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عمان تشرين ثاني / نوفمبر 2016

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Editorial

Culture and Mental Health*

M. Fakhr El-Islam

الثقافة المجتمعية والصحة العقلية

محمد فخر الاسلام

Abstract

Culture has major inputs that influence the development of mental ill health, the features suggesting mental illness, the restoration of mental health and rehabilitation of people with mental illness. Early adequate compensation for deprivation of parental care prevents the development of mental ill health in childhood and the vulnerability to mental ill health in adulthood. Social support by the family neutralizes the adversity of everyday life stresses on various family members, contributes to the development of collective egos and integrates sick members in the family in spite of their mental impairment

The majority of people in the Arab world who experience mental illness have somatic symptoms in the foreground of their illness and reveal emotional symptoms only after mental health workers interview them. Although somatic symptoms are considered more serious and worthy of medical attention, emotional symptoms suggest weakness of personality or weakness of faith. Behavioral symptoms, on the other hand, may be attributed to supernatural agents in traditional cultures. Psychometric investigation yields useful information on mental health only after its standardization on the population investigated. Only culturally competent mental health workers can successfully understand people with mental illness in any community and contribute to the unwitting partnership between traditional and professional help for them.

Key words: Culture, mental health, aetiology, pattern, management

Declaration of interests: None

**Margaret Mead memorial lecture, World Federation of Mental Health XXth World Congress, Cairo, 16-19 October 2015.*

Culture and genesis of mental ill-health

Culture consists of a system of community beliefs and attitudes associated with traditional practices that are trans-generationally continued.[1] Religion is an important constituent of culture. Culture is subject to transgenerational change.

It has inputs into the definition and measurement of mental health and the pattern and management of mental ill health.

In some cultures loss of parental care is followed by early adequate compensation by other parent figures, e.g. from the extended family. This saves children the adverse effects of parental care deprivation on their mental health as children and as adults. The uncompensated deprivation of paternal care in childhood was overrepresented in comparison to maternal care deprivation in a study of narcotic drug dependent adults admitted to a psychiatric hospital in Egypt where the father is culturally held to represent the disciplinary control figure in the family.[2]

Marriage between cousins, which is still condoned in many cultures, reinforces genetic factors involved in predisposition to severe mental disorder. The rates of marriage are reduced in people with schizophrenia in Western cultures where spouses are joined by a love relationship. However, in cultures where family elders arrange most marriages the Western findings were not echoed.[3]

Social support by family members in traditional cultures neutralizes many stresses in everyday life, which could lead to mental ill health. The family in traditional societies is a resource that helps members to cope with threats to, or loss of their security without falling ill in return for their pious dutifulness to the family wellbeing.[4] Intergenerational cultural conflict was not associated with any significant excess of psychiatric symptoms in members of either generation but with excess of professional psychiatric help-seeking as the normal family support was reduced by conflict.[5] In the face of everyday life stresses traditional family support neutralizes potential adversity and preserves the mental wellbeing of all family members.

Cultural inputs in definition and measurement of mental ill health

Signs of severe mental disorder are defined against the cultural background of the community.[6] In the absence of objective evidence from the external reality individual experiences are considered delusions or hallucinations only if they are not shared by the culture as supernatural beliefs or perceptions respectively. Therefore, mental health workers should have the cultural competence that helps to decipher culturally shared from culturally-alien experiences of their service users.

Socially-disinhibited behavior is also defined by transgression of the culturally-shared code of conduct. Legislation in various cultures separates social deviance from mental ill-health as the former calls for application of the penal system while the latter calls for mental health restoration by psychological and psychiatric interventions.

Coping with stresses of everyday life involves the use of the culturally-shared belief system or faith for self-regulation in order to avoid or minimize mental disorders. This could involve invocation of spiritual figures or culturally shared ritual performance.[7]

Psychometric assessment of individual differences in mental functioning is most frequently carried out using tools designed in Western cultures. In transcultural application of these tools the language equivalence of test items may be difficult to establish. This is particularly the case in culture-dependent measurements of verbal abilities and social behavior. The so called culture-free tests depend on abilities developed during childhood and maturation in different cultures. Raven's progressive matrices test, which is widely reputed as culture-free, depends on pattern completion which is better developed in children who have jig-saw puzzles and/or domestic wall paper that help them to exercise their spatial abilities. Before the employment of psychiatric tests for measurement of mental functioning they should be standardized on every population where they are tried in order to yield reliable and valid measurements.

Cultural inputs in symptom pattern in mental ill health

Three main groups of symptoms express mental illness: somatic, emotional and behavioral. Somatic symptoms occupy the front of symptoms in most traditional communities. They are considered more serious and more worthy of attention by others and the patients cannot be responsible for having them. Although they are frequently attributed to physical ill health, symptoms of loss of health may be attributed to envy by evil eyes of others who are not as healthy as the envied person.[9]

Emotional symptoms on the other hand such as anxious or depressed mood may be culturally attributed to weakness of personality or to weakness of faith.[10] The latter may have serious consequences in the depressed by further lowering of their self-esteem. Patients with emotional symptoms are unable to pull themselves together and indulgence in faith or stoicism cannot cure them.

Behavioral symptoms are frequently attributed to supernatural agents that can have an adverse influence on patients' behavior. Supernatural agents, e.g. demons or bad spirits could act spontaneously in order to punish patients, e.g. for transgression of cultural taboos or non-observance of dutiful filial piety. However, some patients and families attribute disturbed behaviors to malicious employment of supernatural agents by others in the form of black magic or sorcery.[9, 10]

In traditional cultures somatic symptoms call for medical consultation whereas emotional and behavioral symptoms call for the help of faith or traditional healers' rituals. The latter practices may be sought prior to, concurrently with or after failure of the former.[8]

The impact of culture on functional impairment in people with mental illness

The sick role is supported by culture in most communities. However, in traditional cultures the sick person remains integrated in the family and his/her functional role obligations are taken over by other family members. This underlies the better outcome of serious mental disorder in developing than developed countries[11] and the better outcome for patients living in extended than nuclear families.[12] Life in extended families where a number of nuclear families share the same household, i.e. structural extended families have largely been replaced by functional extended families with frequent contact of several nuclear families within the same clan of relatives. This has been made possible by recent information technology, e.g. contact by mobile phone communication in addition to frequent visits by nuclear families to each other in traditional societies.

The pivotal role of the family in caring for people with mental illness

Decision taking on various life issues is the function of the family in relation to the healthy and sick among family members in traditional communities. Individual decision-taking is a very infrequent practice. The family decides on sharing in business, housing and arranging marriage as well as on illness behavior in relation to physical and mental ill-health of family members.[13] With recent sociocultural changes in some traditional societies people with mental illness are abandoned by their families to the care of old mental institutions.[14]

Culture in traditional communities replaced the dyadic professional patient-doctor relationship of Western countries by a triangular professional patient- family-doctor relationship.[4] The family chooses professional helpers, pays for treatment expenses and ensures the adequacy of after-care and rehabilitation. Key family members meet the psychiatrist before interviewing a patient with severe mental illness in order to provide information which they cannot divulge in the patients' presence. The family members meet the psychiatrist again after interviewing the patient in privacy, in order to seek information on how to deal with the patients' state of health and specifically to receive advice on how to deal with the patients within the family bounds. In order to preserve confidentiality of the information provided by the patient to the psychiatrist in the dyadic interview the psychiatrist interviews a key relative jointly with the patient and asks the patient to pass on to the relative the information provided to him/ her by the psychiatrist.[4] In the virtual absence of public welfare services in traditional

societies, the family remains the most invaluable, and often the only, welfare resource.

When a psychiatrist is informed about the intention of family members to seek traditional healers' help it is better to leave this to the choice of the patients themselves. The psychiatrist instructs the family to allow no physical harm to patients, e.g. by beatings or cautery by traditional healers, to continue the medication prescribed and to allow patients to receive no herbal treatment from traditional healers because some herbs are toxic.[8]

Psychiatrists and traditional healers of mental ill health

The unwitting partnership between psychiatrists and traditional healers has been the subject of review in traditional cultures.[15] The former adapt global psychiatric medicine to the local culture of their patient and the latter employ the culture they share with the mentally ill and their families. The helping traditional rituals are practiced by the patients and their families at the same time. This reinforces patients' integration as the treatment offered is considered equally appropriate to both the sick and the healthy.

Traditional healers reinforce the projection of responsibility for illness on supernatural objects. Psychiatrists, on the other hands, try to undo this projection as they encourage the patients to hold themselves responsible for their thoughts, feelings and actions. Culture-competent psychiatrists encourage people with mental illness to employ culturally shared beliefs for self-help, e.g. by invocation of god(s), prayers or self-regulation.

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الملخص

للصحة العقليه تأثرات بالثقافة السائدة فى المجتمع التي تحدد مظاهر الصحة والمرض واستعادة الصحة بعد المرض وتأهيل المضطربين نفسياً. فقد لوحظ أن قيام الأسرة بتعويض نقص الرعاية الوالديه مبكراً بكفاءة يقى الفرد من آثار هذا النقص فى الطفولة وفي الكبر. كذلك فان الدعم الاجتماعي الذي تقوم به الأسرة نحو كل عضو فيها يقاوم ويعادل كثيراً من ضغوط الحياة التي قد تحدث كرباً بالفرد ويحتوي المريض وغير القادر من المرضى النفسيين فى كيان الأسرة دون عزلهم عنها بسبب اضطراب قدراتهم النفسية وعجزهم عن كسب قوتهم.

يظهر المرض النفسي فى أغلب المرضى بأعراض بدنية في المقدمة بينما تكون الأعراض الوجدانية في المؤخرة في المجتمعات التقليدية حيث تحظى الأعراض البدنية بالاهتمام الأكبر من جانب العامة والمعالجين على حد سواء بينما تعتبر الأعراض الوجدانية دليلاً على ضعف الشخصية أو ضعف الايمان . أما اضطراب السلوك فيعزى في المجتمعات التقليدية إلى عوامل غيبية تتدخل في حياة الانسان. وتهدف الاختبارات النفسية إلى قياس الوظائف النفسية المختلفة ولكنها تتأثر بالمجتمع الذي صممت فيه هذة الاختبارات ولا يمكن ان تكون صادقة او يعتمد عليها في مجتمع آخر إلا إذا خضعت للتقييم والتطبيع في كل مجتمع طبقاً لثقافتة المجتمعية. ولابد لكل مهتم بالصحة العقلية أن يكون على دراية تامة بالثقافة المجتمعيه في المجتمع الذي يعمل فيه حتى يكون كفئاً لرعاية وتأهيل من تضطرب وظائفهم العقلية.

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Identification of Arab Men and Women with Oppressive Patriarchal Practices

Camelia Ibrahim and Marwan Dwairy

تماهي الذكور والإناث العرب مع الممارسات البطركية القامعة

كميليا إبراهيم ومروان دويري

Abstract

Identification with the oppressor is a coping mechanism applied in many individual and collective contexts of oppression. The objective of the present study was to investigate the application of this mechanism in Arab society, which is characterized as collective, authoritarian, patriarchal, and traditional. We administered the Identification with Oppressive Practices Scale (IOPS) to 549 adolescent and adult Arabs in Israel. Factor analysis of the scale revealed three factors: (a) protecting the family good name and honor (NH), (b) cross-gender relationships (CG), and (c) social functioning (SF). In support of our hypothesis, our results show that the vast majority of adult men and women (81.6%) and a tiny majority of adolescent boys and girls (51.8%) adopt oppressive attitudes. Arab women adopt more oppressive attitudes toward themselves than toward men, and men adopt less oppressive attitudes toward themselves than toward women. The most oppressive attitudes of both genders concern NH, followed by CG. Both men and women adopt less oppressive attitudes concerning SF. It seems that the road map of change starts with adolescents and women in SF, conditioned by protecting the family name and honor and keeping cross-gender relationships within the bounds of propriety and under control. This is the first quantitative research that studied the phenomenon of identification with the oppressor among Arab men and women. Individual differences and more quantitative and qualitative research studies are needed in other Arab societies.

Keynote words: Identification with the oppressor, Arab, Muslim, patriarchy

Declaration of interest: None

Introduction

Although the notion of the mechanism of identification with the oppressor is frequently attributed to Anna Freud,[1] it was mentioned almost 600 years earlier by the Arab philosopher and sociologist Iben Khaldun.[2] In his remarkable book Al Muqaddimah (Introduction), he introduced his sociopolitical theory about the oppression dynamic between people and social groups. He noted that people who are oppressed tend to imitate the oppressor, because an individual's soul always sees perfection in the person who is superior to him or her and to whom he or she is subservient. Many years later, Anna Freud described the manner in which identification with the oppressor operates as one of the ego's tools, which is used to protect the self from hurt and disorganization.[1] Freire[4,5] added a sociopolitical dimension concerning the manner in which this mechanism helps victims of social and political oppression to survive the oppression.

As have many other societies, Arabs have lived for decades under the external oppression of Western colonialism and the internal one of authoritarian values and norms, and therefore, many individuals or groups are expected to identify with the oppressor in order to survive within the interdependent system. They identify with the family, even when it is oppressive, and even justify familial oppression.[5]

Arab society: Collective, authoritarian, patriarchal, and traditional

The vast majority of Arabs are Muslims, with small minorities of Christians, Druze, and others. Much has been written about the main characteristics of the Arabic culture. The major four characteristics are that it is collective, authoritarian, patriarchal, and traditional.

(a) ***Collective****:* Relationships are inter-dependent and the individual's autonomy, freedom of choice, and self-actualization are sacrificed for the best interests and harmony of the collective.[5-9] Despite the dominance of the collective lifestyle, with its norms, values, customs, and way of thinking, Arab/Muslim societies are exposed to Western cultures and their liberal-political system,[5] and therefore, many Arabs and Muslims adopt some individualistic values and act in their own interest, regardless of the family interest.[10]

(b) Authoritarian*:* All individuals, men and women, young and adult, are expected to obey the collective norms and values or must expect to be punished by rejection, loss of family support, corporal punishment, and, in the case of some women, by death for the sake of what is called protecting the honor of the family.[11] As a result of the collective/authoritarian system, the personality of Arab adults is dependent and enmeshed in a collective identity.

(c) Patriarchal*:* The men are dominant and expected to enforce the rules among women and the young. As Johnson[12] expressed it, patriarchy is a social system that operates by creating privilege and oppression, where all members of the society, men and women, have roles in enforcing and preserving this privilege and oppression. Patriarchy also is rooted in Arab and Muslim societies, as it is deeply entrenched in these societies' practices, values, and hierarchical structure. Women are located in an inferior position; they are controlled, oppressed, dependent, submissive and carry the burden of preserving the good name and the "honor of the family".[13-,16] They usually conform to the modesty codes to obtain respect and appreciation.[17] As a result of this structure, many behaviors that are encouraged in the case of men are not encouraged or are forbidden in the case of women, such as smoking, sleeping outside the home or village, choosing some types of professions or jobs, social and political activities, or remarrying after the spouse's death. In general, the choice of a spouse and marriage are considered a family rather than a personal matter in which men have the last word.

(d) Traditional*:* The collective norms stem mainly from the Arabic traditional heritage and Islamic teachings. Apart from the teachings concerning praying and other obligations of believers, the Islamic teachings, Sharia'a, include detailed directives concerning a Muslim's behavior in daily social and personal life. These directives limit the relationships between men and women and control cross-gender relationships. Since the Islamic revolution in Iran in 1979, an intense debate has been running in all Arab societies between modernization and fundamentalism. Much of this debate addresses the Hijab (scarfing) of women and modest clothing and the behavior of men and women in public. Some consider Hijab, which means a thing that hides or separates, an issue of religious rule, but others see it as an expression of the power relationship between men and women.[18, 19]

Within this debate, many behaviors, such as not fasting during Ramadan, women's smoking, wearing shorts, mixed gender meetings or parties, women working and studying at a distance from their village, and the social and political activity of women, may carry a connotation of permissiveness, non-belief, disrespect, or damage to the family honor. However, there are some buds of change in the other direction in terms of resistance to the patriarchal and religious hegemony,[20-22] in particular among the new generation. Typically, agents of this

change bargain with the patriarchy and religion in a gentle way without threatening the social system.[23]

Arabs in Israel as a transitional culture exposed to Israeli and Western cultures

After the Nakbah (the catastrophe) in 1948, more than 750000 Arab Palestinians were expelled from their homeland and became refugees outside their homeland. About 500 Palestinian villages and towns were destroyed during and after 1948, and the 15% of Palestinians who remained and became citizens in Israel became a minority in their homeland.[24] They have lived for two decades under the military Israeli regime and continue to suffer discrimination as Israeli citizens. As Arabs, they maintain their traditional and collective culture and at the same time, they are exposed to the Western lifestyle as a result of Western hegemony in the world and by daily contact with Jewish society. This exposure to the Western life style has affected, selectively, the Arab Palestinian Israeli citizens on a micro and macro sociological level: Arabs have adopted many of the Western norms in some aspects of their lifestyle, in particular in education and business. Seemingly, these changes in the societal structure have weakened the collective structure of the society and the power of the Hamula and the extended family. These changes are still limited because of the discrimination against Arab citizens,[25] which places much of the burden of living on the family rather than on the state and therefore maintains its traditional role.[5]

Dwairy[5] identified several social coping mechanisms that are needed in order to adapt to the Arab collective and authoritarian system: Mosaiara (getting along with others), Istighaba (expressing authentic feelings and attitudes while at a distance from social control), and identification with the oppressor. Many scholars have mentioned that Arab women identify with the oppressive values and norms of the Arab culture and internalize their sense of inferiority.[23,26,27] To the best of our knowledge, no empirical research has been conducted on identification with the oppressive values and norms in the Arab society. The objective of the present study was to examine the identification of Arab adolescent and adult women and men with several practices that limit the individual's freedom of choice in the Arab-Palestinian society in Israel. We hypothesized that: (a) Arab women, as well as men, adopt the patriarchal attitudes that abuse the individual right of both genders, (b) adolescent Arabs adopt less oppressive attitudes than do adults, and (c) both Arab men and women adopt more oppressive attitudes toward women than toward men.

Method

Sample

The Identification with Oppressive Practices Scale (IOPS) was administered to 549 Arab men (n=265) and women (n=284) of which n=217 were adolescents and n=332 were adults; all were students, teachers, or parents recruited in three Arab high schools in Israel. After receiving the parents' consent according to the rules, the IOPS questionnaire was administered to the students in their classes and they passed it to their parents. Only 18% of the parents did not return the questionnaire. The age of the students was 16-17 years and the average age of their parents was 39.78 years, with a standard deviation of 8.5. Only 18.9% of the respondents had not finished high school, while 32.8% had a high school education and the remaining 48.3% had obtained a higher education, including a master's (11.5%) and a PhD degree (1.2%).

Measures

Identification with Oppressive Practices Scale (IOPS)

The IOPS was developed to identify oppressive practices in Arab society. In order to identify the practices and norms that oppress an individual's freedom and

discriminate against Arab women, we presented two questions to four groups of Arabs: "What are the practices or norms that oppress the individual and limit the individual's freedom?" and "What are the practices that oppress the Arab woman and discriminate between males and females in the Arab society?" Participants listed several practices on a sheet of paper. In order to give practical meaning to the items collected and understand how adolescent and adult Arabs' experience these oppressive practices, four Arab professionals (two psychologists and two educational counselors) each conducted separately one of four group discussions centered on the items listed. Two groups consisted of male (n=20) and female (n=16) adolescents aged 16-17 years and two groups consisted of male (N=12) and female (N=16) adults (teachers and masters degree students).

The four professionals then served as judges and each selected separately 20 items that appeared to be the most oppressive and discriminating practices against Arab women. Then, at a meeting of the judges, 16 items were selected that obtained the agreement of at least three of the four judges. The items selected were as follows.

1. The freedom of male or female adolescents to choose their clothes regardless of the normative costume.
2. The freedom of male or female adolescents to socialize with their male and female friends at night.
3. The freedom of male or female adolescents to choose their profession.
4. The right of male or female adolescents to work and earn their living independently.
5. The right of males or females to work outside the village or city.
6. The right of male and female adolescents to organize mixed birthday parties with their male and female friends.
7. The right of male or female adolescents to have an intimate girlfriend or boyfriend, respectively, before marriage.
8. The right of male or female adolescents to live and learn outside the village or city.
9. The right of males or females to choose their spouse.
10. The right of men or women to actively take part in social organizations and political parties.
11. The right of male or female adolescents to smoke in public places.
12. The right of male or female adolescents to drink alcohol.
13. The right of widows or widowers to remarry.
14. The freedom of male or female adolescents to challenge the "family honor."
15. The freedom of male or female adolescents to challenge family expectations.
16. The freedom of male or female adolescents to damage the family reputation.

The judges, who were fully conversant with Arab society and its norms and practices, discussed the best way to express these issues in words. They agreed on the following rules:

When the issue is related to right or freedom of choice, the items should be worded in terms of "Having the right to …" (The girls have the right to choose their profession or career).

When the issue is one of challenging the family, the items should be worded in terms of self-control (Boys should avoid spending time together with their male and female friends at night), or self-responsibility (Women have the duty to actively take part in social organizations and political parties).

When the issue is crucial and typically generates a difficult confrontation with the family, the items should be worded in terms of "the family or society has the right

to prevent or punish." (The family has the right to prevent a girl from living and studying outside her village or city).

Each issue was worded in both female and male terms and therefore the final questionnaire consisted of 32 items. Participants were asked to rate their level of agreement between 1= totally do not agree and 4= totally agree. The scores of the items that were worded in terms of male or female rights were reversed, such that a higher rating for all the items indicated greater oppression.

In order to test the internal consistency of the scale, a Chronbach's alpha test was conducted and the value was found to be high: α=.83. In order to test whether some of the 16 items of each gender merge together in one factor, a principal factor analysis with a varimax rotation and a .20 loading criterion was conducted on the sixteen items of each gender. The results revealed three parallel factors explaining 47.1% and 50.4% of the variance for males and females, respectively (Table 1). We labeled the three factors protecting the name and honor of the family (NH), social functioning (SF), and cross-gender relationship (CG).

