurological deficit is the single most important predictor of the development of depression within one year of stroke. Aben et al.,<sup>44</sup> also found a positive correlation between the level of functional impairment and PSD in his study on 34 patients as he reported that all moderate to severely depressed patients were totally to severely dependent in activities of daily living. Similarly, our findings reveal a highly significant association between depression severity and the degree of neurological deficit deducing that functional impairment represented a risk factor for severe PSD, which is in accordance with results of Lai<sup>45</sup> and Zhao et al.,<sup>46</sup> reporting that the degree of depression in PSD is positively correlated with the degree of post-stroke neurological deficit.

Additionally, we found that stroke patients with depression had a highly significant impairment of quality of life which ranged from severe to very severe impairment. Our findings were in accordance with previous research associating PSD with impairment of all three indicators of general health (mental functional status, disability, and quality of life).<sup>20,47</sup>

Similarly concerning caregivers, we found a highly significant level of strain among caregivers of depressed hemiplegic patients than among non-depressed hemiplegic patients. Our study confirms findings of previous research on the stress of caregivers of PSD patients.<sup>48,49</sup> This stresses the importance of paying more attention to stroke caregivers' needs.

In conclusion, our study emphasizes the importance of detection of PSD and management of its complications on patients and their caregivers. Through paying more attention to potential risk factors for the development of PSD such as male gender, younger age groups and frontal brain lesion and giving even more attention to patients at risk for severe PSD especially females and patients of lower socio-economic classes or severe post-stroke functional impairments, many patients and their caregivers could be spared the agony and stress of the occurrence of PSD. This is of crucial importance especially immediately after the occurrence of the stroke.

However, the limitations of this study lie in the fact that it used a cross-sectional design exploring the consequences in the first one to six months and further studies are needed that stratify patients according to the time lapsed from the stroke to determine possible differences in immediate, recent and delayed psychiatric risks and sequelae. Additionally, determining a preset number for each subgroup (right sided depressed/non-depressed and left sided depressed/non-depressed) might have affected the sample being less representative of the population than random selection, nevertheless the latter sampling might have yielded an over representation of anatomical sites or other variables, but is still warranted in future studies.

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## المخلص

**أهداف الدراسة:** يعد الاكتئاب من أكثر الأمراض حدوثًا بعد السكتة الدماغية بالإضافة إلى تأثيره السيئ على معدل الشفاء وقد وجد أن معدل حدوث الاكتئاب بعد السكتة الدماغية يتراوح بين 20-65% . تهدف هذه الدراسة إلى إلقاء الضوء على العوامل المساهمة في حدوث اكتئاب ما بعد السكتة الدماغية في عينة من المرضى المصريين وتقييم العلاقة بين هذه العوامل وشده الاكتئاب وتأثير الاكتئاب على جودة وكفاءة الحياة وكذلك العلاقة بين الاكتئاب والقائم على رعاية المريض. **العينة البحثية وطريقة البحث:** تضمنت الدراسة 120 مريضاً مصرياً من الجنسين من مرضى حوادث الأوعية الدموية المخية، تراوح متوسط أعمارهم ما بين 40-65 سنة وقد تم اختبار المرضى اكلينيكيًا بالإضافة إلى الأشعة التشخيصية ثم تم الفحص النفسي بواسطة مقياس مني لتشخيص الأمراض النفسية ومقياس هاميلتون لشدة الاكتئاب ومقياس بارثل لأنشطة الحياة اليومية ثم مقياس جودة الحياة لمرضى الاكتئاب وأخيرًا مقياس الإجهاد للقائمين على رعاية المرضى. **نتائج الدراسة:** أظهرت الدراسة ازدياد حدوث اكتئاب ما بعد السكتة الدماغية لدى الرجال (63%) بينما ازدادت شدة الاكتئاب لدى النساء (77.2%)، كما أظهرت النتائج ارتباطًا واضحًا بين الإصابات في الفص الجبهي سواء الأيمن أو الأيسر وحدث الاكتئاب (35%). ومن الجدير بالذكر أن وجدت الدراسة أن تعرض المريض لضغوط نفسية شديدة قبل حدوث المرض تزيد من فرصة حدوث الاكتئاب وكذلك من شدته حيث وجد أن 22% من مرضى الاكتئاب تعرضوا لهذه الضغوط. كما أظهرت النتائج ارتباطًا واضحًا بين انخفاض جودة الحياة وحدث الاكتئاب، كما أظهرت الدراسة أيضًا وجود 73% من مرضى الاكتئاب يعانون من ضعف شديد في الأداء الوظيفي والأنشطة الحياتية اليومية. وبدراسة تأثير الضغط والجهد على القائم على إعطاء الرعاية للمريض وجدت الدراسة علاقة ترايبية بين اكتئاب ما بعد السكتة الدماغية للمريض ودرجة الضغط النفسي التي يتعرض لها الشخص القائم على رعايته. **الاستنتاج:** توصي الدراسة ببحث العوامل المؤثرة في اكتئاب ما بعد السكتة الدماغية في دراسات طويلة المدى (مستقبلية) نظرا لأهمية هذه العوامل في التنبؤ بحدوثه وبالتالي الوقاية منه وكذلك الاهتمام بالقائم على الرعاية وضرورة تأهيله.

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## Types of depression and pattern of comorbidity among a sample of Egyptian Secondary school female students

Abdel Meguid M., MD, El Missiry M., MD, El Serafi D., MD, and Sabry W, MD  
أنواع الاكتئاب ونمط المراضة المصاحبة لدى عينة من طالبات المدارس الثانوية المصرية  
مروى عبدالمجيد، مروى المسيري، ضحى الصيرفي، ولاء صبري

### Abstract

**B** **Background:** Depression is one of the most prevalent disorders among female adolescents. It is associated with high rates of comorbidity and results in detrimental effects on social and academic functioning. **Objective:** The present study aimed to elucidate the types of depression and pattern of comorbidity in a representative sample of Egyptian secondary school female students. **Methods:** 602 female students, recruited from public and private schools in Eastern Cairo, were interviewed by a team of researchers using the Structural Clinical Interview for Diagnosis of DSM IV axis I diagnosis (SCID-I). **Results:** 5.2% fulfilled the diagnosis of major depression, 5% had minor depression in the form of adjustment disorder with depressed mood and only 3.1% had dysthymia. Students enrolled in third grade were more likely to have adjustment disorder, second grade students showed the highest rate of major depression, while first grade students had similar rates of major depression and adjustment disorder. Approximately two thirds of the students having depression had a co-morbid mental disorder. The most frequent comorbid diagnosis was generalized anxiety disorder (GAD) in 32.5% of depressed students followed by social anxiety disorder (20%) and substance abuse (9%). The pattern of comorbidity in relation to the school grades revealed significant statistical differences. **Conclusion:** Different types of depression were prevalent in a sample of Egyptian female students; depression in this age group was significantly associated with comorbid psychiatric disorders. The present study provides important information for clinicians, school authorities and policy makers interested in targeting services to such high risk group expected to be future citizens and mothers.

**Key words:** Depression – adolescents – females – comorbidity – types of depression

**Declaration of interest:** None

### Introduction

Depression among adolescents in general and female adolescents in particular, has been identified as a major diagnosable mental health problem<sup>1</sup>. Life time prevalence increases dramatically from 1% of the population under age 12 to 17% of the population by the end of adolescence<sup>2</sup>. The understanding of why depression emerges with such force and frequency in adolescence, particularly in young women, was explained thoroughly by Andersen and Teicher<sup>3</sup>. Depression in youth has emerged recently as a compelling research topic because there is a two to four-fold risk of depression persisting into adulthood<sup>4</sup>. Young people suffering depression by the age of 15 may represent a high risk group for life-course persistence of depression and mal-adjustment<sup>5</sup>. In addition, early onset depression is of particular concern because it is associated with higher rates of recurrence and of comorbid disorders<sup>5; 6</sup>. Adolescents with depressive symptoms that meet diagnostic criteria for mood disorders have shown higher rates of adverse psychological and social functioning. Moreover, depression is associated with poor school performance, delinquency, running away, substance abuse, suicide and negative impacts on peer and family relationships<sup>7</sup>. Prospective research using community samples shows that more girls than boys exhibit depressive mood and symptoms<sup>8</sup>. Furthermore, Hankin et al. revealed that the sex difference in depression become most dramatic in middle to late adolescents<sup>9</sup>. More girls than boys become depressed owing to the strong influence of negative life events, especially those occurring in interpersonal contexts such as peer, romantic, and family

relationships; girls have a tendency to react more strongly to these stressors in the form of depression<sup>10</sup>. Biological and social changes occurring during adolescence, especially in girls, also contribute to feelings of depression and lack of satisfaction<sup>11; 12</sup>.

Major depressive disorder (MDD) is the most severe depressive mood disorder, with prevalence rates ranging from 10 – 18.5% in adolescence<sup>13</sup>. Longitudinal studies indicate that the mean MDD onset age is approximately 15 years<sup>14</sup>. In the National Comorbidity Survey, lifetime prevalence of minor depression was 8.1% for 15 to 16 year olds and 14.3% for 17 to 18 year olds<sup>15, 16</sup>. Slightly lower rates have been observed among Puerto Rican<sup>17</sup> and Finnish adolescents<sup>16</sup>. Minor depression is considered the strongest risk factor for future MDD<sup>18</sup>. While adjustment disorder with depressed mood is the most common depressive mood disorder in adolescents; the estimated cross sectional rate of dysthymia is only 3%<sup>19</sup>.

When an adolescent meets the diagnostic criteria for one psychiatric disorder, it is likely that he or she will meet the criteria for at least one other disorder<sup>20; 21</sup>. Some epidemiological data recorded a high comorbidity of conduct problems, attention deficit hyperactivity disorder (ADHD), substance abuse and antisocial behaviour with adolescents' depression<sup>22, 23, 24</sup>.

Comorbidity of depression with other psychiatric disorders have also been associated with more severe symptom profiles, poor treatment outcome, increase in disability and service utilization<sup>25</sup>.

Investigation of the pattern and correlates of comorbidity in depressed adolescents by Small et al.<sup>21</sup> revealed that psychological correlates differ meaningfully with



comorbidity, due to the more association with cognitive impairment, psychomotor changes and higher rate of suicidal ideation<sup>26</sup>. Though depression remains a prevalent disorder associated with serious consequences, it is often under-diagnosed and under-treated in young people<sup>27, 28</sup>.

To our best of knowledge, the study of the types of depression and patterns of comorbidity among Egyptian female adolescents received little attention. This study was designed to address this issue in order to provide preliminary information to clinicians, teachers and policy makers interested in providing services to adolescents' females who would be the future mothers.

### Objective

The current study aims to elucidate the types of depression and pattern of comorbidity in a representative sample of Egyptian secondary school girls diagnosed with depression.

### Subjects and Methods

#### Design of the Study

The current study is a cross sectional school-based study conducted during the academic year 2007-2008.

#### Site of the Study

The current study was conducted in Cairo, Egypt. A sample of female adolescent school students in Eastern Cairo was drawn. Recruited participants were secondary school girls aged 14-17 years. The sample frame was obtained from the Ministry of Education.

#### Ethical considerations

Ethical approval of the protocol of research was obtained by authority of Ain Shams University Postgraduate Affairs office and Ministry of Education authority before starting the study procedures. In addition, the students' parents were informed in advance by a letter to obtain their consents. The appropriate dates and time for assessment were established by the school principle. Students were informed about the nature of the research and confidentiality of the obtained information. It was stated that participation in the study was voluntary and that participants had the freedom to withdraw from the assessment at any time.

#### Selection

Basically a method of sampling was followed allowing each relevant factor to contribute in the constitution of the sample a share that was proportionate to its weight in the parent population. Determination of the size of this sample was done after the consultation of a statistician; sampling was performed randomly at five levels:

- 1- The city (Cairo) has five major geographical areas from which one was selected (Eastern Cairo).
- 2- Educational system in Eastern Cairo was divided into two major categories (Private and Public) based on socioeconomic profile. Six schools were selected from two educational districts, one district represent higher socio-economic status (three schools) and the other less affluent status (three schools).
- 3- From each school, 3 classes (one class represents each secondary grade: 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> grade) were

selected and all students in each class were included. Selection of the classes was determined by the school authorities.

- 4- The identified potential participants were 676 girls. 18 guardians and 27 students declined to participate, and four students were excluded because of frequent medical sick leaves.
- 5- All students who gave their consents were examined by paediatricians to exclude those who have medical illness; 25 students were excluded because they had bronchial asthma, rheumatoid arthritis, renal problems, type I diabetes mellitus and other medical problems. (See Fig. 1: Flow chart). Finally 602 students were included in the study (mean age  $15.5 \pm 0.87$  year), including 292 from private schools and 310 from public schools. 229 students (mean age  $14.83 \pm 0.70$  year) were in the first grade of secondary schools (equivalent to year 10) while 230 students (mean age  $15.44 \pm 0.55$  year) were in the second grade (equivalent to year 11), and 143 (mean age  $16.67 \pm 0.62$  year) were in the third grade (equivalent to year 12).

#### Tools applied in this study included

- a) **Children Depression Inventory (CDI)**<sup>29, 30</sup> (Translated by Gharib Abdel Fatah,<sup>31</sup>. The measure is a reliable, valid self-rating scale) suitable for children and adolescents from seven to 17 years old<sup>32, 33</sup>. The cut-off point used for our study was 24, corresponding to that of a similar previous national study on Egyptian high school students<sup>34</sup>.
- b) **Psychiatric interview by SCID-I/NP**<sup>35</sup>: All participants were interviewed using the Structured Clinical Interview for DSM-IV axis I diagnosis Research Version, Non-patient Edition. (SCID-I/NP)<sup>34</sup>. The SCID-I/NP yielded a clinical diagnosis, which we further stratified into depressive and non-depressive. The depressive category was operationally defined as those having current episodes of Major Depressive Disorder, Dysthymic Disorder and Adjustment Disorders with Depressed mood.
- c) **Designed Questionnaire**: We designed a set of questionnaires in the form of yes/no, multiple choice, or closed ended format based on Ain Shams Psychiatric Institute sheet to assess the following domains: age, place of residence, number of siblings, medical problems, positive and negative life events, scholastic achievement, puberty, family background, other personal data and extracurricular activities.
- d) Academic achievement for each student during a two month period was estimated by school teachers and subsequently recorded by researchers.

#### Procedures

602 adolescent female students were first asked to complete the Child Depression Inventory (CDI) and the designed questionnaire. They were then interviewed by the Clinical Interview for DSM-IV Axis I diagnosis; 80

students received a diagnosis of major depression, dysthymia or adjustment disorder with depressed mood according to DSM IV Axis I diagnosis. Senior psychiatrists re-examined the 80 students for a comorbid axis I diagnosis. The examination revealed that

30 students had no comorbid disorders while 50 students had a second or more diagnoses in addition to the principle diagnosis on Axis I. Fig. 1

**Figure 1. Flow Chart**  
Total Number 676 Students

602 Students Included		74 Students Excluded			
292 Students Private	310 Students Public Schools	18 Students Guardian Refusal	27 Students Refusal	4 Students Frequents Leaves	25 Students Medical Causes

**Data processing and statistical analysis**

Analysis was done using Statistical Package for Social Science Version-10 (SPSS v.10). Differences of group means were statistically tested using Students' *t*-tests and ANOVA. The Pearson Chi square test ( $\chi^2$ ) was used to examine group differences in nonparametric data. P value was used to indicate the level of significance ( $P \leq 0.05$  is considered significant,  $P \leq 0.01$  is highly significant,  $P \leq 0.001$  is very highly significant).

**Results**

Using the Structured Clinical Interview for DSM IV diagnosis (SCID-I) we found that 80 out of 602 students (13.3%) had depression. 5.2% (n=31) of the entire students population had major depression, while 5% (n=30) had adjustment disorder with depressive mood and 3.1% (n=19) had dysthymia (Fig. 2).

**Figure2. Types of Depression among the total student population**

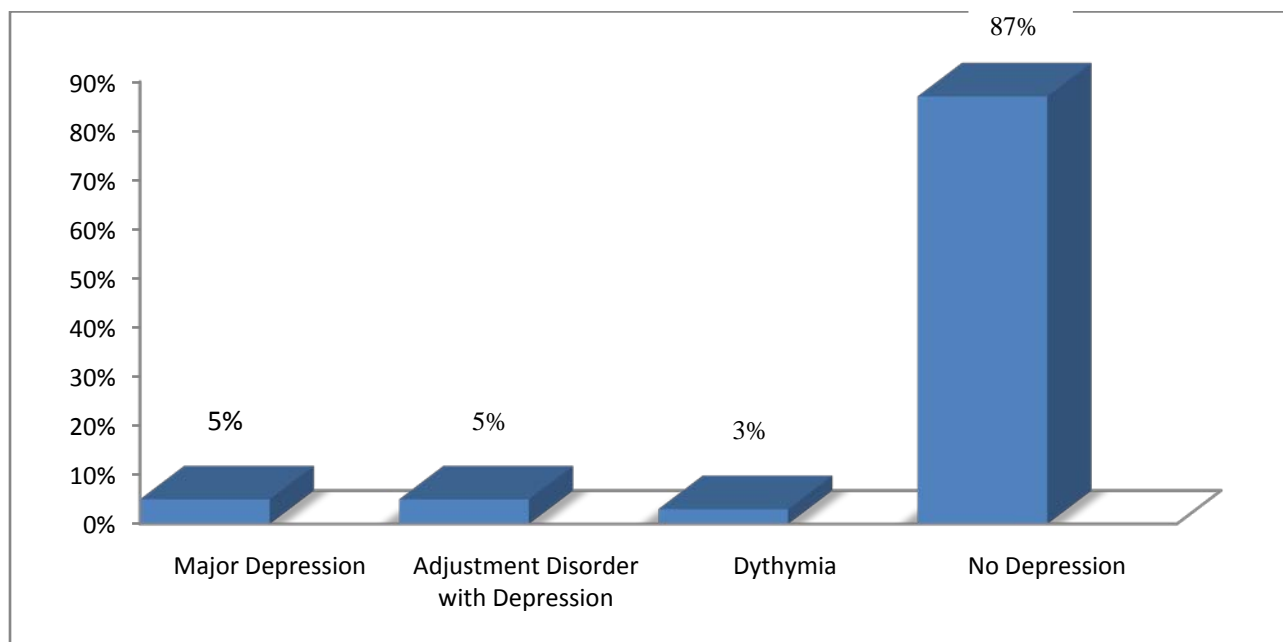
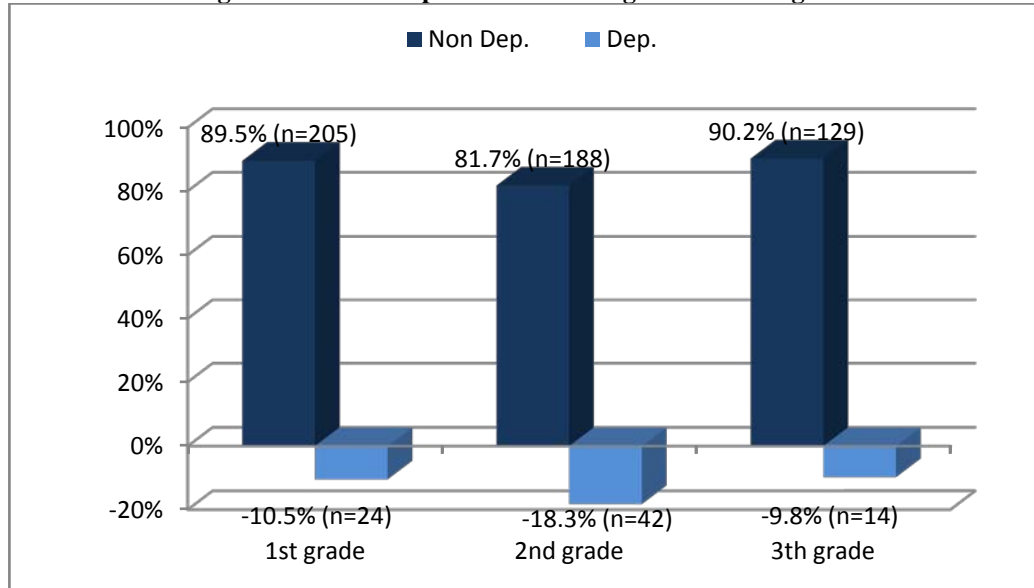


Figure (3) illustrates the rate of depression in students enrolled in the second grade of study (equivalent to year 11) was the highest (18.3%) compared to the rate

estimated in students enrolled in the first grade (equivalent to year 10) and third grade (equivalent to year 12) (10% and 9.8% respectively).

**Figure 3. Rates of depression according to the school grade**



In (table 1a) we presented the types of depression among depressed participants, 38.75% had major depression, 37.5% had minor depression in the form of adjustment disorder with depressed mood, while only 23.75% had dysthymia.

The type of depression differs markedly in relation to the school grade, we found that third grade depressed students were more likely to have adjustment disorder with depressed mood 57% while second grade students suffered more frequently from major depression 38.1%; however, in first grade students we found similar rates of major depression and adjustment disorder 41.7% each.

In an attempt to elucidate the difference in the types of depression according to whether the students belonged to private or public schools, results failed to show any statistical significant difference between them (table 1c). Table (2a) illustrates that 37.5% of students with depression had only one diagnosis on Axis I, while the rest (62.5%) showed another diagnoses with the principle one. Generalized anxiety disorder (GAD) was by far the most encountered comorbid diagnosis (n=26; 32.5%), followed by social anxiety in 20% while about (9%) had substance abuse.

**Table 1. Type of depression among students with depression**

Type of depression	1a	1b			1c	
	Total	According to school grades			According to type of school	
	n=80	1 <sup>st</sup> Grade n=24	2 <sup>nd</sup> Grade n=42	3 <sup>rd</sup> Grade n=14	Private school n=39	Public school n=41
Adjustment disorder	30 (37.5%)	10 (41.7%)	12 (28.6%)	8 (57%)	13 (36%)	17 (41%)
Major depression	31 (38.75%)	10 (41.7%)	16 (38.1%)	5 (36%)	18 (46%)	13 (32%)
Dysthymia	19 (23.75%)	4 (16.6%)	14 (33.3%)	1 (7%)	8 (18%)	11 (27%)
		x <sup>2</sup> = 6.83 / df=2 / p=0.019 (sig)			x <sup>2</sup> = 0.18 / df=2 / p=0.67 (insig)	

The pattern of comorbidity in relation to the school grades (table 2b) revealed significant statistical

differences (p=0.018). Among 2<sup>nd</sup> grade students with depression, the highest rate of comorbid diagnosis was

generalized anxiety disorder (50%). First grade students with depression were more likely to have comorbid social anxiety disorders (38%). Our data indicate that the most frequent comorbid diagnosis with depression among third grade students was substance use disorder (29%).

Rates of comorbidity with depression did not show any statistical significant differences when we compared students with depression enrolled in private versus public secondary schools (table 2c).

**Table 2. Comorbidity among students with depression**

	2a	2b			2c	
	Total	According to school grades			According to type of school	
	n=80	1 <sup>st</sup> Grade n=24	2 <sup>nd</sup> Grade n=42	3 <sup>rd</sup> Grade n=14	Private school n=39	Public school n=41
No comorbidity	30 (37.5%)	11 (46.1%)	13 (31%)	6 (43%)	12 (30.7%)	18 (44%)
GAD <sup>1</sup>	26 (32.5%)	2 (8%)	21 (50%)	3 (21%)	10 (26%)	16 (39%)
Social anxiety	16 (20%)	9 (38%)	6 (14%)	1 (7%)	11 (28%)	5 (12%)
OCD <sup>2</sup>	1 (1.25%)	1 (4%)	0 (0%)	0 (0%)	1 (2.5%)	0 (0%)
Substance abuse	7 (8.75%)	1 (4%)	2 (5%)	4 (29%)	5 (12.8%)	2 (5%)
		x <sup>2</sup> = 18.45 / df=8 / p=0.018 (sig)			x <sup>2</sup> = 5.69 / df=4 / p=0.22 (NS)	

1: Generalised Anxiety Disorder 2: Obsessive compulsive Disorder

We could not elicit any association between comorbidity and any of the following variables: mean age, pubertal age, academic achievement, family history of psychiatric

illness, home environment, and negative life events (table 3).

**Table 3. Correlates of Comorbidity**

		No comorbidity =30	Comorbidity =50		95% Confidence interval
<b>Age</b>	naem±SD	15.4±0.9	15.49±0.93	t 0.01 p= 0.99	-0.393- 0.39
<b>Pubertal Age</b>	naem±SD	12.4±0.8	12.21±1.32	t 1.09 p= 0.28	-0.229- 0.784
<b>Academic Achievement</b>	naem±SD	78.9±9.4	76.92±11.23	t 0.65 – p= 0.52	-6.191 – 3.145
<b>Family History of Psychiatric Illness</b>	evitisop	n=4 13%	n=7 14%	x <sup>2</sup> 0.81 – df 1 p= 0.99	
	evitagen	n=26 87%	n=43 86%		
<b>Home Environment</b>	suoinomrah	n=9 30%	n=17 34%	x <sup>2</sup> 0.24 – df 1 p= 0.624	
	moslerrauqe	n=21 70%	n=33 66%		
<b>Negative life events</b>	tneserp	n=6 20%	n=11 22%	x <sup>2</sup> 0.013 – df 1 p= 0.911	
	tnesba	n=24 80%	n=39 78%		
<b>Termination of Romantic Relation</b>	evitisop	n=10 33%	n=15 30%	x <sup>2</sup> 0.93 – df 1 p=0.33	
	evitagen	n=20 67%	n=35 70%		

**Discussion**

Adolescent depression is an increasingly problematic diagnosis for young people and is associated with more chronic, severe episode and higher rates of comorbidity<sup>36, 37</sup>.

The purpose of this study was to investigate type of depression and pattern of comorbidity in a sample of adolescent girls enrolled in secondary schools in Eastern Cairo, Egypt.

5.2% of the studied population met the criteria for major depression. This data supported the results reached by Shaffer and colleagues<sup>14</sup> who found that the prevalence of major depressive symptoms reached 5% among children and adolescents between 9 and 17 years of age of both sexes. A higher rate was recorded by Rhode and co-workers who estimated that one-year prevalence at age 16 was 15.3%<sup>38</sup>. Among Nigerian female adolescents, Adewuya and co-workers<sup>28</sup> identified an 8.9% prevalence rate of major depression. On the other hand, in a community sample the rates of clinically

defined major depressed ranged from 0.4 to 8.3% or higher<sup>39, 40</sup>. This variability in results may be explained by differences in the sampling process and tools used for assessment<sup>41,42</sup>. A good proportion of adolescents exhibit depressive symptoms that are sub-threshold for the diagnosis of major depression<sup>11, 43</sup>, such as Adjustment Disorder (AD) with depressed mood which involves experiencing fewer symptoms than fulfilling the criteria for major depression. In our study, Adjustment Disorder with depressed mood was the second most commonly encountered depressive disorder among the student population (5%). Most of the clinical symptoms typically started within three months of an identifiable stressor. Similarly, Pelkonen and co-workers found that adjustment disorder was the second most common clinical entity among a sample of Finnish adolescent outpatients<sup>44</sup>. Some authors considered Adjustment Disorder a major precursor and predictor of major depression and other mental disorders, personality problems, behavioural and conduct problems, delinquency, substance misuse and suicide<sup>38;45;46;47;48; 49; 50</sup>. We could not elicit such association by the cross sectional design of our study

Dysthymia is a chronic milder form of depression characterized by depressed or irritable mood present for at least one year<sup>4</sup>. Some argue that these symptoms represent typical adolescent moodiness and turmoil but there is also evidence that these symptoms represent risk for future substantial impairment<sup>51</sup>. The rate of dysthymia among adolescents in the current study was found to be 3.1%. This is consistent with western studies where the rate of dysthymia ranged between 3% and 3.5%<sup>52</sup>.

Minor depression should be considered as a risk factor to developing major depression according to Kovacs and coworkers who found that 70% of adolescents with dysthymic disorder eventually developed major depression<sup>53</sup>. Such association should be considered in future longitudinal studies. Different studies in different cultures found that depressive symptoms were significantly linked with scholastic grades<sup>54, 55</sup>. Similarly, in our society the highest rates of depression were found among students enrolled in second grade followed by other grades. This could be explained by the stress imposed on those students due to the new educational system in Egypt and the increasing difficulties of the university entry system which impose significant pressure on students to obtain high scores at the end of secondary school in order that they might join university. The preparation of the final exam starts from the second year. All families from different social strata spend a lot of money to finance extracurricular private lessons for better achievement of their youth. This pressure imposed on students aggravates those at a higher risk to develop depression. Similar difficulties also were observed in Greek society<sup>12;55</sup>.

#### **Patterns of Co-Morbidity**

DSM criteria for diagnosis of depression are similar to those for adults. If there is any comorbid disorder with

depression, it requires the presence of depression beforehand. High comorbidity with depression in adolescents has been reported in several studies. Angold and Costello recorded that approximately two thirds of children and adolescents with major depressive disorder were found to have another mental disorder<sup>56</sup> while Small and his colleagues found that more than half of their depressed sample had comorbidity with one or more disorders<sup>21</sup>. In the National Co-morbidity survey, 76.6% of adolescent with major depression and 69.3% of those with dysthymia presented at least one other psychiatric disorder<sup>57</sup>.

Several researchers have documented that the most common comorbid disorder with depression is anxiety disorder. Generalized anxiety disorder (GAD), in particular, is recorded to be the highest comorbid condition with adolescent depression<sup>21, 52</sup>. Other disorders include ADHD, oppositional defiant, conduct, antisocial behaviour and substance disorder<sup>4;58</sup>.

In concordance with the previous studies, 62.5% of our depressed sample had at least one comorbid diagnosis on Axis I. Generalized anxiety disorder (GAD) was found to be the most prevalent co-morbid diagnosis with depression (32.5%); it was noticed also that the rate was strikingly higher in the 2<sup>nd</sup> grade students probably due to increase academic pressure owing to the new educational system in Egypt which impose much stress on the second year of high schools. Moreover, comorbid anxiety disorders were noticed to be higher in public schools more than private schools; this could be attributed to the school structure, crowding in the classroom and educational approach, which is more integrated in private than in governmental schools<sup>59</sup>.

Adolescents with a diagnosis of a depressive disorder are more impaired in their social functioning than non-depressed adolescents; also depressive symptoms are associated with interference in various domain of peer relationship<sup>60, 60, 62</sup>. This data could explain why social anxiety disorder was recorded to be relatively highly comorbid with depression in our study, especially in the first grade students who moved to new schools and new environments.

The issue of substance abuse is complicated from a cultural prospective as there are differences between our culture and that of western countries. These were reflected in the under-reporting of substance abuse in general and especially in females due to fear of social stigma in comparison to higher prevalence rates reported by Martin and Cohen<sup>63</sup> in western Countries.

Gender relates to the temporality of depression and substance disorders. Depression has been suggested to be primary to substance dependence among girls and secondary to it among boys<sup>23, 64</sup>. Thus, depressed female students were more likely to have comorbid substance abuse.

Possible reasons to explain comorbidities with depression at such high rates may be related to a common genetic liabilities shared by the two disorders. It has been suggested that the comorbid disorder may be an

alternate manifestation of the same latent factor, which manifests as depression<sup>65</sup>, or it may constitute a heterogeneous phenomenon of clinically meaningful classes including somatic and psychological depression and somatic and psychological anxiety<sup>66</sup>. Our study failed to prove that a number of variables such as age, pubertal age, academic achievement, family history and exposure to stressful events have any correlation with comorbidity. However, previous findings have shown that positive family history, socio-demographic variables and educational attainment influence comorbidity in depressed adolescents<sup>21,67, 68, 69</sup>. Such results could be related to the relatively small sample size.

Given the long-term morbidity of early onset depression, it is timely to consider more effort to the prevention of primary and secondary depression<sup>70, 71</sup>. Understanding depression in this population and appropriate intervention will reduce the negative health outcome in youth.

### Conclusion and Recommendations

Depressive disorders were highly prevalent in a sample of Egyptian female students. Our results on the type of depression and pattern of comorbidity add meaningfully to the previous literature. Major depression was highly prevalent, also the rate of minor, depression and Adjustment Disorder. Results documented that depression in this age group was significantly associated with comorbid psychiatric disorders. Generalized anxiety disorder was by far the highest comorbid disorder followed by social anxiety and substance abuse in the current sample.

The current study offers implication and adds insights into depression in female adolescents and may be informative for clinicians, teachers, parents and also policy makers who are interested in targeting services to such high risk group by designing programs for prevention and early intervention. We encourage further research to fully explore all risk factors that could be correlated with comorbidity in depression and to examine the mechanism of its' occurrence in future.

### Strength and Limitation

The strength of the current study lies in the fact that it is one of the few studies to have investigated depression in Egyptian female adolescents. Moreover, all recruited students were interviewed by trained psychiatrists using a structured psychiatric interview. The findings from this study have also several practical implications.

However, the current study was not without limitation. We had assessed adolescents' depression in a single school community with relatively small sample size and used a sample of students that represented a range of urban populations. Thus, the findings cannot be easily generalized to other populations. Also, we emphasised the on-going episode and not the life time symptoms of depression. We could not establish a causal link between depression and comorbid disorders because of the cross-sectional design of the study.

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## المخلص

يُعد الاكتئاب من أكثر الاضطرابات انتشاراً بين المراهقات ، ويرتبط بمعدلات مرضية مصاحبه عالية كما ينتج عنه آثار تضر بالأداء الأكاديمي والاجتماعي . **والهدف من هذه الدراسة** هو إيضاح أنواع الاكتئاب ونمط المرضية المصاحبة في عينة ممثلة من طالبات المدارس الثانوية المصرية. **طرق البحث:** تم إجراء مقابلة بواسطة فريق عمل من الباحثين مع 602 طالبة ، من مدارس ثانوية حكومية وخاصة في منطقة شرق القاهرة باستخدام المقابلة الإكلينيكية المعيارية للتشخيص على المحور الأول حسب الدليل الإحصائي الأمريكي الرابع لتشخيص الأمراض النفسية. **نتائج البحث:** تبين من نتيجة البحث إصابة 5.2 % بالاكتئاب الجسيم ، و 5 % بالاضطراب التكيفي مع مزاج اكتئابي وكان فقط 3.1 % لديهم مرض عسر المزاج. وبدا واضحاً انتشار اضطراب التكيف في طالبات الصف الثالث الثانوي أما طالبات الصف الثاني ثانوي فقد اظهرن أعلى معدلات الاكتئاب الجسيم ، بينما سجل طالبات الصف الأول الثانوي معدلات متساوية من الإصابة بالاكتئاب الجسيم واضطراب التكيف. وقد أوضحت الدراسة إصابة ما يقرب من ثلثي الطالبات اللاتي يعانين من الاكتئاب باضطرابات مرضية مصاحبة وكان من أكثر التشخيصات شيوعاً بين الطالبات هو اضطراب القلق العام في 32.5% من الحالات يليها القلق الاجتماعي بنسبة 20% والتعاطي والإدمان بنسبة 9% . وكشف نمط المرضية النفسية المصاحبة فيما يتعلق بالصفوف المدرسية فروق ذات دلالة إحصائية ، حيث كان مرض الخوف الاجتماعي مصاحباً للاكتئاب بين طالبات الصف الأول ثانوي واضطراب القلق العام بين طالبات الصف الثاني ثانوي أما التعاطي والإدمان فقد انتشر مصاحباً للاكتئاب بين طالبات الصف الثالث ثانوي. **الخلاصة:** تنتشر أنواع مختلفة من الاكتئاب في عينة من الطالبات المصريات بالمدارس الثانوية كما ترتبط الاكتئاب عندهن ارتباطاً وثيقاً بوجود اضطرابات نفسية مرضية مصاحبة في هذه الفئة العمرية وتقدم هذه الدراسة معلومات هامة للأطباء وأصحاب القرار في السياسات الصحية والسلطات بالمدارس والمهتمين بالخدمات المقدمة لهذه المجموعات عالية المخاطر والمتوقع أن يصبحن أمهات المستقبل.

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## Psychiatric morbidity and pattern of coping among a sample of Egyptian women in early versus recurrent stage of breast cancer

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المرضاة النفسية و نمط التكيف والدعم الاجتماعي في عينة من المريضات المصابات

بسرطان الثدي في المراحل المبكرة و مراحل الانتكاس

أحمد المسيري، مروى عبدالمجيد، مروى المسيري، ضحى الصيرفي

### Abstract

Women with breast cancer have been known to present with high rates of psychiatric disorders, distressing symptoms and stressful experiences that mobilize different coping strategies and may require social support. **Objectives:** To describe the psychiatric morbidity, pattern of coping, and social support in a sample of Egyptian patients with breast cancer in the early postoperative and recurrent stages. **Materials and Methods:** A descriptive cross-sectional study was conducted with 100 female breast cancer patients from the Breast Cancer follow-up clinic at Ain Shams University Hospitals; 75 patients were in the early postoperative (Group-A) while 25 patients were in the recurrence stage (Group-B). All participants were evaluated using the Structured Clinical Interview for DSM Axis-I Disorders (SCID I). Further assessment was done using Beck Depression Inventory (BDI) to assess the severity of depression, the Manifest Taylor Anxiety Scale (MTAS) to assess anxiety state, the Dealing with Illness Coping Inventory to assess the pattern of coping, and the Medical Outcome Study (MOS) Social Support Survey to assess the perceived social support. **Results:** Higher rates of psychiatric morbidity reaching 76% of patients with recurrent breast cancer met the criteria for a psychiatric diagnosis compared to 54.7% of patients in the early stages. The spectrum of the current DSM-IV psychiatric diagnoses differed significantly between the two groups: 44% of the recurrent group had major depression compared to 17.3% in patients with post-operative early stage, the latter groups showed a high rate of anxiety disorders (29.3%) and sub-syndromal depressive symptoms (40%). The recurrent cases scored higher in Beck Depression Inventory (BDI) while the early cases scored higher in Manifest Taylor Anxiety Scale (MTAS). Active coping methods were frequently used by all patients; however, Avoidance Coping method ( $P=0.01$ ) and Passive Resignation strategy ( $P=0.005$ ) were significantly used more by the recurrent group. All types of social support were equally served for both groups; however, the recurrent group received more significant practical support. **Conclusion:** In the current study, Egyptian breast cancer patients demonstrated a high prevalence of psychiatric disorders, with mild to moderate symptom severity. In both early and recurrent stages some coping patterns may be influenced by the psychopathology and the stage of illness. Generally, patients received adequate emotional and practical support. Our findings provided the rationale for developing a program that facilitates early recognition and management of such high rate of psychiatric morbidity among women with breast cancer.

**Keywords:** Breast cancer, coping strategies, social support, depression, anxiety.

**Declaration of interest:** None

### Introduction

Breast cancer is one of the most common cancers in women, with gradual increasing incidence every year<sup>1</sup>. It is considered to be one of the main public health problems worldwide, due to its high morbidity, mortality and high social and economic cost<sup>2</sup>. It is a critical life event that has consequences within many life domains<sup>3</sup>. In Egypt, it accounts for 35.1% of all female cancers, with age – standardized Incidence rates (ASR) of 49.6/100,000 and it is expected to rise over the coming years<sup>4</sup>. Despite successful curative surgery and considerable improvement in pharmacological treatment, patients and their families remain with uncertainty due to the permanent threat of cancer recurrence at the same or different tumor sites<sup>5</sup>. Breast cancer has often been a source of severe psychosocial distress to patients and their families. As the public perception still portrays it as a deadly and disfiguring illness, and overestimates its physical, psychosocial, and economic impact<sup>6</sup>. Several studies focused on the role of psychiatric disorders as they are commonly encountered along the course of the disease. 80% of breast cancer patients reported significant distress during initial treatment, most often anxiety about loss of fertility, self-image, difficulties with

sexual functioning, fear of death, vocational difficulties and possibility of recurrence<sup>7</sup>.

Also mood disorders, especially depression spectrum syndromes, have been the focus of several studies in cancer. Spiegel and Giese-Davis<sup>8</sup> suggested a common psycho-physiological mechanism linking depression and cancer through the dys-regulation of the Hypothalamic-Pituitary-Adrenal axis and immune functioning. The prevalence of depression in breast cancer varies widely, the reported rates range from as low as 1.5% -3%<sup>9</sup> to figures around 50%<sup>10</sup>. Still with these variations it is even thought that depression is under-recognized and underreported in those patients<sup>11</sup>. Improving detection of mood and anxiety disorders among breast cancer patients and their appropriate treatment may reduce suffering, improve quality of life and even survival<sup>12</sup> because there has been some evidence to suggest that depression and anxiety, in particular, are linked to cancer progression, poor treatment outcomes, quality of life and survival rates<sup>13,14</sup>.

Psycho-social support and other personal variables have been reported to influence coping and well-being in breast cancer patients<sup>15</sup>. The relationship between these internal and external factors is complex and interdependent.

A plethora of research indicates that perception of social support and social integration is a significant good prognostic predictor<sup>16</sup>, and is even associated with longer survival among women with advanced disease<sup>17</sup>. Similarly, the internal makeup of the individual, specific personality traits and other psychological variables that influence coping strategies can also modulate the biological aspects, the progression and the course of the neoplastic pathology<sup>18</sup>.

A large body of literature has described the styles, degrees, and efficiency of coping in breast cancer patients. Data suggest that in general engagement rather than disengagement oriented coping strategies are linked to less distress, positive adjustment, better outcomes and higher quality of life<sup>19</sup>.

The degree of impact and the level of coping with breast cancer differ along its' trajectory<sup>20</sup> with the recurrent phase of the illness being particularly distressing to patients and their partners<sup>21</sup>. Some studies indicate that cancer patients with a recurrent disease reported substantial psychological distress with loss of hope for recovery and fears of death<sup>16</sup>, as well as, poorer physical functioning, more problems at home, work, social lives and difficult relationship with their families, physicians and other health professionals than patients with newly diagnosed disease<sup>15</sup>.

Our objective was to assess psychiatric morbidity, pattern of coping and degree of social support in a sample of Egyptian women with early and recurrent breast cancer aiming to provide data essential which could be useful for policy maker to plan a tailored comprehensive service to reduce distress in those women.

### Participants and methods

This descriptive study was conducted at the weekly Breast Cancer follow-up clinic at Ain Shams University Hospitals, Cairo, Egypt, following the approval of the Research and Ethics Committee at the Ain Shams University.

The study included Egyptian female patients aged between 30-65 years who were diagnosed with breast cancer (stage I and II) and treated surgically by modified radical mastectomy or lumpectomy, also patients with local or regional recurrence. We excluded patients with metastasis, hepatic or renal-dysfunction and also cases receiving intensive, chemotherapy and radiotherapy, since side effects of such treatment might transiently affect adjustment and coping.

A total of one hundred and twenty patients who fulfilled the inclusion criteria agreed to participate in the study and signed a printed consent form. However, 20 patients dropped out (16.6%); Two patients (1.6%) withdrew consent, 13 (10.8%) did not attend the second visit for assessment, and 5 (4.2%) started extensive chemotherapy or radiotherapy before the second visit and hence, excluded. The remaining 100 patients were enrolled in the study and were divided into two groups: 75 early post-operative patients (mean age 48±9.5) comprised group (A) and 25 patients (mean age 47±9.6) who suffered recurrence after initial surgical treatment with or without radiotherapy or

chemotherapy comprised group (B). The mean disease – free interval between initial diagnosis and recurrence was 3.8±1.17 years.

All participants in the study were evaluated in two sessions by experienced and trained research investigators and were subjected to the following:

- a) **The Fahmy and El-Sherbini's Egyptian Social Classification:** Scale which stratifies subjects into four social classes<sup>22</sup>.
- b) **Structured Clinical Interview for DSM-IV Axis I diagnosis clinical Version**<sup>23</sup>: the English version was used in this study.
- c) **The Beck Depression Inventory (BDI);** a 21-item self-report measure of the severity of depression state that is specifically geared to measure the behavioural, emotional somatic and cognitive manifestations of depression<sup>24</sup>. The Arabic version was used<sup>25</sup> with the following culturally validated cut-off scores for the Egyptian population; Normal (0-20), mild (21-31), moderate (32-41), and severe (≥42).
- d) **The Manifest Taylor Anxiety Scale (MTAS)**<sup>26</sup>. This consists of 50 self-report items to assess the anxiety state. The Arabic version was used<sup>27</sup> with the following culturally validated cut off scores; Normal (0-16), mild (17-24), moderate (25-35), and severe (≥36).
- e) **Dealing with Illness Coping Inventory**<sup>28</sup>. This is a self-administered questionnaire with forty-eight statements on a Likert scale aiming to measure three main coping methods (active cognitive, active behavioural and avoidance coping). Further, they are analyzed into eight specific coping strategies (e.g. active positive involvement, active experience information, active reliance on others, cognitive positive understanding, cognitive passive rumination, distraction, passive resignation and avoidance solitary passive behaviour).
- f) **The Medical outcome Study (MOS) Social Support Survey**<sup>29</sup>. This is a 20-item self-report scale designed to measure four dimensions of perceived functional social support and interaction (emotional/informational, tangible/practical, affectionate, and total support).

Both the “Dealing with Illness Coping Inventory” and The “MOS Social Support Survey” were translated from English to Arabic with necessary semantic adaptation and back translated by two independent bilingual language expert translators and reviewed by an expert committee for cultural applicability<sup>30</sup>.

As both the Dealing with Illness Coping Inventory and the MOS Social Support Survey were self-administered tools, illiterate subjects included in the research were assisted by the researchers to fill their forms.

### Statistical Analysis

Data analysis was done using Statistical Package for Social Sciences Version-10 (SPSS v.10). Student's *t*-

test was used for comparison between means of the different groups. Pearson Chi-Square Test ( $\chi^2$ ) was used for comparison between qualitative variables. P value was used to indicate the level of significance where  $P \leq 0.05$  is considered significant (SIG),  $P < 0.01$  is highly significant (HS),  $P \leq 0.001$  is (VHS) very highly significant.

**Results**

The demographic characteristics of the two studied groups have been displayed in table (1). The mean age of group A and group B patients were  $48 \pm 9.5$  and  $47 \pm 9.6$  years respectively. No significant difference between the two groups as regard marital status, residency and social standard; however, there were

significant difference as regard education received and occupation.

49.3% of group (A) patients were illiterate or just read and write, 26.6% completed university education or beyond. The rest received different types of pre-university education, on the other hand 16% of group (B) patients were university graduates, 40% illiterate and the rest had mainly secondary school education. The majority in both cohorts were house wives. The rest were in paid employment they were predominantly semi-professionals and non-professionals. Unfortunately, we could not obtain data about their ability to work due to illness.

**Table 1: The socio-demographic characteristics of patients with early vs. recurrent stage of breast cancer**

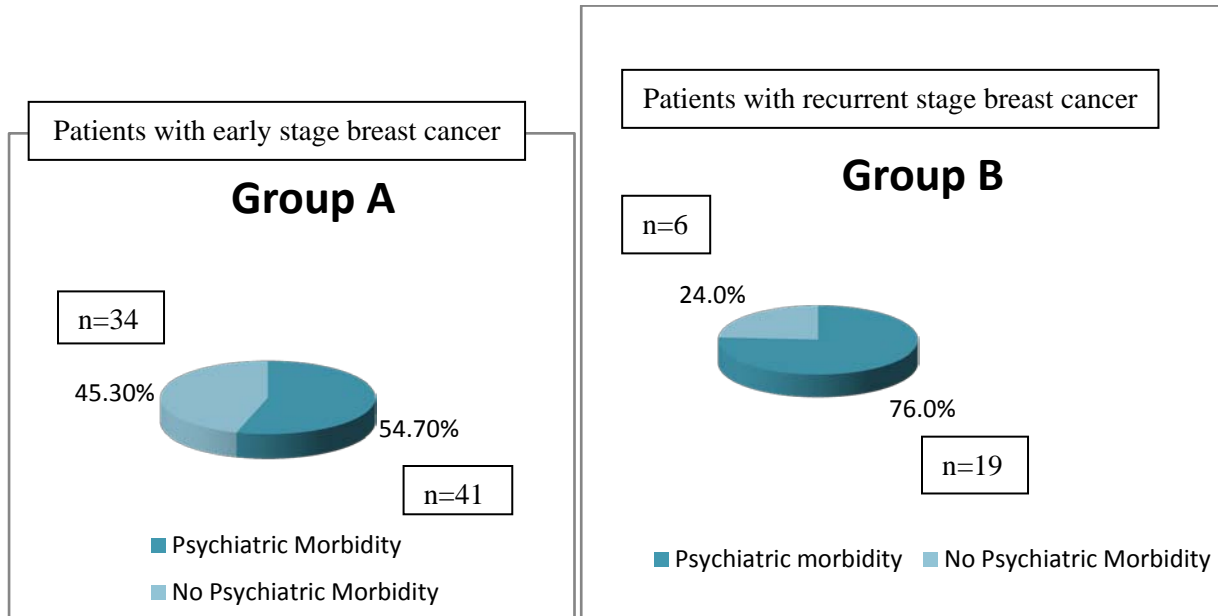
Variable	Group A N = 75		Group B N = 25		P. value
Age (Mean± SD)	48± 9.5		47± 9.6		0.7 (NS)
<b>Marital status:</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	0.8 (NS)
Married	49	65.3	18	72	
Single	1	1.3	0	0	
Divorced	3	4	1	4	
Widow	22	29.3	6	24	
<b>Education:</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	0.02 (SIG)
Illiterate	30	40	4	16	
Reads & writes	7	9.3	6	24	
Primary	5	6.7	2	8	
Preparatory	8	10.7	2	8	
Secondary	5	6.7	7	28	
University	10	13.3	2	8	
Post graduate	10	13.3	2	8	
<b>Occupation:</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	0.04 (SIG)
Nonprofessional	2	2.7	4	16	
Semi-professional	22	29.3	4	16	
Professionals	4	5.3	0	0	
House wives	47	62.7	17	68	
<b>Residence</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	0.8 (NS)
Urban	50	66.7	15	60	
Rural	25	33.3	10	40	
<b>Social level:</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	0.78 (NS)
High	16	21.3	5	20	
Middle	6	8	3	12	
Low	20	26.7	6	24	
Very low	33	44	11	44	

**Group "A"** Patients with early stage breast cancer  
**Group "B"** Patients with recurrent stage breast cancer

Data illustrated in figure (1) shows that psychiatric morbidity was relatively high in both groups. 76% of

patients with recurrent breast cancer met the criteria for a psychiatric diagnosis compared to 54.7% in the early stage patients.

Figure 1. Psychiatric morbidity among patients with early vs. recurrent stage of cancer breast



$\chi^2 = 3.50, df=1, P=0.05$

The spectrum of the current DSM-IV psychiatric diagnoses differ significantly between the two groups ( $P=0.015$ ) table (2). At the time of initial shock of diagnosis, women with early stage breast cancer had a higher rate of anxiety disorders including also

adjustment disorder with anxious mood (30.7%); furthermore they had a higher rate of sub-syndromal depressive symptoms (41.3%) than patients in recurrence group.

Table 2. Psychiatric morbidity among patients with early vs. recurrent stage of breast cancer

Psychiatric diagnosis	Early stage		Recurrent stag		
	Group A (n=75)		Group B (n25)		
	No	%	No	%	
Anxiety disorders & adjustment dis. with anxious mood	23	30.7	3	12	$\chi^2=12.32$ $df=4$ $P=0.015$
Minor depression (dysthymia & adjustment dis. with depressed mood	4	5.3	4	16	
Major depression	13	17.3	11	44	
Subsyndromal mood symptoms	31	41.3	6	24	
Non detectable	4	5.3	1	4	

The stress of living with serious recurrent illness in group (B) patients reflect the high rate of both major depression (44%) and minor depression (16%) this including adjustment disorder with depressed mood and dysthymia.

The severity of depression as measured by Beck Depression Inventory (BDI) indicates that cancer breast patients with recurrence had greater tendency to

have moderate to severe depression compared to their early stage counterparts ( $P=0.019$ ), while the level of anxiety as estimated by Manifest Taylor Anxiety Scale (MTAS) revealed no significant differences between the two groups, however, the early group showed higher tendency to have moderate anxiety, in contrast to the recurrent group who suffered more from mild anxiety (table 3).

Table 3. Severity of depression and anxiety symptoms

	Group A N = 75		Group B N = 25		
	N	%	N	%	
<b>Depression state: (BDI)</b>					$\chi^2=9.91$ $df=3$ $P=0.019$
Mild	31	41.3	15	60	
Moderate	25	33.3	6	24	
Severe	3	4	3	12	
No	16	21.3	1	4	
<b>Anxiety state: (MTAS)</b>	N	%	N	%	

Mild	40	53.3	9	36	x <sup>2</sup> =2.79 df=3 P=0.425
Moderate	32	42.7	15	60	
Severe	2	2.7	1	4	
Normal	1	1.3	0	0	

Beck Depression Inventory (BDI)  
Manifest Taylor Anxiety Scale (MTAS)

In general, depression is more common among recurrent group, while anxiety is more prevalent in the early stage group. The MOS social support survey was used to evaluate various dimensions of social support irrespective of the source. The scores presented in table (4) indicate that there is a high statistically significant difference concerning the practical type of social

support (P=0.005), which is higher in the recurrent group. However, other types of social support are equally served for both groups.

Adaptation to cancer diagnosis and treatment is influenced by psychosocial resources such as coping strategies that women learn during their cancer experience.

**Table 4. The degree of social support (MOS Social Support Survey)**

	Group A N = 75	Group B N = 25	P value
<b>Social support</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	
Emotional informational	39.2±9.9	39.9±9.09	0.74 (NS)
Practical	16.06±3.5	18.8±2.29	0.005 (HS)
Affectionate	12.9±4.8	13.6±3.8	0.49 (NS)

Test used "t" test

Table (5) describes the different pattern of the coping strategies of the female cancer breast patients indicating that the most used coping methods are the active cognitive and behavioural methods, and were equally used in both group (P= 0.11). While avoidance coping method was significantly used by the recurrent

group (P= 0.016). With respect to specific coping strategies; the active reliance on other was the most used strategy across both groups. The recurrent group preferentially used Active Positive Involvement (P=0.04) and Passive Resignation (P=0.005) strategies as compared to group (A).

**Table 5. Patterns of the coping strategies (Dealing with Illness Coping Inventory)**

	Group A N = 75	Group B N = 25	P value
<b>Coping methods</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	
Active cognitive	3.5±0.8	3.7±0.6	0.11 (NS)
Active behavioural	2.8±0.6	3.0±0.6	0.15 (NS)
Avoidance	2.0±0.5	3.3±0.5	0.016 (SIG)
<b>Coping strategies</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>P value</b>
Active positive involvement	3.0±0.8	2.4±0.96	0.04 (SIG.)
Active expressive	3.2±0.9	3.3±1.0	0.74 (NS)
Active reliance on other	4.3±1.0	4.2±1.1	0.89 (NS)
Cognitive positive understanding	3.9±0.9	4.2±0.6	0.32 (NS)
Distraction	2.3±0.8	2.5±0.5	0.16 (NS)
Cognitive passive ruminative	2.7±0.9	2.9±1.0	0.37 (NS)
Passive resignation	2.1±1.1	3.8±0.8	0.005 (HS)
Avoidance / solitary behaviour	2.4±1.2	2.1±0.8	0.25 (NS)

Test used t-test

## Discussion

In most Arab countries, many individuals are afraid to mention the word "cancer" directly, and usually refer to it as "that other dreaded disease" <sup>4</sup>. This stigma might have contributed to the tendency of Egyptian women to neglect their symptoms, where 60% to 90% failed to seek medical attention until their cancer is advanced <sup>31</sup>. At this stage, mental health problems become nearly inevitable, and the stigma intensifies when the psychiatric stigma adds another complicating dimension to it. The resulting disfigurement and

feeling of losing femininity following radical surgery is one of the most important factors leading to major psychological sequelae. Hence, it was necessary to investigate the prevalence of common mental health problems in Egyptian breast cancer patients and describe their coping strategies and social support in order to pave the way to the incorporation of culturally competent psychosocial care for such a dually disadvantaged group. It should be emphasized that the psychosocial impact of breast cancer differs across phases of the illness trajectory. Understanding these

changing psychosocial needs is essential to offer successful timely targeted interventions. Hence, the need to conduct comparative studies throughout the illness course to elicit the specific needs and integrate a phased tailored intervention. Such an approach is crucial in the development of cost-effective services, especially in a developing country, like Egypt. To fulfil part of this need, we used the structured clinical interview for DSM-IV axis I diagnosis (SCID I) to examine 100 patients with different stages of breast cancer. The psychiatric morbidity rate was 54.7% and 76% for the early post-operative cases and the group with recurrence respectively. These rates were much higher than those reported in western literature, for example, Grabsch et al.<sup>32</sup> using DSM-IV diagnosis reported 43% prevalence rate for current psychiatric disorder with advanced breast cancer in Australian women, with nearly the same rates detected by Kissane et al.<sup>33</sup> with early-stage breast cancer in a similar population (45%), and those reported by Derogatis et al.<sup>34</sup>, in a multi-centric study (47%). In comparison to these rates, our finding is certainly alarming. An explanation for this finding may point to the cultural difference or to the possible small sample effect. Initial psychological responses to cancer normally include anxiety, fears and worries related to the future prognosis, survival, breast loss and impaired body image<sup>35,36</sup>. Acute anxiety occurs for cancer patients at several points, e.g. while awaiting the diagnosis of cancer, while awaiting procedures and tests, while awaiting test results, with a change of treatment, after learning of relapse, and on the anniversary of illness-related events<sup>37</sup>. In our study, early stage patients had a high rate of anxiety spectrum disorders and adjustment disorder with anxious mood, this rate is remarkably consistent with reports of Allam et al.<sup>38</sup> in an Egyptian study. But in contrast to Härtl and his co-workers<sup>39</sup> who found that anxiety scores in his breast cancer patients had not changed during the first year after diagnosis and surgery, but became greater after one year. Findings in an Egyptian sample studied by Fahmy and colleagues<sup>40</sup> revealed that 40% of their sample were suffering from adjustment disorder, chronic, with mixed anxiety and depression; 42.5% was found by Abdel Azim<sup>41</sup> and 38.7% of another studied group by Gaballa et al.<sup>42</sup> were having anxiety. The process of adapting to stress induced by anxiety seems to change with time. This was clear in our findings which clarified that the rate of anxiety disorders in the recurrent group was much less than the early group. This may indicate that the initial treatment phase is highly traumatic as in comparison to later or recurrent phases; or that some patients with recurrent breast cancer develop considerable resilience and improvement in some psychological functioning. Understanding these changes can have an impact on the choice of appropriate psychosocial interventions<sup>21</sup>. We found that anxiety symptoms were invariably present in our Egyptian sample, mostly of mild and moderate degrees (42.7% and 53.3% respectively). In Turkish breast cancer samples, where Karakoyun-Celik et al.<sup>43</sup> reported grade II moderate anxiety in 77%, while Alacacioglu et al.<sup>44</sup> found that the mean anxiety

score on the State-Trait Anxiety Inventory was  $44.9 \pm 8.7$ , which falls mainly within the moderate range.

During the recurrent phase of illness patients reported more pain, fatigue, emotional distress, physical problems and social restriction which may explain the high prevalence of depression in this phase<sup>12, 45</sup>. Depression was found to be the most common psychiatric disorder observed in patients with recurrent cancer while 44% had major depression; 16% had minor depression and adjustment disorder with depressed mood. Approximately, similar distribution however, with lower rates was described by Kissane et al.<sup>12</sup>. The prevalence of depression was speculated in different cancer patients by Abdel Azim et al.<sup>46</sup> and was found to reach 55% and by El Batrawi and Moussa<sup>47</sup> was reaching 60%, among them 50% was ranging between mild to moderate. Lower prevalence 37.9% was found in other studies on an Egyptian population suffering from different types of malignancy<sup>41</sup>.

In both sample groups we found that depressive states were from mild to moderate severity, therefore, one can speculate that it can be readily and cost-effectively treated early using antidepressants plus supportive care<sup>48</sup> and endorsement of positive coping skills, which can lead to a substantial alleviation in the depressive state in this population.