Table 1. Factor analysis loadings of IOPS items

		Male items			Female items		
Item	Label	F #1	F #2	F #3	F #1	F #2	F #3
An individual who smokes in public places damages his/her name and the family name	NH	.22	**.47**		**.67**		.23
When an individual's spouse dies he/she should take care of the children and not remarry		.22	**.45**	-.35	**.61**		
An individual who damages the family honor should be severely punished			**.71**		**.71**		
The family has the right to punish an individual who has challenged its expectations			**.74**		**.71**		
Society should ignore an individual who has damaged his/her name and the family name			**.71**		**72**		
The family has the right to punish an individual* who drinks alcohol			**.72**		**72**		.22
An individual should avoid wearing unacceptable clothes	CG			**.71**			**.79**
Young individuals should avoid staying up at night with their friends outside the home.		.21	.23	**.52**	.25	.21	**.57**
The family has the right to prevent young individuals from arranging a mixed male and female birthday party		.24		**.53**		.32	**.53**
The family has the right to prevent young individuals from having a boyfriend or girlfriend before marriage		.22	.32	**.55**	.23		**.67**
**An individual has the right to choose his/her profession	SF	**.73**				**.73**	
**An individual has the right to work and earn his/her own bread		**.79**				**.76**	
The family has the right to prevent an individual from working outside his/her village		**.75**				**.66**	.22
The family has the right to prevent an individual from studying and living outside the village		**.65**	.21			**.58**	.23
**The final word in choosing a spouse belongs to the individual		**.52**				**.52**	
**An individual should take part actively in NGO's and political parties		**.51**		-.22	.21	**.58**	
% Explained variance		19.9	16.9	10.3	20.1	18.2	12.1

*Individual means male or female

** Items that were reversed to assess oppression

Interestingly, the items concerning smoking, alcohol, and the remarrying of widows/widowers were merged in the NH factor, together with items concerning family honor, name, and expectations. In addition, the item concerning unacceptable dress was merged in the CG factor with items related to cross-gender relationships. The SF factor contained items related to personal decisions in life, such

as studying, working, choosing a spouse, and social and political involvement.

The variance explained by the factors (47.1% and 50.4%) indicates that much of the items' variance of the whole scale is shared, and therefore, the sum of the scores of all the items, General Oppression (GOpp), indicates a general oppression that extends across the three factors.

Results

For each subject, we calculated eight scores of oppression: NH-f and NH-m, which are the mean of six items of NH toward females and males, respectively; CG-f and CG-m, which are the mean of four items of CG toward females and males, respectively; SF-f and SF-m, which are the mean of six items of SF toward females and males, respectively; and GOpp-f and GOpp-m, which are the mean of sixteen items of GOpp toward females and males, respectively.

The mean scores of GOpp of males and females toward males and females were all above 2 (Table 2). Those who adopted such an oppressive attitude constituted 71.9% of all respondents. The vast majority of adult men and women (81.6%) and a tiny majority of adolescent boys and girls (51.8%) adopted oppressive attitudes, with a GOpp score above 2 with almost equal gender division.

In order to test the gender and age differences in GOpp toward males and females, we conducted a multiple analysis of variance with repeated measures of GOpp (Gender*Age*Target's gender of GOpp) and found that the attitude of Arab men (M=2.35, SD=.52) is more oppressive than that of women (M=2.22, SD=.50): ($F(1, 531)=16.39$, $\alpha=.0001$, $Eta^2=.030$). This significant gender difference in the attitude toward oppression was maintained in reference to both females and males (Table 2).

Table 2. Means and standard deviations of oppression according to gender and age

	All N=531	**Females N=276**	**Males N=255**	**α Gender**	**Young N=210**	**Adult N-322**	**α Age**
GOpp-f S.D.	2.38 .54	2.29 .53	2.48 .55	.0001	2.21 .59	2.49 .48	.0001
GOpp-m S.D.	2.18 .47	2.14 .46	2.22 .48	.048	2.02 .53	2.28 .40	.0001
GOpp S.D		2.22 .50	2.35 .52	.001	2.11 .49	2.39 .51	.0001
α target's gender	.0001	.0001		Interaction .0001	.0001		Interaction n.s.

Results demonstrate that the attitude of adult Arabs (M=2.38, SD=.43) is more oppressive than that of adolescent Arabs (M=2.10, SD=.56): ($F(1, 531)=53.03$, $\alpha=.0001$, $Eta^2=.090$), and that the oppressive attitude toward females (M=2.38, SD=.54) is stronger than that toward males (M=2.18, SD=.47): ($F(1, 531)=116.62$, $\alpha=.0001$, $Eta^2=.181$). This significant difference in the

oppressive attitude toward males and females was maintained among males and females when tested separately (Figure 1).

In addition, a significant interaction was found between the respondents and the target's gender (($F(1, 527)=13.01$, $\alpha=.0001$, $Eta^2=.024$): the most oppressive attitude was of males toward females (M=2.48, SD=.55) and the least was of females toward males (M=2.14, SD=.46). No significant interaction was found between the respondents' age and the target's gender: the same trend of attitudes was found between both the adolescent and adult respondents (Figure 1).

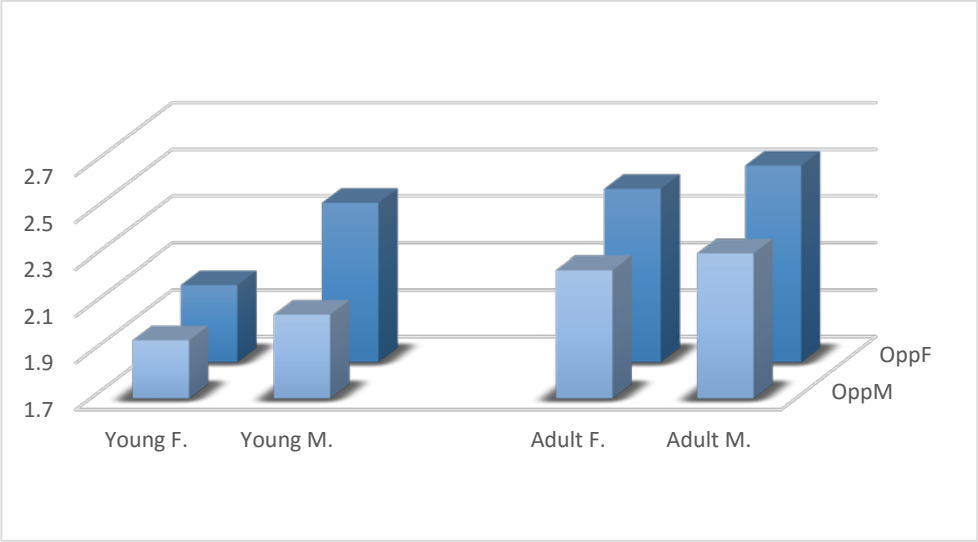

Figure 1. General oppressive (GOpp) attitudes of adolescent and adult males and females toward males and females

Issues of oppression:

The results indicate that the attitudes adopted by Arab men and women are most oppressive in issues related to family name and honor (NH), second most oppressive in items related to cross-gender relationships (CG), and least oppressive in items related to social functioning (SF).

In order to examine gender and age differences in each factor of oppressive attitudes toward males and females, we conducted three multiple analyses of variance with repeated measures of NH, CG, and SF factors (Gender*Age*Target of oppression's gender) and found the same significant gender and age differences in NH and CR oppression: the attitudes of Arab males are more oppressive than those of females, Arab adults' attitudes are more oppressive than those of adolescents, and the oppressive attitude toward females is stronger than that toward males. As for SF oppression, we found that the attitude of Arab males is more oppressive than that of females, and that the oppressive attitude toward females is stronger than that toward males; however, no significant difference was found between the SF of adolescent and adults (Figure 2).

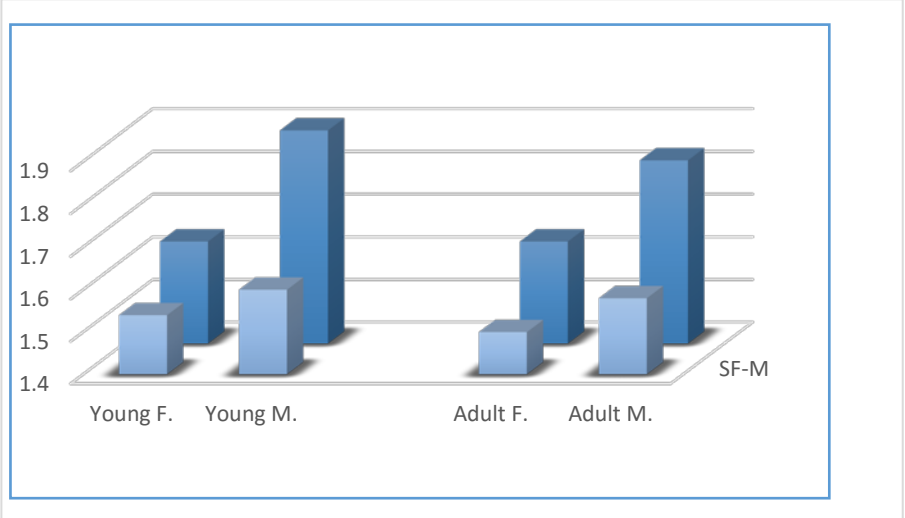

Figure 2. Social functioning (SF) oppressive attitudes of adolescent and adult males and females toward males and females

Cluster analysis

A two-step cluster analysis was conducted and found two clusters among the respondents: oppressive respondents (39.5%) who adopted high levels of oppressive attitudes in all three factors toward males and females and moderate respondents (60.5%) who adopted moderate levels of oppressive attitudes.

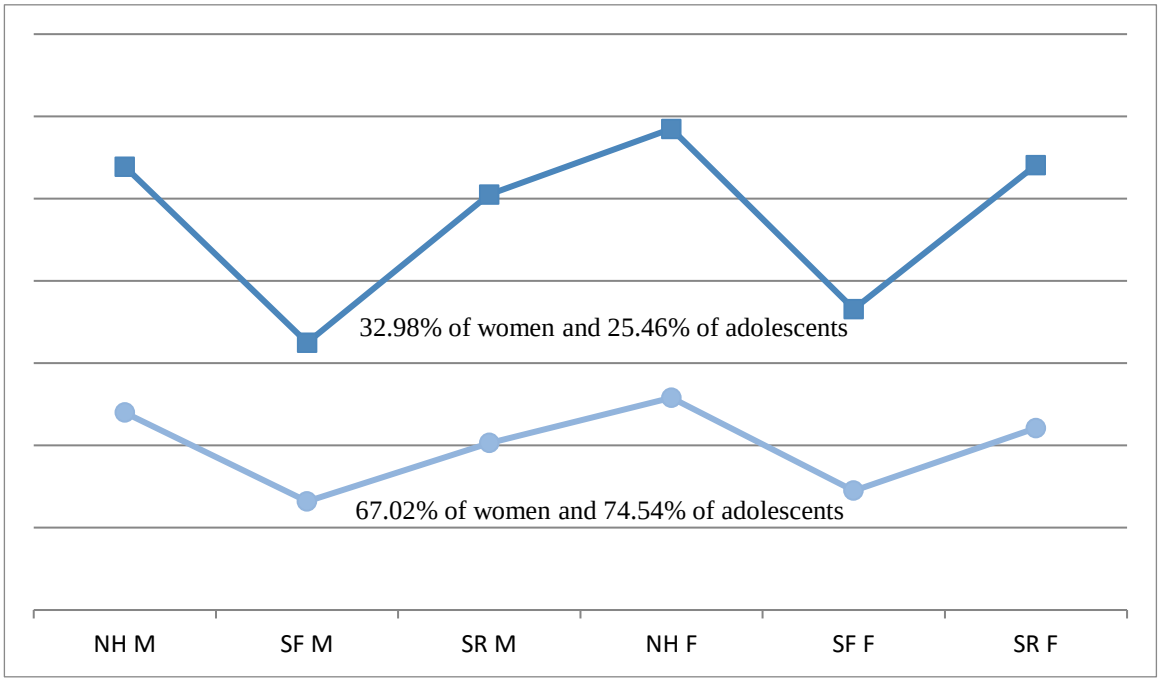

Figure 3. Oppressive (squares) and moderate (circles) clusters

Figure 3 shows that the majority of the respondents had a moderate oppressive attitude profile: 67.02% of females and 52.54% of males [Chi-square (1) =11.58, α=.0001], and 74.65% of adolescents and 51.20% of adults [Chi-square (1) =30.19, α=.0001] adopted a moderate profile.

Discussion

The objective of the present study was to investigate the attitudes of Arab adolescent and adult males and females toward oppressive norms and practices. The IOPS proved to be a reliable scale and revealed three factors of oppressive attitude concerning (a) protecting the family name and honor (NH), (b) cross-gender relationships (CG), and (c) social functioning (SF) (Table 1). Interestingly, the NH factor contained items concerning the choice of drinking alcohol and the right of widows/widowers to remarry, together with items of protecting the name and honor of the family. It seems that among the majority of Muslims in Arab society drinking alcohol is strongly associated with the religious and traditional image of the family rather than with abusing health, losing control, or personal respect. In addition, the remarrying of widows/widowers, in particular of widows, seems to be an act that challenges the traditional family concept, where the parenting role overrides (or precedes) personal choices and rights. Islamic rules may help explain the association between the remarrying of Muslim widows/widowers and the family name and honor. According to these rules, if a widow remarries, she immediately loses the guardianship of her children, which moves automatically to the father's

family,[28] whereas if she remains unmarried and is loyal to these rules she gains her offspring and enjoys the economic support of the husband's family.[29]

The CG factor contained, unexpectedly, the item concerning wearing unacceptable clothes, together with the items of cross-gender relationship, indicating that immodest dress is associated with temptation and a permissive attitude toward cross-gender relationships. This association is in agreement with the opinion of many scholars, who considered the Hijab to be associated with the political and power relationship between Arab men and women.[18, 19].

The items merged in the SF factor were clear and included the individual's right to choose his/her occupation, profession, study, spouse, and political activity.

We hypothesized that Arab women, as well as men, adopt the patriarchal attitudes that abuse the individual rights of both genders. Indeed, our results show that the vast majority of adult men and women (81.6%) and a tiny majority of adolescent boys and girls (51.8%) adopted oppressive attitudes, with a GOpp score above 2 and with almost equal gender division. Despite the collective structure of the personality/self[8] and the adolescent-family connectedness among Arabs,[7,30] we found a noticeable difference between the adults and adolescents' oppressive attitudes, with those of adults being stronger, which seems to be related to the modernization process through which the new generation is passing.[25]

The most oppressive attitudes of both genders concerned the family name and honor (NH), followed by cross-gender relationships (CG). Both men and women adopt less oppressive attitudes concerning social functioning (SF). These results indicate that the modernization process within Arab society is selective; it is accepted in the areas of education and work, but not in that of moral essential issues that threaten the family and tradition.[25] The results also indicate that Arab women still carry the burden of protecting the good name and the "honor of the family" and that their identification with patriarchal attitudes remains strong.

In support of our hypothesis, we found that Arab adolescent boys and girls are adopting less oppressive attitudes than adult men and women, indicating a cross-generational change (Table 2). In addition, unlike the significant differences found between adolescents and adults in NH and CG oppression, no age difference was found in SF oppression, indicating that both adolescent and adult Arabs tolerate personal freedom in the choice of occupation, profession, study, spouse, and political activity (Figure 2). Our results verify that the Arabic culture in Israel is passing through a selective modernization process because of the daily exposure to Western influences in which the acquisition of an education and the choice of work become acceptable for both the old and new generation.[25]

Despite the fact that the majority of adults adopt oppressive attitudes, with a score above 2, we found that the majority of Arabs, in particular adolescents (74.54%) and women (67.02%) were clustered in the moderate cluster (Figure 3), indicating that adolescents and women are leading a significant change toward moderation. The most obvious change is noticed in adolescents' SF. It seems that the road map of change in SF starts with adolescents and women, conditioned by defending the family name and honor and keeping the cross-gender relationships within the bounds of propriety and under control. This represents buds of change among the new generation in terms of resistance to the patriarchal and religious hegemony.[20,21,22]

In support of our hypothesis, our results show that men adopt more oppressive attitudes than women and that the oppressive attitude toward women (M=2.38, SD=.54) is

stronger than that toward men (M=2.18, SD=.47) (Table 1). Arab women adopt a more oppressive attitude toward women than toward men, and men adopt a less oppressive attitude toward men than toward women. Finally, the most oppressive attitude is that of men toward women (M=2.48, SD=.55) and the least is that of women toward men (M=2.14, SD=.46).

Despite the fact that the men remain the primary guards of the Arabic patriarchal system and enforce their rules among women and the young, at the end both men and women are sharing the mission of maintaining the patriarchy. These results agree with those of Johnson[12] who claimed that both men and women have roles in maintaining and preserving the privilege and oppression of the patriarchy. Indeed, our results show that the female attitudes mirror the male attitudes in all oppression issues, giving strong evidence of the submission and the active part taken by women in maintaining the patriarchal system (Figure 1). Assuming that the respondents reported their genuine beliefs and attitudes, the very oppressive attitudes of women indicate a process of identification with the oppressor. At the same time, we can note, in contrast to Butler's thesis[20] who claimed that women have only two ways to face patriarchy - confrontation or conformity, that Arab women make changes, selectively, within the borders of the tradition. They seem to accept the oppression in relation to issues where opposition may exact a heavy price, but they bargain with the patriarchy and the religious tenets in a gentle way, without threating the social system.[23] Given the psycho-cultural conditions of Arab women, identification with the oppressing attitudes is a wise way to protect themselves from external rejection or punishment on the one hand and internal helplessness and depression on the other. Clearly, they pay a price in terms of denial and distortion of the inner and outer reality, but they benefit from the illusion that they are in harmony with themselves and with their families.[3,4]

In summary, the present study showed that patriarchy is still deeply entrenched in the Arab society's practices and values. Although the attitudes of adolescents and adult men and women toward oppressive norms and practices show identification with the oppressor, they differ according to the degree to which the issue is related to the honor and the good name of the family. Buds of change are noticeable among adolescents, but the results show that women are still located in an inferior position; they are controlled, oppressed, dependent, and submissive[13-16] and they carry the burden of protecting the good name and the "honor of the family."

To the best of our knowledge, this is the first quantitative research among Arabs that indicates the process of identification with the oppressing norms among Arab women and men in social and personal issues. In agreement with the results of Freire's studies[3,4], our findings indicate that the psychosocial mechanism of identification with the oppressor operates in the patriarchal Arab society in Israel.

To the best of our knowledge, this is the first empirical research on identification with the oppressing norms in Arab society. It was based on a self-report questionnaire. The results should be validated and the picture needs to be completed using qualitative methods. In addition, our sample, although sufficiently large, consisted of a selective Arab population in Israel. More research is needed in other Arab populations in the Middle East and North Africa, as well as cross-cultural research among other Western and non-Western cultures in the world. Still another question that needs to be studied is: What are the personal, familial, and social characteristics that may predict the level of identification with the oppression versus confronting it?

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ملخص

التماهي مع القهر هي دفاعية نفسية تجري في عدة سياقات قمع فردية وجماعية. هدف هذه الدراسة هو بحث تطبيقات هذه الدفاعية في المجتمع العربي الذي يتميز بأنه جماعي، سلطوي، بطركي، وتقليدي. تم توزيع مقياس التماهي مع الممارسات القامعة على 549 من الذكور والإناث من المراهقين والبالغين العرب في إسرائيل (فلسطينيي 48). تحليل العوامل للمقياس أفضى إلى 3 عوامل: أ) حماية اسم العائلة وشرفها(NH) ، ب) العلاقات بين الجنسين(CG) ، ج) الأداء الاجتماعي (SF) تمشيا مع فرضية البحث دلت النتائج على أن الغالبية الساحقة من الرجال والنساء (81.6%) وغالبية ضئيلة من المراهقين والمراهقات (51.8%) يتبنون مواقف قامعة لحرية الفرد. الإناث العربيات تبنين مواقف قامعة تجاه أنفسهن بدرجة تفوق مواقفهن القامعة تجاه الرجال. المواقف القامعة الأعلى حدة كانت في مجال اسم العائلة وشرفها تليها المواقف المتعلقة بالعلاقة بين الجنسين. كلا الرجال والنساء تبنوا المواقف الأدنى قمعاً بما يتعلق بالأداء الاجتماعي. يبدو أن خارطة الطريق نحو التغيير تبدأ بالمراهقين والإناث في الأداء الاجتماعي شريطة الحفاظ على اسم العائلة وشرفها وإبقاء العلاقات بين الجنسين ضمن الاحتشام اللائق وتحت السيطرة. هذه الدراسة الكمية هي الأولى التي بحثت ظاهرة التماهي مع القهر لدى الذكور والإناث العرب. هناك ضرورة لبحث الفوارق الفردية وإجراء أبحاث كمية وكيفية في بقية المجتمعات العربية.

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Burnout, Perceived Stress and Coping Styles among Nurses at a Tertiary Care Hospital in Muscat

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الاحتراق النفسي، وإدراك الكرب، و أسلوب التعامل بين الممرضين بمستشفى الرعاية الطبية الثالثة في مسقط بسلطنة عمان.

عبدالله النبهاني ، حمد السناوي ، الصلت التوبي

Abstract

Background: Burnout and stress are major factors that can affect employee performance. Both can decrease work performance and customer service and lead to higher chances of acquiring medical illness, such as hypertension or anxiety disorders. **Objective:** Nurses working at a tertiary care hospital were assessed for stress and burnout levels and their coping styles for dealing with these were examined. **Methods:** A cross-sectional design, the present study recruited nurses from a variety of hospital units in Muscat, Oman. Out of 310 questionnaire forms, 276 were fully completed. Three measures were used: Maslach Burnout Inventory (MBI), Perceived Stress Scale (PSS) and a shortened version of the Coping Inventory for Stressful Situations (COPSS). **Results:** N=276 participated in the study (*n*=39 men, *n*= 237 women). Burnout and perceived stress were higher among nurses in surgical wards compared to nurses on other wards. The difference was significant ($p<0.05$). Marital status did not have any significant impact on the level of burnout. Task oriented coping style was the most used method to cope with stress, but there was no significant difference between different wards in term of the method of coping with stress. **Conclusion:** It is important to address the problem of high stress and burnout levels in surgical, medical and obstetrics/gynecology wards. Anticipation of the effects of burnout and stress with active screening programs are better than waiting for the unwanted effects. Moreover, nursing administrators are advised to implement proper channels to help nurses who feel overwhelmed and burnt out and to formulate programs that teach nurses skills to cope with ongoing stress.

Keywords: stress, burnout, nursing, Oman

Declaration of interest: None

Introduction

The term burnout was used first in 1940s. Initially, it described the point where a mechanical or a jet engine stopped operating because of over-heating and overload due to extensive usage.[1,2] Then, during the 1970s, an American Clinical Psychologist, Herbert Freudenberger, used the term to describe the mental and emotional status of overwhelmed and overworked volunteers in mental health clinics.[3] He defined it as 'a progressive loss of idealism, energy, and purpose experienced by people in the helping professions as a result of the condition of the work'.[3]

Other researchers have defined burnout as a spectrum of conditions that varies from a mild degree of unhappiness to a more severe form of fatigue and or depression.[4] Marie *et al.*[5] defined burnout as 'an inability to cope with emotional stress at work or as excessive use of energy and resources leading to feelings of fatigue and exhaustion'.