Social support has been extensively studied as a central variable that moderates coping and adjustment either directly or through buffering the effect of stressful events<sup>49</sup>. It can help to decrease the negative affective states and symptoms of distress and improve the quality of life in women with breast cancer<sup>50</sup>. Social support has been always thought to lie in the core of the traditional collectivistic nature of the Arabic culture with its extended families. Whether the degree of social support for women in the Arabic culture is adequate or equivalent to men in such a patriarchal society<sup>51</sup> or whether social support for women with cancer is influenced by the life threatening nature of the illness as in comparison to a normal female population has not been researched. Unfortunately, this study design will not be able to answer these questions. Hence, further research is needed to investigate the degree and impact of social support in the Egyptian population across. One of the purposes of this research was to investigate the types of social support received by women with breast cancer. Data obtained revealed that both women with early and recurrent stage of breast cancer received equal emotional, informational and affectionate support from their family network.

We found a high significant difference concerning the practical type of social support ( $P=0.005$ ) provided to women in the recurrent phase of their illness in comparison to those in the early phase. Perhaps especially during the recurrence phase more practical help is needed particularly due to the associated physical limitation, pain, and other morbidities. As in other Arab countries, we utilize family care and support as a remedial strategy to compensate for the lack of services and resources, our findings were congruent with findings from studies conducted among Arab women with breast cancer in Jordan<sup>52</sup> and in

contrast to western communities in which health care providers play a crucial role in helping women with breast cancer when they lose their existing support from peers and family members<sup>53</sup>.

Cancer is a traumatic stressor, which mobilizes complex psychological adaptive processes; women develop reactions and strategies to cope with the situation. Coping describes the group of skills and abilities utilized by an individual when faced with stressful situations. Active coping is directed to change the nature of the stressor itself (i.e. behavioural) or how the individual thinks about it (i.e. cognitive). In contrast, avoidance strategies aim to prevent a direct confrontation with stressful events<sup>54</sup>. Active coping is generally thought to be a good psychological marker which can improve adjustment, and reduce psychological distress<sup>1, 55, 56, 57</sup>. In the current study, both groups of breast cancer patients depended upon active cognitive and behavioural coping, this was supported by Abdel Azim et al.,<sup>41</sup> who found that active cognitive coping was the most used coping method by cancer patients regardless of different levels. However, in patients with breast cancer recurrence, negative coping strategies transpire. We found that recurrent group used avoidance coping methods significantly more than the early group, similarly, was the use of passive resignation. The same finding was reported by Foad et al<sup>30</sup> and Abd el Azim<sup>41</sup> in Egyptian cancer patients. Perhaps patients in recurrence feel more resigned to their fate and may tend to resort to avoidance to hide their existential concerns. With the limitation of our descriptive cross-sectional design, it is difficult to conclude that the use of negative coping is solely the function of recurrence, and not the time factor, which can substantially shape the coping method used<sup>58</sup>. Studies must follow the coping strategies of individuals along the trajectory of their illness for a sufficiently long time to observe any stage-related differences in the coping process and to clarify the impact of cultural factors on the coping process, e.g. in Moslem societies like Turkish and Jordanian, they use the same type of spiritual coping as in our patients<sup>41, 47, 59</sup>.

### Implications and recommendations

In clinical practice, it is always useful to examine the psychosocial status of patients during follow-up visits and oncologists should pay attention not only to the impersonal determinants of cancer prognosis, as its stage, metastases, etc., but also to consider the possible role of intrapersonal factors as coping strategies, depression, and anxiety as well as interpersonal factors; as social support and other external life stressors. Oncologists should be proactive in inquiring about these factors as sometimes patients are reluctant to discuss or disclose their symptoms either because of the high emotional repression tendency in cancer patients, or their fear of the mental health stigma, or their fear of distracting the oncologist from curing their cancer<sup>60</sup>. This practice can foster a better physician-patient relationship, improve compliance and outcomes, and endorse the fighting spirit, especially in cancer patients<sup>61</sup>.

From a service perspective, pathways to expert psychiatric care should be readily accessible to oncology patients as an integral part of their treatment and rehabilitation. This should aim to deliver individualized, needs oriented, and timely psychosocial interventions. Health services in Egypt and the Arab countries should endeavour to address the psychosocial needs together with physical health needs of cancer patients as part of a comprehensive bio-psycho-social approach. Social care and health services should also invest in providing appropriate community support for patients, especially with respect to practical and informational support. Our study illustrated the methodological difficulties for interpreting descriptive psychosocial data in small cross-sectional studies. Clearly, more future longitudinal studies with larger sample are required for further investigations. Multi-centric cross cultural studies can be helpful in interpreting and understanding the possible unique socio-cultural effect.

### Conclusion

Psychiatric morbidity is high among patients with breast cancer. The spectrum of psychiatric disorder differs significantly between patients with early postoperative stage and those with recurrence. Depression as a whole was encountered more frequently in the recurrent stage groups, while the rate of anxiety disorders (including adjustment disorder with anxious mood) was high among early stage group. Both groups received emotional, informational and affectionate support; furthermore they utilized similar active, cognitive coping methods and similar coping strategies except that the recurrent group showed higher significant avoidance coping method and passive resignation coping strategy.

We suggest that psychiatric screening is required for patients attending oncology clinics to ensure the early recognition and intervention for psychiatric disorders among women with breast cancer in different stages. Patients should be encouraged to seek professional psychiatric services. Educational program should be offered to care-givers to enhance effective social support and appropriate coping strategies.

### Acknowledgement

We are sincerely grateful to professor Afaf Hamed Khalil Professor of Psychiatry and former chair of the Institute of Psychiatry, Ain Shams University for her kind support and generous guidance through this work. Our deepest gratitude to Professor Ahmed Saad, Professor Gihan Al Nahas, and Assisstant Professor Nivert Zaki and the team of the Institute of Psychiatry Ain Shams University who actively participated in this research by providing training on SCID and guidance

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### المخلص

وجد أن النساء المصابات بسرطان الثدي لديهن معدلات عالية من الاضطرابات النفسية، كما أن الأعراض المؤلمة والتجارب المجهدة قد تعمل على حشد مختلف استراتيجيات المواجهة وتتطلب الدعم الاجتماعي. **الهدف من الدراسة:** هو توصيف المراضة النفسية وكذلك نمط التكيف والدعم الاجتماعي في عينة من مريضات سرطان الثدي المصريات ما بعد الجراحة مباشرة وفي مراحل الانتكاسات. **طرق البحث:** دراسة وصفية مستعرضة تمت على 100 من مريضات سرطان الثدي المصريات في عيادة سرطان الثدي في مستشفيات جامعة عين شمس، 75 مريضة في ما بعد الجراحة في وقت مبكر (المجموعة ألف)، في حين أن 25 مريضة كن يعانين من انتكاسة مرضية (المجموعة باء). تم تقييم جميع المشاركات باستخدام إستمارة المقابلة الإكلينيكية المبنية على الدليل الأمريكي الإحصائي الرابع للأمراض النفسية لتشخيصات المحور الأول. وقد تم تقييم شدة الاكتئاب باستخدام مقياس بيك، ومقياس تايلور للقلق، عمل مقياس التعامل و التكيف مع المرض و مقياس الدعم الاجتماعي لجميع المريضات. **النتائج:** وجد أن معدلات المراضة النفسية في مريضات سرطان الثدي اللاتي يعانين من الإنتكاس مرتفعة. حيث كانت نسبة الاكتئاب الجسيم تصل إلى 44% بينما كانت النسبة في مريضات ما بعد الجراحة 17.3%. و وجد أن المجموعة الأخيرة كانت تعاني من اضطرابات القلق 29.3% و أعراض الاكتئاب بسيطة 40%. وسجلت أعلى درجات الاكتئاب في مقياس بيك بين المريضات اللاتي يعانين من الإنتكاس بينما وجد أن أعلى درجات القلق بين الحالات المبكرة. وكثيراً ما تستخدم أساليب التكيف الإيجابي بين جميع المريضات، ولوحظ أن نمط التجنب والاستسلام السلبي كانت الأكثر استخداماً بين المريضات المنتكسات. كما أن الدعم الاجتماعي قدم لجميع المريضات، ولكن المريضات المنتكسات تلقين الدعم العملي بطريقة أكثر. **الخلاصة:** ترتفع المراضة النفسية لدى مريضات سرطان الثدي المصريات وتتأرجح شدة المرض بين خفيفة إلى معتدلة. كما تتأثر أنماط التكيف بالمرض النفسي؛ وأوضحت الدراسة الدعم الذي يقدم للمريضات نفسياً و عملياً. **نتائج الدراسة:** تعطي أسباباً لعمل برنامج يساعد على سرعة اكتشاف و علاج المراضة النفسية في هؤلاء المريضات.

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## Psychiatric Disorders among People Referred to a Forensic Psychiatry Service in the Kingdom of Saudi Arabia: A Cross-Sectional Study

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الاضطرابات النفسية في الأشخاص المحولين للجنة الطبية النفسية الجنائية في المملكة العربية السعودية: دراسة مقطعية  
محمد عادل الحديدي، يوسف شواوش

### Abstract

**O**bjectives: The aim of this study is to determine the prevalence of psychiatric disorders among people referred for forensic psychiatric evaluation and to study some of their psycho-demographic and clinical characteristics. **Design of the study:** The design of the study is a cross-sectional one year survey. **Methods and Material:** This survey included all subjects referred to the outpatient forensic psychiatric committee at Taif Mental Hospital (OPFPCTMH), the main official psychiatric forensic committee in the Kingdom of Saudi Arabia, during one year (787 subjects). This committee is responsible for the forensic evaluation of all forensic psychiatric referrals in the KSA. They were interviewed using the Mini International Neuropsychiatric Interview (MINI) and they were diagnosed according to DSM IV classification. Clinical and demographic data were collected. The relation between crimes, psychiatric diagnosis, and number of clinical and psycho-demographic variables were done. A further analysis between various psychiatric diagnoses, age at committing crime, sex, ethnic distribution, duration and number of previous admission to psychiatric hospitals were also analyzed. **Results:** The most common offenses committed by people referred to OPFPCTMH were violence, drug, murder or attempted murder, sexual and robbery offense in this order. Most of the offenses were committed by patients with psychosis, personality disorder and substance abuse. All offenses were committed much more by male patients except defalcation and sexual offenses, which were nearly equally committed by males and females. Most offenses were committed by Saudi nationals followed by Yemani, Bangladeshi, Nigerian and Ethiopian nationals. All offenses were committed during the third or fourth decade of life. **Conclusions:** Mental illness is associated with increased rates of serious acts and violence in the KSA. This observation necessitates special attention from health policy makers to take a step for prevention of such crimes.

**Key-words:** offense; mental ill; schizophrenia; Saudi, prevalence.

**Declaration of interest:** None

### Introduction

Evidence has accumulated in the past 20 years indicating that people with severe mental illness are at increased risk (compared with the general population) of committing offenses particularly violent ones<sup>1, 2, 3, 4, 5, 6, 7, 8</sup>. Nearly any psychiatric symptom may be associated with criminality, because symptoms can impair judgment and directly or indirectly violate societal norms. However, recent studies show that, most individuals with mental illness are not so violent<sup>9</sup> and they may be responsible for only 5% of all violent offenses<sup>10</sup>. Although Arab countries were among the first countries in the world to establish mental health hospitals in Baghdad in the year 705 AD, Cairo in 800 and in Damascus in 1270<sup>11</sup>, currently most Arab countries have no mental health acts<sup>12</sup>, no certified training in forensic psychiatry, little research if any in forensic psychiatry and poorly organized forensic psychiatric services<sup>12, 13</sup>. The Arab world, political and religious forces have always been intimately intertwined and Islam is a crucial factor in all aspects of life<sup>14, 15</sup>. Kutaiba Chaleby has provided the first English-language monograph on forensic psychiatry in Islamic jurisprudence<sup>16</sup>. A recent study in KSA showed that the ability of the legal system to detect cases was good, while the ability of the healthcare system to predict crimes and offences was weak, as 58% of cases had had previous contact with the healthcare system previously<sup>17</sup>.

The aims of this study were to find the 1-year rate of different psychiatric illnesses in offenders; age, sex and race issues in mental ill patients committing crimes; the relation of psychiatric disorders to crimes and the types of crimes commonly committed by mentally ill people referred to an outpatient forensic psychiatric clinic in KSA.

### Subjects and Methods

#### Location

This study was performed at the Taif Mental Hospital, the first psychiatric hospital to be opened in Saudi Arabia in the year 1952 with 250-bed capacity. By 1992, the Taif psychiatric hospital bed capacity had increased to 690 and emergency services and sub-specialty clinics were added<sup>18</sup>. The forensic psychiatry committee is one of the most important units inside the hospital. It is considered the main and the central official referral forensic committee in KSA. The forensic committee receives all cases referred for psychiatric assessment by the criminal justice system in the KSA. The committee is made up of a multidisciplinary team including psychiatrists, psychologists, social workers and nurses. Both investigators have been members of the team for many years. The committee holds five open sessions per week to meet patients and representatives from referring associations.

This study was approved by the scientific and ethical committee of Taif Mental Hospital. Informed written consent was obtained from all subjects (all subjects agreed to take part in this study after explaining to them the purpose of this study).

**Design and methods**

The study was an outpatient one year (from 1 May 2008 to 30 April 2009) survey to study all subjects referred from different departments of the legal system (police, prisons, courts) to the outpatient forensic psychiatry committee Taif Mental Hospital (OPFPCTMH) to determine those with psychiatric morbidity. All referrals were interviewed using the Mini International Neuropsychiatric Interview (MINI) and they were diagnosed according to DSM IV classification. MINI is a short structured diagnostic interview. The scale had been previously translated into Arabic and validated <sup>19</sup>. The diagnosis was further validated by the psychiatric forensic committee which consisted of at least two consultants of psychiatry and who had 10 years clinical experience. Clinical and demographic data were collected. The relation between crimes, psychiatric diagnosis, and number of clinical and psychodemographic variables were done. A further analysis between various psychiatric diagnoses, age at committing crime, sex, ethnic distribution, duration and number of previous admission to psychiatric hospitals were also analyzed.

**Subjects**

The study included 787 subjects. Each subject was interviewed by both investigators at least once, while some patients needed up to three sessions to finalize their assessment. Patients who needed further assessment or observation were admitted for up to three months.

Information about crimes was obtained from the official report of the Saudi authority.

**Statistical analysis used**

Data were summarized as means and standard deviations. Qualitative data were described as frequencies. Chi-square was used to test for the association between different nonparametric data and T-test for parametric data. The main findings were presented as proportions with 95% confidence intervals (CIs). The results were computed on an IBM compatible personal computer using the Statistical Software Package for Social Scientists version 15 (SPSS v. 15.0) <sup>20</sup>.

**Results**

After completing the psychiatric evaluation of 787 subjects who were referred to OPFPCTMH, 733 psychiatric patients and 54 malingers were found. All laws in Saudi Arabia are derived from Islamic Shariah law with special offenses classifications including four categories (Hadd offenses, Tazir offenses, retribution and retaliation as in the case of murder, and lastly, Diya) <sup>21</sup>. However, in the present study for purposes of simplification and comparison with various previous studies conducted in other countries, the following classes were used, defalcation, drug, murder or attempted murder, robbery, sexual, violence, forgery and religious offenses.

Table (1) shows that the most common offenses committed by people referred to OPFPCTMH, who were presumed or claim to be psychiatrically sick, were violence, drug, murder or attempt murder, sexual and robbery offenses respectively. Most of these offenses were committed by patients with psychosis, personality disorders, and substance abuse and by Saudi followed by Yemani, Bangladeshi, Nigerian and Ethiopian nationality respectively.

**Table (1) Diagnosis, offenses, and nationality of people referred to OPFPCTMH.**

		N	Percent			N	Percent
Diagnosis	Anxiety	19	2.4	Nationality	Ethiopian	11	1.4
	Mental retardation	67	8.5		Bangladesh	19	2.4
	Mood	38	4.8		Egyptian	7	0.9
	Malingerer	54	6.9		Indian	10	1.3
	Organic	20	2.5		Moroccan	3	0.4
	Personality	171	21.7		Nigerian	14	1.8
	Psychosis	279	35.5		Pakistani	5	0.6
	Addiction	139	17.7		Palestinian	10	1.3
	Offenses	Defalcation	14		1.8	Philippines	5
Drug		164	20.8		Saudi	671	85.3
Forgery		13	1.0		Sudan	2	0.3
Murder or attempt		134	17		Syria	4	0.5
Religious		22	2.8		Turkey	2	0.3
Sexual		110	14		Yemani	24	3.0
Robbery		108	13.7		Total	787	100.0%
Violence		222	28.2				

Table (2 A and B) shows that longer duration and more frequent admissions before committing offenses were

found in people with psychotic and mood disorders more than that presented in people with other diagnoses.

**Table (2) Shows duration and number of admissions in mental hospitals before committing offenses in relation to different psychiatric diagnosis**

Diagnosis		(A)				(B)			
		Duration of admission in mental hospital before committing offense				Number of admission in mental hospital before committing offense			
		Mean	Std. Deviation	t	P	Mean	Std. Deviation	t	P
Anxiety	yes	4.21	12.612	-1.76	0.093	0.11	0.315	-1.389	0.165
	no	9.42	16.475			0.33	0.710		
Mental retardation	yes	4.39	9.528	-4.059	0.000**	0.12	0.327	-4.69	0.000**
	no	9.76	16.835			0.35	0.726		
Mood	yes	15.49	13.411	2.357	0.019*	0.59	0.599	2.381	0.018*
	no	8.99	16.487			0.31	0.706		
Malingeringer	yes	0.74	3.813	-11.36	0.000**	0.04	0.191	-8.351	0.000**
	no	9.93	16.797			0.35	0.723		
Organic	yes	0.00	0.000	-15.96	0.000**	0.00	0.000	-13.05	0.000**
	no	9.54	16.548			0.34	0.711		
Personality	yes	6.57	15.026	-2.62	0.009**	0.13	0.342	-6.063	0.000**
	no	10.06	16.7			0.38	0.766		
Psychosis	yes	14.30	19.365	5.911	0.000**	0.56	0.883	6.204	0.000**
	no	6.55	13.794			0.20	0.542		
Addiction	yes	8.76	15.975	-0.424	0.671	0.32	0.826	-0.185	0.853
	no	9.41	16.506			0.33	0.675		

\*\*t-test is significant at the 0.01 level.

\*t-test is significant at the 0.05 level.

Table (3) demonstrates that offenses committed by patients diagnosed with anxiety disorders were mainly robbery offenses followed by drugs offenses. Patients who are mentally retarded committed sexual offenses followed by robbery and drug offenses. Patients diagnosed as mood disorder committed robbery offenses, violence offenses and religious offenses respectively. Malingeringers committed more violence offenses than drugs and murder or attempted murder. Patients with psychiatric disorders

due to general medical conditions committed drug offenses followed by violence offenses. Personality disorder patients committed drug offenses, sexual offenses, violence offenses, and robbery offenses. Patients with psychotic disorders committed murders or attempted murders followed by violence offenses then drug offenses. Substance abuse patients committed violence offenses, drug offenses and robbery offenses respectively.

**Table (3) Shows distribution of different offenses committed by different psychiatric diagnosis**

Offenses	#1		#2		#3		#4		#5		#6		#7		#8		#9	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Anxiety	2	105	4	211	2	105	7	338	0	0	2	105	2	105	0	0	19	100
Mental retardation	1	15	12	179	6	90	12	179	28	418	5	75	3	45	0	0	67	100
Mood	3	79	0	0	2	53	15	335	2	53	8	211	2	53	6	158	38	100
Malingeringer	0	0	11	214	8	148	1	19	3	56	29	537	2	37	0	0	54	100
Organic	2	10	10	50	0	0	2	10	2	10	4	20	0	0	0	0	20	100
Personality	4	23	51	288	16	94	31	181	34	199	33	193	0	0	2	12	171	100
Psychosis	2	07	40	143	94	337	16	57	31	111	85	338	0	0	10	36	279	100
Addiction	0	0	36	239	6	43	24	173	10	72	55	336	4	29	4	29	139	100
Total	14	18	164	218	13	17	134	17	22	28	110	14	108	137	222	232	787	100

#1 Defalcation offenses, #2 Drug offenses, #3 murder or attempt offenses, #4, robbery offenses #5 sexual offenses, #6 violence offenses, #7 Forgery offenses, #8 Religious offenses, #9 % of all offense

Table (4 A and B) shows that all offenses were committed more by males than females. Defalcation and sexual offenses, on the other hand, were nearly equally represented. It also shows that all offenses were

committed during the third or fourth decade of life. The offenses committed by younger patients included robbery and sexual offenses while older age patients committed more religious offenses and murder offenses.

**Table (4) Illustrated distribution of offenses committed by psychiatric patients in relation to sex and age.**

Offenses	(A)						(B)				
		SEX				Chi-square	P	Age at committing offenses			
		female		male				Mean	Std. Deviation	t	P
	N	%	N	%							
Defalcation	yes	6	42.9	8	57.1	11.88	0.004**	31.00	5.505	-0.401	0.689
	no	93	12	680	88			31.95	8.870		
Drug	yes	2	1.2	162	98.8	24.31	0.000**	33.15	7.998	2.119	0.035*
	no	97	15.6	526	84.4			31.62	9.003		
Forgery	yes	0	0	13	100	1.902	0.389	32.77	17.441	0.175	0.864
	no	99	12.8	675	87.2			31.92	8.624		
Murder or attempt	yes	34	25.4	100	74.6	24.03	0.000**	34.4	8.705	3.58	0.000**
	no	65	10	588	90			31.43	8.764		
Religious	yes	0	0	22	100	3.257	0.031*	35.36	5.594	2.855	0.009**
	no	99	12.9	666	87.1			31.84	8.878		
Sexual	yes	54	49.1	56	50.9	155	0.000**	29.07	9.278	-3.701	0.000**
	no	45	6.6	632	93.4			32.4	8.661		
Robbery	yes	2	1.9	106	98.1	13.10	0.000**	27.31	7.357	-6.004	0.000**
	no	97	14.3	582	85.7			32.67	8.814		
Violence	yes	1	0.5	221	99.5	41.36	0.000**	32.9	8.51	1.917	0.056
	no	98	17.3	467	82.7			31.56	8.918		

\*\*t-test is significant at the 0.01 level.

\* t-test is significant at the 0.05 level.

Table (5 A and B) demonstrates that the most common diagnosis in females committing offenses was psychosis, followed by mental retardation. On the other hand, male psychiatric patients who committed offenses were mainly those with psychosis followed by personality disorders and substance abuse. It also shows that younger

age patients committing offenses were usually diagnosed as having personality disorders, substance abuse and mental retardation. Elderly patients, on the other hand, mainly had a diagnosis of malingering, psychosis and psychiatric disorders due to their general medical condition.

**Table (5) Describes the distribution of psychiatric diagnoses in relation to sex and age**

Diagnosis	(A)						(B)			
		SEX		Chi-square	P	Age at committing offenses				
		female %	Male %			Mean	Std. Deviation	t	P	
Anxiety	yes	2.0	2.5	0.075	0.565	32.89	14.674	0.290	0.775	
	no	98	97.5			31.91	8.640			
Mental retardation	yes	20.2	6.8	19.86	0.000^^	30.09	11.022	-1.459	0.149	
	no	79.8	93.2			32.11	8.576			
Mood	yes	4	4.8	0.11	0.492	30.08	5.904	-1.901	0.064	
	no	96	95.2			32.03	8.932			
Malingering	yes	3	7.4	2.601	0.072	38.43	9.424	5.274	0.000**	
	no	97	92.6			31.46	8.589			
Organic	yes	2.0	2.6	0.124	0.530	33.7	11.379	0.706	0.489	
	no	98	97.4			31.89	8.748			
Personality	yes	16.2	22.5	2.063	0.093	29.68	7.88	-4.105	0.000**	

	no	83.8	77.5				32.56	8.969		
Psychosis	yes	43.4	34.3	3.15	0.049^		34.26	7.780	5.844	0.000**
	No	56.6	65.7				30.66	9.1		
Addiction	yes	8.1	19	7.14	0.003^^		28.6	6.96	-5.878	0.000**
	No	91.9	81				32.65	9.015		

\*\*t-test is significant at the 0.01 level.

^^Chi-square is significant at the 0.01 level. ^ Chi-square is significant at the 0.05 level.

Table (6) shows that defalcation offenses were committed mainly by Saudi followed by Pakistani patients. Most drug offenses committed by Saudi followed by Yemani patients. Forgery offenses were mainly committed by Saudi followed by Palestinian and Yemani patients. Murder or attempted murder was committed by Saudi followed by Bangladeshi, Indian and Yemani patients. Religious offenses were committed

by Saudi followed by Indian, Ethiopian and Yemani Patients. Sexual offenses were mainly committed by Saudi followed by Nigerian, Bangladeshi, Ethiopian and Indian Patients. Robbery offenses were committed more by Saudi than by Yemani followed by Nigerian patients. Violence offenses were mainly committed by Saudi followed by Palestine then Bangladeshi patients.

**Table (6) Shows distribution of offenses committed in relation to nationality.**

Nationality	Offenses								
	#1	#2	#3	#4	#5	#6	#7	#8	#9
Ethiopian	0%	1.2%	0%	0.7%	13.6%	2.7%	1.9%	0%	1.4%
Bangladesh	0%	1.8%	7.7%	3.0%	0%	6.4%	0%	1.8%	2.4%
Egyptian	14.3%	0.6%	0%	0%	0%	0.9%	1.9%	0.5%	0.9%
Indian	0%	0%	0%	1.5%	13.6%	2.7%	1.9%	0%	1.3%
Moroccan	0%	0%	0%	0%	0%	0%	1.9%	0.5%	0.4%
Nigerian	0%	0%	0%	0%	0%	9.1%	3.7%	0%	1.8%
Pakistani	21.4%	0%	0%	0%	9.1%	0%	0%	0%	0.6%
Palestinian	14.3%	0.6%	15.4%	0%	0%	0%	0.9%	1.8%	1.3%
Philippines	0%	0%	7.7%	0%	9.1%	1.8%	0%	0%	0.6%
Saudi	42.9%	90.2%	53.8%	91.0%	40.9%	74.5%	81.5%	94.1%	85.3%
Sudan	0%	0.6%	0%	0.7%	0%	0%	0%	0%	0.3%
Syria	0%	0.6%	0%	1.5%	0%	0.9%	0%	0%	0.5%
Turkey	0%	0%	0%	0%	0%	0%	0%	0.9%	0.3%
Yemani	7.1%	4.3%	15.4%	1.5%	13.6%	0.9%	6.5%	0.5%	3.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: #1 Defalcation offenses, #2 Drug offenses, #3 Forgery offenses, #4 murder or attempt offenses, #5 Religious offenses, #6 sexual offenses, #7 robbery offenses, #8 violence offenses, #9 % of all offense

## Discussion

### 1. Rate of offense in studied sample of KSA population:

The present study shows that the most common offenses committed by people referred to OPFPCTMH were violence, drug, murder or attempted murder, sexual and robbery offense respectively. These results may give misleading figures about criminality among psychiatric patients because minor offenses; for example, road traffic accidents or shoplifting, usually do not reach the legal system and end in the place of the offense when the victim or the police know that the criminal is a psychiatric patient. This concept was accepted by the criminology researcher Ali Wardak in his book "Transnational and Comparative Criminology". He argued that in Saudi Arabia it is possible that several criminal complaints were resolved outside the formal judicial institutions and consequentially remain undocumented by the police when

the victim's family forgives the criminal for social considerations<sup>22</sup>.

On the other hand, murder or attempted murder and sexual offenses were more represented in psychiatric patients. This result could be explained by the fact that major offenses are not accepted socially, not forgivable and cannot end without passing through the formal legal system even if the offender was a psychiatric patient. Moreover, mental illness and especially schizophrenia is associated with an elevated risk for violence in the community<sup>7,23,24</sup>.

The increased prevalence of sexual offenses among psychiatric patients in the present study is in agreement with a previous study by Dunsieith et al.<sup>25</sup>.

### 2. Frequency and duration of admissions before arrest:

Longer duration and more frequent admissions before committing offenses were found more in people

with psychotic and mood disorders than in people with other diagnoses. This can be explained by the observation that psychotic and mood disorders start at a relatively early age, thus attracting more psychiatric attention and care.

### **3. Diagnosis/offense**

#### **Substance abuse:**

In the present study, substance abuse patients committed violence offenses, drug offenses and robbery offenses. This observation is in harmony with previous studies showing that substance abuse dramatically increases the risk of criminal behavior, even more than schizophrenia, personality disorders, or mood disorders<sup>26</sup>. Alcohol dependent women have a 40-50 times higher rate of homicide than the general population<sup>7</sup>. Also, dual diagnosis individuals are 240% more likely to engage in violence.

#### **Anxiety disorders**

The present study established that anxiety disorder patients were the least amongst those who commit offenses. This suggests that anxiety disorders may not be likely to have direct relationship with criminal motivation. Moreover, accidental criminal acts included robbery and drugs offenses. These offenses may be committed by anxious patients to relieve tension or as a way of self medication; they may abuse drugs to cope with stress.

#### **Personality disorders**

The present study demonstrates that personality disorder patients committed drug offenses, sexual offenses, violence offenses and robbery offenses. These results are in agreement with previous studies which showed that the antisocial personality disorder is highly associated with violence and incarceration<sup>27,28</sup>. In a meta-analysis, 47% of prison inmates were diagnosed with antisocial personality disorders<sup>29</sup>. The increase of criminality and recidivist offending in antisocial personality disorder can be explained by the fact that these disorders are characterized by persistent violations of social norms and behaviors, which are a product of abiding character traits such as impulsivity and suspiciousness combined with abnormalities of different mental states, including instability of mood and dissociative symptoms.

#### **Schizophrenia**

The association between schizophrenic disorder and aggressive behavior is a robust finding: it has been reported by several independent research groups working in industrialized countries<sup>30; 31; 32</sup> and in low- to middle-income countries<sup>33</sup>. These findings reflect enormous suffering for both victims<sup>34</sup> and perpetrators<sup>35; 36; 37; 38</sup> and a significant financial burden for society.

The present study establishes that psychotic patients committed murders or attempted murders, violence and drug offenses. Similar results were established by many previous studies<sup>8; 39; 40; 41; 42</sup>. Violent behaviors may be

related to specific psychotic symptoms, such as delusions of thought insertion, thought control, and persecution, or to command hallucinations<sup>43, 44</sup>. These factors may impair the patient judgment and control on his actions leading to an increased risk of offenses. Individuals with schizophrenia may also commit offenses that are similar in their motivation to those committed by persons without a mental illness<sup>45</sup>. Moreover, the rate of offense by schizophrenic patients increases with co-morbid substance abuse<sup>46</sup>.

#### **Mental retardation**

The results of the present study demonstrate that mentally retarded patients committed sexual offenses, robbery offenses, and drug offenses. This result is in agreement with previous research suggesting that people with mental retardation show increase risk of crimes<sup>39</sup>. These results could be explained as follows: Like people of normal intelligence, people with mental retardation can be prompted to commit offenses. Factors leading to crime include unique personal experiences, poverty, environmental influences and individual characteristics. Moreover, the desire for approval and acceptance and the need for protection can lead a person with mental retardation to do whatever others tell him. People with mental retardation can fall prey to more intelligent people who decide to take advantage of them, and they become the unwitting tools of others. There are many cases where people with mental retardation have committed sexual offenses, robberies and drug trade offenses which were planned or instigated by other people or other participants who did not have mental retardation.

People with mental retardation may also engage in criminal behaviors because of their characteristically poor impulse control, difficulty with long-term thinking, and difficulty in handling stressful and emotionally fraught situations. They may not be able to predict the consequences of their acts or resist a strong emotional response.

#### **Mood disorders**

Mood disorders patients committed robbery, violence and religious offenses. This may be explained by the fact that mood disorders like mania are associated with psychomotor hyperactivity and aggression. Mood disorders may also be associated with increased religiosity. The present study result is in agreement with previous research by noting that there may be more evidence relating mood disorders and violence than many clinicians realize<sup>47</sup>.

#### **Malingerer**

Malingererers committed mainly violence, drug and murder or attempted murder offenses. This observation may be due to the fact that malingering is more likely to occur when the individual is charged with a more serious offence<sup>28, 48</sup>

### **General medical conditions**

The present study shows that patients with psychiatric disorders due to general medical conditions committed drug and violence offenses. This result is in agreement with previous research suggesting that people with neurological impairments are at greater risk of becoming violent as in cases of epilepsy or traumatic brain injury<sup>49</sup>. Neurological impairments can have psychological effects, interfering with a person's ability to interpret what is real, and to act or relate to others appropriately<sup>50</sup>.

### **4. Sex**

In the present study it was found that male patients committed more offenses than female patients except in defalcation and sexual offenses where there were no differences between both sexes. Such results are similar to those found in the general population<sup>51; 52</sup>. Moreover, studies of criminality among persons with mental disorders revealed that the male sex is a significant predictor of violent and criminal behavior<sup>33; 51; 53; 54; 55; 56; 57</sup>.

However, the results of the present study differ from those reported in Hiday et al.'s study<sup>58</sup> in which males were no more likely to be violent than females. Moreover, Binder and McNiel<sup>59</sup> found that hospitalized female patients were actually more assaultive than their male counterparts, although males engaged in more fear-inducing behaviors.

Conceivably, the confluence of the two phenomena may explain the mixed findings related to the role of biological sex as a determinant of crime among persons with mental disorder. First, it is possible that police are more likely to lay criminal charges against males than on females for delinquent behavior. Busfield<sup>60</sup> indicates that deviant behavior is more likely to be framed as criminal when perpetrated by males and as psychopathological when perpetrated by females. Alternatively, men may be more likely to be arrested because the violence they commit is more likely to lead to serious injury. This may explain the elevated arrest rates among males with mental disorders. These issues have a great effect within many closed communities like KSA in which females are protected by special cultural and religious precautions which deter the policeman from suspecting or arresting them for fear of the consequence of stopping and examining innocent women. Second, it is possible that biological sex is a powerful risk factor among offender populations and community samples but a less robust predictor among hospitalized patient samples that include subjects who are typically acutely ill. That is, symptom risk factors may mask or overshadow sex effects. Further research is required to explore the potential interactive effect of biological sex on the relationship between mental disorders and violent and criminal behaviors.

Moreover, the present study showed that the main diagnoses associated with female offending were psychosis and mental retardation. Like females, males are affected by psychosis, but in females post partum psychosis plays an important role in offenses particularly infanticide. Parry<sup>61</sup> found that 4% of women with postpartum psychosis committed infanticide.

On the other hand, the most predominate diagnoses among male patients were psychosis, personality disorders and substance abuse. The higher offense rate of personality disorders occurred in males more than in females. This may be due to gender differences observed in different disorders. Paris<sup>62</sup> found that antisocial personality disorder is more common in men than women.

Studying the sex difference in relation to drugs, it was found that related crimes were less prevalent and dangerous among women than among men. These results agree with previous studies in which women reportedly were more likely than men to abuse drugs in private, such as at home, while men were more likely to abuse drugs in social settings, such as a party or a bar. Addicted women often characterize themselves as having few or no friends and a limited social network while men are more likely to have many social opportunities to use drugs<sup>63; 64; 65</sup>. These behavior patterns may reflect society's tolerance of male substance use and the greater social stigma attached to female substance abusers<sup>63</sup>. A substance-dependent woman is seen as more serious, more wrong, and more deviant, as she has transgressed against the general social norms of being a "good woman"<sup>64</sup>. This may lead to a higher incidence of drug use and hence offenses among males than among of females.

### **5. Race**

The incidence of offense was considered to be relatively low in Saudi Arabia, and violent street offense was particularly unusual. Offense rates had, however, risen with the presence of foreign workers<sup>66</sup>. An increase noted in the level of petty offenses in 1989 was linked to unemployment among Saudi and Yemeni residents of the kingdom. These results agree with the present study which revealed that most offenses were committed by Saudi psychiatric patients then followed by Yemeni patients<sup>66</sup>. The increased ratio of offenses committed by Saudi and Yemeni residents may be due to the relative increase in the population ratio (Saudi population 18.7 million, other nationality 8.4 million) in relation to other races in KSA. On the other hand, the increased prevalence of offenses in other racial groups in KSA can be explained by the fact that Saudi Arabia is a destination point for workers from South and Southeast Asia and Africa. As KSA society is very conservative and difficult to accept foreigners to fuse in it easily, foreigners usually live alone with no social support. People who come for hajj may stay and work in the KSA



illegally in low- housing, unhealthy and insecure conditions.

Moreover, studies of mentally ill offenders have found a correlation between race and violence, with Africans having higher rates than Caucasians<sup>51; 58; 67; 68</sup>. However, the effect of race appears to be moderated by other factors such as neighborhood disadvantages<sup>69</sup>; and victimization<sup>70; 58</sup>. Workers from Asian and African countries working in the KSA are subjected to bad treatment by Saudi neighbors and to victimization by work owners.

### 6. Age

Age is another risk factor for criminal behavior in the general population<sup>52</sup>. The present study shows that all offenses were committed during third or fourth decade of life. This result can be explained by assuming that patients at this age may be less able to restrain their impulses and to exercise self-control; less capable than elder people of considering alternative courses of action and maturely weighing risks and rewards; and less oriented to the future and thus less capable of appreciating the consequences of their often-impulsive, risky, even criminal actions.

The results of present study agree with studies which confirm that the rates for both prevalence and incidence of offending appear highest during the second to fourth decade of life, but drop precipitously thereafter<sup>30;39;51;68;69;70;71;72;73;74;75;76</sup>. The present study shows that offenders of younger ages often committed offenses of substance abuse while those with mental retardation, and personality disorders committed robbery and sexual offenses. This may be due to the fact that these disorders usually start in early age and are characterized by increase in impulsivity and low stress tolerance leading to an increased probability of committing offenses particularly pleasure making ones.

### Limitations of the present study

Some psychiatric patients who commit offenses may not be represented in this study particularly those committing minor offenses, which may end at the place of offense and not pass to the legal system and to the OPFPCTMH. It is possible that some psychiatric patients are not picked up by the legal system and could be found in prisons as it is the case around the world. And the possibility that patients committing minor offenses and living far from Taif were not included in the study.

### Conclusions

Serious acts of violence committed by people with a mental illness represent a considerable issue which needs special attention. This study has revealed important findings about demographic factors associated with violence and criminality among individuals with mental disorders. The study has opened up new areas for further

research in Arab countries that are needed for the development of our understanding of the nature of the relationship between mental disorders and offenses and violence. Such an understanding is pivotal to the formulation of appropriate and effective policies for the provision of mental health services aimed at preventing offenses.

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### المخلص

**أهداف البحث:** تُقَرَّر نسبة الاضطرابات النفسية بين المحولين للتقييم إلى اللجنة الطبية النفسية الجنائية بالمملكة العربية السعودية. الطرق والمادة: تم عمل دراسة لكل المحولين إلى اللجنة الطبية النفسية الجنائية الرئيسية بالمملكة العربية السعودية والمسئولة عن تقييم الحالات النفسية من كافة أنحاء المملكة لمدة عام كامل (787 حالة). أجريت المقابلة لكل الحالات طبقاً للمقابلة الدولية النفس عصبية المصغرة ثم تم التشخيص طبقاً للتصنيف الأمريكي الرابع لتشخيص وإحصاء الأمراض النفسية. وبعد ذلك تم توزيع الحالات وفقاً لنوع الجريمة وعلاقتها بمختلف التشخيصات، العمر وقت ارتكاب الجريمة، الجنس، التوزيع العرقي، ومدة وعدد الدخول السابق إلى المصحات النفسية. **النتائج:** كانت كل من جرائم العنف، المخدرات، القتل، الجنس و السرقة هي الأكثر شيوعاً بين المحولين إلى اللجنة. كما كانت الاضطرابات الذهانية، و الاضطرابات الشخصية و إدمان المخدرات هي الأكثر بين المحولين. وقد بينت النتائج أن المرضى الذكور كانوا الأكثر ارتكاباً لكافة أنواع الجرائم عدا الجرائم الجنسية حيث كانت النسبة متساوية تقريباً من قبل الجنسين. كما بينت الدراسة أن المواطنين السعوديين كانوا الأكثر ارتكاباً لأغلب الجرائم طي ذلك اليمانيين ثم البنجلاديشيين، المرضى النيجيريون والأثيوبيون. وقد ارتكبت كل الجرائم خلال العقدين الثالث والرابع من العمر. **الاستنتاجات:** تصاحب الاضطرابات النفسية زيادة في السلوكيات الخطيرة و العنيفة المؤدية لارتكاب العديد من الجرائم. لذا فإن إدراك و فهم هذه الملاحظة يحتاج لقدر كبير من الانتباه من قبل الأطباء حتى يمكن تجنب الكثير من الجرائم

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## Stigma and Attitude toward Mentally Ill Among a sample of non-medical staff working in Psychiatric Hospitals. A transcultural study.

Marwa A. Meguid, Menan A. Rabie, Rasha E. Bassim  
الوصمة و الاتجاه نحو المرضى العقليين لدى عينة من العاملين الغير طبيين  
الذين يعملون في مستشفيات الأمراض النفسية - دراسة عبر الثقافات  
مروى عبدالمجيد ، منان ربيع، رشا باسم

### Abstract

People with mental disorders face stigma, discrimination and marginalization in most societies . Attitudes influence both professional and personal behavior. In particular, stigma and discrimination associated with mental illness results in the under-use of mental health services. **Objectives:** Studying the attitude towards the mentally ill among non medical employees in psychiatric hospitals in two different countries Egypt (group A) and Kuwait (group B). Investigating whether or not working in Psychiatric Hospitals can affect the attitudes to those patients and whether or not there stands a cultural difference in such attitudes. **Methodology:** Non medical psychiatric staff working in hospital; a total number of 347 employees and workers participated in the study, while the number of drop outs was about 46 employees who refused to complete the interview. All subjects fulfilled the following: Fahmy and El-Sherbini Social Classification and Assessment of attitudes towards mental illnesses using (CAMI) scale.

**Results:** It was noticed that higher CAMI scores were found in group B and there was a very highly statistical significance between both groups regarding total scores, fear and exclusion and goodwill. Regarding correlation with various demographic data revealed the following age was not differing statistically in both groups, Sex was found to have a statistical significance in group A concerning social control ( $p=0.04$ ) and fear and exclusion scores in group B ( $p=0.007$ ). Education was found to influence social control in group A ( $p=0.007$ ) and influencing all the subscales of CAMI in group B. Professional workers including nurses and security team were found to have a positive effect on attitude evident in scoring less in fear and exclusion subscale and was statistically different in both group A and B ( $p=0.03$ ;  $0.000$ ) respectively; also occupation influences the total scores in group B ( $p=0.007$ ) and influence good will in both groups. Finally social class revealed that higher social class individuals hold a better attitude than other classes in both groups.

**Conclusion:** general public's view about mental illness is largely unfavorable, the study revealed that attitude of non medical employees in psychiatric hospital toward mentally ill patients is not better than general public attitude despite their continuous contact with this category of patients. Education about mental illness and fighting stigma which affect attitudes of people toward mentally ill is highly needed.

**Key Words:** Stigma, Mentally ill, Social Class.

**Declaration of interest:** None

### Introduction

As in the ancient world, Leprosy involved quarantine from family, and society with the resulting separation, lost potential, and stigma. Similarly, mental illness is considered as today's Leprosy<sup>1</sup>, where most people misunderstood the etiology, treatment, and the prognosis of the illness and thus it was stigmatized. According to Goffman's definition of stigma, it occurs when there is a marked relationship linking the identified person via attributional processes to undesirable characteristics which discredit him or her<sup>2</sup>.

People with mental disorders face stigma, discrimination and marginalization in most societies<sup>3</sup>. Social exclusion, the lack of respect for people with a mental disorder, the negative discrimination of people with mental illness before the law and the difficulties they face when searching for employment or housing, the loss of social status of the families of patients and finally the loss of self-respect and self-esteem by people with a mental illness are all related to the stigma associated with such illness. The stigmatization of people who have a mental

illness not only adds to difficulties in their daily life: it also prevents them from getting access to treatment and care<sup>4</sup>, it also increases the probability that they will not be offered the treatment they need, or will be offered services that are of inferior quality and insensitive to their needs<sup>3</sup>.

Knowledge and attitude is a complex and interrelated construct. While the knowledge refers to the fact that a person knows about a subject through personal experiences, cultural practices or from others, the attitude encompasses knowledge, experiences, personal variables and emotions related to particular topics<sup>5</sup>. Attitudes influence both professional and personal behavior. In particular, stigma and discrimination associated with mental illness results in the under-use of mental health services<sup>6</sup>.

The community's attitudes towards the mentally ill have a major influence on the acceptance of the mentally ill and their social integration<sup>7</sup>. Moreover, stereotypes and stigma associated with mental disorders are frequently

the main obstacles preventing early and successful treatment due to the commonly existing attitudes hindering recognition and the appropriate help-seeking behavior. This is in fact the result of the misleading health information most readily available to the public<sup>8</sup>.

Negative views implying the irresponsibility of mentally ill persons and their incapability of making their own decisions, not to mention their dangerousness, are widely spread. Since negative beliefs often lead to discrimination, there is a little wonder that studies have also shown that people with mental health problems living in the community experience rampant harassment<sup>9, 10</sup>. Studying the public knowledge and beliefs by Jorm<sup>11</sup> revealed that many people cannot recognize specific disorders or different types of psychological distress. On the other hand, attitudes of hospital staff are important for admission, early diagnosis and treatment, and the rehabilitation process of mentally ill patients.

Professional group are generally less optimistic about prognosis, and less positive about the likely long term outcomes of people with mental disorder, when compared with the general public. Medical staffs are less optimistic about outcomes than other professional groups, with mental health nurses generally most optimistic<sup>12</sup>. Nordt et al.,<sup>13</sup> tested whether mental health professionals hold fewer stigmatizing attitudes than the general population; they found that psychiatrists had more negative stereotypes than the general population. Mental health professionals accepted restrictions toward people with mental illness 3 times less often than the public. Health professionals should be aware that their negative attitudes may have an effect on both the public and their patients<sup>11</sup>.

#### ***Aim of the research***

1. Studying the attitude towards the mentally ill among employees in psychiatric hospitals, including nurses, workers, security staff, administrative personnel and paramedical services in two different countries (Egypt & Kuwait).
2. Investigating whether or not working in Psychiatric Hospitals can affect the attitudes to those patients and whether or not there stands a cultural difference in such attitudes.

## **Methods**

#### ***Site of the study:***

This study was conducted in three different Psychiatric hospitals.

- **Hospital (1) Psychological medicine Hospital , (Cairo, Egypt):**

This hospital is one of the private hospitals in Cairo which provide inpatient, outpatient and day care services for psychiatric patients coming from different areas in Egypt as well Arab countries.

- **Hospital (2) Institute of Psychiatry, Ain Shams University Hospitals (Cairo, Egypt):**

The institute is located in Eastern Cairo, and serves a catchment area of about the third of Greater Cairo. It serves both urban and rural areas, including areas around Greater Cairo as well. The institute provides mental health services to psychiatric patients through the inpatient department and the outpatient clinics.

- **Hospital (3) Psychological Medicine Hospital (Kuwait):**

The Psychological Medicine Hospital is the only Psychiatric hospital in Kuwait. It is located in Shewiekh, which is the site for the central governmental medical services in Kuwait. Being a governmental hospital, it serves the whole population living in Kuwait from all the nationalities, both in urban and rural areas with a multidisciplinary system of mental health services including outpatient clinics, inpatient wards and day care hospital in the Addiction department.

#### ***Sample Selection***

A random location sampling method was used; basically a method of sampling was followed in a way that allows each relevant factor to contribute in the constitution of the sample with a share that was proportionate to its weight in the parent population. Determination of the size of this sample was done after the consultation of a statistician. Sampling was performed randomly at the following levels:

- 1- The city of Cairo has 5 major geographical areas from which one was selected (Eastern Cairo).
- 2- Mental health system in Cairo was divided into two major categories (Private and Public) based on socioeconomic profile.
- 3- From each category one hospital was chosen.
- 4- Hospitals were chosen from two districts the private hospital from Heliopolis and the public hospital from Abbasia.
- 5- The psychological Medicine Hospital is the only Psychiatric hospital in Kuwait offering psychiatric services, besides the private clinics. It withholds non doctor employees from several nationalities, such as, Egyptians, Kuwaitis, Syrians, Tunisians, Palestinians, Philippines, Indians, Nepalese, and Pakistanis.

The sample of the study consisted of 347 adults:

- 126 from Hospital (1)
- 73 from Hospital (2)
- 148 from Hospital (3)

All of them are working as employees and workers (non psychiatrists) in the 3 different psychiatric hospitals representing 3 different social classes. Hence the sample was considered representative.

#### ***Inclusion criteria:***

A subject was included in the sample of the study if:

1. He/she can read and write in Arabic language.
2. He/she accepts to participate in the study.

**Exclusion criteria:**

A subject was excluded from the sample of the study if:

1. He/she has a 1<sup>st</sup> or 2<sup>nd</sup> degree relative suffering from a psychiatric disorder.
2. He/she is illiterate.
3. He/she refuses to participate in the study.

**Procedures**

The data were collected during a three months period from the beginning of March 2010 to the end of May 2010. At the time of the analysis, a total number of 347 employees and workers participated in the study, while the number of drop outs was about 46 employees who refused to complete the interview.

An informed consent was obtained from each participant; they were informed about the scales used in the study and accepted to participate.

Demographic data were collected including: gender, age, religion, marital status, residence, education and occupation. Each subject was asked to answer all the questions of Fahmy and El-Sherbini Social Classification, and CAMI (the Community Attitudes toward the Mentally Ill). Participants needed about 20 to 30 minutes, to fill the scales.

Questionnaires were distributed over all the subjects by the researchers: each one of the three researchers worked at one of the three hospitals. Subjects were given open time for filling them, then they were delivered back. The subjects of the study underwent the following:

1) **Assessment of attitudes towards mental illnesses using (CAMI) scale:** This is a self-report scale designed to measure community attitudes towards the mentally ill.

It is a 40-statement inventory which lists different attitudes or beliefs that people sometimes hold concerning the degree of acceptance of mental health services and mentally ill patients in the community<sup>14</sup>. The modified Arabic version of the scale<sup>15</sup> was used in this study.

2) **Fahmy and El-Sherbini Social Classification:** Personal and socio-economic data include age, sex, level of education and occupation of the parents, family size, estimated economic level and sanitation in the house. All data were scored; the total socio-economic score is 30, score 25 or higher indicates high socio-economic class, 20-24 middle class, 16-20 low social class, 15 or less very low socio-economic class<sup>16</sup>.

**Statistical Analysis:** The results of different parameters were collected and statistically analyzed using SPSS (Statistical Package for Social Science) version 12. Student t-test was used for comparison of parametric data in both groups. Qualitative data were compared in both groups using Chi-square test ( $\chi^2$ ). P-value <0.05 was considered statistically significant and P-value <0.01 was considered statistically highly significant.

**Results**

In order to fulfill the aim of this work, a total of 199 subjects (group A) in two Egyptian hospitals and 148 subjects (group B) in Kuwaiti hospital were interviewed by Fahmy & Sherbini Social Classification and Community Attitude to Mental Illness Scale. The sample was including male and female employees in psychiatric hospitals, the following table (1) describes sample profile:

**Table (1): Description of sample profile**

		Group A		Group B	
<b>Total number</b>		199		148	
<b>Age</b>		mean±SD		mean±SD	
		33.47±8.02		33.62±7.8	
<b>Sex</b>	<b>Male</b>	119	59.8%	76	51.4%
	<b>Female</b>	80	40.2%	72	48.6%
<b>Education</b>	<b>Preparatory</b>	14	7.1%	32	21.6%
	<b>Secondary</b>	96	48.2%	70	47.3%
	<b>University</b>	78	39.2%	40	27%
	<b>Post graduate</b>	11	5.5%	6	4.1%
<b>Profession</b>	<b>Manual</b>	14	7%	24	16.2%
	<b>Professional</b>	135	67.8%	88	59.5%
	<b>Administrative</b>	50	25.2%	36	24.3%
<b>Social Class</b>	<b>High</b>	29	14.6%	18	12.2%
	<b>Middle</b>	39	19.6%	34	23%
	<b>Low</b>	69	34.6%	60	40.5%

	<b>Very low</b>	62	31.2%	36	24.3%
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**Table (2): Comparison of CAMI scores in both groups:**

		<b>Group A</b>	<b>Group B</b>	<i>t-value</i>	<i>p-value</i>	<i>Sig.</i>
		<i>Mean±SD</i>	<i>Mean±SD</i>			
<b>CAMI</b>	<b>Total</b>	113.53±10.15	123.99±9.19	-9.87	0.000	VHS
	<b>Fear &amp; exclusion</b>	32.51±4.23	28.34±5.59	7.9	0.000	VHS
	<b>Social Control</b>	17.07±3.25	17.35±2.97	-0.82	0.4	NS
	<b>Goodwill</b>	8.08±1.24	9.59±1.69	-9.62	0.000	VHS

It was noticed higher total CAMI score and good will scores in group B than group A. however fear and exclusion score was higher in group A than group B. Comparing CAMI scores in both groups revealed that a

very highly statistically significant difference was found between both groups concerning fear and exclusion, goodwill and total CAMI scores (p-value=0.000) however social control scores didn't differ statistically between both groups (p-value=0.4).

**Correlation of CAMI scores with different demographic data**

**Table (3): Correlation of CAMI scores to Age**

		<b>Group A</b>	<b>Group B</b>
<b>Age</b>	Mean±SD	33.47±8.02	33.62±7.8
<b>Total CAMI</b>	Mean±SD	113.53±10.15	123.99±9.19
	r-value	-0.023	0.128
	p-value	0.742	0.122
	Sig.	Non Sig.	Non Sig.
<b>Fear and exclusion</b>	Mean±SD	32.51±4.23	28.34±5.59
	r-value	-0.024	-0.015
	p-value	0.735	0.861
	Sig.	Non Sig.	Non Sig.
<b>Social control</b>	Mean±SD	17.07±3.25	17.35±2.97
	r-value	0.053	0.160
	p-value	0.455	0.052
	Sig.	Non Sig.	Non Sig.
<b>Good Will</b>	Mean±SD	8.08±1.24	9.59±1.69
	r-value	0.070	-0.008
	p-value	0.323	0.927
	Sig.	Non Sig.	Non Sig.

Correlation of age with CAMI scores in each group revealed no statistically significant difference in both groups. It was noticed inverse relationship between age

and fear and exclusion scores and total scores in group A, and inverse relationship was found between fear and exclusion and good will in group B.

**Table (4) Correlation of CAMI scores to Sex**

		<b>Total CAMI</b>	<b>Fear and exclusion</b>	<b>Social Control</b>	<b>Good Will</b>
		<i>Mean±SD</i>	<i>Mean±SD</i>	<i>Mean±SD</i>	<i>Mean±SD</i>
<b>Group A</b>	<b>Male</b>	112.97±9.68	32.54±3.92	16.96±3.09	7.98±1.35

	<b>Female</b>	114.38±10.82	32.48±4.68	17.64±3.43	8.21±1.04
	<b>t-value</b>	-0.9	0.1	-0.2	-1.2
	<b>p-value</b>	0.34	0.91	0.04	0.18
	<b>Sig.</b>	Non Sig.	Non Sig.	Sig.	Non Sig.
<b>Group B</b>	<b>Male</b>	122.95±8.79	29.53±4.91	17.29±3.12	9.58±2.06
	<b>Female</b>	125.08±9.53	27.08±6.01	17.42±2.83	9.61±1.21
	<b>t-value</b>	-1.4	2.7	-0.25	-0.1
	<b>p-value</b>	0.15	0.007	0.79	0.9
	<b>Sig.</b>	Non Sig.	Highly Sig.	Non Sig.	Non Sig.

No statistical significant difference was found concerning sex and CAMI scores in group A except for social control (p-value=0.04) which was statistically significant between both

sexes being higher in females and fear & exclusion in group B and had highly statistical significant difference in both sexes found to be higher in males (p-value=0.007).

**Table (5) Correlation of CAMI scores to Education:**

<b>Groups</b>		<b>Total CAMI</b>	<b>Fear &amp; exclusion</b>	<b>Social Control</b>	<b>Good Will</b>
		Mean±SD	Mean±SD	Mean±SD	Mean±SD
<b>Group A</b>	<b>Preparatory</b>	108.64 ±13.77	31.79 ±5.33	15.57 ±3.67	7.79 ±0.89
	<b>Secondary</b>	113.35 ±11.43	32.00 ±4.75	16.85 ±3.16	8.11 ±1.28
	<b>University</b>	113.95±7.53	33.04±3.39	17.21 ±3.135	8.06 ±1.252
	<b>Post graduate</b>	118.36±7.39	34.18±2.44	19.91±3.081	8.18 ±1.25
	<b>F ratio</b>	1.99	1.58	4.14	0.31
	<b>p-value</b>	0.11	0.19	0.007	0.81
	<b>Sig.</b>	Non Sig.	Non Sig.	Highly Sig.	Non Sig.
<b>Group B</b>	<b>Preparatory</b>	126.44 ±10.019	32.56 ±3.35	18.94 ±2.69	8.50 ±1.19
	<b>Secondary</b>	123.20 ±9.021	28.14 ±6.23	17.06 ±3.23	10.03±1.99
	<b>University</b>	123.00 ±9.254	25.80 ±3.99	16.65 ±2.44	9.60 ±1.08
	<b>Post graduate</b>	126.67 ±2.875	25.00±3.22	17±1.54	10.33±1.03
	<b>F ratio</b>	1.25	11.64	4.29	7.13
	<b>p-value</b>	0.29	0.000	0.006	0.000
	<b>Sig.</b>	Non Sig.	Very Highly Sig.	Highly Sig.	Very Highly Sig

Education was found to influence attitudes toward mentally ill, although no statistical significance was found concerning total CAMI scores is noticed that higher scores was found with increasing level of education in group A.

Also significant statistical difference was found in group

A regarding social control scores. On the other hand, group B showed a very high statistically significant difference regarding fear and exclusion and good will, and highly statistically significant difference regarding social control, however total CAMI scores didn't show a statistical significance.

**Table (6): Correlation of CAMI scores to Occupation:**

		<b>Total CAMI</b>	<b>Fear and exclusion</b>	<b>Social Control</b>	<b>Good Will</b>
		Mean±SD	Mean±SD	Mean±SD	Mean±SD
<b>Group A</b>	<b>Manual</b>	112.07 ±11.069	34.50 ±3.737	16.36±3.342	7.93 ±1.141
	<b>Professional</b>	113.07 ±10.925	32.00 ±4.286	16.84±3.296	8.04 ±1.363
	<b>Administrative</b>	115.18±7.328	33.34±4.008	17.88±3.048	8.22±0.887
	<b>F ratio</b>	0.94	3.57	2.23	0.49
	<b>p-value</b>	0.39	0.03	0.11	0.6
	<b>Sig.</b>	Non Sig.	Sig.	Non Sig.	Non Sig.
<b>Group B</b>	<b>Manual</b>	123.17±9.98	28.25±9.08	17.33±2.04	8.67±1.34
	<b>Professional</b>	122.52±8.82	26.98±4.21	16.98±3	9.95±1.86
	<b>Administrative</b>	128.11±8.52	31.72±4.08	18.28±3.29	9.33±1.12



	<b>F ratio</b>	5.1	10.36	2.49	6.42
	<b>p-value</b>	0.007	0.000	0.086	0.002
	<b>Sig.</b>	Highly Sig.	Very Highly Sig.	Sig.	Highly Sig.

Studying the relationship between occupation and CAMI scores revealed that only a significant statistical difference was found in group A regarding fear and exclusion. On the other hand, group B showed a very

high statistically significant difference regarding fear and exclusion, and highly statistically significant difference regarding social control and total CAMI scores.

**Table (7) Correlation of CAMI scores to Social Class:**

		<b>Total CAMI</b>	<b>Fear &amp; exclusion</b>	<b>Social Control</b>	<b>Good Will</b>
		Mean±SD	Mean±SD	Mean±SD	Mean±SD
<b>Group A</b>	<b>High</b>	117.31 ±6.8	33.90 ±3.29	18.48 ±3.63	8.41 ±1.376
	<b>Middle</b>	111.77 ±12.38	32.44 ±4.65	16.85 ±2.96	7.74 ±1.499
	<b>Low</b>	114.54 ±9.1	32.36 ±4.13	17.28 ±3.33	8.1 ±0.942
	<b>Very low</b>	111.76 ±10.6	32.08±4.43	16.32±2.99	8.1±1.277
	<b>F ratio</b>	2.65	1.28	3.15	1.67
	<b>p-value</b>	0.05	0.28	0.026	0.17
	<b>Sig.</b>	Sig.	Non Sig.	Highly Sig.	Non Sig.
<b>Group B</b>	<b>High</b>	125.33 ±13.38	30.56±3.94	18.67 ±3.218	9.22 ±1.35
	<b>Middle</b>	126.06 ±5.67	25.56 ±7.81	17.35 ±2.53	9.88 ±0.91
	<b>Low</b>	123.43 ±8.70	27.67±4.55	16.30 ±3.06	10.27 ±2.01
	<b>Very low</b>	122.28±10.06	30.89±3.77	18.44±2.51	8.39±1.07
	<b>F ratio</b>	<b>1.19</b>	<b>7.14</b>	<b>5.8</b>	<b>12</b>
	<b>p-value</b>	<b>0.313</b>	<b>0.000</b>	<b>0.001</b>	<b>0.000</b>
	<b>Sig.</b>	<b>Non Sig.</b>	<b>Very Highly Sig.</b>	<b>Highly Sig.</b>	<b>Very Highly Sig.</b>

Studying the relationship between Social class and CAMI scores revealed that only a significant statistical difference was found in group A regarding total CAMI scores and social control. On the other hand, group B showed a very high statistically significant difference regarding fear and exclusion and good will, and highly statistically significant difference regarding social control.