A widely accepted definition was introduced by Maslach, a social psychologist and prominent figure in burnout research. She defined burnout as '"a syndrome of three

components: (1) emotional exhaustion (depletion of emotional resources to contact other people), (2) depersonalization (negative feelings and cynical attitudes toward the recipient of one's services or care) and (3) reduced personal accomplishment (a tendency to evaluate oneself negatively, particularly with regard to work)'. [6]

Although there is an overlap between the symptoms of burnout (especially depersonalization and emotional exhaustion) and depression (fatigue and exhaustion), the two terminologies are not the same. Compared to depression, people high in burnout make more vital impressions and are able to enjoy things aside from work related. They rarely lose weight or exhibit suicidal thoughts. Overall, burnout is more work-related whereas depression is free of context.[6]

Some studies have shown that burnout is more associated with certain professionals,[6] which require human interaction, such as doctors, nurses, teachers, social workers and policemen.[1,6] Among healthcare professionals, nurses were reported to have the highest risk of developing burnout.[1,6] This could be explained by several factors, such as heavy work load, the pressure of taking care of multiple patients at the same, doing shift work and the constant fear of acquiring infection from patients. Other factors, such as constant demands from the patients and their physicians, the aggressive behavior of some patients, the lack of clear work responsibilities and the unsupportive work environment, also play a role.[6]

Not all individuals who work in the same environment develop burnout. This is because some risk factors related to the person or work places play a major role in burnout development. [2] These factors can be categorized into work environment related factors, demographic variables and personality traits.

Work environment risk factors include work overload, lack of control over one's work, different work values, poor support from peers and supervisors and injustice and lack of fairness in the work place.[2] Demographic risk factors for burnout include: young age, being single, and having a high level of education.[2] Certain personality traits have been linked to burnout development. These are having low self-esteem, perfectionism, impatience and extreme conscientiousness.[2]

Medical literature shows that the impact of burnout is multidimensional. There are physical, social, mental and interpersonal manifestations of burnout.[2,7] The most noticeable impact of burnout is the reduction of work performance and decrease in service quality.[6] Due to prolonged exposure to emotional, mental and physical exhaustion, the motivation of the vulnerable individual will diminish gradually and the workers will not be able to keep up with work demands. Moreover, the frequency of absenteeism, sick leave, job dissatisfaction and the wish to leave the job will increase.[6]

Methods

The current study uses a cross-sectional design. Nurses from eight hospital units in Muscat, Oman were invited to participate. Questionnaires were distributed by head nurses in the eight wards/departments. Out of 310 questionnaires distributed, 276 were fully completed. The collected demographic data included gender of the participant, nationality (Omani, non-Omani), age, total years of working as a nurse, number of years working as a nurse, location of work in the hospital (ward/ department), transportation method (own car or public transport) and marital status. Consent was obtained from each participant. The name and staff number of each nurse was not obtained in order to keep all participants anonymous. All assessment measures used were in English.

Measures

Three measurement scales were used: the Maslach Burnout Inventory (MBI), the Perceived Stress Scale (PSS) and a shortened version of the Coping Inventory for Stressful Situations (CISS).

Maslach Burnout Inventory (MBI)

The MBI has three different versions: human services survey, general survey and educator survey. In the current research the human services survey was used to measure burnout among nurses.[7,8,9] The MBI is widely regarded as the tool of choice for measuring burnout syndrome.[7,8] The tool was designed to measure three different dimensions of burnout – namely, personal accomplishment (PA), depersonalization (DP), and emotional exhaustion (EE). The inventory is comprised of 22 statements that pertain to one of the subscales mentioned. Burnout is considered a continuous variable, ranging from low to moderate to high degree of experienced feeling. It is not viewed as a dichotomous variable with either present or absent.[9] High degree of burnout is reflected by high scores on EE and DP subscales and low scores on the PA. Likewise, low degree of burnout is reflected by low scores on EE and DP and in high score on PA. It is important to note that each subscale is interpreted separately, and the scales are not combined to produce a total score.[9]

Perceived Stress Scale (PSS)

The PSS was used to measure a person's level of stress. The scale has 10 different statements. It was published in 1983 and is one of the most widely used psychological instruments for measuring nonspecific perceived stress.[10] Some studies linked high scores of PSS, indicative of chronic stress, with alteration in biological markers of ageing, immune markers and wound healing.[11]

Coping Inventory for Stressful Situations (CISS)

The CISS consists of 21 items measuring three coping dimensions. Firstly, the task oriented dimension (seven items) deals with the problem at hand. Secondly, the emotion oriented dimension (seven items) concentrates on the resultant emotions. Thirdly, avoidance oriented subscale (seven items) illustrates attitudes of trying to avoid problems.[12]

Ethical consideration

The current study was approved by the Ethics Committee at the College of Medicine and Health Science, Sultan Qaboos University. The contact number and email address of the researchers were provided in each questionnaire to enable participants to contact for any further inquiries or to seek psychiatric professional help if needed.

Data analysis

Data were inputted using Epi Data Software (version 3.1) and exported to the Statistical Package for the Social Sciences – Version 16 (SPSS v. 16.00) for analysis. The operating computer software was Windows 7. Descriptive statistics were presented as percentages; and arithmetic mean was calculated at two standard deviations. P values below 0.05 were considered significant.

Results

The distribution of participants in the study is shown in Table 1. The majority of the participants were from surgical wards (27.2%) followed by obstetrics and gynecology wards (21%) and medical wards (18.5%). The lowest number of participants was from ICU and psychiatric wards.

Table 1. Distribution of participants into different wards/departments

Ward	Medical	Surgical	ICU	Pediatric	Psychiatry	A&E	FAMCO	Obs/Gyn	Total
Frequency	51	75	11	18	11	21	31	58	276
Percentage	18.5	27.2	4	6.5	4	7.6	11.2	21	100

ICU: Intensive Care Unit. A&E: Accident and Emergency. Obs/Gyn: Obstetrics and Gynecology. FAMCO: Family Department

As shown in Table 2, the mean value of PA for overall nurses was 35.06 (SD= 6.14), which reflects moderate levels of PA. Likewise, mean for EE was in the moderate range of moderate, but the mean for DP was low.

Table 2. Mean and standard deviation of Personal accomplishment, Emotional Exhaustion and Depersonalization

	Personal Accomplishment	Emotional Exhaustion	Depersonalization
Mean	35.06	20.07	5.97
Std. Deviation	6.14	14.72	7.13

Table 3. Categories of Maslach Burnout Inventory (MBI) percentage scores according to wards

		Depersonalization			Emotional Exhaustion			Personal Accomplishment		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Place	Medical									
		18.20	23.40	14.60	23.30	15.80	12.80	33.30	14.70	11.10
	Surgical									
		22.10	38.30	35.40	21.80	31.60	32.60	33.30	23.50	26.30
	ICU									
		5.00	2.10	2.10	3.00	3.50	5.80	2.70	7.80	1.00
	Pediatric									
		6.60	2.10	10.40	4.50	7.00	9.30	2.70	5.90	10.10
	Psychiatric									
		3.30	4.30	6.20	3.80	7.00	2.30	0.00	5.90	5.10
	A&E									
		4.40	12.80	14.60	4.50	3.50	15.10	1.30	12.70	7.10
	FAMCO									
		14.40	4.30	6.20	13.50	10.50	8.10	16.00	7.80	11.10
	OBS/GYN									
		26.00	12.80	10.40	25.60	21.10	14.00	10.70	21.60	28.30

Table 3 shows that the highest level of emotional exhaustion and depersonalization was found in surgical wards (32.6%, 35.4%) followed by medical (12.8%, 14.6%) and obs/gyn wards (14%, 10.4%). Similarly, low personal accomplishment was higher among nurses in surgical and medical wards (both 33%). Evaluated by the Maslach Burnout Inventory subscales, the differences between different wards in the hospital were significant. For depersonalization the *p* value was = 0.011; for emotional exhaustion and depersonalization the *p* values were = 0.034 and 0.001, respectively.

Table 4. Slightly higher and much higher than average perceived stress level in different wards and departments

		Perceived Stress Groups		
		Slightly higher than average	Much higher than average	Total
Medical	% within Perceived stress groups	19.30%	17.20%	18.50%
Surgical	% within Perceived stress groups	33.00%	20.70%	28.10%
ICU	% within Perceived stress groups	1.10%	8.60%	4.10%
Pediatric	% within Perceived stress groups	8.00%	1.70%	5.50%
Psychiatric	% within Perceived stress groups	4.50%	1.70%	3.40%
A&E	% within Perceived stress groups	3.40%	20.70%	10.30%
Famco	% within Perceived stress groups	9.10%	17.20%	12.30%
Oby/Gyn	% within Perceived stress groups	21.60%	12.10%	17.80%
	Count	88	58	146
***p*=.001**				

Similar results have been found for the distribution of perceived stress level among nurses in different wards with indicated a significant difference (Table 4). The highest level of stress (28.1%) was on surgical wards followed by nurses at medical and obs/gyn wards (18.5% and 17.8% respectively). The lowest percentage of perceived stress was found on the psychiatric ward (3.4%, *p*=0.001).

Table 5. Mean burnout level according to age groups

	< 35 years (mean)	> 35 years (mean)	*p* value
Personal accomplishment	136.36	140.35	0.67
Emotional exhaustion	157.95	121.68	0.0001
Depersonalization	156.45	122.98	0.0001

Table 5 shows that burnout is higher among younger nurses and this is true for EE and DP. There was a significant difference in EE and DP (p = 0.0001 for both) between the two age groups.

Table 6. Mean rank of perceived stress level according to age group

Age group	<35 years	> 35 years	*p* value
mean rank	151.85	126.95	0.01

Like burnout level, perceived stress was higher among younger nurses with significant difference between the two age groups (p=0.01), as in Table 6.

Table 7. Perceived stress distribution, (lower than average) according to marital status

Marital status	Stress lower than average group	*p* value
Married	78.8%	0.584
Single	17.5%	
Divorce	1.8%	
Widow	1.8%	

As shown in Table 7 married nurses have lower than average stress levels compared to single nurses. However this is not statistically significant (*p*=0.584).

Table 8. Mean and standard deviations of the Coping Inventory for Stressful Situation (CISS) (N=276) among ward nurses

Ward	Task oriented, Mean (SD)	Emotion oriented, Mean (SD)	Avoidance oriented, Mean (SD)
Medical	27.2 (5.1)	19.5(3.6)	21.8(4.6)
Surgical	26.9 (4.2)	19.9(3.96)	21.8(5.4)
ICU	26.8 (3.9)	23.7(6.19)	23.2(5.7)
Pediatric	28.5 (4.0)	19.2 (3.8)	22.5 (7.0)
Psychiatric	25.4 (4.1)	18.0(3.9)	21.0(3.3)
A&E	25.3(3.9)	19.7(4.1)	21.9(4.9)
FAMCO	26.3(4.87)	21.1(4.0)	22.3(5.5)
Obs/Gyn	27.4(3.5)	19.7(3.6)	22.5(4.8)
***P* value**	0.358	0.023	0.962

All three categories of coping styles were present in different departments (Table 8). Task oriented coping methods were the most commonly used followed by avoidance and emotion oriented methods. There was no significant difference between wards in terms of the method used to cope with stress apart from emotional oriented coping methods where the *p* value was = 0.023.

Discussion

Among working people, stress is considered a common problem. As a consequence, chronic emotional distress can lead to burnout which has a negative impact on the level of achievement, satisfaction rate of the worker and the patients.[1] Nursing is a profession with high stress levels.[1] The occupation is associated with a variety of stressors, such as constant demands from patients and physicians, shift work, pressure of taking care of multiple patients and different nursing management styles.[1,6]

Our study attempts to measure the level of burnout, stress and the ways nurses cope with stress. The current study showed that the highest level of burnout (reflected by high emotional exhaustion, depersonalization and low personal accomplishment) was in surgical wards, followed by the medical and obs/gyn wards. This finding was to some extent similar to the result of a Canadian survey from 1999, which had a sample size of 6500 nurses. The Canadian survey showed that the highest level of burnout was among nurses in the emergency department followed by nurses on medical-surgical wards.[13]

The reason behind the high level of stress on surgical, medical and obs/gyn wards compared to the psychiatric ward is still unclear but some papers wonder whether it is because of the nature of the work in the wards as psychiatric specialty considered as noninvasive specialization compared to surgical, medical or obs/gyn wards.[13] Other studies found the stress higher in the ICU compared to medical-surgical wards because of situations related to death and dying.[14]

Another important factor regarding the development of burnout and stress is the hospital staffing level. Due to budget cuts, the ratio of nursing to inpatients decreased in many countries.[15] For example there was a 9% reduction in staff nurses from the years 1990 to 2002 and an increased number of inpatients. This had a negative impact on the nurses' wellbeing in term of increased workload, more demands from patients and doctors. Moreover the chances of having breaks was reduced. In some instances the aggression level, physically and verbally, was increased in areas like emergency departments because of the long waiting period.[15]

The finding of the present study showed that nurses in the ICU reported lower burnout levels compared to departments like psychiatry and Famco wards. This can be explained by the small sample size from the ICU (4%). Multiple studies have shown a correlation between working on critical care wards and high level of stress and burnout. A study conducted in 165 ICUs in France, showed that around 33% of nurses who participated in the study (N=2392) reported severe burnout.[5]

The current study results demonstrated a higher level of burnout in those who were less than 35 years of age compared to those above 35 years. Higher levels of depersonalization and emotional exhaustion were found in nurses aged less than 35 years and the difference was significant in these two components of burnout compared to the age group above 35 years. Likewise, personal accomplishment was found to be higher in the group above 35 years compared to group those below 35 years of age; however, the difference was not significant. These findings demonstrate that with age the level of experience increases and the burnout level decreases. Another study[16] showed almost the same result with increasing age associated with lower levels of emotional exhaustion and depersonalization.

Perceived stress was higher in the group below 35 years of age when compared to the group aged above 35 years with significant difference (p=0.01). This result is consistent with the burnout result that the younger the age of the nurse, the higher level of stress and burnout. In contract, other studies give conflicting data about the relationship between burnout and years of experience.

Hayter *et al*.[17] did not attribute years of experience to the level of accomplishment (part of burnout syndrome).

Coping has been defined as "…continuously changing behavioral or cognitive efforts to meet inner and/or outer demands which compel subjective limits of the person or exceed his/her self-resources".[14] A multi-dimensional structure of coping behaviors were proposed to be performed by different individuals.[18] Different psychometric tests were used to assess the coping of individuals to stressful situations. The Ways of Coping Check List, Ways of Coping Questionnaire, COPE inventory, Coping Responses Inventory and Coping Inventory for Stressful Situations (CISS) are among widely accepted assessment tools developed for coping strategies. CISS is still considered by many researchers as superior to other psychometric tests in the coping assessment field.[19]

In the current study, all nurses used the three categories of coping styles against stress and burnout: the task oriented, emotional oriented and avoidant oriented. The task oriented style was the most common style, followed by avoidant and emotional oriented style. The nurses in wards with high stress and burnout were more commonly task orientated than nurses on other wards and departments (accept pediatric). Jaracz *et al*.[20] considered task oriented approaches as the most efficient for neutralizing the effects of stress and, to some extent, protecting from burnout. The paper found a fragmentary and weak relation between coping style and burnout level.[20]

Multiple studies found a correlation between a nurse's age, number of experiences and the level of burnout.[21] The younger the nurse, the higher the level of burnout and vice versa. Our study showed similar results. Nurses in the group who were below 35 years of age had significantly higher levels of emotional exhaustion and depersonalization. Some researchers speculate this is due to the fact that, with time, nurses gain the ability to cope with stress.[21]

A similar finding was obtained from the perceived stress level compared to age group above and below 35 years of age. Higher stress levels were found in the age group below 35 years with significant difference between the two age groups.

Marital status also influenced the level of stress. The data had shown that married nurses experienced less stress compared to unmarried nurse. Similar results were found in a study which showed that married nurses who were working in elderly nursing homes had less perceived stress compared to unmarried nurse.[22]

Implication

Results of the current research can be helpful in many ways. The hospital nursing administration can address the amount of stress and burnout level among nurses in Muscat. It will help them to address areas where there are high levels of stress and burnout. By anticipating the negative outcome of emotional drainage, it is advisable to identify ways to minimize this problem. It would be advisable to have regular screening to identify nurses who show high levels of burnout and offer them help. Psychiatric evaluation might be necessary in cases where anxiety reaches the level of diagnosable disorder or comorbid disorders manifest, such as depression.

Limitation

The number of participants from the ICU was small (4%) compared to the overall sample size. This led to an underestimation of the burnout and stress level compared to other departments. It has been known that ICU nurses are one of the groups at greatest risk of experiencing burnout and stress,[5] but due to the small sample size from this department it was difficult to reach a firm conclusion.

All questionnaires used in the current research were subjective, which might affect the accuracy of the respondents.

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الملخص

الاهداف: قياس نسبه الاحتراق (الاجهاد) النفسي وإدراك الكرب و كيفيه مقاومتهما ضمن مجموعة من موظفي التمريض العاملين بمستشفى مرجعي في مسقط سلطنة عمان. **المكان:** مستشفى جامعة السلطان قابوس بمسقط سلطنة عمان. **المنهج / الطريقة :** تم اختيار 310 ممرض وممرضة بطريقة عشوائية من 8 أقسام في المستشفى وتم توزيع استمارة البحث باللغة الانجليزية عليهم لتعبئتها. تم استلام 276 استمارة كاملة فقط والتي استخدمت في البحث. الاستمارة كانت تحوي على 3 مقايس نفسيه: 1. مقياس ماسلاش للاحتراق (الاجهاد) النفسي ، 2. مقياس إدراك الكرب ، 3. مقياس طرق مقاومة الاحداث المقلقة (النسخة المختصره). كما تحوي الاستمارة على شرح مبسط للبحث واقرار بسرية المعلومات و طلب موافقه على تعبئته. **النتائج:** تمت ملاحظة ان معدل الاجهاد أو الاحتراق النفسي كان الاعلى بين الممرضين في أقسام الجراحة ثم في أقسام الباطنية و أقسام النساء والولادة . ($P < 0.05$) الحالة الزوجية للممرض أو الممرضة كان لها تأثير مهم في نسبة الاجهاد النفسي. أيضاً تمت ملاحظة ان مقاومة القلق بعمل نشاط معين كان اشهر وسيلة لتخفيف الضغط النفسي. **الخاتمة:** يجب عدم اغفال أن نسبة الاجهاد النفسي و القلق كانت عالية في أقسام الجراحة و الباطنية و النساء والولادة. على هذا الاساس فيفضل استباق أي نتائج سلبية في الاقسام المذكورة اعلاه. كما انه ينصح ادارة التمريض في المستشفى بعمل قنوات تواصل من الممرضين المحتاجين للمساعدة لتخفيف الضغوط النفسية عليهم و مساعدتهم لاكتساب مهارات تخفيف التوترات النفسية في بيئة العمل.

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Psychological Correlates of Shift Work Sleep Disorder Among a Sample of Egyptian Nurses

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التبعيات السيكولوجيه المصاحبه لاضطراب النوم الناشيء عن العمل بنظام المناوبات في عينة من الممرضات المصريات

نيفين زكي، خديجه دنيور، مني شريف، عادل الوهيدي، باندي بيريومال

Abstract

Introduction: The present study investigates the psychological consequences of shift work sleep disorder (SWSD) in a sample of Egyptian nurses. **Participants and methods:** All participants (N = 150) reported their personal and work data. Some items were selected from the Standard Shiftwork Index (SSI). Participants answered the Hospital Anxiety and Depression Scale (HADS), Maslach Burnout Inventory (MBI), Pittsburgh Sleep Quality Index (PSQI), Shift Work Sleep Disorder (SWSD) questionnaire. The shift work group were allocated to either the high or low risk group based on classification using the SWSD questionnaire. **Results:** The high risk group showed higher percentages of career breaks, weight gain, health problems and medication administration as evidenced by the SSI, emotional exhaustion and depersonalization as evidenced by the MBI. Total HADS scores were higher and sleep quality much poorer. **Conclusions:** Shift work sleep disorder (SWSD) affects the well-being of shift work nurses and can lead to various health-related difficulties, which have personal, societal, and public health ramifications. When designing shift schedules, management should take these factors into consideration to decrease the burden caused by shift work.

Keywords: HADS, PSQI, burnout, Shift Work Sleep Disorder, nurses

Declaration of interests: None

Introduction

Shift work sleep disorder (SWSD) is a circadian rhythm sleep disorder characterized by daytime sleepiness and frequent complaints of insomnia resulting from the work schedule.[1] The International Classification of Sleep Disorders – Third Edition (ICSD-3) described the diagnostic criteria for SWSD, which includes the following four criteria: (1) complaint of insomnia or excessive sleepiness temporally associated with a recurring work schedule that overlaps the usual time for sleep; (2) symptoms must be associated with the shift work schedule and present over the course of at least one month; (3) circadian and sleep-time misalignment as demonstrated by sleep log or actigraphic monitoring for seven days or more; and finally, (4) sleep disturbance is not explainable by another sleep disorder, a medical or neurological disorder, mental disorder, medication use or substance use disorder.[2]

Few studies have used standardized questioinnaires to measure SWSD which seems to be underestimated and underdiagnosed in clinical settings. Rotations and scheduling are the main characteristics of shift work. Healthcare staff and nurses in particular are locked into schedules that provide 24-hour care and include night shift work, which exposes them more to the health risks of SWSD and are therefore a focus for special attention in published studies on shift work.[3]

In general, staff who work shifts tend to experience problems in four main areas caused by the de-

synchronization of the endogenous time-keeping system of circadian rhythms that affects multiple physiological functions within the body.[4] The first is related to increased fatigue and sleepiness caused by decreased sleep, which consequently results in a cumulative sleep debt when trying to sleep during the day. The second area relates to general health: shift workers tend to suffer from poorer physiological and psychological health, including increased gastrointestinal and cardiovascular problems. The third area of concern relates to family and social life. Shift workers tend to suffer from poorer family and social relationships because their working hours often overlap with times that normally should be devoted to societal and family obligations.[5] The fourth relates to the quality of the work itself in that job performance and satisfaction can be impacted by poor sleep.[6]

In the past, shift work was traditionally scheduled by dividing the day into three 8-hour shifts. This pattern was the custom in nursing for many years. In common with other industries, there is now a trend for some healthcare employers to adopt longer shifts, typically two shifts per day each lasting 12 to 13 hours. Employees work fewer shifts each week.[7] Changes are driven by perceived efficiencies for the employer and improved work life balance for employees because they work fewer days per week. However, persistent worries have been raised about the negative impact on the quality of care associated with working longer hours and the introduction of 12-hour shifts has raised concern. Fatigue and decreased levels of vigilance were found to be correlated with longer working hours, potentially resulting in more adverse events in the workplace.[8] A recent study based on a survey of 22,275 registered nurses in four US states found that poor quality of care and low patient safety was higher in nurses who worked shifts of 12 hours or more in comparison to those working shorter eight to nine hour shifts. Patients reported lower levels of satisfaction with healthcare services in hospitals where the nurses worked longer shifts.[9]

Night workers, in particular, are highly disposed to daytime sleepiness and lack of concentration, which have been considered a hidden causes of traffic accidents,[10] a substantially increased level of industrial injuries, general accidents, and job errors during quality control, as well as a general deterioration in their work capability.[11]

Shift work is also associated with a number of adverse health outcomes, including gastrointestinal problems cardiovascular disease, diabetes, depression, and cancer.[12] Night shift workers are reported to be more overweight, have a higher body mass index,[13] and elevated serum lipid profile[14] when compared to day workers. The most commonly encountered gastrointestinal problems in rotating shift workers are peptic ulcers and acid reflux at night. Furthermore, the risk of developing cardiovascular disease increased by 40% in shift workers. Shift work has also been associated with increased rates of depression and is thought to amplify already present mood disorders.[15] Finally, nurses who had endured shift work for many years were significantly more likely to develop breast and colon cancers. In fact, the International Agency for Research on Cancer (IARC), a part of the World Health Organization (WHO), released a report stating that shift work is probably carcinogenic to humans.[16]

Scant data are available about the problem related to shift work in Egypt and the Arab regions. The present study screened for the adverse health effects of shift work on nurses and the possible associating factors, such as demographic factors and work-related characteristics, in addition to health consequences, sleep quality, and levels of burnout associated with this pattern of working. The overall purpose of the study was to provide applicable recommendations to decrease stress produced by working conditions and promote the best patient care.