### Discussion

As defined by Lauber<sup>17</sup> mental health literacy is the public's knowledge and beliefs about mental disorders enhancing the ability to recognize specific disorder. Contact with individuals who have mental illnesses, and education that replaces myth with fact, can decrease stigmatization and positively affect attitudes<sup>18; 19; 20</sup>. As early psychiatric intervention is known to reduce morbidity and mortality in the patients with physical illness, the need for an early referral to psychiatric services is not overemphasized<sup>21</sup>.

In Arab countries, stigma was identified in Saudi Arabia<sup>22</sup> and in Morocco among family of patients with schizophrenia, it was found that a total of 86.7% reported they have hard lives because of the illness, and 72% reported psychological suffering caused by sleep and

relationship disturbances and a poor quality of life<sup>23</sup>. Stigma was also observed in Asian cultures as China, Japan and India<sup>3</sup> and was found to be evident among patients and their relatives as well.

In this research, we attempted to assess beliefs, attitudes and behavior of the community working in close contact with the mentally ill patients other than their treating doctors. The participants were presented with a number of statements about mental illness. They covered a wide range of issues from perceptions and attitudes towards people with mental illness, to opinions on services provided for them.

The current study showed findings which must be seen in light of the prevalent concepts of mental illness and their treatment among the general population taking in consideration the recent spurt in the health and educational awareness among the public. Responses to questions on mental illness and mentally ill patients have been mixed. A sizeable number had felt that mentally ill were 'insane' 'violent' and 'dangerous' indicating their negative view.

Comparison between the two groups as regards the total CAMI scores revealed higher mean total scores in

Kuwaiti community than Egyptian community with a very high statistical significance between both groups, indicating better overall attitude toward mentally ill patients. Previous study by Hussein et al<sup>24</sup> revealed higher mean total score among Egyptian university staff than those found in the group of employees included in the current study, indicating that the level of education positively influence attitude to mental illness. On the other hand, Gad et al.<sup>25</sup> found that 53.2% of his studied Egyptian population held a negative attitude towards mental illness.

Comparison between the two groups as regards the social control scores revealed no significant differences denoting the similarity between both Arab communities regarding their negative beliefs about psychiatric patients. Such beliefs included that they should be locked in a closed area, hospitalized, or treated like children and not allowed to have a job or a responsibility as they believed that the psychiatric illness is due to lack of self control.

The scores of fear and exclusion were very significantly higher among (group A) than that of the (group B) especially regarding the female sample, while the male participants in (group B) expressed more fear and exclusion scores, most probably due to the fact that an ineligibly large portion of them are departed from their countries, either leaving their families behind or staying with their families, but are still away from their homes. A fact that most probably colors their perceptions and expectations with a tinge of insecurity, however scoring significantly higher in goodwill than group A Egyptian female participants had more scores on the social control items, it may be due to criminalization of mentally ill which increased during the past year as many violent crimes were assumed to be committed by mentally ill people and were associated by an intense media coverage, this may reflect the belief encouraging locking patients in hospitals. Previous study concluded that females in general held less stigmatizing attitudes<sup>26</sup>. Regarding age, in both groups, older participants expressed less fear and exclusion scores, most probably due to their longer years of experience dealing with the mentally ill people, which lead to overcoming and diminishing the issues of insecurity and excessive fears in group B. Another study in Singapore found that nurses aged from 31-50 years hold a positive attitude<sup>27</sup>. Although Hayward and Bright<sup>28</sup> estimated that older people hold more stigmatizing attitudes; same finding was found by Gad et al<sup>25</sup> as elderly expressed negative attitude.

Education has always had a remarkable role in forming people attitudes, but in what way? Interestingly, the results showed that in (group A) the higher the education level and the social class, the more was the tendency towards social control of mentally ill patients. This result may be attributed to the fact that, highly qualified and

higher social class persons are working in the administrative jobs away from the actual contact with patients, rendering them with the common public attitude towards mental illness.

In a study performed by Youssef et al,<sup>29</sup> about causal beliefs of Schizophrenia among a sample of employees of a Suez canal University in Egypt, they found that a significant association between educational status and attribution of illness to personal and social causes of patients, their interpersonal relations and biological factors being reported by higher educational levels of participants as they have other hypotheses to mental illness other than metaphysical causes reported by lower educational levels. Also El-Defrawi et al.<sup>30</sup> working on attitude of families of psychiatric patients found that educational level was significantly associated with knowledge of relatives about the diagnosis, and Afana et al.<sup>31</sup> found that educational level affect attitude and knowledge towards mental illness in primary mental health professionals. Another study revealed that high educational level is associated with more positive attitude<sup>25</sup>.

Meanwhile the less educated participants were either nurses, security men or workers, who are actually in daily contact with the patients. They are more exposed to the deeper humanistic side of these patients not their social image side. These participants are more experienced in dealing with patients and are more aware of the symptoms of mental illness, the ups and downs in the clinical picture, and definitely have a better idea about their prognosis<sup>32</sup>; also increased personal experience leads to more pro-social reactions towards persons with a mental illness, to less anxiety in the presence of a mental ill person and less social distancing<sup>33</sup>. Although Hellzen et al.<sup>34</sup> while studying nurses' attitudes towards older residents with long term mental illness revealed that nurses with long experience became less sensitive in their relationship with the resident than less experienced nurses. There appeared to be a tendency for long work experience to have a negative effect on nurses' attitudes towards the resident. Tay et al<sup>27</sup> concluded that nurses especially with higher qualification hold a positive attitude.

Hussein et al.<sup>24</sup> conducted a study among teaching staff members of faculty of Medicine, Ain Shams University in Cairo, they found that among the most educated group in our community, attitude towards the mentally ill is generally better than in western countries and this is not due to attribution of illness to supernatural causes as previously thought.

Results of ( group B) regarding education seemed quite logic, higher education leads to better attitudes towards mental illness, i.e., less Fear and Exclusion scores, less Social Control scores and more Good Will scores. However, there are pretty different explanations for these

results if only we knew that up to this moment, there is no mental act in Kuwait, i.e. there is no involuntary admission. It is an official and cultural attitude towards the mentally ill that they have every right to remain in the community, and not to be hospitalized except in severe cases and only for short durations. Moreover, Psychiatric services were only introduced in Kuwait about 40 years ago, and thus, there are still some families not admitting the mental illness and not accepting the Psychiatric help as an answer to their relatives' problems. For further clarification, it is worth mentioning that in (group B); the administrative jobs are only assigned to the Kuwaiti people with the protective, denying cultural legacy. At the same time, high qualifications and post graduate studies are indeed an issue of necessity for assignment and continuation in the Psychological Medicine Hospital in Kuwait. Therefore, however holding two different explanations, high levels of education come with less fear and exclusion in group B sample. It only becomes clear for us when we revert to the different backgrounds behind the same results. On the other hand, other jobs requiring less education, such as security men, porters, and technicians are assigned the non Kuwaiti, socially insecure minorities, as explained before.

Administrative and manual workers of both groups expressed higher Fear and Exclusion scores. Moreover, Kuwaiti participants had higher Good Will scores. Jorm et al<sup>11</sup> also found that health professionals (ie general practitioners, psychiatrists and clinical psychologists) rated long-term outcomes more negatively and believed discrimination to be more likely. This may be because health professionals have greater contact with mental illness and individuals who have chronic or recurrent problems than the public and therefore may be more realistic in their assessment of long-term outcomes.<sup>32</sup> In a study conducted by Aghanwa<sup>35</sup>, results showed that a far greater proportion of health workers considered the hospital as a source of help for people with mental illnesses; expressed the greatest dislike for 'labeling'; and considered that persons with mental illness were significantly different from other people, "believing that the way the patients would be perceived would depend on the type of the mental illness".

Certainly, negative attitudes toward mental illness appear to worsen the overall quality of life of individuals with mental disorders. Furthermore, providing culturally specific care involves ensuring that hospital staff is properly educated on underlying issues<sup>36</sup>. Cultural diversity in knowledge about and attitudes toward mental illness requires this issue to be explored in a wide range of cultures, especially in developing countries. In addition, the knowledge, attitude and beliefs of the hospital staff regarding mental illness will be the key, as they are directly involved in providing mental health care along with general care to needy physically and psychologically ill patients. Similarly a trained nurse

should be actively involved in mental health disseminating activities<sup>37</sup>. Filipic et al.<sup>38</sup> concluded that the consequences of negative attitudes found among hospital staff in his work were contributed to the low quality of life of schizophrenic patients, and slow, often incomplete, re-socialization.

In (group B), the high and very low social class participants expressed more fear and exclusion, more Social Control scores and lower Good Will scores. These results were concordant with the study conducted by Foster et al<sup>32</sup>, unqualified staff held more positive as well as more negative attitudes than qualified staff. This is generally consistent with Munro and Baker's<sup>39</sup> finding and overall conclusion that it cannot be assumed that qualified staff will hold more positive attitudes than unqualified staff. It is possible that other variables such as professional development training or other support may have influenced their attitudes. In accordance with previous studies with nurses in particular,<sup>12;27</sup>, it is also possible that further education and training on mental illness and therapeutic strategies could result in the development of more positive attitudes for these mental health workers, including the medical orderlies who have had limited education in mental illness. As Baker et al<sup>40</sup> identify, evidence of positive attitudes alone does not indicate whether there is corresponding therapeutic behavior and quality of care for clients or not.

For the past fifty years, programs aiming to de-stigmatise mental illness have advocated for medical rather than psychological explanations of mental illness. Biological and genetic factors have been promoted as underlying causes and people with mental disorders were considered 'ill' in the same sense as those with medical conditions. Current evidence however disputes the assumption that this information will result in more positive attitudes toward mental illness. Contrary to the assumption of de-stigmatisation programs, genetic and biological causal beliefs were related to more negative attitudes toward those with mental illness<sup>41</sup>.

Historically, the study of public attitudes toward mental illness and mentally ill persons has mostly been the domain of mental health professionals namely psychiatrists, psychologists, psychiatric social workers, as well as academics in those related fields, and psychiatric program directors and administrators<sup>42</sup>. The magnitude of mental health problem and its consequent burden upon human society is enormous. The problem is particularly troublesome in developing countries where in the ratio of mental health professional to the population is extremely low. Apart from this, general public's view about mental illness remains largely unfavorable. The topic of mental illness itself evokes a feeling of fear, embarrassment or even disgust fostering negative attitudes towards mental illness and mentally ill people<sup>43</sup>. The consequence is the low psychiatric service utilization rate despite a large body of

literature points towards high rate of psychiatric problem in the community as well as in hospitals<sup>37</sup>.

## Conclusion

General public's view about mental illness is largely unfavorable, the study revealed that attitude of non medical employees in psychiatric hospitals toward mentally ill patients is not better than general public attitude despite their continuous contact with patients. Although mental health services began in Egypt years before Kuwait, attitudes towards mentally ill was worse in Egyptian employees more than Kuwaiti employees, indicating that there is a strong need for improving knowledge and education about mental illness to ameliorate attitude towards those patients. Also much more efforts is needed to fight stigma aiming to improve general public attitudes towards mental illness.

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### الملخص

يواجه مرضى الاضطرابات العقلية الوصمة والتمييز والتهميش في معظم المجتمعات مما يؤثر على السلوك المهني والشخصي لأفراد المجتمع . و لذلك قام الباحثون بدراسة اتجاه العاملين في مستشفيات الأمراض النفسية في مصر والكويت تجاه المرضى النفسيين و مقارنتها بين البلدين لبحث أثر الاختلاف الثقافي بين العاملين في البلدين. و قد لوحظ أن هناك دلالة إحصائية عالية جداً بين الاتجاهات في مجموعتي البحث و وجود اختلاف كذلك عند مقارنة النتائج مع البيانات الديموغرافية للمشاركين في البحث. كشفت الدراسة أن اتجاه العاملين في مستشفيات الأمراض النفسية تجاه المرضى المصابين بأمراض عقلية ليست أفضل من موقف الجمهور العام على الرغم من الإتصال المستمر مع هذه الفئة من المرضى. وهناك حاجة شديدة لتغيير وجهة النظر للمرضى العقلين و الحد من الوصمة المصاحبة للمرض النفسي.

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## Diagnostic Agreement in Schizophrenia Using OPCRIT 3.31 Checklist

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### الإتفاق التشخيصي في الفصام باستعمال قائمة OPCRIT

قاهري ، الحداد، الشبول، الفرّج، السدادى، جريللي، النشيط

#### Abstract

**O**bjectives: To determine the degree of agreement of the OPCRIT diagnostic systems in the diagnosis of Schizophrenia. **Method:** A total of 112 case notes (67.9% men and 32.1% women), of Bahraini Schizophrenic patients with ICD-10 classification formed the Schizophrenic population for this study. These 112 patients who were analyzed attended the out-patient department at the Psychiatric Hospital in Bahrain until the year 2008. The OPCRIT 3.31 checklist was applied as a diagnostic tool. The kappa coefficient and percentage of agreement were used to measure the concordance and absolute agreement of the OPCRIT diagnostic systems of Schizophrenia. **Results:** The diagnoses of Schizophrenia using ICD 10, DSMIII-R. Research Diagnostic Criteria (RDC) and Tsung and Winokur (TS and WI) all have strong and excellent agreement with each other. The strongest is between RDC and TS & WI (Kappa 0.936). The diagnosis of Schneider (SCHN), French (FREN), CROW and Farmer (FARM) all have low kappa values of agreement (less than 0.4) with other diagnoses except FREN with DSMIII-R (0.451). The absolute percentages were high for all diagnostic systems except for the diagnosis of CROW. **Conclusion:** The diagnostic systems of ICD-10, DSMIII-R, RDC, and TS and WI have strong diagnostic agreements (kappa < 0.780). The strongest is between RDC and TS&WI (kappa 0.936), while Schneider French, Crow, and Farmer have low diagnostic agreements (Kappa>0.4) However, French and DSM/III-R maintained higher diagnostic agreement (Kappa 0.451). Results direct the need for a cautious level of confidence and validity of officially designated classification systems.

**Key Words:** Schizophrenia, Checklist, Kappa.

**Declaration of interest:** None.

#### Introduction

Schizophrenia is a devastating disorder with high worldwide lifetime prevalence.<sup>1</sup> Although its etiology is unknown and its treatment elicits only a partial response, it is very important to have early detection of its initial symptoms, since early therapeutic intervention permits the prevention of the worse outcome. Unfortunately, the diagnosis of Schizophrenia remains a “fuzzy” scientific concept. For example, the so called Polydiagnostic studies comparing ICD-10, research diagnostic criteria with other reasonable definitions of Schizophrenia consistently demonstrates that the number of patients with Schizophrenia diagnosed in a given sample varies by a factor of 2-3, depending on the diagnostic criteria applied and the composition of the examined sample<sup>2,3</sup>. Since its presentation is heterogeneous, many operational diagnostic criteria have been developed during the last three decades, but there is no consensus as to which of them is the most adequate. The 1970s witnessed the emergence of St Louis and Research Diagnostic Criteria. This was followed in the 1980s by the incorporation of operational definitions in the diagnostic and statistical manual (DSM) of the American Psychiatric Association and subsequently an operational version of the diagnostic criteria in the 10<sup>th</sup> edition of the International Classification of Diseases (ICD-10). Although such definitions of the disorder usually ensure high inter-rater reliability, this does not guarantee validity. In addition there is a problem resulting from the fact that different operational definitions of nominally the same disorder often fail to match and do so in an unpredictable way<sup>4</sup>. However, the Diagnostic Criteria of Schizophrenia are not based on insight into the

pathophysiology of the disease and much less on the knowledge of etiology, rather diagnoses are not conventionally defined which leads to multiple diagnostic traditions and sometimes even contrasting systems<sup>5</sup>. The inadequacies of the standard glossaries have led research investigators to develop their own explicit criteria and classification schemes through selection of the diagnostic category in the glossary that most closely resembles the characteristics of the patient being diagnosed. In practice, this has meant that, by and large, the diagnostician used his own concept of the disorder even though a publication referring to those diagnoses might state that the diagnoses were made “according to the DSM Criteria”.<sup>6,7</sup> Research Psychiatrists were however able to achieve higher reliability up to 92% agreement for Schizophrenic illness using the Present State Examination (PSE) interview technique.<sup>8</sup> Furthermore, an overall kappa of +0.77 for inter-rater reliability of individual symptom rating of PSE was achieved<sup>9,10</sup>.

In this current study, 12 diagnostic systems of the OPCRIT checklist were used to show the significance of an overlap between diagnostic systems.

#### Methodology

The Operational Criteria checklist for psychotic and affective illness (OPCRIT) version 3.31 was the main study tool<sup>4,11</sup>. This checklist allows classification of subjects according to the functional psychosis and affective disorder categories in DSM-III R, DSM VI, ICD-10, Feighner et al, the research diagnostic criteria (Spitzer et al), the criteria of Taylor and Abrams, Carpenter et al, the first rank symptoms of Schneider,

Tsung and Winkur, French, Crow and Farmer. In general it has been designed to facilitate polydiagnostic approach to mental illness. This tool has been found to be both valid and reliable<sup>12</sup>. A qualified psychiatrist trained to use this tool assessed all patients using hospital case notes. All case notes were scanned for a lifetime of ever having occurrence of signs and symptoms of Schizophrenia. A total of 112 Bahraini Schizophrenic patients were included in the study. This represented the total number of Schizophrenic patients registered before March 2008 and who fulfilled the following inclusion criteria:

- Diagnosed as Schizophrenia based on ICD-10 classification system<sup>13</sup>.
- Bahraini nationals.
- Parents alive (This criterion was included because this study was run concomitantly with a study on the genetics of Schizophrenia for the same sample).
- Age 18-60 years.
- Have no coarse brain disease prior to the onset of Schizophrenia.
- Have no history of alcohol/ drug abuse within one year of onset of psychotic symptoms.
- Have no other co-morbid mental illness e.g. mental retardation or mixed affective and psychotic symptoms e.g. schizoaffective disorder, and/or post-Schizophrenic depression.

The Cohen's Kappa Coefficient was used to measure and ascertain the significance of concordance corrected for chance agreement between each pair of the diagnostic methods. Kappa values vary from negative value to zero for chance agreement and 1 for perfect agreement.

## Results

The mean age of the study patients was 32.4 years with a range of (18-50) years. 67.9% of the patients were males and 32.1% were females. The mean age of onset was  $20.0 \pm 4.7$  years. At onset of illness, unmarried patients constituted 76.8% of the cases and unemployment presented itself in 73.6% of the patients. Also, onset of illness at or below 25 years of age was found in 86.5% of study sample.

Table 1 compares all 12 diagnostic systems of Schizophrenia with each other in terms of Kappa coefficients of agreement and percentage of absolute agreement. Kappa coefficient of agreement for Diagnosis of Schizophrenia by Carpenter and Tailor and Abrams with other diagnoses could not be calculated due to the small cell counts in the cross tab table.

The Diagnostic system ICD-10 strongly agrees with TS and WI, RDC and DSMIII-R (Kappa values are 0.879, 0.828 and 0.780 respectively). Also, the diagnosis of Schizophrenia by DSMIII-R strongly agrees with RDC, TS and WI (Kappa values are 0.828 and 0.879 respectively) and has adequate agreement with DSM-III R, Feigner and French with Kappa's ranging from 0.451 to 0.481. The strongest agreement was between RDC and

TS and WI (0.936). The diagnostic system of Schneider, French, Crow and Farm all have low Kappa values of agreement (less than 0.4) with other diagnoses except in the case of French with DSMIII-R (0.451). In general the diagnoses of Schizophrenia ICD-10, DSMII-R, RDC and TS&WI all have strong agreement with each other.

The results of percentage of absolute agreements between the 12 diagnostic systems of Schizophrenia with each other are also presented in table I. The absolute percentage of agreements ranged from 17.9% to 99.1%. In general these percentages for absolute agreement are high for all diagnostic systems except for the diagnosis of Crow which has the lowest absolute percentages of agreement with all diagnostic systems.

## Discussion

The most important finding of this study is that the 12 systems vary in the rates at which they make the diagnosis of Schizophrenia. There is strong agreement between the diagnostic systems ICD-10, Tsung and Winokur and Research diagnostic criteria (RDC), Kappa values are 0.879, 0.828 and 0.780 respectively. Also there is a strong agreement between DSM-III-R and RDC, TS & WI; Kappa values are 0.828 and 0.879 respectively. The results are consistent with findings in other studies<sup>11,14,15</sup>. This is not surprising when one knows that Spitzer et al. (1980) has described the DSM-III as a modification of the RDC<sup>16</sup>. It is a natural expectation for DSM-III to have an adequate agreement with DSM-III R, Feighner and French, with Kappa's ranging from 0.451 to 0.481. The DSM-IV is a natural prodigy of DSM-III-R which shares similar diagnostic criteria with Feighner and French. Another important factor is the type of patient population in the study; all of whom passed the acute stage of the Schizophrenic illness and the necessary six months in order to qualify for the diagnosis in the DSM-III R and DSM IV classification<sup>17,18</sup>. The exclusion criteria of no alcohol and drug abuse, their mean age of onset of  $20.0 \pm 4.7$  years (below the age of forty at onset), the 76.8% unmarried, all fit very nicely with the requirements in Feighner criteria.

The Diagnostic systems of Schneider, French, Farm and Crow all have low Kappa value of agreement less than 0.4 with the other diagnoses. This is again consistent with the reported literature<sup>11, 12,14</sup>. And can be explained by the fact that these criteria are more restrictive and narrow, and therefore will diagnose fewer patients as suffering from Schizophrenia. The diagnostic system of Crow was the most restrictive. Crow have proposed two subtypes of Schizophrenia; Type I syndrome mainly of positive symptoms (including delusions and hallucinations) which are more likely to be predominant in the acute illness. Type II syndrome consists mainly of negative symptoms which include among others poor grooming, lack of motivation and social withdrawal<sup>19</sup>. The Type II syndrome is more consistent with the sub-chronic or chronic type of Schizophrenia. Negative symptoms tend to be chronic in course and less amenable to treatment, but occur regardless of the stage of illness<sup>20</sup>.

Kappa values for the diagnostic systems of Carpenter and Taylor and Abrams could not be calculated due to the small cell counts in the cross table. The Taylor and Abrams system is very restrictive and has questionable diagnostic value and poor inter-rater reliability. Abrams and Taylor have later suggested that it is outdated and did not recommend it for future use <sup>21</sup>.

The disparity between these diagnostic systems illustrates the degree of difficulty associated with the diagnosis of Schizophrenia and with the concept of Schizophrenia itself. Psychiatric researchers are trying to establish operationally defined diagnostic criteria which they can refer to as “objective” criteria, yet even with the strictest adherence to diagnostic precision, several of the key signs and symptoms of Schizophrenia leave room for divergent subjective interpretations. An example for such

difficulty are terms like restricted affect, poor insight, and poor rapport, all of which do not easily lend themselves to operational definitions.

#### Limitations of the study

This is a retrospective study defined by the application of diagnostic criteria to case notes. The determination of index diagnosis from case notes not specifically written for research purposes obviously carries its own limitations.

#### Conclusion

Most of the diagnostic systems within the OPCRIT 3.31 have very high or adequate agreements between them, which points out to the usefulness of the OPCRIT as a diagnostic system in research and differentiating Schizophrenic from non-Schizophrenic cases.

**Table 1: Kappa coefficients and percentages of absolute agreement between 12 diagnostic systems of schizophrenia**

		DSM III R	DSM IV	RDC	FEIGN	CARP	SCHN	FREN	TA and AB	TS and WI	CROW	FARMR
DSM III-R	Kappa P-value		86.6	97.3	84.8	*	91.1	91.1	*	98.2	26.8	91.1
DSM IV	Kappa P-value	0.481 <0.0005		85.7	76.8	*	81.2	81.2	*	86.6	29.5	79.5
Research Diagnostic Criteria	Kappa P-value	0.828 <0.0005	0.435 <0.0005		83.9	*	92	90.2	*	99.1	24.1	92
FEIGNER	Kappa P-value	0.472 <0.0005	0.332 <0.0005	0.431 <0.0005		*	75.9	77.7	*	83	34.8	75.9
CARPENT R	Kappa P-value	*	*	*	*		*	*	*	*	*	*
SCHNEIDER	Kappa P-value	0.247 0.003	0.172 0.006	0.272 0.002	0.071 0.218	*		89.3	*	92.9	23.2	96.4
FRENCH	Kappa P-value	0.451 <0.0005	0.273 0.001	0.368 <0.0005	0.223 0.005	*	0.097 0.251		*	89.3	17.9	91.1
TAILOR & ABRMS	Kappa P-value	*	*	*	*	*	*	*	*	*	*	*
TSUNG & WINOKUR	Kappa P-value	0.879 <0.0005	0.459 <0.0005	0.936 <0.0005	0.390 <0.0005	*	0.300 0.001	0.276 0.003	*		25	92.9
CROW	Kappa P-value	0.023 0.421	-0.039 0.383	-0.005 0.383	0.008 0.866	*	0.018 0.314	-0.096 0.001	*	0.013 0.598		21.4
FARMER	Kappa P-value	0.141 0.040	0.049 0.298	0.157 0.028	0.037 0.388	*	0.317 <0.0005	0.141 0.040	*	0.176 0.018	0.009 0.480	
ICD-10	Kappa P-value	0.780 <0.0005	0.481 <0.0005	0.828 <0.0005	0.347 <0.0005	*	0.398 <0.0005	0.231 0.014	*	0.879 <0.0005	0.023 0.421	0.313 <0.0005

\* Kappa values for the systems CARP and TA&AB cannot be calculated due to the small cell counts in the cross tab table.

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#### المخلص

**أهداف الدراسة:** هدفت الدراسة لتحديد درجة التوافق في تشخيص الفصام باستعمال أنظمة التشخيص لقائمة الأمراض في الخصائص العملية بالأمراض الذهانية واضطراب المزاج. **الطريقة:** تم تحديد الملفات الطبية لمرضى بحرانيين مصابين بالفصام عددهم 112 مشخصين طبقاً للتقسيم الدولي العاشر للأمراض، وتم تحليل هذه المجموعة التي تراجع العيادات الخارجية لمستشفى الطب النفسي في البحرين حتى عام 2008، تم تطبيق قائمة الخصائص العملية لتشخيص الاضطرابات الذهانية والمزاجية، وتم تطبيق معامل كايبر لمعرفة درجة التوافق في تشخيص الفصام بأنظمة التشخيص المختلفة باستعمال هذه القائمة. **النتائج:** إن تشخيص الفصام بالتصنيف الدولي العاشر، أو حسب دليل التشخيص والإحصاء الأمريكي الثالث بالنسخة المراجعة، أو خصائص التشخيص للبحوث، بالإضافة إلى نظام تسنج و وينكور، أظهرت توافقاً كبيراً بالتشخيص لمرضى الفصام، (كايبا 0.936) بينما ظهر أن تشخيص شنايدر والفرنسي بالإضافة لتشخيص كراو و فارمر، لها قيمة متدنية لمعامل كايبا (أقل من 0.4)، ماعدا التشخيص الفرنسي والدليل الأمريكي الثالث المراجع (0.451 كايبا)، وكانت النسب المئوية المطلقة مرتفعة لكل أنظمة التشخيص ماعدا التشخيص حسب كراو. **الاستنتاج:** هناك توافق كبير (معامل كايبا < 0.78) بين أنظمة التقسيم الدولي العاشر والأمريكي المراجع الثالث، ونظام التشخيص للبحوث بالإضافة لنظام تسنج و وينكور. وكان أقواها بين نظام التشخيص للبحوث مع نظام تسنج و وينكور (0.936 معامل كايبا)، بينما كان التوافق بالتشخيص منخفضاً (معامل كايبا > 0.4) بين شنايدر والفرنسي وكراو و فارمر. مع ذلك فقد حافظ النظام الفرنسي والأمريكي الثالث المعدل على توافق أعلى (0.451 كايبا). النتائج تشير إلى الحاجة إلى مستوى من الحذر بالثقة والمصادقية في أنظمة التشخيص التي توضع بشكل رسمي.

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## Measurement of urinary sugars by HPLC as a non invasive test of increased intestinal permeability in autistic children

Al-Gohary E, Abd El-Sattar N, Saleh S, Essawy H, El-Khouly GH, Mahmoud N, and Mohamed N

قياس سكر البول بواسطة جهاز الفصل الكروماتوجرافي السائل العالي الأداء كطريقة غير اختراقية

لاختبار زيادة نفاذية الأمعاء في أطفال اضطراب الذاتوية

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### Abstract

**Objectives:** Autism is found now to be more prevalent than childhood cancer, diabetes and Down Syndrome, affecting as many as 1 in each 500 children. In autism, increased intestinal mucosa permeability is expected secondary to the “leaky gut” hypothesis or “opioid excess” hypothesis. This study aimed at testing increased intestinal permeability in autistic children by using the standard convenient and non invasive lactulose/mannitol test which assesses mucosal integrity of the small bowel in children. **Methods:** Fifty autistic children fulfilling all the DSM-IV research diagnostic criteria for Autistic Disorder were recruited from the specialist outpatient clinic for autism at Institute of Psychiatry Ain Shams University Hospitals. Twenty children with normal intellectual functioning and with no personal or family current/past history of neuropsychiatric disorder were selected as a control group. Severity of autism was assessed by the Childhood Autism Rating Scale (CARS). All patients and controls were subjected to: 1) full history taking with emphasis on history of communication and behavioral development; 2) thorough clinical examination including evaluation of behavioral and communication skills of each child; 3) Wechsler Intelligence Scale - child version (WISC) to assess their intellectual level; and, 4) the sugar permeability test which was based on simultaneous oral administration of two sugars with different molecular size and absorption routes (lactulose and mannitol-L/M), then the urinary recovery of each molecule was estimated using the high performance liquid chromatography (HPLC) technique. **Results:** There was a highly significant elevation of both lactulose recovery percentage and L/M recovery ratio, but not mannitol recovery percentage, in autistic children compared to controls. A highly significant positive correlation between lactulose recovery percentage and L/M recovery ratio, and highly significant negative correlation between mannitol recovery percentage and L/M recovery ratio in all autistic children was found. L/M recovery ratio is proposed as an indicator for assessing the severity of autism. **Conclusion:** Elevation of urinary excretion of lactulose and hence L/M recovery ratio may help to identify the role of increased intestinal permeability as an etiopathogenic factor in autism.