We also aimed to test for the first time the Arabic version of a recently developed instrument deployed in shift work research, i.e. Barger's Shift Work Sleep Disorder questionnaire.

Subjects

A cross-sectional study was conducted from October 2013 to June 2014. The study protocol was approved by the Mansoura University Human Ethics Committee. All participants provided written consent prior to enrollment into the study, which was carried out in Mansoura University hospitals. Participation in the study was voluntary and participant confidentiality was assured.

Participants

The current sample was comprised of shift work nurses on a rotating schedule as follows: morning shifts from 0800 to 1400, evening shifts from 1400 to 2000, and night shifts from 2000 to 0800.

Sample size

The sample size was calculated based on the main variable (sleep disorder), by using this variable from a study carried out in Malaysia[17] and another study carried out in Iran[18] and by using the website www.Dssresearch.com to calculate the sample size assuming percentage of sleep disorders (62%) among shift work nurses with a power of 80%, and an alpha error level of 5%. The sample size calculated was 72 participants. While, if the prevalence of insomnia is 47.7% among shift work nurses, the required sample size would be 148 participants. The larger sample size was chosen.

Inclusion criteria

Inclusion criteria were 20 to 35 years of age and working in either rotating or fixed shift for at least two years. Shift worker history of at least three consecutive months of rotating shifts was a further inclusion requirement as was not having more than one job. Nurses over the age of 35 years were excluded because the hospital policy excludes older nurses from undertaking shift work.

Methods

An interview with each study subject was carried out in order to support the completion of questionnaires. After completion, arrangements were made for blood sample collection to assess morning and evening cortisol levels These were taken 12 hours apart. Sociodemographic data including age, residence, marital status, number of children and occupational history (job description, duration of employment, weekly working hours and work place) were also gathered.

Screening tools

Standardized Shiftwork Index (SSI)

The SSI is a standardized measure for assessing the influence of different shift systems and their features on health and well-being of shift-workers.[19] Items from the SSI included, shift details, physical health, such as (cardiovascular and digestive problems, diseases diagnosed by physician, history of medication for more than three months, menstrual regularity) and social and domestic problems. Questions about physical health were responded to with "almost never", "quite seldom", "quite often", or "almost always". A 3-point response scale ranged from "not at all", "sometimes "to "very much assessed the impact of the shift system on social and domestic life; for example, domestic tasks, shopping and going to the doctor.

Hospital Anxiety and Depression Scale (HADS)

The HADS is a 14-item, self-assessment questionnaire using a four-point scale to measure symptoms of anxiety and depression experienced during the last week.[20] Scores for the anxiety and depression subscales range from 0-21 with scores categorized as follows: normal (0-

7), border line case (8-10), case (≥11). The sensitivity of the cutoff point was 0.89 and the specificity was 0.75. The Arabic version of the HADS was validated by Elrufaie *et al*.[21] Internal consistency of the anxiety and depression subscales, defined by Cronbach's alpha coefficient, was 0.78 and 0.87, respectively, indicating satisfactory reliability.

Maslach Burnout Inventory MBI

The MBI evaluates burnout levels using three subscales. The Emotional Exhaustion (EE) subscale includes nine items and refers to feelings of being strained and depleted of one's emotional and physical resources. The Depersonalization (DP) subscale comprises five items and refers to a negative, callous, or excessively detached response to various aspects of the job. The Personal Accomplishment (PA) subscale has eigh items and refers to feelings of incompetence and a lack of achievement and productivity at work. Each statement on the MBI is rated on a 7-point scale from 0 (never) to 6 (everyday). High scores on EE and DP subscales and low scores on PA subscale indicate high levels of burnout. Moderate burnout corresponds to moderate scores on each subscale. Low scores on the EE and DP subscales and high scores on the PA subscale suggest low burnout.[22] In the MBI, scores for each subscale are evaluated separately. MBI scores were categorized as follows for EE low burnout (≤17), moderate burnout (18-29), high burnout (≥30), for the PA low burnout (≥40), moderate burnout (31-39), high burnout (≤30), for the DP low burnout (≤5), moderate burnout (6-11), high burnout (≥12). The correlation between the three subscales of burnout is not shown with a total score. Conversely, three different scores are calculated for each individual. The Arabic version of the MBI, translated by Sabbah *et al.,*[23] was used in the current study.

Pittsburg Sleep Quality Index (PSQI)

The PSQI assesses quality and patterns of sleep through self-reported sleep habits over the last month. It is a global measure with seven subscales; subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping pills, and daytime dysfunction. A global sleep quality score is derived from the total sum of the seven subscales scores. Each subscale scores from 0 (not in the past month) to 3 points (3 or more times per week) with the overall score ranging from 0 to 21. A PSQI total score ≥5 indicates poor sleep quality. A score of 5 yielded a diagnostic sensitivity of 89.6% and a specificity of 86.5%, with an internal consistency (α) of 0.83 and test-retest reliability (r) of 0.85[24]. The Arabic version of the PSQI, validated by Suleiman *et al*., [25] was used.

Shift Work Sleep Disorder Questionnaire (SWSD)

The SWSD consisted of 26 statements assessing the following: demographics and work schedule details, insomnia while working non-standard shifts, excessive sleepiness while working nonstandard shifts, and insomnia and excessive sleepiness while on a break (e.g., at least one week in the last year) from nonstandard shifts (e.g., vacation or standard day shifts). Nonstandard shifts were defined on the questionnaire as those that start before 0700 or after 1400, rotate, or regularly include hours outside of the standard 0800 to 1400 work day. High risk SWSD and low risk SWSD were calculated by the following equations:

Low_Risk=(Shiftwork_Nights_Final_Awakening*1.576) +(Shiftwork_Nights_Well_Being*1.305)+Wake_Sleepiness_Work_Night*1.204)+(Wake_Sleepiness_Drive_Off*0.949)-5.189.

High_Risk=(Shiftwork_Nights_Final_Awakening*2.24) +(Shiftwork_Nights_Well_Being*2.406)+Wake_Sleepiness_Work_Night*1.615)+(Wake_Sleepiness_Drive_Off*0.412)-8.859[26] We will use the terminology (high risk vs low risk)referring to these two classifications.

Following author consent, the SWSD questionnaire was translated into Arabic and back-translated using two independent translators. The process of translation and cultural adaptation followed international recommendations.[27] Final translation was reviewed by the study authors. The Arabic version can be found in the appendix. The questionnaire had an internal consistency (α) of 0.84 and test-retest reliability (r) of 0.85. The final version of the questionnaire is consistent with the ICSD-3 criteria for SWSD. It is comprised of four items assessing the hallmark symptoms of the disorder. One question queries insomnia complaints related to sleeping at an adverse circadian phase; two questions examine excessive daytime sleepiness and impaired well-being; a final question evaluates frequency of sleepiness following days off from work. Timing of standard shifts were adjusted to reflect routine Egyptian work hours.

Statistical analysis

The data obtained were analyzed using the Statistical Package for the Social Sciences, version 20 (SPSS v 20.0).[28] Descriptive statistics, means and standard deviations were calculated for continuous variables and results were analyzed using Student's *t*-test for parametric continuous variables. Categorical variables were presented by percentages and frequencies. Chi-Square or Fisher's exact test were used for categorical variables (proportions). Fisher's exact test was computed only for 2x2 tables where there was one cell having expected count less than five. The Monte Carlo test was computed in tables having more than 2x2, and there were cell(s) having an expected count of less than five. The difference was considered significant at $p \leq 0.05$. The shift work group was divided into high and low risk subgroups based on the SWSD questionnaire classification.

Results

The demographic data are summarized in Table 1. There was a statistically significant difference between the high and low risk groups in relation to workplace experience and BMI levels. From the demographic data, it was found that the majority of nurses' husbands were perceived to be unsupportive and work schedules disruptive although no significant difference was observed between both groups. The high risk group reported problems commuting to work as evidenced by a significant differences found between both groups regarding the means of transportation and the safety of transportation to reach their work places, especially during the night shifts (Table 2). Nurses reporting a high risk of SWSD had more disruptive shift schedules, which was observed in the irregularity of their work schedules, the extra time spent on the night shifts (from 1400 to 2000 or from 2000 to 0800) when compared with daytime shifts (from 0800 to 1400 and from 0800 to 1600), and less time to rest as evidenced by shorter holidays and fewer weekends or days off (Table 3). Burnout levels were significantly high especially on the Exhaustion and Depersonalization subscales of the MBI; participants reported having poorer sleep quality and, as evidenced by their HADS scores, higher levels of anxiety. Means, standard deviations, minimum obtained score and maximum obtained score together with the range of the scales used are summarized in Table 4.

Physical health problems were indicated in the high risk SWSD group who had higher levels of blood cholesterol, hypertension, and bronchial asthma (p=0.05, p=0.033, p=0.037, respectively; (Table 5)). The trend was also toward having a higher level of gastrointestinal disturbances, appetite disturbance and weight gain; however, this was not statistically significant (p=0.06,0.09) as Table 5 demonstrates. Participants tended to have higher levels of nighttime cortisol (p=0.07), but this difference did not reach the level of statistical significance. Daytime cortisol levels showed

no difference in both SWSD groups as demonstrated in Table 5.

Items relating to job performance (Table 6) were paralleled and it was found that the high risk SWSD group tended to have more needle stick injuries; they also made more mistakes while handling patient medications. This difference is evidenced by the statistically significant *p* value between both groups on these two work performance items (*p*=0.04, 0.01 respectively).

Table 1. Comparing demographics from the SWSD high and low risk shift work groups

Variable	**High Risk SWSD**	**Low Risk SWSD**			
	n	***n***	**df**	***p* Significance**	**Pearson's r Significance**
Marital status					
Single	16	3	2	0.9	0.93
Married	109	21			
Widow - Divorced	1	0			
Number of children					
None	3	1			
One child	37	8	4	0.9	0.62
Two children	49	8			
Three children	20	4			
Four children	1	0			
Residential status					
Rural	91	18	1	0.4	0.78
Urban	35	6			
Work duration					
Less than five yrs	29	5			
Five or more yrs	48	12		3	0.46
10 or more yrs	41	7			
15 or more yrs	8	0			
Work place					
Surgical	31	10			
Medical	38	9	4	0.13	0.03
Pediatric	20	3			
Emergency and ICU	22	0			
OBs and Gyn	15	2			
Weekly work hours					
48	50	7			
50	1	1	3	0.47	0.45
54	11	2			
60	64	14			
Husband's work pattern					
Morning hours	81	13			
Night shift	11	0	2	0.028	0.067
Running shift	17	8			
Husband's attitude					
Not supporting	45	8			
Somewhat not Supporting	55	11			
Not interesting	4	0	4	0.63	0.500
Somewhat Supporting	4	1			
Exactly supporting	1	1			

Annual vacations Yes No	 45 81	 7 17	1	0.35	0.54
BMI Normal (18.5 – 24.9) Overweight (25 – 29.9) Obese (30+)	 25 34 67	 13 4 7		0.002	0.001

Table 2. Differences in methods and safety of commuting among the SWSD high and low risk shift work groups

Variable	**High Risk SWSD**	**Low Risk SWSD**		
	n	***n***	**df**	***p* Significance**
Transportation means Public transportation Walking	 126 0	 22 2	1	0.025
Feeling unsafe during morning travel Almost never Quite seldom	 46 80	 5 19	1	0.10
Feeling unsafe during nighttime travel Quite often Almost always	 74 52	 8 16	1	0.019

Table 3. Differences in shift characteristics among the SWSD high and low risk shift work groups

Variable	**High Risk SWSD**	**Low Risk SWSD**	
		N	***p* Significance**
Morning shift followed by Anticlockwise shift time Clockwise shift time	 88 38	 6 18	0.001
Evening shift followed by Anticlockwise shift time Clockwise shift time	 12 114	 4 20	0.23
Night shift followed by Anticlockwise shift time Clockwise shift time	 106 20	 16 8	0.048
Total number of yearly night shifts 90 96 120 150 156	 1 49 4 2 70	 1 7 0 0 16	0.43
Best night shift organization Permanent night shift Single block per year Occasional blocks per year A block of night each month One or two nights each week	 6 34 28 39 19	 2 5 5 12 0	0.16

Number of rest weekends/28 days			
Four weekends	2	0	0.002
Three weekends	11	9	
Two weekends	68	9	
One weekend	45	6	
Regularity of shift system			
Regular	13	2	0.44
Irregular	113	22	
Rate of running cycle			
Every week	105	21	0.44
Every month	21	3	
Shift time			
0800 to 1400	62	12	0.57
0800 to 1600	64	12	
1400 to 2000	126	24	
2000 to 0800	124	26	

Table 4. Summary of Burnout, HADS, and PSQI among the SWSD high and low risk shift work groups

			High risk	Low risk	*p*	Min	Max	Mean(SD)	Range
Burnout scale									
Exhaustion degree						1	61	25(±24.9)	60
	moderate (18-29)		5	8	**0.000**				
	high >30		121	16					
Achievement degree						1	64	17.8(±17.7)	
	high>40		23	6					63
	moderate34-39		69	12	0.07				
	low <33		34	6					
Depersonalization						1	3	1.7(±0.64)	
	low<5		23	6					55
	moderate6-11		69	12	**0.02**				
	high >12		34	6					
PSQI						0	15	4.5(±3.16)	
	<5 good		6	17	**0.000**				15
	> 5 Bad		120	7					
Anxiety	**HADS subscale**					1	19	11.6(±2.4)	
	borderline 8-10		29	14	**0.001**				18
	cases >11		97	10					
Depression	**HADS subscale**					1	3	2.3(±0.55)	
	borderline 8-10		44	10	0.5				2
	cases >11		82	14					

Table 5. Health correlates of shiftwork nurses

Variable		High Risk SWSD	Low Risk SWSD	df	*p* significance
		n	***n***		
Hypercholesterolemia					
Since starting shifts		9	5		
Never		117	19	1	0.05
Hypertension					
Before starting shifts		1	1		
Since starting shifts		15	7	2	0.033
Never		110	16		
Bronchial asthma					
Since starting shifts		5	4		
Never		121	20	1	0.037
Gastrduodenitis					
Before starting shifts		1	1		
Since starting shifts		48	4	2	0.06
Never		77	19		
Weight gain					
Never		25	10		
Mild		20	1	3	0.09
Moderate		40	6		
Severe		41	7		
Apetite disturbances					
Seldom		23	5		
Often		83	11	2	0.09
Always		20	8		
Cortisol (evening)					
	5 – 8	9	0		
Mean (SD)	8 – 10	38	4		
61(±58.8)	10 – 12	14	2	28	0.07
	>12	2	2		
Cortisol (morning)					
Mean (SD)	12 – 15	19	1		
12 (±4.8)	15 – 18	26	4	25	0.33
	18 – 2	7	3		

Table 6. Differences in performance at work between the SWSD high and low risk shift work groups

Job performance variable	**High risk**	**Low risk**	***p***
Arrival on time			
Seldom	2	1	
Often	26	13	0.6
Always	62	10	
Needle stick injury			
Never	6	1	
Seldom	29	4	**0.04**
Often	72	15	
Always	19	4	
Sick leave			
Never	111	24	

	Seldom	11	0	0.06
	Often	4	6	
Gave wrong treatment to the patient				
	Happened	97	15	**0.01**
	Didn't happen	29	9	

Discussion

The present study successfully identifies noteworthy predictors of psychosocial disturbances in nurses. All participants (N=150) were involved in a shiftwork schedule; however, we used Barger's Shift Work Sleep Disorder (SWSD) questionnaire to divide the sample into high and low risk groups. Participant risk of developing SWSD also affected other risk factors, including socio-demographic characteristics such as marital status and age; personal factors like chronic illness, sleep disorders and self-reported mental health; lifestyle factors such as time for leisure and exercises; and, work-related factors, including the clinical subspecialty, poor communication with colleagues, work-related chaos, and job satisfaction. Lifestyle factors were significant contributors to poor mental health and psychological wellbeing and greater susceptibility to Shift Work Sleep Disorder (SWSD). Cheung *et al*[29] suggested that nurses who make positive lifestyle changes also secure a good work/life balance and preserve their functioning at work and their personal well-being.

In the present study, the SWSD questionnaire was used and, depending on the results, *n*=24 nurses were considered to be low risk while *n*=126 were at high risk of SWSD. A higher incidence of gastrointestinal and appetite disorders was observed in shift workers, particularly the high risk group who worked night shifts. This association can be explained by the change of routine mealtimes, difficulty obtaining hot cooked and nutritious food during shift time and the inability to have social contact during meals, which is similar to Nojkov *et a.l*[30] who found that the prevalence of irritable bowel syndrome was 48% in rotating shift nurses and 31% in day shift nurses. Also, a study from Singapore reported the prevalence of functional bowel disorders was 38% in nurses working rotating shifts compared with 20% in those working day shifts.[31] Moreover, a cross-sectional study by Hitchcock *et al.*[32] reported an increase in gastrointestinal symptoms (e.g. abdominal pain, constipation, diarrhea, heartburn, indigestion, loss of appetite, nausea) in individuals working more than 30 night shift hours in a 28-day period. The researchers also found a three-fold increase in the risk of a gastrointestinal diagnosis (e.g. colon polyps, stomach ulcers, ulcerative colitis) in evening shift workers.

Night shift workers are awake at times when they are supposed to sleep and attempt to sleep during the day when they are normally meant to be awake. They have a higher incidence of poor sleep and related complications.[33] The blood cortisol level has a normal diurnal variation with an increase during early morning and decrease at night. Cortisol is a reliable indicator of stress, which shows discrepancy across the day with high levels in the morning and low levels around midnight. Stress may alter intensity of secretion of cortisol and circadian pattern of the hormone.[34] As regards to the plasma cortisol level, results from the present study found a trend toward differences in plasma cortisol levels between high risk shift work nurses and the low risk group. Plasma cortisol levels increased at night disrupting the biological clock of the nurses and exposing them to high stress levels due to altered levels of nighttime cortisol together with increasing the consequent health risks. These results support Monk *et al.*[35] who showed that salivary cortisol levels were lower

in early morning among shift workers compared to daytime workers. This suggests high stress levels and a disrupted circadian pattern. In strategic organizations where occupational health guidelines are followed, the physical and mental health of staff are as important as productivity. Nurses are considered to be at high risk of burnout due to work-related stress. Burnout at work leads to physical, emotional and mental overtiredness which greatly affects the quality of patient care and staff productivity. We found burnout levels higher in shift work nurses when compared with daytime nurses and among high risk shift work sleep disorder participants when compared with the low risk group. Similarly, Rezaei *et al.*[36] found that rotating shift midwives had high scores of burnout.

Similarly, Dall'Ora *et al.*[6] in a study conducted in 12 European countries found an association between shifts of 12 hours or more and all three subscales of burnout. While it has been suggested that nurses may prefer night shifts to improve their income, the decision appears to be at the expense of their psychological well-being. Also, higher risks of medical errors, decreased quality of care, and economic loss through increased absenteeism are further negative consequences. Studies that report correlations between shift work and burnout levels are controversial. Two important cross-sectional studies by Stimpfel *et al.*[37,38] with respectively large sample sizes (N=22275 nurses and N=3710 nurses) from the US pointed out that when nurses are working 13 hour shifts or longer, the odds of them reporting job dissatisfaction and burnout were higher than for those working eight hours.

In the present study, female nurses working shifts reported significant sleep disruption. The high risk SWSD group reported poorer sleep quality compared to those in the low risk SWSD group. Other studies have shown that women have a greater need for sleep as they tend to suffer more sleep problems; this poses a particular dilemma in a female dominated profession, such as nursing. It is assumed that many nurses will be mothers; having a family denotes greater responsibilities, which may affect the quality and quantity of sleep due to stress. We also found a positive corrrelation between SWSD and the direction of rotation of next scheduled shifts, which is in line with research findings[39] that identified anxiety and depression symptoms in individuals working night shifts. The high risk group scored higher on the HADS, which might reflect a scheduling conflict between work and family responsibilities therefore indicating that shift work possibly interferes with participation in family life. Such scheduling, in combination with the experience of fatigue, may increase the risk of depression. Conversley, Thun *et al.*[40] found that night workers and nurses who changed from day work to night work during the study period did not differ from day workers either in terms of baseline symptoms of anxiety or depression, or in terms of subsequent symptom levels. However, nurses who changed from night work to day time work reported a significant decrease in anxiety and depression symptoms over time compared to day workers.