**Key Words:** Autism – Sugars – Permeability – HPLC

**Declaration of interest:** None

### Introduction

Autism is the most prevalent of a subset of disorders organized under the umbrella of pervasive developmental disorders which usually presents within the first three years of life<sup>(11, 28, 29)</sup>. It is a neurological disorder affecting as many as 1 in each 500 children<sup>15, 33, 36</sup>. It primarily strikes males (male to female ratio is about 4:1), however, severe forms have been found in females<sup>25, 45, 50</sup>. Autism has been identified as having greater prevalence than childhood cancer, diabetes and Down Syndrome<sup>10, 14, 42</sup>.

The etiology of autism is still unknown, but it is generally accepted that it is caused by abnormalities in the brain structure and/or function<sup>4, 23, 24</sup>. However, one of the postulated causes of autism is the increased permeability of intestine (leaky gut), which was found in 43% of autistic patients<sup>47</sup>. Many theories attempted to link this increased permeability to viral infection (measles), yeast infection (over growth of candida albicans), reduction in phenylsulfotransferase (PST) which lines intestinal tracts and protects from leakiness, and heavy metals in intestinal tract which lead to infection, which in turn can cause leaky gut<sup>27</sup>. As a result of the leaky gut, the digestion products of natural foods such as cow's milk and bread are able to enter the blood stream and induce antigenic responses. Moreover, they can pass through the blood brain

barrier and produce a negative impact on the brain development<sup>19, 41</sup>.

The standard test for leaky gut syndrome is the mannitol and lactulose test<sup>20</sup>. Both are water soluble molecules that the body cannot use. Mannitol is easily absorbed by people with healthy intestinal lining and lactulose is a larger molecule which is only slightly absorbed. A healthy test shows high levels of mannitol and low levels of lactulose; if high levels of both molecules are found, it indicates a leaky gut condition<sup>7</sup>. This study tested the hypothesis of increased intestinal permeability in autistic children by using the convenient and non invasive lactulose/mannitol test which assesses mucosal integrity of the small bowel in children.

### Subjects and Methods

#### Patients

Fifty autistic children (43 males and 7 females) were recruited from the specialist outpatient clinic of autism at Institute of Psychiatry Ain Shams University Hospitals. Their ages ranged between 3-14 years with a mean age of 6.1±3.1 years old. We included children who met the diagnostic criteria of autism according to DSM-IV<sup>1</sup>, presented with typical complaints of autism, such as delayed or abnormal pattern of speech, impaired socialization with or without behavioral abnormalities (as self injuries and aggression),

disturbed sleep and stereotyped movements<sup>3, 35</sup>, and had an age appropriate range of intellectual functioning as measured by the Wechsler Intelligence Scale for Children (WISC)<sup>48, 49</sup>. Patients were excluded if they had individual or family history of allergy, diabetes mellitus, clinical evidence of GIT disorders and/or history of antiepileptic drugs intake.

### **Controls**

Twenty healthy age (ranged 3-11 years with a mean age  $6.8 \pm 2.2$ ), gender, and intellectual functioning matched children were selected as a control group. They were selected on the basis of having no personal or family current/past history of neuropsychiatric disorder.

Informed consent was obtained from the parent of each autistic child and control subject before initiation of the procedure.

### **Clinical Methods**

Severity of autism was assessed by the Childhood Autism Rating Scale (CARS)<sup>37</sup> which is often used to evaluate young children who may have autism spectrum disorders. The scale evaluated children with a rating of one (indicating no abnormality) to four (indicating severe abnormality) in each of 15 areas (relation to people, emotional response, imitation, body use, object use, listening response, adaptation to change, taste, smell and touch responses, visual response, fear, verbal communication, non verbal communication, activity level, intellectual response, and general impression).

According to CARS, our sample was classified into two main groups. The first group was classified as mild to moderate if the child scored  $> 30$ . This group comprised 38 autistic child, 36 males and 2 females. Their ages ranged between 3 to 14 years with a mean age of  $6.5 \pm 3$  years. The second group was classified as severe if the child scored  $> 37$ . This group comprised 12 autistic children, 7 males and 5 females. Their ages ranged between 3 to 14 years with a mean age of  $6.5 \pm 3$  years.

All patients and controls were subjected to: 1) full history taking with emphasis on history of communication and behavioral development; 2) thorough clinical examination including evaluation of behavioral and communication skills of each child; and, 3) experienced clinicians interviewed both groups of children and the relevant family members in order to confirm diagnosis of autism.

For autistic children, the WISC was routinely included in the diagnostic evaluation at the specialist clinic for autism. The test was administered individually by neuropsychologists blind to the study and hypotheses. Both the cases and control groups were tested by neuropsychologists under similar conditions similar. All children within the cases and control groups had average age appropriate intellectual functioning.

### **Analytical Methods**

The sugar permeability test involved simultaneous oral administration of two sugars with different molecular size and absorption routes (lactulose and mannitol). The urinary recovery of each molecule was then estimated using the high performance liquid chromatography (HPLC) technique<sup>2</sup>.

#### **• Sampling**

The child followed a diet free of mannitol and lactulose for 24 hours before the test. After an overnight fast, the child voided the first urine sample and then ingested a solution containing 5 gm lactulose and 1 gm mannitol in 100 ml of deionized water. After 30 minutes, a liberal intake of water was permitted to increase urine flow. All urines voided in the subsequent six hours were collected with sodium azide as a preservative. The total volume was recorded and an aliquot was kept at  $-20\text{C}$  for subsequent analysis.

#### **• Assay Procedure**

Urinary mannitol and lactulose was assessed using HPLC assay<sup>(30)</sup>. This was conducted in six steps: **1)** preparation of the sample by adding 0.5 gm of ion exchange resin to 2 ml of the thawed urine specimen. The mixture was mixed vigorously for 10 seconds, followed by centrifugation for 10 minutes at  $3000\text{g}$ . The resulting supernate was filtered through 0.2 $\mu\text{m}$  pore filter; **2)** standard preparation of mannitol and lactulose by reconstituting synthetic mannitol and lactulose lyophilized standards by HPLC graded water and stored it at  $4\text{C}$  for one month; **3)** reagents preparation by putting the first reagent HPLC graded acetonitrile in the second one HPLC graded water (70/30 by vol); **4)** chromatographic analysis was done on Beckman Coulter's HPLC system that consisted of a dual pump model 126 programmable solvent module controlled via 32 karat software, an amine modified silica column with a particle size of  $5\mu\text{m}$ , a length of 250 mm and an inner diameter of 4.6mm, and a refractive index detector model of 156; **5)** assay procedure consisted of three steps; a) an isocratic separation was applied in which the mobile phase consisted of HPLC acetonitrile in HPLC graded water (70/30 vol), b) the flow rate was maintained at 1ml/min through the chromatographic run which last for 15 minutes, c) 20  $\mu\text{l}$  of the filtrate as well as the mannitol and lactulose external standards were injected into the chromatographic unit using a Hamilton micro-syringe. Reversed phase HPLC eluting pattern of mannitol and lactulose obtained by refractive index detector where the peak at 8.4 min corresponds to mannitol and the peak at 11.4 min corresponds to lactulose (Wakefield et al., 2000); and, **6)** to calculate the results, the amount of the lactulose and mannitol was determined by the external standard method using peak height. Serial dilutions of lactulose and mannitol standards were injected and then peak heights were determined. A linear standard curve was constructed by plotting peak height versus the corresponding lactulose and mannitol concentrations. The concentration in the sample was obtained from the curve by interpolation. The percentage of lactulose and mannitol recovered in the

urine samples was calculated by the following equation: amount in urine/amount ingested x 100 L/M ration was also calculated.

**Statistical Methods**

Data coded and revised were introduced to EXCEL database to be later manipulated and analyzed using SPSS v 16.0. The mean (X) and standard deviation (SD) was used for descriptive analysis. Comparative statistics between the different groups were done using the Student's *t*-test. Spearman correlation coefficient was used to test correlation between scores of different measured variables. For evaluation of diagnostic performance, five parameters were used as described by Schultz et al.<sup>38</sup>; diagnostic sensitivity, diagnostic specificity, diagnostic efficacy, positive predictive value, negative predictive value. The overall diagnostic performance of each test was assessed and plotted by the Receiver Operator Characterization (ROC) curve analysis as described by Zweig & Campbell<sup>51</sup>. Significance level was set at  $\leq 0.05$ .

**Results**

Results of our study showed that the statistical comparison of the three studied parameters in autistic children versus controls revealed the presence of a highly significant increase in both lactulose recovery percentage and lactulose/mannitol (L/M) recovery ratio in autistic children (Table1).

In order to assess the relationship of the increased intestinal permeability with severity of autism, statistical comparison of the studied parameters in different severities of autistic children versus controls revealed a highly significant increase in lactulose recovery percentage and lactulose/mannitol (L/M) recovery ratio in both subgroups of severities when compared to controls. In addition, there was a significant increase of mannitol recovery percentage in severe autistic category relative to controls. Furthermore, when mild to moderate and severe autistic children were compared with each other, the latter group showed a significant increase of lactulose/mannitol (L/M) recovery ratio (Table1).

**Table (1): Comparison between autistic children versus controls, between different severities of autism versus controls, and between different severities of autism versus each other regarding the studied parameters**

Compared Groups	LR %			MR %			L/M R ratio		
	X±SD	t	P	X±SD	t	P	X±SD	t	P
Control Group (n = 20)	1.8±0.6			4.6±0.5			0.4±0.1		
Autism Group (n = 50)	3.5±0.6	10.9	<0.001	4.5±0.6	0.9	>0.05	0.8±0.2	11.5	<0.001
Compared Groups	LR %			MR %			L/M R ratio		
	X±SD	t	P	X±SD	t	P	X±SD	t	P
Control Group (n = 20)	1.8±0.6			4.6±0.5			0.4±0.1		
Mild to moderate autism (n = 38)	3.4±0.5	10.7	<0.001	4.5±0.7	0.6	>0.05	0.8±0.2	11.0	<0.001
Severe autism (n = 12)	4.3±1.0	5.5	<0.001	4.1±0.4	2.7	<0.05	1.0±0.2	8.7	<0.001
Compared Groups	LR %			MR %			L/M R ratio		
	X±SD	t	P	X±SD	t	P	X±SD	t	P
Mild to moderate autism (n = 38)	3.4±0.5			4.5±0.7			0.8±0.2		
Severe autism (n = 12)	4.3±1.0	1.9	>0.05	4.1±0.4	2.3	>0.05	1.0±0.2	3.7	<0.05

LR% means Lactulose Recovery%, MR% means Mannitol Recovery %, L/M R means Lactulose/Mannitol Recovery and P value is significant at  $\leq 0.05$  and highly significant if  $P < 0.001$ .

Our correlation study revealed the presence of a highly significant positive correlation between lactulose recovery percentage and L/M recovery ratio and a highly significant negative correlation between

mannitol recovery percentage and L/M recovery ratio in all autistic children. However, no correlation was found between mannitol recovery % and lactulose recovery percentage (Table2).

**Table (2) Correlation between Lactulose Recovery percentage, Mannitol Recovery percentage, and L/M Recovery ratio in autistic children**

Parameters	Mannitol Recovery %		L/M Recovery ratio	
	r	P	r	P
Lactulose Recovery %	-0.04	>0.05	0.8	<0.001
Mannitol Recovery %			-0.6	<0.001

L/M means Lactulose/Mannitol, r means Pearson correlation coefficient, and P value is significant at  $\leq 0.05$  and highly significant if  $P < 0.001$ .

Diagnostic performance study using Receiver Operating Characteristic (ROC) curve analysis was done for lactulose recovery percentage and L/M

recovery ratio in an attempt to determine the best cut-off value for each one that helps in assessment of the increased intestinal permeability in all autistic patients

versus healthy control group. It revealed that the best cut-off value for lactulose recovery percentage was 2.6 at which the diagnostic sensitivity was 92%, diagnostic specificity 100%, positive predictive value 100%, negative predictive value 83% and diagnostic efficacy

94%. While the best-cut off for L/M recovery ratio was 0.5 at which diagnostic sensitivity was 96%, diagnostic specificity 90%, positive predictive value 96%, negative predictive value 90%, and diagnostic efficacy 94% (Figure1).

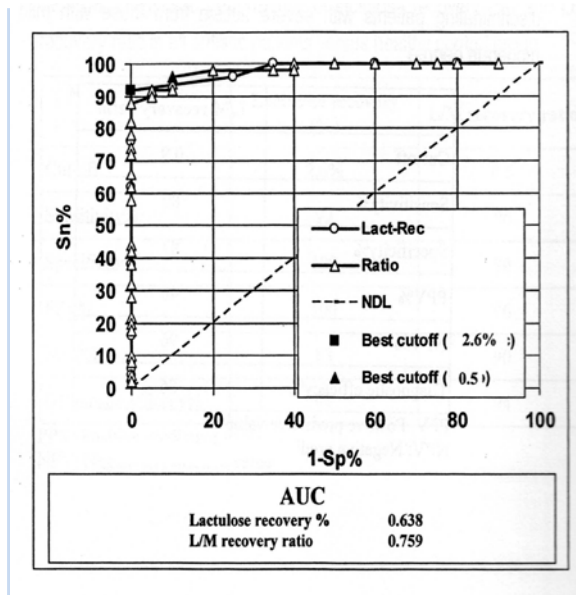


Figure (1): ROC curve analysis showing the diagnostic performance of Lactulose recovery (%) and Lactulose /Mannitol recovery ratio.

ROC curve analysis was also applied to assess the diagnostic utility of L/M recovery ratio in discriminating severe autistic children from those with mild to moderate degree. This revealed that the best cut-off value for L/M recovery ratio was 0.9 at which

the diagnostic sensitivity was 80%, diagnostic specificity 87%, positive predictive value 40%, negative predictive value 96% and diagnostic efficacy 86% (Figure2).

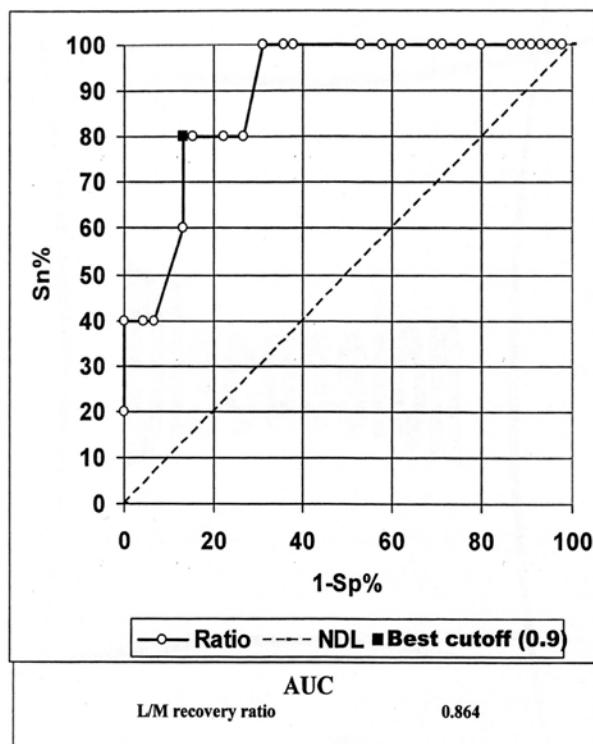


Figure (2): ROC curve analysis showing the diagnostic performance of Lactulose / Mannitol recovery ratio in discriminating mild to moderate from severe cases.

## Discussion

Leaky gut syndrome is a gastrointestinal disorder in which the integrity of the intestinal lining of the digestive tract, named intestinal mucosal barrier, becomes more permeable, or "leakier" than normal, due to repeated irritation. The small intestine is designed to allow tiny particles of digested nutrients to pass through its wall and into the bloodstream. These are then distributed for use throughout the body. But due to a variety of causes, the intestinal wall can become more permeable and allow larger less digested particles and toxins to pass through causing "Leaky Gut Syndrome". The body then recognizes these particles as foreign "invaders", and the immune system attempts to fight them off which can set the stage for various autoimmune disorders<sup>26</sup>.

Anyone can develop a leaky gut at any time in his life. Several factors can lead to leaky gut, either occurring individually or working together. Any chemical or physical activity that stimulates the pores in the intestines and keeps them open for too long can lead to increased permeability. Common sources include antigens as gluten and/or tumor necrosis factor in infants with cow's milk allergy<sup>7</sup>, trivalent MMR vaccine<sup>46</sup>, impairment in GIT development<sup>32</sup>, hyperactivity of the intestinal luminal contents due to hyper secretion of secretin<sup>17,18,22</sup>, chronic candidiasis<sup>21</sup>, chronic stress<sup>13</sup>, medications<sup>39</sup>, diet<sup>31</sup>, zinc deficiency<sup>40</sup>, and impaired sulfation<sup>12</sup>.

Indeed, impairment of brain development in very young children through gut associated pathways may be irreversible. Hence, it is valuable to consider the two scenarios by which intestinal function may play a role in altering CNS function. Firstly, impaired intestinal absorption of vitamin B12 leads to its deficiency, which interferes with proper nerves function and myelin formation<sup>50</sup>. Secondly, gliodomorphines and casomorphines arising from partial luminal digestion of gliadin and casein absorbed through leaky gut enter CNS to interfere with brain function as they simulate the opioid hormone B endorphin<sup>8</sup>.

In autism, brain involvement secondary to "leaky gut hypothesis or opioid excess hypothesis" was highlighted either by parental observation or clinical research<sup>16, 44, 47</sup>; however, it is still a matter of controversy. Accordingly, the intestinal mucosa may be abnormally permeable in autism.

Results of the present study supported this hypothesis by finding a highly significant elevation of both lactulose recovery percentage and L/M recovery ratio, but not mannitol recovery percentage, in autistic children compared to controls. Moreover, our correlation studies revealed a highly significant positive correlation between lactulose recovery percentage and L/M recovery ratio, and highly significant negative correlation between mannitol recovery % and L/M recovery ratio in all autistic children.

These results supported D'Eufemia *et al.* and Horvath & Perman<sup>7, 19</sup> who found that 43-76% (respectively) of autistic children, without evident GIT symptoms, had increased intestinal permeability which was reversed by secretin treatment. They explained the increase in L/M recovery ratio by the difference in the molecular size and absorption route between mannitol and lactulose. Mannitol passes through more abundant transcellular routes of aqueous pores in the cell membrane (transcellular pathways), whereas lactulose passes through fewer intercellular junctional complexes and extrusion zones at villous tips (paracellular pathways). The later pathway is considered the route of permeation for molecules of molecular mass more than 180 dalton, such as peptides.

As Cass<sup>5</sup> reported, peptides most often at fault in autism are those derived from casein (milk) and gluten (wheat, barely, oats, and rye). These peptides have basically the same structure of opiates and absorbed through the intestinal tract into the blood stream and are carried to the various body tissues including the brain. It is hypothesized that the glutens and casein peptides are binding to the opiate receptors in the brain and effectively cause an opioid intoxication. Unfortunately, chronic opioid toxicity affects learning, social interaction, and motor/sensory neurological function.

Robertson *et al.*<sup>34</sup>, did not identify any differences in the intestinal permeability in children with autism compared with controls and suggested these findings may occur because some of the autistic children were managed on restricted diets, which may improve their intestinal permeability. However, they agreed with us and others like Erickson *et al.*<sup>9</sup> in recommending continuing the research of GIT function and the role of gut-brain axis in the early development of the autistic phenotype in infants and children.

Regarding the determination of the best cut-off value for lactulose recovery percentage and L/M recovery ratio that helps in assessment of increased permeability in autistic children, our results disagreed with Celli *et al.*<sup>6</sup> who found that neither urinary lactulose recovery % nor mannitol recovery percentage provided sensitivities more than 80% and a specificity of 80%. This difference could be attributed to the difference in the applied technique; we used HPLC, which is more reliable and precise in assessing intestinal permeability than gas chromatography technique used by them<sup>43</sup>. Concerning the relation of intestinal permeability to the severity of autism, both the lactulose recovery percentage and L/M recovery ratio were significantly elevated in the two categories of severity in relation to controls; however, L/M recovery ratio was significantly higher in the severe category relative to mild to moderate one. In addition, L/M recovery ratio had a good diagnostic utility in discriminating severe autistic children from those with mild to moderate

degree. This means that the extent of the elevation in L/M recovery ratio was closely linked to autism severity. These findings supported White50 who reported that altered GIT functions may increase the severity of behavioral symptoms forum in autism.

## Conclusion

Elevation of urinary excretion of lactulose and hence L/M recovery ratio may help to identify the role of increased intestinal permeability as an etiopathogenic factor in autism. In addition, L/M recovery ratio is proposed as an indicator for assessment the severity of the disease. Routine assessment of urinary excretion of lactulose recovery ratio may help in identification of the autistic children who may be candidates for elimination of antigenic peptides from their diet. Routine assessment of L/M ratio at a cut-off 0.9 may discriminate severe autistic patients from those with mild to moderate degree.

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### المخلص

**هدف البحث:** تشير الإحصاءات الآن إلى أن اضطراب الذاتوية أصبح أكثر شيوعاً بين الأطفال من أمراض السرطان والسكر ومتلازمة داون. وقد أشارت الأبحاث إلى احتمال وجود علة في درجة نفاذية الأمعاء في الأطفال المصابين باضطراب الذاتوية، وأن هذه العلة قد تكون تابعة لنظرية "المعوى المرشح – الأفيونية الفائضة". وعلى هذا فقد هدفت هذه الدراسة إلى اختبار نفاذية الأمعاء في معى الأطفال المصابين بالذاتوية باستخدام وسيلة قياسية غير اختراقية لتطبيق اختبار نسبة سكر اللاكتيولوز (ل) إلى سكر المانيتول (م) والذان يختلفان في الوزن الجزيئي ويستخدمان كمقياس لسلامة الغشاء المخاطي للأمعاء الدقيقة. **طريقة البحث:** قد اشتمل البحث على دراسة خمسين طفلاً مصاباً بالذاتوية يمثلون عينة البحث تم جمعهم من عيادة الذاتوية التابعة لمركز الطب النفسي بمستشفيات جامعة عين شمس، وتمت مقارنة بعشرين طفلاً صحيحاً يمثلون العينة الضابطة ويتلاءمون مع عينة البحث في العمر والجنس والوظيفة الذهنية. وقد خضع أطفال عينة البحث التي اختبر شدة الذاتوية (كارز)، كما خضع أطفال عينة البحث والضابطة للاختبارات الآتية: (1) استيفاء تاريخي كامل مع التركيز على تاريخ التواصل والنمو السلوكي، (2) فحص سريري دقيق شمل تقييم القدرات السلوكية والتواصلية لكل طفل، (3) اختبار ويكسلر للكفاء الخاص بالأطفال، (4) القدرة النفاذية للأمعاء بدفع الأطفال لتعاطي اللاكتيولوز والمانيتول، (5) ثم قياس نسبة استعادة كل من نوعي السكر في البول. **نتائج البحث:** وقد أظهر البحث ارتفاع كلاً من نسبي استعادة اللاكتيولوز (ل) ونسبة استعادة (ل:م) بدرجة دالة إحصائية، من دون ارتفاع نسبة استعادة المانيتول (م) في بول أطفال عينة البحث بالمقارنة بأطفال العينة الضابطة. كذلك أظهر البحث وجود ارتباط إيجابي دال إحصائياً بين نسبة استعادة (ل) و (ل:م)، و ارتباط سلبي دال إحصائياً كذلك بين (م) و (ل:م) في بول كل أطفال عينة البحث. **الاستنتاج:** ويقترح البحث استخدام (ل:م) كمؤشر لشدة الذاتوية. كما أكد البحث الدراسات التي أظهرت أن زيادة إخراج اللاكتيولوز، ومن ثم زيادة نسبة (ل:م) في بول أطفال اضطراب الذاتوية هو دليل على تغير نفاذية الأمعاء، وهو بالتالي قد يمثل سبباً لحدوث اضطراب الذاتوية.

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## Tramadol dependence in the addiction unit of Baghdad: a cross sectional study

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الاعتماد على عقار الترامادول في وحدة الإدمان في بغداد : دراسة مقطعية  
محمد رشيد لفته العبودي

### Abstract

**O**bjective: Tramadol is one of the most prescribed centrally-acting analgesics in the world. It has been widely used in Iraq over the last few years. There are many contradicting studies about the potential risk of Tramadol abuse in the world. In this piece of work, we have tried to describe a group of patients presenting with Tramadol abuse who were referred to the main addiction unit in Baghdad. **Method:** 36 patients referred to the addiction unit in Ibn-Rushed Mental Teaching Hospital in Baghdad with Tramadol abuse problems were screened and included in this cross-sectional study. Results: 78% were males and 22% were females ranging in ages 16-57 years (M=27years). From the sample, 90% were on Tramadol alone and a further 10% were on poly drugs; about 92% of them were iatrogenic abusers. Most of the patients were without previous history of drug abuse. More than one fifth of the patients had at least one seizure. Approximately one fifth of the sample were health professionals. **Conclusion:** Tramadol is freely and widely used in Iraq. Tramadol has a clear risk of causing dependency syndrome and this has been nearly almost always iatrogenic in our study sample. Tramadol abuse seems to be a growing problem in Iraq.

**Key words:** Tramadol, Dependence, Iraq, Iatrogenic.

**Declaration of Interest:** None.

### Introduction

Tramadol, as a centrally-acting, opioid-like analgesic with serotonin reuptake inhibition properties, is one of the most prescribed analgesics in the world<sup>1,2,3</sup>. Prescriptions for Tramadol, for example, in Canada reached almost 26 million in 2006 representing total sales of \$800 million<sup>4</sup>.

Tramadol has been shown to be beneficial in the treatment of a wide range of acute and chronic pain syndromes<sup>1,5</sup>. It is widely used in Iraq. While no specific date for its entrance in Iraqi markets has been determined, many pharmacists confirm that it was between the end of 2004 and into the early months of 2005. Currently in Iraq, Tramadol is very cheap and available freely on counter without prescription.

Many articles have raised the question of risk of abuse among patients using Tramadol in many different countries the world.<sup>1,3,6,7</sup> Few psychiatrists in Baghdad recognized scattered cases of Tramadol abuse emerged in 2008. We will try to study the ongoing problem of Tramadol abuse in Baghdad.

### Method

From Jan. to April 2010, 36 patients suffering from Tramadol dependence who attended the addiction unit in Ibn-Rushed Mental Teaching Hospital in Baghdad city were included in this cross-sectional study. This unit is unique to the whole country.

All patients (N=36) were referred for the first time to our addiction unit and were interviewed with a translated, semi-structured interview based on The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)<sup>8</sup>.

One of the main limitation in this study is its small sample. The urgent need to bring awareness of this burgeoning problem has been a strong argument for why we do not wait to collect more cases. Another limitation

is the lack of in-depth discussion of the cases with other related factors.

### Results

The whole sample (N=36) fulfilled the criteria of DSM-IV for substance use disorders-dependence. Twenty-eight patients (78%) were male and eight (22%) were female ranging in age from 16-57 years (mean age= 27 years). Seventeen patients (47%) were married and 19 patients (53%) were non-married. Twenty-two patients (61%) were admitted to the addiction unit with the remaining 39% treated as outpatients. From those who had been admitted, three patients were female and 19 patients were male. Regarding level of education of the whole sample (N=36), 15 patients (41%) had attained an education at intermediate school or below (<10 years study), while 21 patients (59%) had attained to secondary school and above (>10 years study). Of those with a higher education level, seven patients were medical staff. Over 89 % of the sample (32 patients) solely abused Tramadol and only four patients (11%) were abusing other drugs beside Tramadol. Of those 32 patients (mono drug abuse group), two patients had a history of previous drug abuse. About 92 % (33 patients) were using Tramadol for the first time as a prescribed drug; only three patients (8%) had started Tramadol intake without prescription. None of the patients who consumed Tramadol by prescription had been made aware of the risk of abuse by their physicians.

The duration of the problem of drug abuse for this sample was from 6 to 30 months (mean = 18 months). The average daily dose was 400-5000 mg (mean 1000 mg /day). Seventeen patients (47%) had only consumed the drug orally, 13 patients (36%) were on both tablets and injections while six patients (17%) were on injections only.

Tramadol is very cheap and available without

prescription. Only four patients (10%) mentioned that they had difficulties in getting their daily drug supply. Eight patients (22%) experienced at least one seizure episode of tonic-clonic type during their abuse. None of the admitted patients experienced seizures during their period of admission to our unit.

## Discussion

Although there is currently no accurate estimate of Tramadol use in Iraq, it seems that this drug is widely used in Iraq like in many other countries around the world.<sup>1,2,3</sup> The extreme shortage of opioid medications for many years in Iraq may have played an important role for the increasing rate of Tramadol use as a pain killer in post operatives and other acute and chronic pain conditions. Being very cheap and over the counter type of medication (i.e. doesn't need prescription) have made it a preferred medication for many patients due to its easy accessibility, which appears to be global problem rather than one that is unique to Iraq.<sup>9,10,11,12</sup> Only 10% of our sample had difficulties in their drug supply. A few countries have begun recently to put the drug on a scheduled list which needs at least a prescription.<sup>2,13</sup>

Many articles still give contradicting results about the risk of Tramadol abuse or withdrawal symptoms.<sup>1,3,14,15,16,17,18,19,20,21,22</sup> According to our study, it seems that Tramadol is associated with the risk of addiction for people not previously prone to experiencing any substance abuse problems. Indeed, approximately 90% of the sample in the current study did not have previous substance abuse disorders.