Fatigue is a significant predictor of psychological health and has a strong prognostic value on subjective health complaints in terms of psychosomatic complaints, emotional exhaustion and sleep problems. How shift work affects fatigue is unknown, but it is thought to increase fatigue indirectly by disrupting sleep quality or aggravating any existing sleep problems or disorders.[41] Nurses in the present study reported poor sleep quality on the PSQI. Nazatul *et al.*[17] found that more than half of the nurses in their study experienced sleep disturbance during the month before completing the questionnaire and met the PSQI criteria for “poorer sleep.” The percentage of nurses who scored a global sum of PSQI more than five points (considered to have sleep disturbance) was 57.8%. Saleh *et al.*[42] have shown that failure to obtain adequate sleep is an important

contributor to medical errors, and a lack of sleep leaves many caregivers, including nurses, more prone to irritability and anger toward those for whom they are caring. This often leads to guilt, anxiety, depression, and more sleep problems; the nurses tended to experience more commuting problems and less enjoyment of weekends. Such information can be used to optimize work schedules for nurses to alleviate work stress. Dall'Orra *et al.*[43] identified features of shift work that have an effect on employee enactment, including job performance, productivity, safety, quality of care conveyed, errors, adverse events and client satisfaction; and, on their well-being, including burnout, job satisfaction, absenteeism, intention to leave the job in all sectors, including healthcare. Given these many factors, it follows that setting up better rules and guidelines for shift work careers will likely ensure the well-being of staff, patients and employer.

Strengths and limitations

In the present study, we used standardized and validated instruments. Additionally, the study was based on a reasonably large and homogenous sample of nurses, limiting the influence from possible confounding variables, such as different work load, environment, or work schedule. As a cross-sectional study, it is difficult to conclude on causal directions. Furthermore, actigraphic assessment or administration of sleep diaries to objectively quantify sleep disorders would have been a point of strength. Linking the findings with work errors and quality of performance together with the screening of cancer susceptibility would have added much to the current findings.

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الملخص

هذه الدراسة تبحث العوامل المرتبطه والتبعيات النفسيه المصاحبه لاضطراب النوم الناشئ عن العمل في مناوبات في عينة من الممرضات المصريات باستخدام استبيان بارجر . **طرق البحث:** كان عددالمشاركين (ن = 150) تم تجميع البيانات الشخصية منهم وقد تم اختيار بعض الاسئلة من المؤشر القياسي للعمل بنظام المناوبات أجاب المشاركون على عدد من المقاييس لقياس الاعراض النفسية واضطرابات النوم، واستخدم مقياس بارجر لتقسيم مجموعه البحث الى مجموعة معرضة لمخاطر لعمل بالمناوبات بشكل عالي ومجموعة منخفضة المخاطر. **النتائج:** كانت المجموعة ذات المخاطر العالية في تصنيف بارجر تظهر نسب أعلى من الفصل الوظيفي، والزيادة في الوزن والعديد من المشاكل الصحية وتعاطي الادوية كما حصلو على نسب اعلى من الإجهاد العاطفي و انعدام الذات على مقياس مسلاخ و إجمالي القلق والاكتئاب كما كانت جودة النوم لديهم اقل . **الاستنتاجات:** اضطراب النوم الناشيء عن العمل بالمناوبات يؤثر على الصحة العامة للممرضات ويمكن أن يؤدي إلى العديد من المضاعفات الصحية و الشخصية والمجتمعية. ينبغي أن تؤخذ هذة العوامل في الاعتبار عند تصميم جداول العمل وتقليل العبء الناجم عن العمل في نوبات.

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Appendix

Arabic Version of the Shift Work Sleep Disorder Questionnaire (SWSD; Barger *et al.* 2012)

- هل تعاني من مشاكل في القدرة علي النوم او النوم الزائد **نعم** لا
- هل مشكلة الارق او النوم الزائد متعلقة بجدول عملك حيث يجب عليك التواجد بالعمل بينما من الطبيعي ان تكون نائما في ذلك الوقت **نعم** لا
- هل مشكلة الارق او النوم الزائد المتعلقة بجدول عملك استمرت لشهر او اكثر **نعم** لا

من فضلك اقرا كل سؤال بعناية قبل الاجابة.عند الضرورة جاوب السؤال على قدر استطاعتك وتذكرك

1) في خلال الشهر الماضي، هل عملت بنظام المناوبات غير الاعتيادي الذي (يبدأ قبل 07:00 ص أو بعد 14:00 م ، الذي يتضمن بشكل دوري ساعات عمل خارج الاوقات المعتادة من السابعة صباحاً حتي الخامسة مساء **نعم** لا

اذا كانت اجابتك بنعم، انتقل إلى السؤال 2 .إذا كانت لا، توقف عن المشاركة.

2) في المتوسط، كم مرة في الأسبوع تعمل في مناوبات غير اعتيادية؟

3) متى بدأت العمل في المناوبات غير الاعتيادية ؟

- قبل أقل من شهر ○
- من 1-6 أشهر ○
- منذ 7-12 شهرا ○
- منذ 1-5 سنوات ○
- منذ أكثر من 5 سنوات ○

4) أ. للمناوبات غير الدوارة، عادة متى تبدأ المناوبة غير الاعتيادية.

:

ص م (اختر واحدة)

ب . للمناوبات غير الدوارة،عادة متى تنتهي من المناوبة غير الاعتيادية

:

ص م (اختر واحدة)

5) ما هو عمرك؟ سنوات

6) ما هو جنسك؟ ذكر انثي

7) في خلال الشهر الماضي، اثناء عملك في مناوبات غير اعتيادية، كانت كمية النوم الكلية التي حصلت عليها في المجمل

كافية	غير كافية بدرجة طفيفة	غير كافية الى حد ما	غير كافية على الاطلاق

8) في خلال الشهر الماضي، هل عانيت من الرغبة في النوم او النعاس خلال العمل علي المناوبة غير الاعتيادية

على الاطلاق	بدرجة طفيفة	درجة تستحق الاخذ في الاعتبار	درجة شديدة

9) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية هل عانيت من مشكلة عدم القدرة علي الدخول في النوم عندما يحين ميعاد نومك؟

لا مشكلة	مشكلة طفيفة	مشكلة تستحق الاخذ في الاعتبار	مشكلة شديدة

10) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية هل عانيت من مشكلة الرغبة في البقاء نائما؟

لا مشكلة	مشكلة طفيفة	مشكلة تستحق الاخذ في الاعتبار	مشكلة شديدة

11) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية هل كانت لديك مشكلة في الاستيقاظ مبكرا عن الحاجة وعدم القدرة على العودة إلى النوم؟

لا مشكلة	مشكلة طفيفة	مشكلة تستحق الاخذ في الاعتبار	مشكلة شديدة

12) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية، الجودة الاجمالية لنومك (بغض النظر عن طول الفترة التي نمتها كانت

مرضية	غير مرضية بدرجة طفيفة	غير مرضية الى حد ما	غير مرضية للغاية

13) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية شعورك بالارتياح العام اثناء الفترة التي تكون فيها مسيقظا كانت

طبيعية	منخفضة بدرجة طفيفة	منخفضة الى حد ما	منخفضة للغاية

14) في خلال الشهر الماضي، في اثناء عملك بالمناوبة غير الاعتيادية ان كفائتك الجسمانية والنفسية اثناء الفترة التي تكون فيها مسيقظا كانت

طبيعية	منخفضة بدرجة طفيفة	منخفضة الي حد ما	منخفضة للغاية

15) في الشهر الماضي، ما مدى احتمالية انك كنت تغفو للنوم في اثناء عملك بالمناوبة غير الاعتيادية؟

لا يوجد احتمال على الاطلاق	احتمال طفيف	احتمال متوسط	احتمال عالي	غير منطبق علي

16) في خلال الشهر الماضي، ما مدى احتمالية انك كنت تغفو للنوم أثناء القيادة بعد العمل بالمناوبة غير الاعتيادية

لا يوجد احتمال علي الاطلاق	احتمال طفيف	احتمال متوسط	احتمال عالي	غير منطبق علي

17) في خلال الشهر الماضي، ما مدى احتمالية انك كنت تغفو للنوم اثناء التنقل بالمواصلات (وليس القيادة) بعد العمل بالمناوبة غير الاعتيادية

لا يوجد احتمال على الاطلاق	احتمال طفيف	احتمال متوسط	احتمال عالي	غير منطبق علي

18) في السنة الماضية، هل كان لديك على الأقل استراحة أسبوع واحد من العمل بالمناوبات غير الاعتيادية (على سبيل المثال، أسبوع عطلة، أو أسبوع عمل اعتيادي)

نعم	**لا**

إذا كان الجواب بنعم، انتقل إلى السؤال 19 .إذا كان الجواب لا، انتقل إلى السؤال 27.

19) خلال استراحتك من العمل بالمناوبات الغير اعتيادية كان اجمالي كمية النوم التي حصلت عليها

كافية	غير كافية بدرجة طفيفة	غير كافية الى حد ما	غير كافية على الاطلاق

20) خلال استراحتك من العمل بالمناوبات الغير اعتيادية هل عانيت من الرغبة في النوم او النعاس خلال الفترة التي كنت فيها مستيقظاً

على الاطلاق	بدرجة طفيفة	درجة تستحق الاخذ في الاعتبار	درجة شديدة

21) خلال استراحتك من العمل بالمناوبات الغير اعتيادية هل واجهت مشكلة الدخول في النوم عندما يحين معاد نومك

لا مشكلة	مشكلة طفيفة	مشكلة تستحق الاخذ في الاعتبار	مشكلة شديدة

22) خلال استراحتك من العمل بالمناوبات الغير اعتيادية هل واجهت مشكلة في القدرة علي البقاء مستيقظاً

لا مشكلة	مشكلة طفيفة	مشكلة تستحق الاخذ في الاعتبار	مشكلة شديدة

23) خلال استراحتك من العمل بالمناوبات الغير اعتيادية ، الجودة الاجمالية لنومك (بغض النظر عن طول الفترة التي نمتها كانت

مرضية	غير مرضية بدرجة طفيفة	غير مرضية الى حد ما	غير مرضية للغاية

24) خلال استراحتك من العمل بالمناوبات الغير اعتيادية ، ان كفائتك الجسمانية والنفسية اثناء الفترة التي تكون فيها مسيقظاً كانت

طبيعية	منخفضة بدرجة طفيفة	منخفضة الى حد ما	منخفضة للغاية

25) خلال استراحتك من العمل بالمناوبات الغير اعتيادية كم كانت طول المدة التي تاخرت فيها عن النوم عند رغبتك في النوم بمعاد نومك

لا تاخير	تاخير طفيف	تاخير الى حد ما	تاخير كبير للغاية

26) ما مدى احتمالية انك كنت كنت تغفو للنوم أثناء القياد ة بعد يومين من الراحة من العمل

لا يوجد احتمال على الاطلاق	احتمال طفيف	احتمال متوسط	احتمال عالي	غير منطبق علي

نشكرك لتعاونك

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Stress, Depressive Symptoms, Well-Being and Mindfulness in a Sample of Saudi Medical Residents

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يسرى العتيق

Abstract

Objectives: It is well documented that medical residency training is generally stressful. Research has mainly focused on the negative mediating factors that contribute to high stress level in medical residents. In recent years, research has shifted toward understanding the protective factors that mediate stress and promote well-being. Mindfulness, a state of mind characterized by focus, awareness, and attention to and acceptance of one's experiences in the present moment, has become an increasingly popular topic in stress management. The current study aims to examine stress levels, depressive symptoms, and well-being reported by medical residents in the Kingdom of Saudi Arabia and the association between these variables and a self-report measure of mindfulness. **Methods:** All residents enrolled in a residency program in one hospital in Riyadh were asked to complete an online survey. The survey included four self-report measures to assess stress, depressive symptoms, well-being, and mindfulness. **Results:** Of the 60 medical residents who were contacted, 33 completed the online survey. Survey results revealed high levels of stress and depressive symptoms among the sample. Mindfulness was also found to be associated with positive outcomes, including lower perceived stress and depressive symptoms and enhanced well-being.

Keywords: Stress, mindfulness, well-being, Saudi Arabia

Declaration of Interest: None

Introduction

The stress of medical residency training is well understood.[1,2] Long working hours, limited sleep, high responsibility and emotional exhaustion result in significant levels of stress. Anxiety, depression,[3] and social impairment[4] are common consequences of the stress of residency training. These effects can lead to serious problems, including substance abuse[5] or even suicidal ideation.[6] If unmanaged, many of these problems may persist beyond residency training.[7] Extensive research has examined the factors and consequences of the stress of residency training. However, more attention has recently been drawn to mediating factors that promote well-being and help individuals to cope with stress;[8,9] nonetheless, mindfulness as a possible mediating factor has yet to be examined in this particular group.

Mindfulness is defined as a state of mind embodying a certain quality of attention to moment-by-moment experience characterized by acceptance and a non-judgmental view.[10] This special way of paying attention has been associated with psychological health and well-being[11] and this association might be explained by the mode of mind that operates the state of mindfulness.[12] The mindfulness mode of mind allows individuals to live their moment-by-moment experience without judgment, over evaluation, or achievement striving. It also allows for conscious decisions about how to respond to particular experiences. In contrast to mindfulness, the automatic mode of mind is characterized by rumination, avoidance, and excessive need to achieve and is associated with automatic reactive responses to

situations. These characteristics are strongly associated with psychological distress and mental illness.[13] For example, individuals in mindfulness mode are able to fully engage in a pleasant family gathering - even after a long, stressful workday. Conversely, individuals in automatic mode find it difficult to engage in a pleasant event because they are constantly ruminating about the stressful workday.

Although researchers initially focused on mindfulness as a skill to be acquired through training,[14] evidence also suggests that this state of mind can be considered a trait-like quality that varies among individuals - from high levels of awareness of experience to low levels of habitual and automatic thinking.[15] General evidence suggests that mindfulness training[14,16] and mindfulness traits[17] are associated with higher levels of psychological health and well-being. Studies have also found that mindfulness training can reduce burnout and depression and improve well-being and empathy among physicians[18] and medical students.[19] Self-rated mindfulness by physicians was found to be associated with patient-centered communication and higher levels of patient satisfaction.[20] There is more on mindfulness and healthcare providers in the research literature.[21,22] However, no study has examined the effect of mindfulness as a trait-like quality among young doctors in residency training.

The stress experienced by students in medical residency programs in Saudi Arabia has not been adequately examined; there is not enough data available to clarify whether the levels of stress arising from medical residency in Saudi Arabia resemble those reported elsewhere. Moreover, previous research has not assessed mindfulness as a factor mediating stress and well-being in the Saudi population in general. Therefore, the present study aims to examine self-reported perceived levels of stress, depressive symptoms, and well-being in Saudi medical residents and the relationship of these variables to mindfulness as a trait-like quality. First, we hypothesize that medical residents will show high levels of stress and depressive symptoms and low levels of well-being, consistent with the results from studies performed in other countries. Second, we expect mindfulness to negatively correlate with stress and depressive symptoms and positively with well-being.

Methods

All medical residents enrolled in a residency program in a hospital in Riyadh were asked to complete an online survey prior to attending a stress management course as part of their residency training. The survey begins with general demographic data, including age, gender, marital status, and year of residency. Respondents are then asked to complete four self-report measures assessing stress, depressive symptoms, well-being, and mindfulness. The survey ensures confidentiality as no individual can be identified from his or her response.

Sample

N=60 medical residents were contacted and *n*=33 completed the online survey. Of the residents who completed the survey, 75% were men (*n* = 25), 51% were single (*n* = 17), 39% were in their first year of training (*n* = 13), 27% were in their second year (*n* = 9), 9% were in their third year (*n* = 3), and 24% were in their final year (*n* = 8).

Measures

Perceived Stress Scale (PSS)

The PSS is a widely used self-report measure of an individual's evaluation of his/her level of stress. The questionnaire asks individuals about their feelings and thoughts during the last months (e.g., "In the last month, how often have you felt nervous and stressed?"). Participants respond to each item on a five-point scale (0 = never to 4 = very often). The highest score possible is 40. For samples of respondents aged 18 to 44 years, normal scores for healthy individuals range between 11.9 to 14.7.[23]

Beck Depression Inventory (BDI-II)

The BDI-II is a widely used self-report measure of depression and consists of 21 multiple-choice statements measuring common symptoms of depression.[24] Although there is a validated Arabic version of the BDI-II with good reliability, the English version was used in the present study to ensure consistency with other scales, which were also provided in English. Participants were asked to rate how often they have felt a number of depressive symptoms over the last two weeks on a scale from 0 to 3. The highest score possible is 63. Recommendations for score interpretations suggest that total scores between 17 and 20 indicate borderline clinical depression, scores between 21 and 30 indicate moderate depression, and scores above 31 indicate severe depression.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

The WEMWBS is a 14-item, self-report measure concerning aspects of mental health related to positive affect, relationships, and functions (e.g., "I've been optimistic about the future"). Participants are asked to describe their experiences on a five-point scale (1 = never to 5 = all the time). The scale has good psychometric properties, with a median for healthy population between 50 and 55.[25]

Mindfulness Attention Awareness Scale (MAAS)

The MAAS is a 15-item, self-report scale that assesses participants' awareness of and attention to moment-to-moment, everyday experiences on a scale ranging between 1 and 6. Participants are asked to rate how frequently they currently have each experience (e.g., "I tend to walk quickly to get where I am going without paying attention to what I experience along the way"). The scale has shown good validity and reliability as a measure of mindfulness.[26]

Results

Perceived stress, depressive symptoms, and well-being

Table 1 shows self-reported levels of perceived stress, depressive symptoms, and well-being across the residency year of training. The results show that all residents scored high on the PSS, that is, above the normal range for healthy groups,[23] which indicates that residents are currently experiencing significant levels of stress.

All residents also reported levels of depressive symptoms above the borderline clinical depression level. The scores indicated the presence of severe depressive symptoms in all residents except third-year residents, who reported experiencing moderate depressive symptoms. Conversely, self-reported levels of well-being were generally low. The mean score was below the normal level identified in previous studies.[25]

Table 1. Self-reported perceived stress levels, depressive symptoms and well-being by residency year

	R1 (*n*=13)	R2 (*n*=9)	R3 (*n*=3)	*R4 (n=8)*
PSS	21.23	25.50	19.00	*16.80*
BDI	32.38	39.00	23.00	*39.75*
WEM-WBS	42.46	38.17	51.00	*44.86*

Relationship with mindfulness scale

The relationships between mindfulness and stress, depressive symptoms, and well-being are reported in Table 2. Results confirm the study hypothesis: mindfulness was negatively associated with perceived stress and depressive symptoms and positively associated with well-being. All correlations were significant at the .05 level.

Table 2. Correlations between mindfulness and stress, depression and well-being

	MAAS	PSS	*BDI*
PSS	-0.45*		
BDI	-0.65*	0.61*	
WEM-WBS	0.51*	-0.68*	*-0.45**

Further analysis was performed by dividing the residents, based on their mindfulness scores, into groups with high and low levels of mindfulness. The cut-off point was identified as the mean score of the entire group (M = 3.8). Results showed significant differences in stress, depressive symptoms, and well-being between the groups. The high mindfulness group had lower scores for stress and depressive symptoms and higher scores for well-being whereas the opposite results were observed for the low mindfulness group who showed higher levels of perceived stress and depressive symptoms and lower levels of well-being (Figure 1).

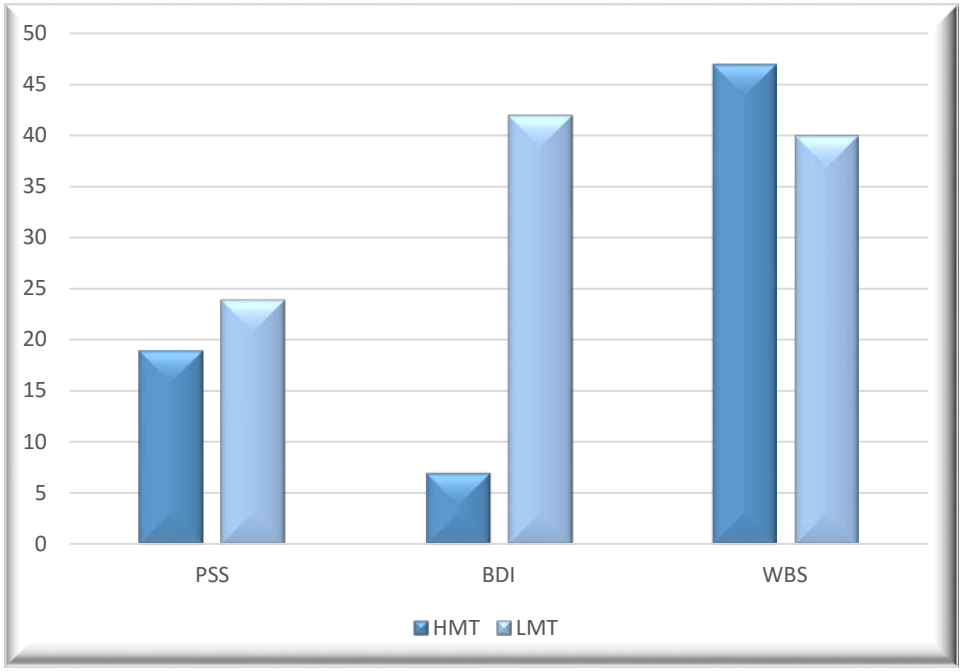

Figure 1. The differences between the high mindfulness and low mindfulness trait groups on self-reported measures

Discussion

The stress of residency training is well documented in the literature.[27] The effects of such stress may lead to burnout, depression, or even serious suicidal ideation[28] and, if unmanaged, may last beyond residency training.[7] Few studies have examined the positive factors that mediate stress and coping among medical residents.[9] The present study aimed to measure stress, depressive symptoms, and well-being in medical residents in Saudi Arabia and assessed the relationship of these variables with mindfulness as a protective factor against stress.

Our findings are consistent with those found in international studies, which suggest that residency training is, in fact, associated with high levels of stress and depressive symptoms. For our study, the result was expected because medical education in Saudi Arabia

generally follows Western standards and curricula. Residency training in such programs is typically highly demanding and associated with long training hours, limited sleep, and high emotional demands.[4]

Reported consequences of such rigorous programs include anxiety, depression, [3] social impairment, [4] and burnout.[2] However, very little research has identified mediating factors that reduce stress. Lebensohn *et al.* [9] found that good sleep routines and regular exercise are among the positive coping behaviors associated with wellness among medical residents. In the present study, we examined mindfulness as a trait-like quality in relation to stress and well-being.

Our results regarding mindfulness as a trait-like quality, as measured by the MAAS, confirm our hypothesis. Mindfulness as a state of mind - characterized by focus, awareness, and attention to moment-by-moment experience with acceptance - is associated with positive outcomes of less perceived stress and depression and enhanced well-being. This result is consistent with increasing evidence suggesting that mindfulness is associated with psychological health.[11]

Although mindfulness was measured in the present study as a trait or predisposition, previous studies have also shown that mindfulness can be learned. In fact, the well-established Mindfulness-Based Cognitive Therapy (MBCT) [29] and Mindfulness-Based Stress Reduction (MBSR) program[30] have shown that teaching such skills can improve stress levels among patients with chronic pain, anxiety disorder, and recurrent depression.

Therefore, if mindfulness, as a naturally present trait-like quality, is associated with general well-being, training medical residents to improve their mindfulness skills may provide a promising way to improve medical residents' mental health and well-being. A number of studies have measured the effects of mindfulness training on healthcare professionals.[21,22] A review of current studies suggests that mindfulness training is an effective tool to promote self-care and well-being in physicians and healthcare providers; thus, mindfulness training would likely be equally helpful for young physicians during their residency training.

When discussing mindfulness as a therapeutic approach, it is important to consider its cultural associations. Mindfulness has been adapted from East Asia and Buddhism. Therefore, some have argued that transferring skills that have specific social and cultural contexts requires careful consideration.[31] However, the influence of Islamic principles on Saudi culture might facilitate the adaptation of mindfulness because many of the mindfulness techniques are compatible with Islamic principles. For example, prayer, meditation and kindness are fundamental practice in Islam, which resemble the training required in mindfulness. These examples suggest that mindfulness practice is not a strange concept in Saudi Muslim culture, which increases its validity in adaptation.

Limitations

Although the present study provides valuable information in this understudied sample from Saudi Arabia, some limitations must be acknowledged. First, the sample size affects the validity of the study. Second, the response rate for the online survey was 55%, which might indicate bias in the sample. Specifically, individuals who participated in the study may have been those in need who sought help through participating in the study. Third, the measures used, except for the BDI-II, have not been validated for a Saudi sample. Therefore, the sample was compared with data from other studies. Despite these limitations, the present study provides initial data on an understudied community that should motivate further research in this important field.

Summary

In summary, the stress of medical residency training in Saudi Arabia is no different from that found in other studies performed in other areas of the world; such training is associated with high levels of perceived stress

and depression and low well-being. In the present study, mindfulness, as a trait-like quality of awareness, was significantly positively correlated with well-being and negatively correlated with stress and depression. These results demonstrate the potential beneficial effects of including mindfulness training in residency programs to promote well-being.

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الملخص

أثبتت الدراسات حول العالم أن تدريب الأطباء المقيمين مرهق بشكل عام. وقد ركزت الأبحاث بشكل رئيس على العوامل السلبية التي تسهم في رفع مستوى التوتر لدى المتدربين في هذه البرامج؛ و لكن هذا التركيز تحول في السنوات الأخيرة إلى فهم العوامل الوقائية التي تتوسط التوتر وتعزز الصحة النفسية، ومنها " اليقظة الذهنية"؛ والتي تعبر عن درجة التركيز والوعي والانتباه إلى التجارب الفردية لحظة بلحظة .

وفي بداية الأمر ركزت أغلب الدراسات على اليقظة الذهنية كمهارة يمكن تعلمها، وعلاقتها بالتوتر والإجهاد، ثم ظهر بعد ذلك دراسات تعنى باليقظة الذهنية كسمة أو حاله. **أهداف الدراسة:** تهدف الدراسة الحالية إلى فحص مستوى التوتر، والاكتئاب، والصحة النفسية لدى مجموعة من الأطباء المقيمين تحت التدريب في المملكة العربية السعودية؛ عن طريق تعبئة مجموعة من الاستبانات توزع عبر الانترنت. **النتائج :** أكمل الاستبانات 33 متدرباً فقط من 60 متدرباً تم التواصل معهم. نتائج هذه الدراسة وجدت دليلاً على مستويات عالية من الإجهاد وأعراض الاكتئاب بين العينة؛ كما وجدت أيضاً علاقة إيجابية بين اليقظة الذهنية كسمة وبين مستوى الصحة النفسية لدى العينة.

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Illness Perception of Heart Disease in a Saudi Population

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إدراك مرض القلب في عينة من المجتمع السعودي

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Abstract

Objectives: Patients' perception of their own illness affects how they follow management plans and how they react to various symptoms of cardiac diseases. The present study evaluated symptom perception, timeline, cure, consequences and causes of heart disease in adults at King Khalid University Hospital (KKUH) in the Kingdom of Saudi Arabia and assessed the associations of demographic factors. **Methods:** A cross-sectional study enrolled N=59 patients at KKUH using the Illness Perception Questionnaire (IPQ) with demographic questions added. Participants were patients between the ages of 18 to 75 years old diagnosed with heart disease. **Results:** Most participants were men (78.6%), 40 years old or older (83%) and married (81.4%); half the participants had a lower education level (52.5% secondary or less). Over 70% recognized breathlessness, chest pain, loss of strength and irregular heartbeat as symptoms of heart disease. Approximately half (52.6%) agreed that "Heart disease is likely to go on and on", and three-quarters (76.2%) agreed that "Heart disease is a serious condition". Almost all (91.5%) agreed, "Changing one's diet (less fat) will help to control heart disease". **Conclusion:** Participants had some misconceptions about their illness.

Key Words: illness perception, heart disease, Saudi Arabia, KKUH, IPQ

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Introduction

Heart disease is the leading cause of death worldwide.[1] Ischemic heart disease was the second highest cause of death in 1990 and the leading cause of death in the Arab world in 2010.[2] Research showed that non-physical factors might influence patients with heart disease.[3] The patients' attitudes, knowledge and mood can affect the outcome of the disease.[4,5] Thus, it is important to assess illness perceptions of heart disease among heart patients.

A study was conducted previously in the Kingdom of Saudi Arabia to estimate the prevalence of coronary artery diseases (CAD), and found an overall prevalence rate of 5.5%. The prevalence of CAD in men and women was 6.6% and 4.4%, respectively. Urban Saudi residents showed a higher prevalence of CAD (6.2%) compared to rural Saudis (4%).[6] A Saudi Arabian study to test the knowledge level of adults regarding dietary fat intake and coronary heart disease (CHD) showed that most participants recognized the correlation between CHD and exercise, smoking and dietary cholesterol. Most participants also acknowledged the difficulty of modifying their dietary habits and giving up their favorite foods.[7]

Weinmann and colleagues created the Illness Perception Questionnaire (IPQ) to assess the perception of diseases.[8] Perceptions of several diseases such as breast cancer,

diabetes mellitus and psoriasis were studied in different countries and cultures using the IPQ.[9-11] The IPQ was used previously in the Arabic region. Noureddine *et al*. translated and modified the original version of the IPQ into Arabic to assess the perception of heart disease in Lebanon.[12] An Arabic version of the IPQ was used in Saudi Arabia to evaluate the beliefs and perceptions of Vitiligo patients regarding their conditions.[13] The aim of the present study is to answer "what are the illness perceptions in patients with heart diseases in King Khalid University Hospital (KKUH) in Saudi Arabia?". As such, the perceptions of patients with heart diseases at KKUH were assessed using the Arabic version of the IPQ. We hypothesized that there are misperceptions of heart disease at KKUH, which will be different compared to other studies that used the same scale in different countries.

Methodology

Setting and sample

A cross-sectional design was used. The study population comprised N=59 patients who were either hospitalized or visiting the outpatient cardiac clinic at the KKUH. Participants were patients with heart disease and illness perception was evaluated in these patients. Inclusion criteria were: (a) 18 to 75 years old, (b) attending KKUH cardiac outpatient clinic or admitted to cardiac wards, and (c) patients diagnosed with a cardiac disease. We included all available patients who agreed to participate in the present research. A sample size calculation was performed using the single mean equation ($n = Z\alpha^2\ S^2 /d^2$) at the 95% confidence level (where S = standard deviation, $Z\alpha = 1.96$ for the 95% confidence level and d= the accuracy of the estimate). We found a previous study that showed an IPQ score standard deviation of 19.59 in patients with heart disease.[14] We assume the accuracy of estimate for the IPQ is a score of 5 out of a total score of 240. Thus, the required sample size is as follows: $N= (1.96)^2 * (19.59)^2 / 5^2 = 58.97$ or rounded up to 59.

Procedure

Ethics approval was obtained from the Institutional Review Board (IRB) at KKUH. Authorization from the Cardiac Center within the hospital was granted to proceed with data collection from the inpatient wards and outpatient clinics.

Data collection took place at KKUH, which is one of the largest hospitals in Riyadh and a hospital for patients from urban and rural areas. The cardiology and cardiac surgery wards and the outpatient clinics were visited by the research team over one month to collect the data. Data were collected between 4 March 2014 and 3 April 2014 by four medical students. Patients took about 20 to 40 minutes to complete the questionnaire. A female nurse was present when the patient was female.

For the item "heart disease is largely dependent on chance or fate", very few patients questioned what was meant by "chance" and they indicated that "chance" does not exist. Some patients were illiterate, so the questions were read to them with no extra explanation. Other patients were not able to finish the IPQ because they did not have the time or declined to finish it. These were excluded from the analysis.

Measurements

The heart disease version of the IPQ was adapted by Cherrington *et al*. and it included 57 items.[14] The first scale represents identity and included 15 items where the patients were asked whether symptoms were related to heart disease and the options were "Yes", "No" or "Don't Know". The score was from 0-15 using this scale. The IPQ had four remaining subscales that were rated using a Likert scoring scale from "Strongly Agree" to "Strongly Disagree". The timeline scale included eight items, the

cure/control scale included 10 items, the causes scale had 15 items and the consequences scale had nine items. The higher the scores obtained from the scales the more the patients believed that heart disease is chronic and controllable with many causes and symptoms.

An Arabic IPQ was used in a previous study by Noureddine *et al*.[12] who translated the IPQ into Arabic, and we obtained their permission to use it in our study. For cultural and demographic reasons, the translated version was modified slightly. The Arabic version showed good reliability and validity (Cronbach alpha was 0.80).[15]

Data analysis

The frequency and percentages or the mean and standard deviation (SD) were used to describe sample characteristics. To compare subgroups, we used the Pearson correlation coefficient (r), Student's *t*-test and ANOVA. Statistical Package for the Social Science Version 21 (SPSS v. 21.0; Armonk, NY, USA) was used in statistical analysis. We considered $p<0.05$ as significant for the level of significance for the statistical tests.

Results

Overall, N=59 patients participated in the study. Participants were divided into the following groups: outpatient (50.8%), inpatient (47.5%) and unknown information (1.7%), and there was no statistical difference between them (t=0.134, p=0.894). Inpatient participants were categorized into four groups based on duration of admission: one week or less (70.4%), more than one week to one month (22.2%), more than one month to one year (3.7%) and more than one year (3.7%). We also classified participants into multiple age groups: 18-30 years (5.1%), 30-40 years (10.2%), 40-50 years (28.8%), 50-60 years (28.8%) and 60-70 years (25.4%). The majority were men (74.6%); 20.3% were women and information was unavailable for the rest (5.1%). There was no statistical difference between these groups ($t = 0.259$, $p = 0.797$).

Less than half of participants had hypertension (40.7%), others did not have hypertension (54.2%), and there was no available information for the rest (5.1%). Half of the patients were not diabetic (50.8%), others were diabetic (44.1%) and the rest had an unknown diabetic status (5.1%). We asked participants if they were made aware by their physician or health specialist whether or not they have high cholesterol level. Their answers were as follows: no (44.1%), yes (39.0%), not sure (6.8%) and unknown information (10.2%). Over half of the participants were non-smokers (64.4%), others were smokers (20.4%), and smoking status was unknown for the rest (15.3%). Most were married (81.4%), 10.2% were single and information was unknown for 8.5% (Table 1).

Table 1. Demographic data

Variables	Participants (N=59)	Percentage (%)
Gender		
Male	44	74.6
Female	12	20.3
N/A*	3	5.1
Outpatient	30	50.8
Inpatient	28	47.5
N/A*	1	1.7
Duration of Admission		
< 1 week	19	70.4
< 1 month	6	22.2
< 1 year	1	3.7
> 1 year	1	3.7
Age		
18-30	3	5.1
30-40	6	10.2
40-50	17	28.8
50-60	17	28.8
60-75	15	25.4
Diabetes	26	44.1
Hypertension	24	40.7
Hyperlipidemia	23	39.0
Smoking	12	20.4

***N/A= not available (participants did not answer the question)**

The mean overall IPQ score was 163.40 (SD, 15.14; range, 42-225). The IPQ score for male patients was 165.33 (SD 13.89) and that for female patients was 161.18 (SD 17.41), but the difference was not significant (t = 0.792, P = 0.433).

The mean IPQ score for inpatient participants was 162.72 (SD 15.72). There was no significant correlation between age and total IPQ score (Pearson r = 0.073, p = 0.648). The mean IPQ scores for gender, education level, place of care, hypertension, diabetes, smoking and area of living are shown in Table 2.

Table 2. Relationship between IPQ scores and other factors

Factor		IPQ Mean (SD)	P value
Gender	Male	165.33 (13.89)	0.433
	Female	161.18 (17.41)	
Admission	Outpatient	164.10 (14.86)	0.771
	Inpatient	162.73 (15.72)	
Age	Less than 50 years old	160.94 (15.53)	0.302
	Equal to/or older than 50 years old	165.87 (14.80)	
Education level	High school and below	166.23 (13.68)	0.569
	University and above	163.47 (16.26)	
Hypertension	Yes	164.79 (14.89)	0.874

	No	164.05 (14.85)	
Diabetes Mellitus	Yes	166.81 (15.85)	0.285
	No	161.85 (13.28)	
Smoking	Yes	168.80 (12.48)	0.383
	No	162.41 (15.34)	
Region	Central	164.04 (14.88)	0.536
	Others	167.25 (14.75)	

The mean overall patient IPQ score on the identity scale was 8.07 (range, 0-15). For the items “breathlessness”, “chest pain”, “loss of strength”, “irregular heartbeat” and “fatigue”, more than 70% of the patients chose “yes”. Of the five items where “yes” was chosen the least selected were “nausea” (41%), “headache” (33%), “upset stomach” (30%), “flu-like symptoms” (21%) and “cough” (19%).

The mean overall IPQ score on the timeline scale was 24.60 (range, 8-40). About half of participants (52.6%) agreed that “heart disease is likely to go on and on”, while 49.1% of participants agreed that “heart disease is likely to be permanent”. Overall, participants had a mean score of 32.07 (range, 9-45) for the consequences scale (Table 3).

Table 3. IPQ scales

Scales	**Mean**	**SD**
Identity	8.07	3.47
Timeline	24.60	4.08
Consequence	32.07	3.66
Cure	38.00	4.15
Causes	60.23	7.07
IPQ total	163.40	15.14

Three-quarters of participants (76.2%) agreed that “heart disease is a serious condition”. “Heart disease is disabling” was agreed by 78% of the participants, and 91.5% agreed that “heart disease had major consequences on one’s life”. Eighty-three percent of the participants agreed that “with time, heart disease becomes easier to live with”. Only 13.6% of the participants agreed that “heart disease goes by its own”. The mean participant score on the cure scale was 38.00 (range, 10-50). Most participants (91.5%) agreed that “changing one’s diet (less fat) will help to control heart disease”. The mean score on the causes subscale was 60.23 (range, 15-75). The top five causes were smoking (95%), eating fatty food (93%), poor medical care in the past (90%), obesity (90%) and family problems and worries (88%), while the lowest five causes were depression (68%), overwork (66%), genetics (63%), work/job type (59%) and chance or bad luck (34%). There was no significant difference between men and women on all subscales.

Discussion

Our study evaluated illness perception in Saudi Arabian patients with heart disease. The sample was mostly middle-aged men and most participants did not have a university level of education. When conducting the present study, it was difficult to approach female patients for cultural reasons. Data collection was carried out by men.

Cherrington et al.[14] used the same tool in myocardial infarction patients and, compared with the present study, our participants had higher scores for the total IPQ score (163.4) than those in the United States (US) study (124.1). A higher IPQ total score equates to higher levels of negative illness perception.[14] This could be because our participants were less educated than participants in the US study. Some of our participants were illiterate and, therefore, the questionnaire was read to them. In addition, three subscale scores were higher in our study, one was similar and one score was lower compared with the US study. The higher subscale scores were consequences (32.1 in our study vs. 22.9 in the Cherrington *et al*. study), causes (60.2 vs. 43.0) and cure (38.0 vs. 24.0). This shows that participants in our study believed that heart disease has negative consequences; that there are many causes of heart disease; and, that heart disease is difficult to cure. For example, one patient who was admitted to the cardiology unit refused to label himself as a patient with heart disease even though he was diagnosed with angina. The timeline subscale was similar to the Cherrington *et al*. study (24.6 vs. 23.9), and the identity subscale is the only one that had lower scores than the US study (8.1 vs. 10.3). A lower score on the identity subscale suggested that patients with heart disease are not fully aware of the symptoms and signs of heart disease. For example, only 66% chose “sweating” as a symptom of heart disease and only 52% said yes to “dizziness”.

Noureddine *et al*. used the same tool as in our study.[12] Their study population was a community sample (hospital visitors). Noureddine *et al*. did not report the overall IPQ results, but they presented the detailed subscale scores, which are compared to our results as follows: three subscales were higher in our sample and the other two subscales have lower values. The consequences are lower in our study (32.1 vs. 33.39), causes are higher (60.2 vs. 58.15) and cure is also higher (38.0 vs. 24.86). This shows that our participants compared to Noureddine *et al*.’s study participants believed that their heart disease had fewer adverse consequences with many causes, and that curing their heart disease would be difficult. The timeline subscale was lower in our study (24.6 vs. 28.13), which suggests that our participants believed that heart disease is less chronic compared to participants studied by Noureddine *et al.* The identity subscale had lower scores (8.1 vs. 9.48), and a lower score for identity indicates that patients with heart disease are not fully aware of the symptoms and signs of heart disease.

There were no factors associated with a high IPQ total score. There was no significant difference in the IPQ total score for gender, age, having diabetes, having hypertension, smoking, in- or outpatient status or area of residence. However, Noureddine *et al.* found that smokers and diabetics had less control of their heart disease.[12]

There was no difference in IPQ subscale scores between men and women. This is inconsistent with results of previous studies. For example, Grace *et al*. found that women were less likely than men to attribute heart disease to causes within their control. Additionally, women are more likely than men to perceive heart disease as a chronic, untreatable condition.[16] In another study on coronary heart disease patients in Jordan, men perceived lower consequences and had a better understanding of their illness than did women;[17] however, Noureddine *et al*. found that more men than

women tended to view heart disease as having greater consequences (33.81 vs. 33.09).

Previous studies showed that negative illness perceptions were related to depressive symptoms[16] and these were subsequently associated with the development of new episodes of depression.[18] Negative illness perceptions of acute myocardial infarction patients also predict attendance at cardiac rehabilitation in the future.[19] One randomized controlled study examined the effect of an intervention that aimed to improve illness perceptions in patients with heart disease. The study found that the functional outcome after myocardial infarction can be improved by an in-hospital intervention designed to change patients' illness perceptions.[20]

The current study has some limitations, including that the IPQ has not been standardized within Saudi Arabia for reliability and validity, and that a small number of participants were recruited from one governmental hospital, which likely did not represent all regions within the Kingdom.

We recommend that health authorities in Saudi Arabia, specifically, and in the region in general prepare awareness campaigns to improve illness perceptions about heart disease. We also encourage health workers to spend enough time with patients and their relatives to correct their misperceptions about heart disease.

Implications for Practice:

- Heart disease patients in Saudi Arabia have negative illness perceptions compared to patients in the US.
- Improving illness perceptions held by patients may help improve their care.

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الملخص

إدراك المرضى لمرضهم يؤثر على كيفية اتباعهم لخطط العلاج وكيفية تفاعلهم مع مختلف العلامات والأعراض لأمراض القلب. الهدف من هذه الدراسة هو تقييم إدراك العرض، الخط الزمني، الشفاء، العواقب والمسببات لأمراض القلب للبالغين في مستشفى الملك خالد الجامعي في المملكة العربية السعودية، وتقييم تأثير العوامل الديموغرافية. دراسة مقطعية ألحقت 59 مريض في مستشفى الملك خالد الجامعي باستخدام استبيان إدراك المرض مع إضافة أسئلة ديموغرافية. أعمار مرضى القلب كانت من 18-75 عام. أغلب المشاركين كانوا ذكور (78,6%)، > 40 سنة في العمر (83%) ومتزوجين (81.4%)، ونصف المشاركين كان لديهم مستوى تعليمي منخفض (52,5% ثانوي أو أقل). أكثر من 70% من المشاركين أدركوا ضيق التنفس، ألم الصدر، فقدان القوة ودقات قلب غير منتظمة كأعراض لمرض القلب. ما يقارب نصف المشاركين (52.6%) اتفقوا أن "مرض القلب على الأرجح أن يستمر ويستمر"، وثلاثة أرباع (76.2%) اتفقوا أن "مرض القلب حالة خطرة". تقريبًا الكل (91.5%) اتفقوا أن "تغيير النظام الغذائي (دهون أقل) سيساعد للسيطرة على مرض القلب". المشاركون كان لديهم بعض المفاهيم الخاطئة حول مرضهم.

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Seizure Associated with Tramadol Dependence: A Cross-Sectional Study

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النوبة الصرعية المصاحبة للاعتماد على الترامادول: دراسة قطعية في مركز واحد

محمد عادل الحديدي، عبد الهادي الجيلاني

Abstract

Background: Tramadol is reported to be the most misused drug among all illegal substances in Egypt. The likelihood of it inducing epileptic seizures remains contested. **Objectives:** The present study examined the prevalence of seizures in Tramadol-dependent clients and sought to identify any possible associated factors. **Methods:** A survey of all Tramadol dependent clients was conducted from October 2014 to September 2015. Following this, N=215 participants were interviewed using the Mini-International Neuropsychiatric Interview (M.I.N.I.), the Beck Depression Inventory (BDI), the Hamilton Anxiety Rating Scale (HAMA-A); and a drug urine screening. Fasting blood sugar, serum creatinine, serum glutamic oxaloacetic transaminase, glutamic-pyruvic transaminase were also assessed. Electroencephalography was done twice. Participants were then placed into two groups: seizure and non-seizure. **Results:** One third of participants using Tramadol developed seizure. There were no significant within group differences in relation to completed psychometric or lab tests. Mean duration of Tramadol use, high doses, ingestion on empty stomach, and co-use with Tetrahydrocannabinol, antidepressants or drugs that could lower seizer threshold was found to be higher in the seizure group than the non-seizure group with statistically significant differences. **Conclusion:** The risk of epileptic seizure arising from Tramadol use cannot be ruled out and it is, therefore, recommended that Tramadol used in limited to circumstances where cost benefits are deemed worthwhile.