Many studies refer to the iatrogenic causality in Tramadol abuse<sup>11,13</sup>. Our study shows that this is the case in 92 % of our sample. Patients participating in the current study stated that they started their intake of Tramadol according to consultations of physicians. This might indicate that most physicians are not aware of the potential risk of dependency on Tramadol.

Despite the relatively recent availability of this medication in the Iraqi market and the huge stigma associated with addiction in general in Iraq {only 0.2% admitted their substance abuse problems in the Iraqi National Mental Health Survey (INMHS)<sup>23</sup> it seems that patients with Tramadol dependence have got no significant difficulties in disclosing it and seeking help for any difficulties associated with it. This possibly would mean that Tramadol abuse would be a growing challenge to the mental health services and society as a whole.

In the conservative Iraqi society, it is very unusual for females to disclose a substance abuse problem and seek help for it. However, it is interesting to note that 22% of the current study sample were female (n=8) of whom three had consented to hospital admission for treatment. It is highly likely that the iatrogenic nature of the problem has significantly contributed to the ease with which these ladies and their families had accessed services and accepted recommendations including hospital admission.

Approximately 60% of the individuals included in the current sample were regarded to be educated and 47% were married. These two findings were inconsistent with the findings of the INMHS and other studies<sup>23, 24, 25</sup>. Iatrogenicity factors could also be the possible plausible explanation.

About 22 % of the sample had at least a single tonic-clonic seizure at the period of Tramadol abuse. The Risk of seizure among Tramadol use is mentioned frequently in many studies.<sup>2, 4, 13, 26</sup> In the current sample, no prior history of seizure was found in any patient who reported having experienced seizures. This is not dissimilar to what other different studies have shown.<sup>27, 28, 29</sup> No seizure was reported during the period of inpatient care on the addiction unit among our sample. This might indicate that the risk of seizure is more likely to be associated with taking high doses of the Tramadol rather than associated with the withdrawal phase.

It is highly possible that easy availability of Tramadol and its free access in medical and surgical settings have contributed to encouraging patients with health professional backgrounds - in our sample 19.4% (n=7), to take the drug without due caution leading up to becoming dependent on it. This finding was confirmed in another study.<sup>30</sup> This represents a serious problem for the health profession in Iraq which needs a proactive approach to address it.

## Conclusion

Tramadol has been freely and widely used over the last few years in Iraq and it seems that there is an emerging problem of Tramadol dependency in Baghdad as evidenced by receiving more referrals by the main addiction unit in Iraq. Our study has shown that most of the cases of Tramadol dependency included in the sample were iatrogenic. Physicians and health professionals need to be aware of the potential addictive nature of Tramadol. And finally, more in-depth discussions are needed to consider drawing a national strategy to address the problem from every aspect including free availability of and easy access to Tramadol.

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## المخلص

**أهداف الدراسة :** يعتبر عقار الترامادول واحد من أشهر المهدئات ذات التأثير الشامل- الموصوفة في العالم. لقد استخدم هذا العقار بشكل مكثف في السنوات القليلة الأخيرة في العراق. هناك دراسات متناقضة عديدة في العالم حول خاصية الإدمان على هذا العقار. سنحاول في هذه الدراسة وصف مجموعة من المرضى المعتمدين على عقار الترامادول والمحاليين إلى وحدة الإدمان الرئيسية في بغداد. **الطريقة :** لقد تم دراسة ستة وثلاثين مريضاً من المعتمدين على عقار الترامادول والمحاليين إلى وحدة الإدمان في مستشفى ابن رشد التعليمي في بغداد. لقد أخضعت العينة للدراسة المقطعية. **النتائج:** كان 78 % من العينة هم من الذكور و 22 % إناث. كانت أعمارهم تتراوح بين 16- 57 سنة ( المتوسط هو 27 سنة). كان 90 % من المجموعة معتمدون على عقار الترامادول وحده و 10 % معتمدون على عقارات أخرى بالإضافة إلى عقار الترامادول. أن حوالي 92 % من العينة قد استخدمت العقار بسبب استشارة طبية. ليس هناك تاريخ مرضي سابق من ناحية سوء استخدام الدواء عند معظم مرضى العينة. حصل ما لا يقل عن نوبة إختلاجية واحدة لدى أكثر من خمس العينة. تبين أن حوالي خمس العينة هم من العاملين في حقل الصحة. **الاستنتاجات :** أن عقار الترامادول يستخدم بكثرة وبدون تقييد في العراق. أن لدى عقار الترامادول خطورة واضحة في التسبب بإدمان دوائي والذي تبين بأنه بسبب الاستشارة الطبية في معظم حالات عينة البحث. يبدو أن إدمان عقار الترامادول هي مشكلة متنامية في العراق.

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## Levothyroxine induced mania in the setting of juvenile hypothyroidism

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الهوس الناجم عن عقار ليفوثيروكسين في نقص الغدة الدرقية الحدوثي

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### Abstract

**H**ypothyroidism is a common problem in clinical practice with diverse manifestations some of which are neuropsychiatric. Mania is commonly associated with hyperthyroidism. Only a few selected case reports mention mania as a presenting feature of hypothyroidism. We report a case of mania with psychotic symptoms in a 16-year-old Egyptian female who had no previous history of psychiatric disorder. She presented to the Endocrinology and Metabolism (EM) clinic with delayed puberty and short stature. Workup revealed primary hypothyroidism for which she was given replacement therapy and developed manic symptoms shortly after the initiation of thyroid replacement. She required both mood stabilizer and thyroxin replacement for the amelioration of her symptoms. We concluded that psychiatric assessment in approaching patients suffering from thyroid disorders is essential since the associated psychiatric disturbances might hinder adequate treatment plan for those patients.

**Key Words:** Hypothyroidism, mania, thyroxin replacement therapy.

**Declaration of interest:** None

### Introduction

Thyroid disorders are associated with a variety of affective and psychotic disorders. Although the links between depression and hypothyroidism and between mania and hyperthyroidism are well described, mania in the setting of hypothyroidism is unusual.<sup>1</sup>

Organic affective syndrome, manic type, occurring shortly after the initiation of thyroid replacement in hypothyroid patients have been reported; the first of which was unraveled by Ziegler 1931.<sup>2</sup> It was stated that psychosis, long accepted as a psychiatric presentation of hypothyroidism, could occur concomitantly with replacement therapy for hypothyroidism<sup>3</sup>.

### Case Report

A 16-year-old Egyptian female presented to the EM clinic with delayed puberty and short stature. She was 2<sup>nd</sup> in order of birth among five siblings of non-consanguineous marriage, living in Upper Egypt. Her prenatal period had passed uneventful. She had delayed motor milestones and she still had her deciduous teeth till the time of presentation. She joined school at the age of six with below average performance. When she reached 2<sup>nd</sup> preparatory, she stopped and refused to go back to school because her mates used to comment on her short

stature and she had very few friends. Since the age of eight years old, mother reported that she was not gaining adequate height compared to her siblings and peers with no evident decline in her social communication. After medical consultation, she was diagnosed as having primary hypothyroidism. Her thyroid profile revealed at that time a TSH > 75 $\mu$ IU/ ml and Levothyroxine was prescribed at dose of 50  $\mu$ gm/day.

Five days after the administration of Levothyroxine, mother noticed that the patient started to become agitated and irritable, hyperactive with decreased sleeping hours so she stopped medications completely after which the patient returned dramatically within a few days to her baseline condition.

At the age of 16 years old, the patient sought medical advice in the EM clinic, as she had not reached menarche and had not developed secondary sexual characters; however, she had not suffered from any cognitive or memory problems.

Clinical Examinations findings are listed in Table (1) and her laboratory results including thyroid profile and complete blood picture are shown in Table (2).

**Table (1): Clinical examinations findings**

Clinic examination	Findings
<b>General examination</b>	Pallor, rough complexion, puffiness of face and hands with mild non-pitting pedal edema, yellowish discoloration of teeth Height:126cm; Weight:34 kg; BMI:21.4 No signs of congenital or skeletal abnormalities.
<b>Neck examination</b>	No evidence of Goiter or neck webbing
<b>Cardiac/chest/abdominal/ Neurological examination:</b>	No abnormality detected (NAD)
<b>Tanner staging for pubertal development was P1B1 (prepubertal)</b>	
<b>She was below the 3rd percentile for her age and proportionate for her stature.</b>	

**Table (2): Lab investigations results**

Laboratory investigations	Results
<b>Thyroid profile revealed</b>	Free T4: 0.13 µIU/ ml, Free T3: 1.08 µIU/ ml, TSH: 200µIU/ ml.
<b>Complete blood picture</b>	Total leucocytes count (TLC): 4.2, Hemoglobin (HB): 10,0 Platelet: 206

**Figure (1); X-ray of left hand**



Her bone age was seven years and Fig (1) shows the X-ray of the patient's hand. Levothyroxine 50 µ gm/day was prescribed After initiation of replacement therapy, within a few days mother noticed that the patient's previous behavioral condition had recurred where she became hyperactive and hypertalkative with spontaneous laughing and self-talk. She was easily provoked with decreased sleeping hours and she neglected her self-hygiene; she was also aggressive towards her siblings, speaking to non-existing persons. Mother again stopped

Levothyroxine; however, the condition did not improve. She brought the patient for consultation and psychiatric assessment was indicated.

In psychiatric interview, mother reported that her daughter's condition usually appeared with initiation of thyroid replacement therapy and that she had no previous history of any psychiatric conditions. The patient had a positive family history of psychotic disorder in her cousin and aunt still received treatment in the form of antipsychotic and mood stabilizers (Carbamezapine).

Mental State Examination of the patient revealed poor eye-to-eye contact, uncooperativeness with hostile attitude and refusal to answer questions. Carbamezapine 200mg CR was prescribed in 600mg bid; in addition ,Levothyroxine 50 µgm daily was re-administrated with close follow up. Partial improvement had occurred regarding her agitation and aggressive behavior with better sleeping rhythm a week after starting Carbamezapine with serum level reaching 10.2 mg\dl.

Over the next two weeks, complete improvement had occurred and manic symptoms faded; serum Carbamezapine level was 8.1 mg\dl. Psychological assessment was performed after stabilization of the patient condition: verbal intelligence quotient (IQ)=78, performance IQ= 82, total IQ= 80. Endocrinology examination revealed improvement of some of the

clinical presenting features; in addition, her deciduous teeth began to change.

## **Discussion**

With the rapid advances in basic science and methodological techniques over the past 25 years, there have been dramatic changes in the concepts of thyroid hormone action in the adult brain. It is now widely accepted that thyroid hormone continues to play a critical role influencing the mood and cognition of the adult brain.<sup>5</sup>

Both hyperthyroidism and hypothyroidism are associated with changes in mood and intellectual performance. Depression is the most common affective disorder encountered in hypothyroid patients while the occurrence of mania in hyperthyroidism is more evident.<sup>6</sup>

The occurrence of mania with psychotic features has been reported following abrupt normalization; both in Grave's disease and in hypothyroid states.<sup>7</sup> Josephson and Mackenzie in 1980<sup>2</sup> reviewed 18 case reports of patients with hypothyroidism developing mania soon after the initiation of replacement therapy. In their retrospective review, the appearance of psychobiology occurred within four to seven days of therapy. This is similar to the onset of symptoms in our case, which occurred after five days in the 1<sup>st</sup> time to be given Levothyroxine and in the first week in the 2<sup>nd</sup> time. In addition, El- Kaissi et al, 2005<sup>7</sup> reported occurrence of the same condition after dose augmentation by three days.

While the average age in Josephson and Mackenzie<sup>2</sup> review was 47 years, and duration of hypothyroidism was 28 months, our patient's age was 16 years and duration of hypothyroidism was eight years. In their report, the characteristic clinical picture included the presence of psychopathology prior to the initiation of therapy, the appearance or exacerbation of psychotic symptoms within four to seven days of treatment initiation and resolution in one to two weeks irrespective of therapeutic intervention. In our case, Carbamazepine was added to Levothyroxine for stabilization of patient condition since it had been proven within her family in cousin and aunt. In addition, antiepileptic proved superior in treating secondary mania; valproic acid was avoided for fear of polycystic ovaries (POC) and menstrual disturbances as side effects since the patient had been suffering from delayed menarche originally. El - Kaissi et al, 2005<sup>7</sup> managed by temporarily halting

Levothyroxine therapy in addition to administering a Neuroleptic agent.

It is worth mentioning, as in any mental illness, that premorbid personality, family history and social factors can precipitate a psychotic illness in a patient with hypothyroidism, which is the condition in our case since the patient had a positive family history of psychosis. Antecedent data suggests a relatively high incidence of past personal and family psychiatric disorder in these patients.<sup>2</sup>

Levothyroxine treatment of hypothyroidism in rapid cyclers had been shown to decrease the severity and frequency of manic and depressive episodes.<sup>8</sup> The appearance or exacerbation of preexisting psychiatric illness after the initiation of thyroid hormone replacement is unusual. It was proposed that this phenomenon may be related to acute alteration of thyroid status rather than to thyroxin itself.<sup>7</sup>

Insights on the hypothalamic pituitary thyroid (HPT) axis and mood revealed that thyroid hormone receptors are widely distributed in the brain. Many of the limbic system structures where thyroid hormone receptors are prevalent have been implicated in the pathogenesis of mood disorders. Interactions of the thyroid and neurotransmitter systems, primarily norepinephrine and serotonin, which are generally believed to play a major role in the regulation of mood and behavior, may contribute to the mechanism of action in the developing and mature brain.<sup>9</sup>

Furthermore, within the central nervous system (CNS), the regulatory cascade through which the thyroid hormones, particularly T3, exert their effects is not well understood: deiodinase activity, nuclear binding to genetic loci and, ultimately, protein synthesis all may be involved. Other proposed mechanisms for thyroid involvement in the etiology of mood disorders include disturbances or reactive hyperactivity in the HPT axis, as manifested in the blunted thyroid stimulating hormone (TSH) response to thyrotropin releasing hormone (TRH) found in some patients with depression.<sup>10</sup>

## **Conclusion**

This case illustrates the unusual occurrence of acute mania in the setting of primary hypothyroidism in adolescence shortly after the initiation of thyroid hormone replacement therapy. It helps to throw light upon the importance of psychiatric assessment in approaching patients suffering from thyroid disorders

since the associated psychiatric disturbances might hinder adequate treatment plan for these patients.

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#### المخلص

كثيرا ما يصاحب إضرابات الغدة الدرقية إضرابات نفسية مختلفة: مثل الاكتئاب، الذهان، أو قلة في القدرات المعرفية. و من المعروف كثرة حدوث الهوس مع زيادة إفراز الغدة الدرقية و الاكتئاب مع نقص الإفراز. ويعتبر حدوث الهوس مع نقص إفراز الغدة الدرقية من الندرة التي استدعت الانتباه و المتابعة في عدة حالات كالحالة المشار إليها. الحالة لمراهقة تبلغ من العمر ستة عشر عاما تعاني من قصر القامة و عدم ظهور علامات البلوغ الثانوية و قد شخصت كحالة نقص في إفراز الغدة الدرقية أولي. و عند بدء العلاج بهرمون الغدة الدرقية عانت المريضة من أعر اض الهوس التي استدعت إعطاءها مثبتات مزاجية. و من هنا نستنتج أهمية التقييم النفسي لحالات الغدة الدرقية حتى يتسنى الوصول بالمرضي إلى الأمل في الخطة العلاجية.

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## Letter to the Editor

Dear the Editor

I read with interest Dr Razoki s paper entitled (prevalence of post traumatic stress disorder in primary school children in Baghdad-Iraq) published in the AJP vol.21,No1May 2010.The paper addresses an important issue that received concern by many western and local authors ,during 2006-2007 (Lancet Vol. 368,september 2006) (journal of Royal Society of Medicine Vol100, Sep2007) the violence in Iraq reached a peak especially in Baghdad and 4 middle governorates where death toll reached to a daily figure of 50-60 in addition to the mass killing and arrest by the invading US troops and bombardment of some towns and villages, frequent curfews, people at that time were suspicious about communicating and disclosing personal information to strangers , needless to say, to any governmental authority represented by governmental employees who were in charge of data collection from house to house and schools. the paper was derived from the Iraqi Mental Health Survey (WBA newsletter June,2009) which addressed a different figures for PTSD among the population in general, that survey was organized and supervised outside Iraq .in this paper, I like to attract attention to the following points:

1. The author did not refer to the issue of security as a limitation to his study and he did not explain how he managed to interview 600 child and asked for their families permissions in one month duration with all acts of violence in 2006, was there any military or governmental support description for the details of technique is important to mention.
2. The discussion was brief and inconclusive for such a serious issue.
3. In the conclusion it was mentioned that( the psychological impact of the current extremely violent situation in Baghdad and Iraq at large) this statement does not sound in harmony with figure like 14% and similar figure 13% in Kurdish governorate (Duhok) which was the safe heaven.
4. The author referred to the effect of three decades of wars and violence and the sample was that of 6-15 years old children.
5. In the abstract, the author explained the low figure of PTSD by coping and psychological immunization through the last 3 successive stressful and traumatizing decades which does not fir with the sample age group as children lack the coping mechanisms and most vulnerable to the effect of war and continuous acts of violence The paper admitted the urgent need to establish centers for psychological support which supposed to be already established by the same Japanese Government fund at 2003.

I feel this is very important and likely to enhance the credibility of future research about the psychological effect of 2003 US lead occupation of Iraq.

**Maha Younis -Iraq**



## مقياس السلوك الصحي لطلبة الجامعات الأردنية

احمد عبد المجيد صمادي، محمد عبد الغفور الصمادي

### Hygienic behaviors scale for Jordanian College Students

Ahmad A. Smadi, Mohammad A. Al - Smadi

#### Abstract

The study aimed to develop a scale to measure health behaviors among the Jordanian college students with good psychometric measures. To achieve this objective A 64 items were written to measure health behaviors in four domains (body care, general health care, dealing with substance and medical drugs, and psychosocial health). These items were judged by a panel of ten specialists in measurement and evaluation, counseling and psychology who decided the domain each item belong to, and items remained after that were 52. A sample of 1849 students were selected from seven Jordanian universities (governmental and private). Data were statistically analyzed, Item domain correlation were calculated using a minimum correlation coefficient of 0.29 for each item to be in the scale. Only 46 items remained in the final scale, these Items were subjected to factor analyses using principal components with varimax rotation, this procedures showed that the scale has four factors (that explains 32% of the total variance) very similar to the theoretical domain, which makes sure that the scale has construct validity. Also, the scale has been proved to have discriminant validity since it was able to distinguish between students who have a high health level and those who have an average or low health level. Also, the scale was proved to have a high internal consistency (Cronbach-Alpha = 0.87 for the total score, 0.84 for the first domain, 0.74 for the second domain, 0.75 for the third domain, 0.68 for the fourth domain). Also, the scale was proved to be externally reliable based on test-retest method ( $r = 0.79$ ). The scale includes norms to interpret the individual score.

#### المخلص

هدفت الدراسة إلى بناء أداة تقيس السلوكيات الصحية لدى طلبة الجامعات الأردنية بحيث تتمتع بخصائص سيكومترية مقبولة، ولتحقيق الغرض تم كتابة 65 فقرة تقيس أربعة أبعاد رئيسية ( العناية بالجسم، العناية بالصحة العامة، التعامل مع العقاقير والأدوية، الصحة النفس- اجتماعية). تم تحكيم الفقرات من خلال عرضها على عشرة متخصصين في مجال القياس والإرشاد وعلم النفس وبعد الأخذ بملاحظاتهم حذفنا اثنا عشر فقرة وتبقى 52 فقرة. ولتجريب المقياس على طلبة الجامعات الأردنية تم اختيار عينة مكونة من 1849 طالباً وطالبة يمثلون سبع جامعات حكومية وخاصة. أدخلت البيانات إلى ذاكرة الحاسوب وخضعت لعدة إجراءات إحصائية، حسبت معاملات ارتباط الفقرات بالأبعاد التي تنتمي إليها واعتمد معيار معامل ارتباط الفقرة بالدرجة الكلية 0.29 كحد أدنى لقبول الفقرة، أدى تطبيق هذا الإجراء إلى حذف ست فقرات بحيث تبقى لدينا 46 فقرة خضعت للتحليل العاملي مع تحديد عدد العوامل بأربعة عوامل، وكشف التحليل عن وجود أربعة عوامل مستقلة تفسر ما مجموعه 32% من التباين تتشابه مع البنية النظرية بدرجة عالية مما يؤكد بأن المقياس يتمتع بصدق البناء. كما تبين أن للمقياس قدرة تمييزية بين من تمتع بمستوى صحي عالٍ ومن تمتع بمستوى صحي متوسط أو مندني. كما كشف التحليل عن أن المقياس يتمتع بمعامل اتساق داخلي عالي (كرونباخ - ألفا 0.87) للمقياس ككل. و0.84 للبعد الأول، 0.74 للبعد الثاني، 0.75 للبعد الثالث، 0.68 للبعد الرابع. كذلك تم التأكد من الثبات الخارجي للأداة من خلال تجريبه على عينة مستقلة وبأسلوب الاختبار وإعادة الاختبار بفارق زمني مدته أربعة عشر يوماً بين مرتي التطبيق، وبلغ معامل الارتباط للمقياس ككل 0.79. كما تضمن المقياس معايير لتفسير الدرجات.

**الكلمات المفتاحية:** السلوك الصحي، مقياس أسلوب الحياة، مقياس السلوك الصحي، طلبة الجامعات.  
**الدعم:** البحث بدعم من جامعة اليرموك - الأردنية.

#### المقدمة

تعود صحة الإنسان إلى العديد من العوامل المؤثرة فيها، فبالإضافة إلى العوامل البيولوجية والبيئية يبدو أن الأسلوب الذي يعيشه الإنسان، والعادات السلوكية الصحية التي يمارسها يوماً بعد يوم تعد من المتغيرات الرئيسية والمؤثرة في حالته الصحية. ويمكن القول بأن العديد من المشكلات الصحية التي يتعرض لها الفرد تعود إلى السلوك الصحي غير السليم الذي يمارسه في حياته اليومية بجانب مسببات أخرى لا تقل أهمية عن العوامل النفسية والسلوكية. وتوصلت البحوث العلمية والطبية إلى تحديد العوامل المؤثرة في صحة الإنسان وصنفت على النحو التالي: الوراثة والبيئة والنظام الصحي أو الطبي ونمط الحياة، وهذا العامل اكتسب أهمية كبرى في الدراسات الويانية في مجال الصحة العامة، واعتبر الممارسات الصحية كالنشاط البدني، وساعات النوم، والممارسات الغذائية من العوامل المؤثرة في الصحة والمرض في المجتمعات الحديثة<sup>8</sup>.

لتحديد العلاقة بين الصحة العامة للفرد وبين بعض المتغيرات سواء البيئية الموجودة في المحيط الاجتماعي والفيزيائي، أو التي تكمن في المحيط الداخلي للفرد (النفس) ظهرت العديد من المدارس والاتجاهات العلمية والفلسفية فعلى سبيل المثال، هناك من نظر إلى الكائن الإنساني نظرة ثنائية قطبية كجسد وروح كالفلسفة الإسلامية أمثال الغزالي وابن ماجه، أو كجسد وعقل أمثال مدرسة التحليل النفسي ممثلة بمؤسسها سيغموند فرويد<sup>10</sup> كما أن هناك من نظر للكائن الإنساني نظرة كلية شمولية، أي أنه يجب

النظر للفرد كوحدة كلية غير قابلة للتجزئة أو التحليل، ويمثل هذا الاتجاه ما يعرف بالمدرسة الإنسانية التي استندت في بعض مفاهيمها للفلسفة الوجودية، ومن أبرز هؤلاء المنظرين ألفرد أدلر مؤسس مدرسة علم النفس الفردي، وكارل روجرز مؤسس نظرية العلاج المتمركز حول الفرد، وفرتز بيرل مؤسس نظرية العلاج الجشطالتي<sup>3</sup>. وهناك من نظر للفرد نظرة شمولية بحيث تتكامل فيه الجوانب العقلية مع الانفعالية مع الاجتماعية مع الجسمية، بمعنى أن أي نشاط يصدر عن الفرد هو مزيج من المكونات المعرفية والانفعالية والفيزيولوجية والحركية، ويمثل هذا الاتجاه نظرية الاختيار لمؤسسها وليام غلاسر<sup>13</sup> ونظريات النظم بمختلف مدارسها واتجاهاتها. ومن منطلق هذه النظريات الأخيرة ينظر لصحة الفرد العامة كنتاج لتكامل هذه العناصر التي تشكل الفرد كوحدة كلية متكاملة، وأن أي خلل في جانب من هذه الجوانب أو العناصر ستمتد تأثيراته إلى بقية جوانب شخصية الفرد. فالعلاقة بين هذه المكونات هي علاقة ديناميكية تفاعلية<sup>4</sup>. وبالاستناد إلى هذا المبدأ تتضح العلاقة بين الاضطرابات النفسية والأمراض الجسدية والإختلالات الاجتماعية، على اعتبار أن الفرد هو محصلة مجموعة من العناصر المتفاعلة يعيش في محيط اجتماعي متفاعلاً معه من خلال العلاقة الوظيفية، حيث يؤثر ويتأثر به<sup>5</sup>.

ويؤكد تيموثي<sup>1</sup> أن الارتقاء بالصحة ينطلق من أن الصحة الجيدة هي نتاج

وباستعراض فقرات المقياس يلاحظ الباحثان وجود عدد لا بأس به من الفقرات التي يمكن الاستفادة منها عند توظيفها مع بعض المجتمعات العربية عامة والمجتمع الأردني بشكل خاص ، وكثير من هذه الفقرات غير قابلة للتوظيف في المجتمعات العربية لعدة أسباب هي :

- 1 - بعض الفقرات متحيزة ثقافياً تركزها على بعض الأنشطة الجنسية مع المحارم.
- 2 - بعض الفقرات تقيس عادات سلوكية غير موجودة في المجتمعات العربية كمعرفة الفرد بقياسات ضغط الدم ونبض القلب ومستوى السكر في الدم وغيرها.
- 3 - بعض الفقرات متخصصة جداً لا يعرفها إلا الأطباء.

وفي جامعة كورنيل في الولايات المتحدة الأمريكية قام ديروغاتيس<sup>11</sup> بتطوير قائمة الأعراض المرضية بالاستناد إلى الأبحاث السيكمترية والإكلينيكية، تتكون الأداة من 95 فقرة في صورة تقرير خاص بالأعراض النفسية والعقلية.

تضمن المقياس الأبعاد الإكلينيكية التالية: الأعراض الجسمانية، الوسواس القهري، حساسية التعامل مع الآخرين، الاكتئاب، القلق، العداوة، قلق المخاوف المرضية، البارونيا التخيلية الذهانية. تتمتع الأداة بدرجة مقبولة من الصدق المنطقي، ودرجة معقولة من الاتساق الداخلي حيث تمتعت بأبعادها بمعاملات إتساق داخلي تراوحت ما بين 0.79 – 0.89، كما لوحظ أن المقاييس الفرعية ترتبط مع بعضها البعض. إلا أن الأداة كان قد تم تطويرها على عينات مرضية ولا تصلح للتطبيق مع الأشخاص غير المرضى. وتم تطويرها للعربية من خلال تجربتها على عينتين مرضية وغير مرضية لاشتقاق خصائصها السيكمترية<sup>2</sup>.

كما قام كل من ماكي وجيسن وجيرفس<sup>14</sup> بتطوير مقياس تقييم نمط الحياة لدى الأطفال الذين يعانون من شلل دماغي وأسره من خلال تطبيق الأداء على عينة مكونة من 691 طفلاً يعانون من الشلل الدماغي في شمال شرق إنجلترا الذين ولدوا ما بين عامي 1968-1985. وبعد تجريب المقياس وأجراء التحليلات الإحصائية لفقرات المقياس تبين أن المقياس يتمتع بخصائص سيكمترية مقبولة بحيث تجعل المقياس صالحاً لتطبيقه مع الأطفال الذين يعانون من الشلل الدماغي. يتكون المقياس من 46 فقرة تقيس: اللياقة البدنية، حرية الحركة، الأعباء المالية، الدمج الاجتماعي، الأعباء الإكلينيكية، التعليم.

وفي عام 2003 قام ايكشتاين<sup>12</sup> بتطوير نموذج مقابلة لتحديد أسلوب الحياة لدى العاملين في الخدمات الإرشادية معتمداً على نظرية أدلر والتي ركزت على أن الفرد يسعى للتغلب على مركب النقص من خلال تبني هدف خيالي. وللوصول إلى الهدف يطور الفرد أسلوب حياة من خلال تفاعله مع الأسرة، وذلك خلال الست سنوات الأولى من عمره متأثراً بترتيبه الولادي ونمط التنشئة وخبرات الطفولة المبكرة .

يتكون النموذج من عدة أبعاد وهي: الموقف الموضوعي للفرد، تقييم المهام الحياتية، تقييم السلوكيات الصحية، أسئلة تقيس الانفعالات والجو العائلي، خبرات الطفولة والمراهقة المهمة ووصف الأبوين. ولتشخيص هذه الأبعاد وضعت أسئلة بعضها تكون خياراتها محددة وبعضها تكون إجاباتها مفتوحة. خلاصة الإجابة عن جميع الأسئلة في النموذج يمكن المعالج من تشخيص أسلوب حياة العملاء.