Keywords: Tramadol, epileptic seizure, drug misuse, Egypt

Declaration of interests: None

Introduction

Tramadol (4-phenyl-piperidine) is an opioid-based drug with an effect somewhat similar to codeine. Its action is mainly through agonist action on mu receptors and central gamma-amino-butyric acid (GABA) as well as to decrease re-uptake 5-hydroxy tryptamine (5-HT), noradrenaline).[1] Action on the μ-opioid receptor as the main site with subside actions serotonin, norepinephrine are responsible for its drug dependence effect.[2]

Although the population of Egypt now exceeds 90 million,[3] there are no official figures for drug dependency prevalence rates or an estimate as to how many drug users there are in the country.[4] However, the misuse of Tramadol has become a widespread problem highlighted by the General Secretariat of Mental Health and Addiction Treatment in 2015. Tramadol is believed to be the third most abused substance after cannabis and alcohol, according to national statistics;[5] however, Tramadol was the single most abused substance found in approximately 40.7 % of drug-addicted Egyptians surveyed by the Anti-Addiction Fund 10623 hotline.[6] The Ministry of Social Solidarity recently launched the hotline in response to the growing problem of Tramadol misuse. It is understood that the difference between the two reported figures might be explained by the fact that

Anti-Addiction Fund 10623 hotline figures were derived from people who contacted them to treat Tramadol dependency rather than for cannabis and alcohol dependency.[5] However, both figures suggest a concerning trend for Egypt. In 2014, 6% of callers to the Anti-Addiction Fund 10623 hotline reported that they had started using Tramadol at 15 years of age with one fourth of callers starting between the ages of 15 and 20 years. These numbers suggest that users between ages 15 to 20 years represent 22.9% of all users.[6] The General Secretariat of Mental Health and Addiction Treatment, maintain that "people have been using opiates here for thousands of years".[5] The United Nations Office on Drugs and Crime (UNODC) reported no less than five billion tablets trading in Egypt 2012. In 2013, Egyptian authorities declared that, they reduced the abuse of Tramadol from 650 million tablets in 2012 to 27 million tablets in 2013.[7] The decrease might be attributed to new efforts in drug trading prevention although a recent law for trading and buying Tramadol has led to a marked price increase that opened up the black market trade further. Although such measures may alleviate aspects of the problem, Tramadol misuse remains significant such that limited measures do not necessarily address the wider consequences.[8] A high prevalence of Tramadol use in Egypt is linked to easily accessible, inexpensively priced medication and the drug also holds less stigma since it is prescribed by doctors to treat illness. Other substances like alcohol carry the stigma of being prohibited by religion while heroin has gained a dangerous image in the public eye. Many people report using Tramadol for better sexual and physical performance, but a recent study published in Egypt reported the reverse to be true.[9]

The likelihood of Tramadol inducing an epileptic fit, as an undesirable side-effect, remains a contested point. Initially, researchers postulated that convulsions associated with Tramadol use were infrequent. However, Phase 4 studies of Tramadol detected many case reports of convulsions, which led to the revision of the drug's package insert to include a solid cautioning over the higher risk of epileptic convulsion with treatment.[10] Some studies have shown that, Tramadol can only aggravate convulsions if taken above the maximum therapeutic dose for patients with a past history of epilepsy or in conjunction with other drugs that lower the seizure threshold.[11] However, other studies have found that it may induce seizures even when taken in therapeutic doses and despite co-administration drugs or substances not being used.[12, 13, 14]

The aim of the present study is to estimate the prevalence of seizures in Tramadol dependent patients and to detect any possible associated factors.

Method

In the first phase of the present study, a survey was conducted with all Tramadol dependent patients who came to the Addiction outpatient clinic in Mansoura University Hospital for the period from 1st October 2014 to 30th September 2015. All participants recruited to the study met the inclusion and exclusion criteria. Inclusion criteria included both genders with an age range of 15 to 55 years, DSM-5 criteria for Tramadol dependence, daily use of Tramadol of any dosage for duration not less than one year and with or without history of epilepsy. Exclusion criteria included intellectual disability (IQ<70 as assed via the Arabic version of the Wechsler Adult Intelligence Scale Revised (WAIS-R),[15] any medical illness, for example, hypertension, diabetes mellitus, liver disease, and any psychiatric disorders before Tramadol use. Out of 224 selected cases, 219 agreed to participate in the study; four participants were excluded from the study having declined to be monitored via Electroencephalography (EEG). The remaining participants were divided into group A - those who never had seizures (n=149) and group B – those who have had seizures (n=66).

The mental state of all participants was assessed using the Arabic versions of the Mini International Neuropsychiatric Interview (M.I.N.I.),[16-18] the Beck Depression Inventory (BDI),[19,20] and the Hamilton Anxiety Rating Scale (HAMA-A).[21,22] History of previous seizures was taken from each participant and from the relevant attendant. To screen for drug trace, a urine screening involved one step multi-drug screen test (Advance Quality, In Tec Products, INC) for amphetamine, methylene deoxy methamphetamine, barbiturates, benzodiazepines, cocaine, opioid, Tetrahydrocannabinol (THC); a one step Tramadol test device (Abon Biopharm (Hangzhou) co., Ltd.; China) was used to screen for Tramadol in the urine. In addition, fasting blood sugar, serum creatinine, serum glutamic oxaloacetic transaminase (SGOT), glutamic-pyruvic transaminase (SGPT) were assessed. Electroencephalography (EEG) was done once for participants without seizures and twice for participants who had experienced seizures (one within 24 hours of the last seizure and the other within seven days from the last seizure).

The present study was approved by the Institutional Research Board (IRB) of the Mansoura Faculty of Medicine. The IRB is a committee formally designated to approve, monitor, and review biomedical and behavioral research involving humans and animals. It conducts risk-benefit analysis in an attempt to determine whether or not research should be done. The present study is in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. Written informed consent was obtained from all participants before inclusion into the study.

Statistical method

Data were analyzed using the Statistical Package for the Social Sciences - Version 20 (SPSS v. 20.0). Quantitative variables were presented as Mean (SD) and unpaired *t*-test was used for comparison between the groups. Qualitative variables were presented as number and percent. Chi-square or Fisher's exact test was used for comparison between the two groups, as appropriate. $P \leq 0.05$ was considered statistically significant.

Results

Results showed that the number of seizures ranged from one to nine with a median of four; all seizures occurred within two hours of the last Tramadol dose ingestion. Two thirds of participants using Tramadol and not experiencing any seizures were men while 100% of all participants dependent on Tramadol and have seizures were men. There was no statistically significant difference for age in either group, but earlier age of onset for the use of Tramadol was found in participants with seizure than without (Table 1).

Table 1. Comparison between participants with seizure and non-seizure regarding gender, age and age of onset for first use

	Seizure *(n=66)*	**Non seizure *(n=149)***	**Significance test**
Gender			
Male N (%)	66(100)	97(65.1)	$\chi 2=30.4$, $P \leq 0.001$
Female N (%)	0	52(34.9)	
Age (Mean ± SD)	28.0±3.8	27.9±3.7	t=0.13, P=0.9
Onset age (Mean ± SD)	20.9±4.4	25.9±3.8	t=8.7, $P \leq 0.001$

Table 2 showed that all participants in both groups have no depression, but approximately 90% in both groups reported anxiety-related symptoms on the HAM-A scale with no statistically significant difference. Also, there was no statistically significant difference between both groups in fasting blood sugar, SGPT, SGOT, and serum creatinine although only three subjects out of 66 in the seizure group presented with mild renal impairment. Ten percent of subjects who developed seizures had positive past history of epilepsy in comparison with zero participants in the non-seizure groups. EEG positive findings were identified in 6% of participants who did not report any seizure in their life compared to a 50% EEG positive finding in participants screened within 24 hours after seizure and 17% EEG positive finding after one week post-seizure.

Table 2. Comparison between participants with seizure and non-seizure in relation to physical and psychological state

	Seizure (*n*=66)	**Non seizure (*n*=149)**	**Significance test**
Epilepsy Yes No	 7(10.6) 59(89.4)	 0 149(100.0)	χ^2=16.3, $p\leq$0.001
EEG1 Yes No	 33(50.0) 33(50.0)	 9(6.0) 140(94.0)	χ^2=56.2, $p\leq$0.001
EEG2 Yes No	 11(16.7) 55(83.8)	 9(6.0) 140(94)	χ^2=6.1, p=0.013
Renal impairment Yes No	 3(4.5) 63(95.5)	 0 149(100.0)	Fisher's Exact, P=0.028
S. creatinine	0.85(0.6-1.5)	0.9(0.5-1.2)	Z=0.11, P=0.9
SGOT	33(24-40)	33(22-45)	Z=0.24, P=0.8
SGPT	35(26-45)	34(22-43)	Z=0.3, P=0.8
FBS	90(80-113)	91(70-118)	Z=0.16, P=0.87
Anxiety Yes No	 60(90.9) 6(9.1)	 136(91.3) 13(8.7)	χ^2=0.01, P=0.9
HAM-A	13(5-22)	13(4-21)	Z=0.17, P=0.9
Depression Yes No	 0(0) 66(100)	 0(0) 149(100)	Not applicable
BDI	5(0-8)	5(0-9)	Z=0.95, P=0.34

The pattern of Tramadol use is presented in Table 3. It shows the mean duration of use was found to be higher in the seizure group than the non-seizure group with statistically significant differences. Also, amounts of Tramadol that were higher than the accepted therapeutic dose (maximum 400mg) were found in participants who had seizures compared with those who did not have seizures. Using Tramadol on an empty stomach and Co-use with THC, SSRIs and drugs that lower seizure threshold were associated with higher frequency of seizure than none. On the other hand, concomitant use of Tramadol with benzodiazepine was found to be significantly higher in the non-seizure group. Use of Tramadol to relieve stress was not related to seizure.

Table 3. Comparison between seizure and non-seizure regarding pattern of Tramadol use

	Seizure (*n*=66)	**Non-seizure (*n*=149)**	**Sig.**
Tramadol duration (*Mean ± SD)*	7.1±1.4	1.9±1.1	t=29.07, $p\leq0.001$
>=5 yeas (N & %)	64(97)	3(2)	χ^2=192.3, $p\leq0.001$
<5years (N & %)	2(3)	146 (98)	
Tramadol dose *Median (Min-Max)*	1575(550-3375)	200(25-225)	Z=11.87, $p\leq0.001$ (Mann-Whitney test)
Higher than therapeutic dose (>400mg)			
Yes N (%)	55(83.3)	5(3.4)	χ^2=145.4, $p\leq0.001$
No N (%)	11(16.7)	144(96.6)	
Fasting intake			
No N (%)	12(18.2)	147(98.7)	χ^2=,153.8 $p\leq0.001$
Yes N (%)	54(81.8)	2(1.3)	
Co-THC			
Yes N (%)	26(39.4)	84(56.4)	χ^2=5.3, p=0.02
No N (%)	40(60.6)	65(43.6)	
Co-Benzo			
Yes N (%)	7(10.6)	89(59.7)	χ^2=44.7, $p\leq0.001$
No N (%)	59(89.4)	60(40.3)	
SSRI.TCA, MAOI			
Yes N (%)	43(65.2)	2(8.1)	χ^2=78.3, $p\leq0.001$
No N (%)	23(34.8)	137(91.9)	
Co-use of drugs lowering seizure threshold			
Yes N (%)	16(24.2)	0	χ^2=39.0, $p\leq0.001$
No N (%)	50(75.8)	149(100.0)	
Use of Tramadol to relieve stress			
Yes N (%)	28(42.4)	73(49.0)	χ^2=0.8, P=0.4
No N (%)	38(57.6)	76(51.0)	

Discussion

The results of the present study showed that lifelong number of seizures in the participants ranged from one to nine with a median of four. All seizures occurred within two hours of the last Tramadol dose ingestion and no recurrent seizure was experienced by any participant. Single seizure was frequent in other studies[23] while in

one study[22] an estimated 2.8% of participants had recurrent seizures; however, Jovanović-Cupić *et al.*[14] found that half of their participants experienced multiple seizures, this difference might be due to different methodologies. In a study by Petramfar and Haghighi,[24] convulsions occurred within the first 12 after Tramadol intake. In addition, Jovanović-Cupić *et al.*[14] found that epileptic attacks were caused by Tramadol instantly after its consumption (within the first 24 hours); although 16% of participants presented with convulsions 24 hours after Tramadol misuse.

The present study found that one third of participants (n=66) developed seizures after using Tramadol. Similar results were found in many other studies[1,14,24-27] although lower frequency of seizures has been noticed in other studies.[12,28] In the present study, no female developed a seizure (100% of participants were men) as a consequence of Tramadol misuse. Male predominance and the tonic-clonic nature of seizures were similar in this and other studies.[14,23,25,26,29] This may be due to the fact that men usually use higher doses and with earlier onset than women.

In the present study seizures were found in participants using higher than therapeutic doses and for longer duration. The maximum therapeutic dose of Tramadol is 400 mg/day.[25,30,31] Such findings coincide with those found in Taghaddosinejad *et al.*[23] who reported that convulsions were more common in participants who took higher doses concluding that convulsion is a dose-dependent property of Tramadol intoxication. This could be attributed to Tramadol neurotoxicity. Longer duration of misuse was found to be a risk factor for seizures.[14,27] Other studies have shown that Tramadol convulsions occur even in recommended doses as low as 50 mg.[14,32,33] Taghaddosinejad *et al.*[23] maintained that, when examining the blood Tramadol level, seizures happened in some cases with low blood Tramadol levels; however, it did not occur in some cases with high blood Tramadol concentrations. The reasons for this unusual finding remains unclear, but drug dependency and tolerance may be a possible cause.[23]

Several studies investigated why seizures occur with Tramadol use. Some revealed that high doses of Tramadol induce an inhibitory effect on gamma-amino-butyric acid (GABA) receptors.[34,35] This inhibition of GABA receptors has been reported to be responsible for induction of severe seizures in animals.[35,36] Moreover, GABA receptor inhibition produced by Tramadol can be a result of its opioid receptor agonist activity[35] and persistent action on the opioid receptor has been established to induce convulsion due to inhibition of GABA pathways.[37,38] Moreover, seizure with Tramadol intoxication can be referred to the monoamine reuptake inhibition.[28]

The present study revealed that using Tramadol on an empty stomach, and co-use with THC, SSRIs and drugs that lower seizure threshold were associated with higher frequency of seizures than none. A similar finding was highlighted by Kroenke *et al.*[39] Tramadol may also increase the convulsion probability in participants receiving other treatments, such as antidepressants and some antipsychotics. On the other hand, the present study has shown that concomitant use of Tramadol with benzodiazepine was found to be significantly higher among the non-seizure group. This result supports a study that demonstrated how Tramadol convulsions can be controlled by benzodiazepine.[40] Taghaddosinejad *et al.*[23] found that the most co-ingested medications were benzodiazepines. High seizure frequency with combined use of Tramadol in combination with alcohol was reported by Jovanović-Cupić *et al.*[14]

Ten percent of participants in the present study who developed seizures had a positive past history of epilepsy when compared with zero participants in the non-seizure group. EEG positive finding were found in 6% of participants who did not show any seizure in their life

compared with a 50% EEG positive finding in participants having seizures within 24 hours and 17% EEG positive finding one week after the last seizure. Similar findings are discussed in other studies,[11,12] which revealed a somewhat low risk of convulsions with Tramadol unless it was misused by participants with a history of epilepsy. Interestingly, one study conducted with animals has considered an anti-epileptic activity for Tramadol.[41]

The present study found that all participants in both groups did not report any depressive symptoms, but approximately 90% in both groups showed some degree of anxiety on the HAM-A scale with no statistically significant difference. These findings indicate that psychological factors may be not responsible for seizure causation.

It is well known that Tramadol is metabolized in the liver and eliminated through the kidney; any renal or liver insufficiency may affect seizure threshold or incidence,[20] but in the present study there was no statistically significant difference between both groups in fasting blood sugar, SGPT, SGOT, and serum creatinine although. Only three subjects out of 66 in the seizure group showed mild renal impairment. Results were expected when referring to the study by El-Hadidy and Helaly,[42] which found that Tramadol use was not associated with marked change in blood sugar, SGPT, SGOT, and serum creatinine even if taken in high doses and for long duration.

Conclusion

Seizures induced through Tramadol misuse were a common occurrence in one third of participants in the present study. Contributing factors may include earlier age of use, longer duration of exposure, high doses, past history of epilepsy or co-use of drugs that lower the seizure threshold. From our findings it is suggested that in order to avoid a risk of seizure, participants are best to avoid misusing Tramadol; its use is advised on a very limited basis if the cost benefits are worthwhile.

Strength and limitations

Although the current study is not a population based study, we believe that the high number of participants who misused Tramadol during the short period of study indicate the probability of high prevalence of Tramadol abuse in our community. Limitations of this study include its cross-sectional design and reliance on participants reporting past history of epilepsy. Also many participants who develop seizures did not come to our hospital for treatment since people in our community prefer private clinic consultation more than public consultations, particularly when it comes to serious conditions.

One limitation of the present study was our inability to measure the blood level of Tramadol, which prevented us from drawing firm conclusions with regard to its temporal relation and even causality with seizures. Although we did illicit drug screening for all clients, we were unable to measure other medication levels that could lower seizure threshold and we were reliant on participants accurately recounting their history.

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الملخص

خلفية البحث: في مصر أعلن حديثاً عن احتلال الترامادول على المقام الأول للحبوب المحظور تداولها و الاكثر تعاطي. و مع ذلك فان احتمالية حدوث النوبة الصرعية مع استخدام الترامادول مازال غير معلوم .**الأهداف:** كان الهدف من هذه الدراسة تقدير معدل حدوث النوبة الصرعية لدى معتمدي الترامادول وللكشف عن العوامل المحتملة التي قد تلعب دور في حدوثها. **طرق البحث:** أولاً، وقد تم اجراء دراسة مسحية لمدة سنة واحدة لجميع متعاطي الترامادول المترددين على العيادة الخارجية للادمان. تمت اجراء مقابلة تشخيصية لجميع المشاركين (215) باستخدام المقابلة العصبية والنفسية الدولية الصغيرة إصدار، كما تم عمل مقياس بيك للاكتئاب، مقياس هاملتون للقلق. وفحص البول للمخدرات. ثم تم قياس نسبة السكر صائم في الدم، و معدل الكرياتينين، و وظائف الكبد وقد تم اجراء رسم المخ الكهربائي مرتين. **النتائج:** ثلث معتمدي الترامادول حدث لهم نوبة صرعية في فترة البحث. لم يكن هناك اي تأثير واضح للاسباب النفسية التي قد تلعب دور في حدوث النوبة الصرعية. طول مدة الاستخدام، بجرعات عالية، و ابتلاعة على معدة فارغة، واستخدامة بالاشتراك مع تعاطي الحشيش، مضادات الاكتئاب أو الأدوية التي يمكن أن تخفض حد حدوث النوبة هي اهم العوامل التي كانت فارقة إحصائياً بين المجموعتين لصالح حدوث النوبة الصرعية . **الاستنتاجات:** من هذه الدراسة من أجل تجنب خطر تهديد الحياة نوصي بتجنب سوء استخدام الترامادول وعدم استخدمة إلا في ظروف محدودة للغاية عندما قيمة الفوائد تفوق التكلفة.

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Predictors of Depression and Anxiety in a Sample of Egyptian Female Breast Cancer Survivors

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التنبؤ بالاكتئاب والقلق في عينه من الاناث المصريات الناجيات من سرطان الثدي

خالد عبد المعز محمد، اسماء ابراهيم حسن

Abstract

Background: In Egypt, breast cancer is the most common cancer in women representing 18.9% of total cancer cases with an age-adjusted rate of 49.6 per100,000 population. Research on cancer survival includes the physical consequences as well as psychosocial and economic challenges surrounding the diagnosis of cancer and its treatment. **Objectives:** The current study assessed predictors of depression and anxiety in a sample of Egyptian women with breast cancer who attended an outpatient oncology clinic one or more years post-treatment. **Method:** A case control study involved N=74 women (*n*=37 breast cancer survivors; *n*=37 matched controls) who were clinically interviewed in an oncology outpatient clinic at the Suez Canal University Hospital. Depression and anxiety symptom levels were assessed using the Beck Depression Inventory (BDI-II) and the Hamilton Anxiety Rating scale (HAM-A). **Results:** Time since last treatment (one to five years) was associated with the greatest risk, categorized as being four times greater, for developing anxiety compared to those who had survived five or more years post-treatment. None of the socio-demographic characteristics or time since last treatment could significantly predict depression in breast cancer survivors. **Conclusion:** Further research on breast cancer survivors should include a larger sample size and wider variation in age and treatment modalities to enhance the generalizability of the results and better identification of the correlation between factors and mental disorders.

Keywords: Female breast cancer survivor, depressive symptoms, anxiety symptoms

Declaration of interest: None

Introduction

Breast cancer is the most common malignancy in women aged 50 to 70 years. Early diagnosis, advances in treatment modalities, and aging societies have led to a rapidly increasing number of cancer survivors.[1] In 2010, breast cancer survivors represented 22% of the estimated 11.7 million cancer survivors and 41% of all female cancer survivors. Today, it is estimated that one adult in a thousand is a cancer survivor in the western world.[2]

In Egypt, breast cancer is the most common cancer in women representing 18.9% of total cancer cases[3] with an age-adjusted rate of 49.6 per100 000 population.[4]

The National Coalition for Cancer Survivorship (NCCS) pioneered the definition of survivor as from the time of diagnosis and for the balance of life; a person diagnosed with cancer is a survivor. This expansive definition of "survivor" includes people who are dying from untreatable cancer. NCCS later expanded the definition of survivor even further to include family, friends and voluntary caregivers who are affected by the diagnosis in any way.[5]

The National Cancer Institute, Office of Cancer Survivorship, uses a variant of this expanded definition while Macmillan Cancer Support defines a cancer survivor as someone who is "living with or beyond cancer", namely someone who:

- has completed initial cancer management and has no apparent evidence of active disease;
- is living with progressive disease and may be receiving cancer treatment, but is not in the terminal phases of illness; or,
- has had cancer in the past.[6]

Cancer survivors are at increased risk of having co-morbid conditions[7] and have reported poor or fair health, psychological disability, limitations in daily life, and reduced ability to work after breast cancer compared to the general population.[8] Despite these problems, less medical care has been documented for cancer survivors compared to patients without a cancer history.[9]

Anxiety and depression are the two most commonly occurring psychiatric disorders in women with breast cancer.[10] Prevalence of anxiety in breast cancer patients has been as high as 49%, and that of depressive disorder also high at 46%.[11,12] Breast cancer is concerning due to its high mortality rate and because all stages of the disease and treatment procedures, e.g. surgical or adjuvant treatments, can have an adverse psychological impact on women who are affected by it.[13] Disease progress, less social support, a lower educational level, and younger age were predictors of psychological co-morbidity (p<.004).[14]

The current study assessed predictors of depression and anxiety in a sample of Egyptian women with breast cancer who attended an outpatient oncology clinic one or more years post-treatment.