أما فيما يخص دراسة السلوكيات الصحية وأساليب الحياة في التراث النفسي والطبي في المجتمعات العربية عامة والمجتمع الأردني خاصة يلاحظ قلة اهتمام الباحثين بهذا الميدان، لذا لم يتمخض البحث في المصادر المكتوبة العربية عن وجود أي مقياس يقيس السلوكيات الصحية وبهذه الدرجة من الشمولية، وخاصة لدى طلبة الجامعات. باستثناء دراسة قام بها عبد<sup>7</sup> لتطوير مقياس يقيس بعض أنماط السلوكيات الصحية لدى عينة الطلبة المعلمين من طلبة كلية التربية والمعلمين في كلية التربية الرياضية في جامعة أسيوط. تتكون المقياس من 43 فقرة تقيس الأبعاد التالية: عامل المرافق الصحية وعامل صحة البيئة و عامل الصحة الشخصية والنشاط الرياضي وعامل التغذية وعامل أهمية الراحة والنوم وعامل التدخين. تمتع المقياس بالصدق المنطقي والصدق التمييزي وصدق البناء، كما تمتع المقياس بمعامل ثبات إعادة كلي بلغ (0.90) ومعاملات ثبات تراوحت ما بين 0.51 – 0.94 للأبعاد الفرعية. أوصى الباحث بتطوير مقياس آخر لتعميمه على طلبة الجامعات كافة. لذا تهدف الدراسة الحالية إلى تطوير

إنجاز شخصي تراكمي، فالفرد يقوم بتطوير نظام سلوكي صحي في سنوات عمره الأولى ويحافظ عليه في مرحلتي الرشد والشيخوخة. وعلى المستوى الطبي يتضمن تعليم الفرد سلوكيات صحية، ومساعدة الأفراد الأكثر عرضة للخطر لأن يسلكوا بطريقة آمنة. ويرى علم النفس الصحي أن الارتقاء بالصحة يقوم على تطوير آلية تتدخل تهدف إلى مساعدة الفرد على تكوين وممارسة السلوكيات الصحية، وتغيير السلوكيات الضارة بالصحة. وبالنسبة للمجتمع فإن الارتقاء بالصحة يعني التركيز العام على الصحة الجيدة، وتوفير المعلومات التي تساعد الأفراد على تكوين سلوكيات صحية والابتعاد عن السلوكيات الضارة بالصحة، ويمكن أن تسهم وسائل الإعلام في نشر الوعي الصحي لدى الأفراد من خلال البرامج التثقيفية لمخاطر بعض السلوكيات غير الصحية كالتدخين، وبعض العادات الغذائية. إن موضوع الارتقاء بالصحة تطور بشكل واضح على مر السنين، ففي السابق كانت الوقاية تقوم على أساس الكشف المبكر عن الأمراض، أما في حالة غياب المرض فإن الاهتمام بالسلوك الصحي أو تطويره كان ضعيفاً. وكنتيجة حتمية لارتفاع الكلفة المترتبة عن الأساليب التقليدية في الرعاية الصحية بدت الحاجة ملحة لتطوير استراتيجيات وقائية للارتقاء بالصحة من خلال تعليم الأفراد في تكوين سلوكيات صحية منذ نعومة أظفارهم والمحافظة عليها خلال مراحل تقدم العمر.

### مفهوم السلوك الصحي

يشير السلوك الصحي إلى مجموعة السلوكيات التي يمارسها الفرد للحفاظ على مستوى صحي مناسب انطلاقاً من نظرية الاختيار ونظريات النظم، والتي تنظر إلى الصحة العامة للفرد كمحصلة لتكامل جميع جوانب الفرد الجسمية والعقلية والانفعالية والحركية. على اعتبار أن صحة الطالب هي من خلال قيام جميع أجهزة الجسم بوظائفها على أكمل وجه وألفه وانسجام<sup>6</sup>.

لدراسة الممارسات التي يقوم بها الأفراد للحفاظ على مستوى عالٍ من الصحة الجيدة سواء في الجوانب الجسدية أو النفسية ظهرت بعض المحاولات المتناثرة هنا وهناك. فعلى سبيل المثال حاول لازروس<sup>14</sup> تشخيص الاضطرابات التي قد يعاني منها الفرد من خلال نموذج خاص استند إلى نظريته في العلاج المتعدد المحاور، فقد نظر إلى أن شخصية الفرد مكونة من سبعة جوانب لخصها في ما يعرف بالهوية الأساسية (BASIC-ID)، حيث يشير الحرف B من (Behaviors) إلى السلوكيات التي يمارسها الفرد في التفاعل مع المثيرات البيئية ويشير الحرف A من (Affects) إلى الجوانب الإنفعالية والعاطفية في شخصية الفرد، ويشير الحرف S من (Sensory) إلى الإحساسات والنظام الإدراكي للفرد، ويشير حرف I من (Imaginations) إلى التخيلات والتصورات التي يطورها أو يقوم بها الفرد، ويشير الحرف C من (Cognition) للعمليات العقلية والمعرفية التي يستخدمها الفرد، ويشير حرف I من (Interpersonal) إلى علاقته مع المحيط الاجتماعي، ويشير الحرف D من (Drugs) إلى العقاقير والجوانب البيولوجية في شخصية الفرد.

استخدم لازروس نموذجاً خاصاً يقيس هذه الأبعاد عند رواد عبادته النفسية لتشخيص حالة الفرد، وفي ضوء ذلك يحدد مسار العملية العلاجية. إلا أن هذا المقياس لم يرق ليصبح مقياساً يتمتع بخصائص سيكمترية مقبولة علمياً بحيث يمكن الاعتماد عليه كأداة تشخيصية يمكن للباحثين الآخرين الاستفادة منها، وفي الولايات المتحدة قام هنلر وابلسنراث وليف غرين<sup>15</sup> بتطوير مقياس تقييم أسلوب الحياة والذي هدف إلى تقييم صحة الفرد والمخاطر التي تواجه حياته. ولتحقيق الغرض قام ببناء مقياس مكون من أربعة أجزاء: الصحة العامة وتقيسه 173 فقرة، وموضوعات لها علاقة بنمو الفرد الشخصي وتقيسه 31 فقرة، ومواجهة الفرد لخطر الموت وتقيسه 43 فقرة، وبعض المؤشرات التحذيرية الطبية والسلوكية والعاطفية وتقيسه 39 فقرة.

وبمراجعة هذا المقياس يتضح بأنه يغطي معظم جوانب الصحة العامة للفرد و يتمتع المقياس بصدق المحتوى والصدق التلازمي والصدق التنبؤي. كما تضمن المقياس درجات ثبات عالية تراوحت ما بين 0.81 – 0.97 للأبعاد الفرعية بفارق زمني مدته أربعة عشر يوماً بين مرثي التطبيق. كما تمتع المقياس بمعاملات اتساق عالية (كرونيباخ – الفا) تراوحت ما بين 0.67 – 0.94 لأبعاد المقياس. كما تبين فيما بعد أن أبعاد المقياس مترابطة مع بعضها البعض<sup>9</sup>.

وزع المقياس بصورته الأولية على عشرة من المتخصصين في مجالات القياس والتقييم والإرشاد وعلم النفس التربوي وعلم النفس اللغوي والتربية. وطلب منهم التأكد من مدى انتماء الفقرات للأبعاد التي صممت من أجل قياسها وتمثيلها، والتأكد من سلامة اللغة، وسهولة الفهم، ومدى ملاءمتها لطلبة الجامعة، واعتمد الباحثان معيار اتفاق بين المحكمين بنسبة 80% كشرط للإبقاء على الفقرة في المقياس، و أدى تطبيق هذا الإجراء إلى حذف 12 فقرة وبقي لدينا مقياساً يتكون من 52 فقرة موزعة كما يلي:

- بعد الصحة العامة وتقيسه الفقرات: 1- 11.
  - بعد العناية بالجسد وتقيسه الفقرات: 12 - 23.
  - بعد استخدام العقاقير وتقيسه الفقرات: 24 - 32.
  - البعد النفسي والاجتماعي وتقيسه الفقرات: 33 - 52.
- كُتبت جميع فقرات المقياس بالصيغة الإيجابية ووضع أمام كل فقرة تدرج خماسي نوع ليكرت بحيث أن دائماً =5 درجات، غالباً =4 درجات، أحياناً = 3 درجات، نادراً = درجتان، مطلقاً = درجة واحدة. ويمكن لدرجة المفحوص أن تتراوح ما بين 52 - 260 درجة، وكلما ارتفعت درجة المفحوص يعني أنه يمارس سلوكيات صحيحة تساعد على أن يحيى حياة طبيعية؛ بمعنى أن لديه أسلوب حياة إيجابي وصحي. قدم للمقياس بتوضيح طريقة الإجابة عن فقرات المقياس، وتم توضيح المعنى الإجرائي لكل درجة من درجات الإجابة عن فقراته. وتم التأكيد على سرية المعلومات، كما تم التأكيد بأن البيانات المتضمنة ستستخدم لأغراض البحث العلمي فقط، لذا لم يطلب من المستجيبين كتابة الاسم، وإنما بعض البيانات التي ستساعد في تصنيفها.

**الخطوة الرابعة: تجريب المقياس على عينة من طلبة الجامعات**  
لتجريب المقياس تم اختيار عدد من الجامعات الرسمية والخاصة بحيث تمثل جميع مناطق المملكة الأردنية الهاشمية (الجامعة الأردنية، جامعة اليرموك، جامعة مؤتة، جامعة البلقاء، جامعة العلوم والتكنولوجيا، جامعة آل البيت، الجامعة الهاشمية، جامعة جرش الأهلية، جامعة إربد الأهلية). وبعد الحصول على رسائل استقبال من قبل تلك الجامعات، قام الباحثان بتوزيع المقياس على عينات متباعدة من خلال تطبيق المقياس على طلبة شعب الثقافة العامة مثل: العلوم العسكرية، مبادئ الحاسوب، اللغة الإنجليزية، اللغة العربية، حيث أن هذه المساقات هي متطلبات إجبارية لجميع طلبة الجامعة بغض النظر عن تخصصاتهم، وتضم طلبة من جميع المستويات الدراسية وذلك للوصول إلى أقرب درجات التمثيل لمجتمع الدراسة، ألا وهو طلبة الجامعات الأردنية كافة والذين يصل عددهم بحدود 150 ألفاً غالبيتهم في الجامعات الرسمية. كما روعي في تحديد حجم العينة تمثيل حجم الطلبة في كل جامعة. والجدول (1) يوضح توزيع أفراد العينة في ضوء بعض المتغيرات.

الجدول (1) توزيع أفراد العينة في ضوء بعض المتغيرات

المتغير	المستويات	التكرار		النسبة المئوية	
		الفرعي	الكلية	الفرعية	الكلية
طبيعة الجامعة	حكومية خاصة علمية إنسانية	1661	1849	89.8	100.0
		188			
		1150			
المستوى الدراسي	أنهيت أقل من 40 ساعة معتمدة أنهيت ما بين 41 - 90 ساعة معتمدة أنهيت أكثر من 90 ساعة معتمدة	627	1849	33.9	100.0
		847			
		375			

**الخطوة الخامسة: التأكد من صدق المقياس إحصائياً**

#### الصدق البنائي

للتأكد من صدق المقياس أجري تحليل عاملي توكيدي مع تحديد عدد العوامل بأربعة عوامل صمم المقياس لقياسها باستخدام تقنية المكونات الأساسية (Principle components) مع التدوير المتعامد

(Varimax rotation) نظراً لاستقلالية الأبعاد عن بعضها البعض. في حال الفقرات التي تنسحب على أكثر من عامل تم تصنيف الفقرة ضمن العامل الذي ترتبط به أعلى شيء. كشف التحليل العاملي عن وجود أربعة عوامل (جدول 2).

جدول(2): تشبع الفقرات على العوامل الأربعة وارتباطه بالدرجة الكلية على المقياس

المقياس	المجالات			مضمون الفقرة	رقم الفقرة	المجال
	بعد العناية بالجسم	بعد التعامل مع الأدوية والمخاقير	بعد العناية بالصحة العامة			
0.44			0.49	أساهم في توفير الدعم الاجتماعي لمن يحتاج من أسرتي	33	البعد النفسي الاجتماعي
0.46			0.53	أحظى بالقبول التام من جميع أفراد أسرتي	34	
0.35			0.44	أعامل الناس كما أحب أن يعاملونني	36	
0.44			0.61	لدي إحساس جيد بالمرح	37	
0.45			0.62	أشعر بالرضا عن ذاتي	38	
0.48			0.64	تتمتع حياتي بدرجة مقبولة من الإثارة والنشاط والمتعة	39	
0.39			0.51	أصف حياتي العاطفية بالاستقرار	40	
0.41			0.59	لدي الثقة التامة بقدرتي على إصدار الأحكام	41	
0.39			0.53	من السهل أن أكون محبوباً من الآخرين	44	
0.45			0.61	أنا على وعي تام بجميع المشاعر التي أعيشها وأقبلها	45	
0.31			0.43	أعبر عن مشاعري بسهولة للقرابين مني	46	
0.39			0.52	أنا أتحمل نتائج جميع تصرفاتي	47	
0.46			0.58	أضع نفسي أهدافاً واقعية، بحيث يمكن تنفيذها	48	
0.46			0.60	أنتخذ قراراتي دون الشعور بالضغط أو الانزعاج	49	
0.39			0.53	أنا قادر على فهم مشاعر الآخرين وجهات نظرهم	50	
0.47			0.57	أجمع المعلومات الضرورية قبل اتخاذ أي قرار	51	
0.29		0.38		عندما أختار البروتين الحيواني فإني أتناول اللحم البيضاء والأسماك	1	
0.29		0.47		أتناول وجبة الإفطار يومياً بانتظام	4	
0.45		0.57		أكثر من تناول الخضار والفواكه الطازجة	5	
0.38		0.49		أكثر من شرب المياه النقية	6	
0.44		0.52		أنوع في الأغذية التي أتناولها	8	
0.48		0.56		أقوم بالإجراءات اللازمة عندما أعاني من أي ألم	13	
0.43		0.52		أنظف أسناني بعد تناول وجبات الطعام	14	
0.32		0.46		أحصل على حاجتي الكافية من النوم	15	
0.48		0.55		أحافظ على المستوى الطبيعي لضغط الدم	16	
0.48		0.51		أنتخذ الإجراءات اللازمة للوقاية من الأمراض المعدية	17	
0.40		0.58		أحافظ على الفحص الطبي السنوي (كل سنة)	18	
0.40		0.54		أراجع طبيب الأسنان دورياً للتأكد من سلامة أسناني	19	
0.35	0.49			أتجنب استخدام أدوات أو أغراض الآخرين الشخصية	12	بعد التعامل مع الأدوية والمخاقير
0.33	0.47			ألتجأ إلى استخدام الأدوية عند الضرورة فقط	23	
0.29	0.55			أتجنب استخدام أي نوع من التبغ (سجائر، النرجيلة)	24	
0.35	0.70			أتجنب تناول العقاقير المهدئة	26	
0.32	0.69			أتجنب تناول العقاقير المنومة	27	
0.50	0.57			أراعي بدقة التعليمات المرفقة مع الدواء؛ الذي يصفه الطبيب	28	
0.43	0.67			أتجنب الحصول على الأدوية من أشخاص غير مؤهلين لوصفها	29	
0.47	0.47			أنا على وعي تام بالأعراض الجانبية لأي دواء أتناوله	30	
0.42	0.58			أتجنب الخلط بين الأدوية دون إشراف الطبيب	32	
0.39	0.51			أحافظ على درجة من التناوب بين وزني وطولي	2	
0.34	0.54			أركز في غذائي على نسبة قليلة جداً من الأملاح البيضاء	3	
0.32	0.54			أقل من تناول الأغذية الغنية بالسكر الأبيض	7	
0.36	0.57			أتجنب المشروبات الغنية بالسكريات الحرارية	9	
0.39	0.60			أقل من الأغذية الغنية بالزيوت والدهون الحيوانية	10	
0.40	0.53			أتابع برامج التنظيف الصحي على شاشمة التلفاز	11	
0.37	0.58			أمارس الرياضة كالجري أو كرة القدم أو غيرها	20	
0.38	0.55			أمارس رياضة المشي بشكل منتظم	21	

لدينا 46 فقرة، وكان ارتباطها بالدرجة الكلية على المقياس قد تجاوز 0.29 مما يؤكد أن المقياس يتمتع بصدق البناء. كما كشف التحليل العملي أن هذه العوامل الأربعة تسفر ما مجموعه 32% من التباين (جدول3).

وبالمقارنة بين هذه العوامل الناتجة عن عملية التحليل مع العوامل النظرية والتي بني المقياس على أساسها يتبين أن التشابه بينهما يتجاوز 80% مع انتقال بعض الفقرات من عامل إلى آخر. أما بعض الفقرات التي كان تشبعها على جميع العوامل كان أقل من 20% فقد حذفت من المقياس وتبقى

جدول (3): التباين المفسر الكلي

المكون	الجذور الكامنة التمهيدية			استخلاص مجموع مربعات التشتتات			تدوير مجموع مربعات التشتتات		
	الكلي	التباين المفسر %	التباين المفسر التراكمي %	الكلي	التباين المفسر %	التباين المفسر التراكمي %	الكلي	التباين المفسر %	التباين المفسر التراكمي %
1	7.520	16.711	16.711	7.520	16.711	16.711	5.101	11.336	11.336
2	2.893	6.429	23.141	2.893	6.429	23.141	3.348	7.439	18.776
3	2.546	5.659	28.799	2.546	5.659	28.799	3.150	6.999	25.774
4	1.520	3.379	32.178	1.520	3.379	32.178	2.882	6.404	32.178

كذلك افترض الباحثان بأن الطلبة الذين يتمتعون بمستوى صحي جيد سيكون أدأؤهم على المقياس أفضل من نظرائهم الذين يتمتعون بمستوى صحي متوسط أو فما دون وبدلالة إحصائية. وللتأكد من صحة هذا الافتراض حسب المتوسطات الحسابية والانحرافات المعيارية لدرجاتهم على المقياس ككل (جدول4).

كما حسب معامل ارتباط هذه الفقرات بالأبعاد التي تنتمي إليها تبين أن جميع الفقرات تمتعت بمعاملات ارتباط معقولة ومقبولة.

### الصدق التمييزي

للتأكد من القدرة التمييزية لفقرات المقياس بين فئة أعلى 27% ممن أجابوا عن فقرات المقياس وفئة أدنى 27% ممن أجابوا عن فقرات المقياس جميعها يتبين أن جميع فقرات المقياس تتمتع بقدرة تمييزية عالية.

جدول(4): المتوسطات الحسابية والانحرافات المعيارية لدرجات الطلبة في ضوء المتغيرات

الانحراف المعياري	المتوسط الحسابي	المستويات	المتغير المستقل
0.42	2.798	جيد جداً	المستوى العام لصحتك
0.46	2.540	متوسطة	هل تعاني
0.43	2.763	لا	من أي مرض
0.45	2.636	نعم	متوسط دخل الأسرة الشهري
0.44	2.762	1-300 (متدني)	
0.43	2.756	301-800 (متوسط)	
0.43	2.738	801 فأكثر (مرتفع)	

وبدلالة إحصائية مقارنة مع من يتمتعون بمستويات صحية متوسطة أو منخفضة، مما يؤكد صحة الافتراض بأن للمقياس قدرة تمييزية.

كما أجري تحليل تباين ثلاثي للمتوسطات الحسابية في ضوء متغيرات الصحة والحالة الاقتصادية ومعاناة الطلبة لأي مرض(جدول5). يتضح من الجدول5 أن المتمتعين بمستوى صحة عالية كان أدأؤهم على المقياس أعلى

جدول(5): تحليل التباين الثلاثي لتأثير متغيرات الدراسة

الدلالة الإحصائية	ف	متوسط المربعات	درجة الحرية	مجموع المربعات	مصدر التباين
0.000	88.939	15.991	1	15.991	المستوى العام لصحتك
0.605	0.268	0.048	1	0.048	هل تعاني من أي مرض
0.272	1.302	0.234	2	0.468	متوسط دخل الأسرة الشهري
		0.180	1844	331.547	الخطأ
			1848	349.684	الكلية

المتوسط وربما يحتاجون للتنقيف الصحي، الدرجات التي هي دون 93 لديهم سلوك صحي ضعيف وبالتأكيد يحتاجون للتنقيف الصحي.

### الاستنتاج

نظراً لخلو المكتبة العربية من أداة تقيس السلوكيات التي تجعل الفرد يتمتع بصحة جسدية ونفسية بحيث يتمتع بخصائص سيكومترية عالية تؤدي بزيادة الثقة في نتائجها، جاءت هذه الدراسة، حيث تم تطوير أداة مكونة من 64 فقرة، وبعد تحكيمها من قبل المتخصصين تبقى منها 52 فقرة وزعت على عينة من طلبة الجامعات الأردنية الحكومية والخاصة ومن مختلف مناطق الأردن. وبعد حساب معاملات ارتباط الفقرات بالأبعاد التي تنتمي إليها واعتماد معيار معامل ارتباط الفقرة بالدرجة الكلية 0.29 كحد أدنى للإبقاء عليها، وبعد تطبيق الإجراء حذف ست فقرات وتبقى 46 فقرة أخضعت للتحليل العاملي والذي كشف عن وجود أربعة عوامل تناظر العوامل التي صمم على أساسها المقياس مما يؤكد أنه يتمتع بصدق البناء. كما كشف التحليل عن أن المقياس يتمتع بقدرة تمييزية بين من يتمتع ولأغراض الإرشاد. ويمكن أن يعطى بشكل جماعي وبشكل فردي ويمكن أن يستخدم مع الطلبة في جميع الجامعات الأردنية وفي كافة المناطق وللذكور والإناث على حد سواء ودون تمييز. ويوصي الباحثان بتطوير المقياس على مراحل عمرية أدنى كطلبة المرحلة الثانوية والتعليم الأساسي وطلبة كليات المجتمع.

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### ثبات المقياس

للتأكد من الاتساق الداخلي للمقياس ككل ولأبعاده الفرعية استخدمت البيانات واستخرجت معاملات كرونباخ- ألفا للمقياس ككل ولأبعاده الفرعية التي يتكون منها المقياس تبين أن المقياس قد تمتع بدرجة عالية من الاتساق الداخلي (كرونباخ-ألفا=0.87)، كما تمتعت أبعاده الفرعية بدرجات اتساق داخلي مقبولة. (0.84) للبعد الأول، 0.74 للبعد الثاني، 0.75 للبعد الثالث، 0.68 للبعد الرابع). وانخفاض معامل الاتساق الداخلي يفسره قلة عدد الفقرات في هذا البعد، حيث بلغت عدد فقراته ثمانية فقرات.

### ثبات الإعادة

للتأكد من الثبات الخارجي للأداة وزعت الأداة بصورتها النهائية على عينة ثبات (54) طالباً وطالبة من كلية التربية في جامعة اليرموك في الأردن، ثم أعيد توزيعها عليهم مرة ثانية بعد مرور أربعة عشر يوماً، ثم حسبت معاملات الارتباط بين مرتي التطبيق على الأداة ككل وعلى الأبعاد الفرعية للأداة. كشفت نتائج التحليل أن معامل ارتباط بين مرتي التطبيق كان (0.79) للمقياس ككل، 0.81 للبعد الأول، 0.79 للبعد الثاني، 0.75 للبعد الثالث، 0.78 للبعد الرابع) وهذه قيم مقبولة لأغراض البحث.

### تفسير الدرجات

لتفسير الدرجات على المقياس فقد تم استخراج المتوسط الحسابي للدرجة الكلية على المقياس والذي بلغ 124، كما استخراج الانحراف المعياري لدرجات المفحوصين والذي تبين أنه 20 درجة. وفي ضوء ذلك يمكن تفسير الدرجات كما يلي:

الدرجات التي تتجاوز 135 فأكثر لديهم سلوك صحي جيد جداً  
الدرجات التي تتراوح ما بين 114 - 134 لديهم سلوك صحي متوسط  
ومقبول، الدرجات التي هي دون 94 - 113 لديهم سلوك صحي دون

## Hygienic behaviors scale

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### ملحق: مقياس السلوك الصحي

الرقم	الفقرة	دائماً	غالباً	أحياناً	نادراً	مطلقاً
1.	عندما اختار البروتين الحيواني فإنني أتناول اللحوم البيضاء والأسماك*					
2.	أحافظ على درجة من التناسب بين وزني وطولي					
3.	أركز في غذائي على نسبة قليلة جداً من الأملاح البيضاء					
4.	أتناول وجبة الإفطار يومياً بانتظام					
5.	أكثر من تناول الخضار والفواكه الطازجة					
6.	أكثر من شرب المياه النقية					
7.	أقل من تناول الأغذية الغنية بالسكر الأبيض					
8.	أنوع في الأغذية التي أتناولها					
9.	أتجنب المشروبات الغنية بالسكريات الحرارية					
10.	أقل من الأغذية الغنية بالزيوت والدهون الحيوانية					
11.	أتابع برامج التنقيف الصحي على شاشة التلفاز**					
12.	أتجنب استخدام أدوات أو أغراض الآخرين الشخصية					
13.	أقوم بالإجراءات اللازمة عندما أعاني من أي ألم					
14.	أنظف أسناني بعد تناول وجبات الطعام					
15.	أحصل على حاجتي الكافية من النوم					
16.	أحافظ على مستوى طبيعي من ضغط الدم					
17.	أأخذ الإجراءات اللازمة للوقاية من الأمراض المعدية					
18.	أحافظ على الفحص الطبي السنوي (كل سنة)					
19.	أراجع طبيب الأسنان دورياً للتأكد من سلامة أسناني					
20.	أمارس الرياضة كالجري أو كرة القدم أو غيرها					
21.	أمارس رياضة المشي بشكل منتظم					
22.	أستمع بسماع الموسيقى يومياً					
23.	ألجأ إلى استخدام الأدوية عند الضرورة فقط***					
24.	أتجنب استخدام أي نوع من التبغ (سجائر، نرجيلة)					
25.	أتناول القليل من المشروبات الغنية بالكافيين (قهوة، شاي، كولا).					
26.	أتجنب تناول العقاقير المهدنة					
27.	أتجنب تناول العقاقير المنومة					
28.	أراعي بدقة التعليمات المرفقة مع الدواء الذي يصفه الطبيب.					
29.	أتجنب الحصول على الأدوية من أشخاص غير مؤهلين لوصفها.					
30.	أنا على وعي تام بالأعراض الجانبية لأي دواء أتناوله					
31.	أنا ممن يبحثون عن الطب البديل كالمعالجة بالأعشاب					
32.	أتجنب الخلط بين الأدوية دون إشراف الطبيب					
33.	أساهم في توفير الدعم الاجتماعي لمن يحتاج من أسرتي***					
34.	أحظى بالقبول التام من جميع أفراد أسرتي					
35.	أمارس المطالعة سواء من الكتب أو الانترنت					
36.	أعامل الناس كما أحب أن يعاملونني					
37.	لدي إحساس جيد بالمرح					
38.	أشعر بالرضا عن ذاتي					
39.	أتمتع حياتي بدرجة مقبولة من الإثارة والنشاط والمتعة					
40.	أصنف حياتي العاطفية بالاستقرار					
41.	لدي الثقة التامة بقدرتي على إصدار الأحكام					
42.	لا مانع لدي من البكاء عند الإحساس بضرورة ذلك					
43.	أنا ألق بالآخرين					
44.	من السهل أن أكون محبوباً من الآخرين					
45.	أنا على وعي تام بجميع المشاعر التي أعيشها وأقبلها					
46.	أعبر عن مشاعري بسهولة للقرابين مني					
47.	أنا أتحمّل نتائج جميع تصرفاتي					
48.	أضع لنفسني أهدافاً واقعية بحيث يمكن تنفيذها					
49.	أأخذ قراراتي دون الشعور بالضغط أو الانزعاج					
50.	أنا قادر على فهم مشاعر الآخرين ووجهات نظرهم					
51.	أجمع المعلومات الضرورية قبل اتخاذ أي قرار					
52.	أحافظ على القيام بالمعابدات المختلفة					

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## رسالة رئيس التحرير

الزملاء والزميلات الأفاضل

إنه من دواعي سروري تقديم المجلد الثاني والعشرين من المجلة ، إن الجهد مستمر لرفع مستوى المجلة، وتشجيع الباحثين العرب على الكتابة فيها وبالتالي تبادل المعرفة والخبرة بين الأطباء النفسيين العرب وأطباء العالم.

إن المجلة قد أصبحت متوفرة على الموقع الإلكتروني منذ عام 2008 بحيث تتوفر في الموقع وعلى الورق في وقت واحد.

أقدم جزيل شكري وامتناني لكل من أسهم بإرسال البحوث، والمحكمين الذين لا يبخلوا علينا أبداً في تقييم البحوث للنشر.

لقد خطى إتحاد الأطباء النفسيين العرب خطوات هامة على مدار العقدين الماضيين والأمل كبير أن يتسارع التقدم في المستقبل.

رئيس التحرير

وليد سرحان



## تعليمات للباحثين

تصدر المجلة العربية للطب النفسي منذ عام 1989 عن إتحاد الأطباء النفسيين العرب في الأردن. وتصدر المجلة مرتين في السنة. في شهر مايو (أيار) وشهر تشرين ثاني (نوفمبر) إلكترونياً و ورقياً. الأوراق المرسله قد تكون بحوثاً أصيلة، مراجعات، وكذلك الأوراق التي تصف الممارسة العملية للطب النفسي، وتقبل الأوراق على أنها خضعت للمعايير الأخلاقية والقانونية المحلية والدولية. و أن لا تكون قد نشرت في السابق وتقبل باللغتين العربية أو الإنجليزية مع ملخص باللغتين، ترسل الأوراق لرئيس تحرير المجلة.

### ترسل الأوراق بالبريد الإلكتروني على أن تشمل:

- عنوان الورقة (لا يزيد عن 40 حرف)، ويكون بالإنجليزية والعربية، وتكون أسماء الباحثين بلا ألقاب أو عناوين وباللغتين.
- ملخص باللغة الإنجليزية (لا يزيد عن 200 كلمة). ويجب أن يتبع شكلاً منظم أ (الأهداف، الطريقة، النتائج، الاستنتاج). وي تبعه الملخص العربي حسب نفس الترتيب
- يتبع الملخصين الكلمات المفتاحية (لا تزيد عن 5).
- الإعلان عن أي دعم أو تضارب في المصالح بعد الكلمات المفتاحية.
- الأسماء الكاملة للباحثين وألقابهم وعناوينهم، وعنوان الباحث المرسل تكون في نهاية الورقة.
- الشكر على الدعم والإرشاد لأشخاص يكون لهم أسهام في انجاز البحث تضاف بعد المراجع.
- الصفحات يجب أن تكون مرقمة.

### الجدول

يجب طبع الجداول بمسافات مضاعفة وعلى صفحات خاصة وترقم بالأرقام (1،2،3) وتعطى أسماء مختصرة.

### الصور

الصور التوضيحية يجب أن تكون بضعف الحجم الذي ستظهر به بالطباعة.

### قائمة المراجع

يجب اتباع أسلوب فان كوفر بحيث تظهر أرقام المراجع في النص، ترتب المراجع بتسلسل حسب ظهورها في النص وليس حسب الحروف الأبجدية.

- إذا كان هناك مراجع عربية وأجنبية تكتب بتسلسل واحد بداية بالمراجع العربية ثم المراجع الأجنبية. مثال:
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