Participants and method

The present study was a retrospective analytical study conducted in the oncology outpatient clinic of Suez Canal University Hospital.

Study population

The study population was comprised of female breast cancer patients who had completed cancer treatment via chemotherapy, radiotherapy or surgery on its own or in combination for one year or more and who attended the oncology outpatient clinic at the Suez Canal University hospital for follow up.

Inclusion Criteria

1. Women aged between 20 to 50 years old.
2. Histological diagnosis of non-metastatic primary breast cancer (stage 0–III b).

Exclusion criteria

1. Evidence of recurrent or secondary breast cancer proved by high values of tumor markers, metastasis in other breast or any other body organ by Abdominal and Chest Computed Tomography and Bone scan.
2. Currently receiving treatment.
3. Having any disabling medical disorder or chronic medical illness.
4. Having primary major psychiatric disorders before breast cancer was diagnosed as defined by the use of psychotropic drugs and self-report.
5. The presence of concurrent life events or stressors.

Sample

A total of N=74 women were recruited to the study of which n=37 were breast cancer survivors and n=37 were age and gender matched healthy controls. Data were collected for a six month period from April to September.

Method

Step 1

A clinical interview was conducted for collecting personal data, medical history and full general and neurological examination.

Step 2

All participants were interviewed to assess depression and anxiety using the following measures:

Beck Depression Inventory (BDI-II; Arabic version)[15]

The BDI-II is a 21-item self-report measure designed to assess the behavioral, emotional somatic and cognitive manifestations of depression.

Hamilton Anxiety Rating scale (HAM-A; Arabic version)[16]

The HAM-A is a 14-item self-report measure that rates the severity of an individual's anxiety.

Participants who were illiterate or with low literacy received help and supervision while filling the questionnaire.

Data management and statistical analysis

Data were collected coded, entered and analyzed using Microsoft Excel software before being analyzed using the Statistical Package for the Social Sciences Version 15 (SPSS v 15.0) software for analysis.

Quantitative data was expressed as means ± SD while qualitative data was expressed as numbers and percentages. Student *t* test was used to test significance of difference for quantitative variables and Chi Square was used to test significance of difference for qualitative variables.

A probability value (*p*-value) < 0.05 was considered significant and <0.01 for highly significant results. Multiple regression analysis was used for correlation between multiple factors.

Ethics

Informed consent was obtained from all participants, which included the following ethical points:

1. Aim of the research.
2. Explanation of the aim in a simple manner to be understood by lay people.
3. No harmful maneuvers had been used in order to obtain consent.
4. All data were considered confidential and were not used outside the current research.
5. Participants were provided with contact details of the researchers for the purpose of communicating any questions or concerns pertaining to the study or their involvement in the study.
6. All participants were informed about the outcome of the study.
7. All participants were aware that they could withdraw from the study at any time without giving any reason.
8. In the case of participants who were illiterate or had low literacy, a witness signature was sought to confirm how their data were collected.
9. All participants provided signatures or their finger prints to indicate their consent.

Results

There were no statistically significant differences between breast cancer and control groups for age, marital status, residence, economic status or educational level. Married participants represented the majority of subjects (78.4%, 83.8%) in control and cases respectively; however, all single participants (5.4%) were in the control group. Participants in the breast cancer survivors' group were either illiterate or could read and write while the majority of the control group reported having received a technical education (Tables 1 and 2).

Table 3 shows that 86.5% of breast cancer cases were diagnosed after 2005. All had undergone radical mastectomy and chemotherapy with the majority receiving radiotherapy (97.3%) and hormonal therapy (91.9%); 24.3% had received their last treatment within the last five years.

Table 4 shows that there was a statistically significant difference between breast cancer cases and controls in relation to the HAM-A. Participants with breast cancer reported experiencing more anxiety symptoms compared to controls. Results from the BDI-II returned a non-significant difference in the reported mean for both groups.

Time since last treatment (one to five years) was associated with the greatest risk, categorized as being four times greater, for developing anxiety compared to those who had survived five or more years post-treatment (Table 5).

None of the socio-demographic characteristics or time since last treatment could significantly predict depression among breast cancer survival (Table 6).

Table 1. Distribution of age between both groups

Age (years)	**Cases group (*n*=37)**	**Control group (*n*=37)**	***p*-value**
Mean ± SD	43.03 ± 6.1	41.05 ± 6.1	0.167

Table 2. Socio-demographic characteristics of studied population

	Cases group (*n*=37)		**Controls group (n=37)**		**p-value**
	No.	**%**	**No.**	**%**	
Residence					
Rural	18	48.6	21	56.8	0.485
Urban	19	51.4	16	43.2	
Marital status					
Single	0	0	2	5.4	0.497
Married	31	83.8	29	78.4	
Divorced	1	2.7	3	8.1	
Widow	5	13.5	3	8.1	
Economic status					
Poor	16	43.2	11	29.7	0.160
Intermediate	20	54.1	21	56.8	
Good	1	2.7	5	13.5	
Educational level					
Preparatory and less	19	51.4	12	32.4	0.323
Primary and secondary	4	10.8	3	8.1	
Technical education	11	29.7	17	45.9	
Higher education	3	8.1	5	13.5	

* Statistically significant at $p < 0.05$ a Fisher's exact test

Table 3. Past Medical history among cases

	No.	**%**
Year of diagnosis		
2000 – 2005	5	13.5
2005 and later	32	86.5
Treatment modalities		
Radiotherapy	36	97.3
Chemotherapy	37	100.0

Surgery "Total resection"	37	100.0
Hormonal therapy	34	91.9
Time since last treatment		
One to five years	28	75.7
Five years or more	9	24.3

Table 4. Comparison between breast cancer cases and their controls regarding HAM-A and BDI-II score

Measure		Cases group **(n=37)**	Control group **(*n*=37)**	*p*-value
Beck Depression Inventory-II (BDI-II)	**Mean ± SD**	19.14 ± 9.93	15.08 ± 10.07	0.086
	Range	2 – 40	2 – 39	
Hamilton Anxiety Rating Scale (HAM-A)	**Mean ± SD**	21.35 ± 11.26	15.81 ± 11.34	0.038 *
	Range	2 – 52	1 – 50	

Table 5. Multiple logistic regression analysis for the predictors of anxiety among cases

	B	***S.E.***	***p*-value**	**Adjusted OR**	**95% CI of Adjusted OR**	
					Lower	**Upper**
Age groups	-0.98	0.793	0.215	0.374	0.079	1.769
Time since last treatment	1.48	0.990	0.134	4.402	0.632	30.659
Residence	0.51	0.859	0.555	1.659	0.308	8.932
Marital status	0.11	0.544	0.836	1.119	0.386	3.250
Economic status	0.33	0.757	0.665	1.387	0.315	6.117
Educational level	0.33	0.457	0.468	1.393	0.569	3.415
Constant	2.70	2.925	0.357	14.831		

Table 6. Multiple logistic regression analysis for the predictors of depression among cases

	B	***S.E.***	***p*-value**	**Adjusted OR**	**95% CI of Adjusted OR**	
					Lower	**Upper**
Age groups	-0.620	0.763	0.416	0.538	0.121	2.400
Residence	-0.225	0.837	0.788	0.799	0.155	4.118
Marital status	0.129	0.518	0.803	1.138	0.413	3.138
Economic status	0.377	0.737	0.610	1.457	0.343	6.185
Educational level	0.333	0.449	0.458	1.396	0.579	3.366
Time since last treatment	0.559	0.923	0.545	1.748	0.286	10.674
Constant	1.875	2.856	0.511	6.523		

Discussion

The current study sample included only young survivors, aged 50 years or younger. The reasons which accounted for greater symptom burden among younger survivors are:

1. Young women receive a cancer diagnosis when they are in a state of "perfect health"[17] while older women have more life experience with health and illness and have developed coping strategies to manage prior crises and illness. Older women have fewer life demands with family, children, and employment, and many have established social networks.[18] It follows that life experience prepares older women to cope with the emotional consequences of a breast cancer diagnosis better than younger women.[19]
2. Young women feel that they are too young to have been diagnosed with cancer; feel different from their peers; described feeling ''out of sync'';[20] and, report feelings of loss related to actual loss of choice to have children and potential loss of not seeing their children grow up.[21] There is strong evidence that younger survivors are at higher risk for psychological morbidity.[22]
3. Younger women report more unmet needs, experience greater emotional distress, have more concerns about appearance, self-concept, employment, and finances than older women do.
4. Young women report greater difficulty coping with a cancer diagnosis because they have more responsibilities requiring physical effort; greater concern about the impact of their illness on their families and intimate relations; greater fear of death; higher expectations for themselves concerning health and functional status; and, exposure to more complicated and more toxic treatment regimens.[23]
5. Younger cancer survivors are more likely to choose definitive, e.g. surgery, or systemic, e.g. chemotherapy, cancer therapies, which are associated with greater side effects and long-term late effects.
6. Side effects of adjuvant treatment such as chemotherapy and radiotherapy also have unwanted physical side effects. Such side effects include hair loss, dry or reddened skin, premature menopause, and sexual dysfunction.[24] These side effects are particularly distressing for younger survivors who often worry about how such physical changes might affect their sexual lives and their romantic relationships. Moreover, these side effects can severely disrupt breast cancer survivors' daily routine and their ability to maintain their roles in family or as job holders.[25, 26]

Higher levels of unmet needs have been identified in patients with characteristics similar to participants in our study - women who were younger, unmarried, experienced physical morbidity, lower income, financial difficulties, who lived in a rural location and had unmet needs were associated with higher anxiety and/or depression levels.[27, 28]

A good explanation and predictor of different reactions to cancer as a disease and to treatment in relation to life experience is found in a study that describing patterns of psychosocial functional adjustment.[29] The study found that the majority of breast cancer survivors in the recovery phase were emotionally distressed during diagnosis and treatment, but were able to move on with their life, integrating cancer as one component of their life experience.[30]

The majority of participants in the current study were married and study results indicated no significant relation between marital status and depression among survivors; also, we did not find that marital status was a significant predictor for anxiety. Similarly, an Iranian study[16] revealed that there were no significant relationships between marital status and risk of severe psychological

co-morbidity. The study reported that being single is a protective factor for developing psychological distress while being widowed led to a greater risk of developing psychological distress. Conversely, other studies reported fewer depressive symptoms among married females.[31-34] In the current study, 65% of participants lived in rural areas; however, the results did not reveal any significant relation between anxiety or depression in relation to residence as had been the case in one study.[35]

All breast cancer survivors in the current study had sustained a total mastectomy. Reconstructive surgery was not used as a definite surgical option possibly due to a shortage of medical services and/or the survivors' low socio-economic status which likely meant that breast reconstruction was a less viable option to choose. It was hypothesized that removing a breast totally would cause depression and perceived low body image; however, the current study did not include other types of surgery for comparison.

To redress this point, other literature was reviewed for the current study which focused on the type of surgeries and possible effect on psychological morbidity. For example, a study that assessed Egyptian mastectomy survivors found that surgery was not the only cause for elevated depression levels in the sample population (46%) who were assessed using the BDI-II (cut-off point >12); it was concluded that radiotherapy treatment contributed to post-mastectomy depression even after three years.[36]

A recent study in Mansoura, Egypt[37] evaluated the impact of modified radical mastectomy (MRM) versus breast conserving surgery pre- and post-operative and found that the MRM group showed a greater level of cognitive, affective and behavioral distress when compared with the pre-operative assessment. A Korean study[38] found that mastectomy and radiotherapy was linked to more depressive symptoms in Korean survivors of Stage 0-III BC. The impact of mastectomy can be greater than the impact of breast cancer itself. Women who have had mastectomies appear to experience more bio-psychosocial problems, e.g. dissatisfaction of body image, feminine self-image, self-dislike and concern with regard to sexual activities.[39]

In the present study, time since diagnosis or treatment was not found to be a predictor for depression in breast cancer survivors. This point is both supported and contradicted in two studies - one in Nigeria[33] found that more years since diagnosis predicted more depressive symptoms while a US study reported the opposite.[40] As hypothesized, the present study found that time since treatment predicted more anxiety among participants who had completed treatment in less than five years making them four times at risk for developing anxiety compared with those who were five or more years post-treatment. In the current sample, 75% were less than five years post-treatment, which may explain the high mean HAM-A score in those with breast cancer.

The relationship between anxiety and time elapsed could be best explained by differences between the early phase post-treatment and the late period as described by Mullan.[41] Post-treatment of up to three years is called extended survival; it is when the active treatment has ceased and there is the greatest risk of recurrence for most cancers. Most of the participants in the current study were in this category. Survivors with post-treatment times of five or more years represent the permanent phase when the risk of recurrence for most cancers diminishes and patterns of previous lifestyle are re-established.

The present study excluded the presence of concurrent life events or stressors. However, the timing of the study, which took place during routine follow-up visits, may in part account for increased emotional distress in the breast cancer group. Returning to the hospital to ensure that her disease remains in remission is critical for each patient and is a time when distress about possible recurrence is

heightened. It may be a time when survivors remember their experience of the disease.[42]

Limitations

Several limitations of the current study must be considered:

1. The small sample was drawn from a relatively homogenous group of patients attending an oncology outpatient clinic at a single hospital. This limits the generalizability of the results.
2. Another limitation is the single time-point measure, which does not allow understanding of changes in the depression and anxiety in the different trajectory of cancer treatment and follow-up. However, in view of the broad agreement between our findings and those in other tertiary referral centers, it is unlikely that the sample is untypical or that the results contain important biases.
3. Most participants were illiterate, had few activities to occupy their time and were from rural areas, which might have affected the results.
4. There was no baseline assessment at the time of surgery for comparison, which did not allow an analysis of the most stressful times for breast cancer patients and the fluctuations of their distress over time.
5. Coping strategies adopted by participants influenced their psychological status, as did the impact of married life, body image and social supports, which were important in the psychological adjustment of cancer.

Recommendations and implications

In clinical practice, it is always important to examine the psychosocial status of cancer patients during follow-up visits. Oncologists should pay attention not only to cancer as a disease and its related issues at the prognosis, stage, metastases, etc., but also to the role of coping strategies, depression, and anxiety, body image, self-satisfaction as well as interpersonal factors, such as social support and marital life and other external life stressors.

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الملخص

يعتبر سرطان الثدي من أكثر انواع السرطان شيوعاً بين النساء في جمهورية مصر العربية، وهو ما يمثل 18,9% من إجمالي حالات السرطان بمعدل 49,6 في كل 100,000 من السكان. ان نسبة سرطان الثدي ازدادت في العقود الأخيرة، وازدادت معها فرص البقاء على قيد الحياة، ويتبع ذلك زيادة في اعداد النساء اللواتي يعشن مع نتائج المرض والتي تشمل ردود الأفعال النفسية للمرض والعلاج وتأثيراته الجانبية وانعكاسه على حياتهن. وتهدف هذه الدراسة الى التنبؤ بالاكتئاب والقلق في عينة من الناجيات من سرطان الثدي بعد مرور سنة على الأقل من استكمال انماط العلاج المختلفة .

وقد تم تطبيق النسخة العربية من مقياس بيك للاكتئاب والنسخة العربية من مقياس هاميلتون للقلق على عينة مكونة من 37 من النساء الناجيات من سرطان الثدي المترددات على عيادة الأورام بمستشفى جامعة قناة السويس وكذلك عينة ضابطة مماثلة من حيث السن والخصائص الديمغرافية. وقد خلصت نتائج الدراسة الى وجود فوارق احصائية لأعراض القلق بين المجموعتين باستخدام مقياس هاملتون للقلق في حين لم يتبين فوارق احصائية لأعراض الاكتئاب باستخدام مقياس بيك للاكتئاب في حين كان عنصر الزمن عامل التنبؤ الوحيد لاحتمالية حدوث القلق.

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Posttraumatic Stress Disorder and Psychological Trauma in Syrian Refugees in Duhok, Iraqi Kurdistan

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إضطراب الكرب التالي للرضح وعلاقته بالصدمات النفسية لدى اللاجئيين السوريين في دهوك، كردستان العراق

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Abstract

Objectives: The present study aimed to determine the prevalence of posttraumatic stress disorder (PTSD); to identify the relationship between PTSD symptom severity with the experienced traumatic events; and, to assess whether quantity or quality of trauma exposure is associated more with PTSD symptom severity. **Method:** PTSD and its relation to traumatic experiences in a random sample of 820 Syrian refugees at Domiz 2 camp of the Northern Iraq in April-June 2015 were assessed. Face to face interviews were conducted to collect socio-demographic data, and level of trauma exposure and PTSD by Harvard Trauma Questionnaire (HTQ). **Results:** of the 820 Syrian refugees, 134 (16.3%) had PTSD symptomatology. The rate of PTSD among mildly traumatized refugees was (12%), among moderately traumatized refugees was (13.6%), and among severely traumatized respondents was (50%). PTSD rates were high among respondents experienced separation, physical and emotional violence. All trauma types, except sexual violence, were significantly associated with PTSD severity and a significant association was found between cumulative trauma effect and the severity of PTSD. **Conclusion**: PTSD symptom severity was related to cumulative traumatic events and was significantly associated with different trauma types. Important steps are needed to provide humanitarian protection to those who fled their countries and cross international borders. Mental health treatment programs are needed for Syrian refugees suffering from PTSD and other psychological problems.

Keywords: Posttraumatic stress, trauma, Syrian refugees, Iraq

Declaration of interest: None

Introduction

Refugees are likely to be exposed to various traumatic events, such as the threat of dying, witnessing violence, sustaining serious injury and/or the disappearance of relatives and close friends.[1] Since 2012, the conflict in Syria has resulted in many Syrians leaving their country in search of safety elsewhere. The United Nations Refugee Agency (UNRA) recorded that over 2.5 million people have fled the Syrian conflict. By March 2015 an estimated 226,943 were registered as refugees in Iraq.[2] The majority were registered and living in and around the city of Duhok in Northern Iraq. Although the regional government in collaboration with non-governmental organizations endeavored to provide shelter, food, water, healthcare, education and employment to refugees it remains difficult to manage all of their needs.

When refugees are exposed to repeated, prolonged traumatization compounded by the difficulties of their living conditions and their worries about an unpredictable future, the probable rates of depression, anxiety, and PTSD increase.[3,4] Research on Rwandan and Burundese refugees found that more than half of those studied had severe psychiatric disorders. The prevalence of PTSD ranges from 14-37% in community populations affected by war and 6-8% in those

unaffected by war as in the United States.[5] It is estimated to range from 36-62% among Syrian refugees in camps within Jordan.[6]

Previous meta-analysis studies indicated that cumulative traumatic events are the main predictors for development of PTSD in refugees.[7] Symptom severity of PTSD and depression was significantly associated with accumulation of traumatic events.[8] Some reported that the relationship between psychopathological symptoms and objective measures of trauma severity is far from clear.[9]

Others investigated the relationship between quantity of trauma exposure and the severity of PTSD symptoms. Mollica *et al.* confirmed the linear relationship between quantity of self-reported trauma and PTSD severity in Cambodian refugees.[10] This is supported in a study on Kosovar Albanians, which indicated a significant linear decrease in mental health status especially regarding worsening of PTSD symptoms and social functioning with increasing amount of traumatic events.[11] Conversely, a study on Iraqi refugees indicated that trauma subtypes are related more than cumulative trauma in the prediction of mental health outcomes.[12]

Some studies found that refugees exposed to multiple trauma in their original countries, such as being in jail, tortured or frequent sexual abuse experienced persistent mental health problems.[13] Different traumatic experiences, such as witnessing the kidnapping of family members, or being close to death were associated with PTSD symptoms.[14]

Researchers have tried to investigate whether different symptom profiles in refugees are related to different trauma experiences.[8] A study on Tuareg refugees in Burkina Faso found that people who experienced the death of a family member were more likely to have a PTSD diagnosis.[15]

The aim of the current research was to measure the prevalence rate of PTSD symptoms and severity in Syrian refugees who were resettled to camps in Northern Iraq. Findings may provide information on whether PTSD symptom severity is related to the number of self-reported traumatic experiences or if it is associated with different trauma exposure types.

Method

Aim and objectives

The present study assessed the relationship between exposure to traumatic events and PTSD symptom severity in Syrians living in refugee camps in Northern Iraq. The specific objectives were to:

1. Provide socio-demographic information of Syrian refugees.
2. Determine the rate of PTSD among Syrian refugees.
3. Investigate the association between cumulative trauma events reported among Syrian refugees and the rates of PTSD.
4. Assess the relationship between severity of PTSD symptoms and various typess of traumatic experience.
5. Identify whether PTSD symptom severity is associated more with a total number of personally experienced trauma events or with different types of traumatic experiences.

Participants and procedure

A cross-sectional survey with N=820 Syrian refugees was conducted at Domiz 2 camp, which is located 20 Km to the southwest of Duhok city in Northern Iraq. At the time of conducting the study, approximately 13,736 Syrian refugees were settled in the camp and shared 2289 tents. A total of 820 tents were selected randomly. One member of each family was chosen according to the following inclusion criteria:

- Syria was the person's country of origin;

- the person had lived in Syria since 2011 leaving the country only after that year;
- he/she was over the age of 18 years; and,
- he/she was able to communicate.

Exclusion criteria were:

- having disorders that affected mental capacities and insight or effecting normal communication like intellectual disability, advanced dementia, and
- psychotic patients in the active stage or in relapse with severe psychotic features.

Face-to-face interviews were conducted for data collection. Six counselors administered the psychometric measures following a five-day training provided by a psychiatrist. The interviewers, one supervisor, and one project assistant were hired locally. Interviews lasted for two months starting on 15 April 2015.

The number of tents was determined by a simple random sampling technique. An eligible adult was selected for interview from each tent by choosing one name randomly from the family members' names written on small papers and put in a bag. Efforts were made to interview men and women separately to provide a confidential space for them to answer questions.

Measures

Socio-demographic information was obtained via a questionnaire for age, gender, marital status, religion, academic level, occupation status, and past psychiatric history of participants and of family members.

The Harvard Trauma Questionnaire (HTQ) was used to assess trauma exposure and PTSD symptom levels.[16] It is a widely used cross-cultural checklist. Parts I and IV were used, which addresses exposure to traumatic events and the presence and severity of PTSD, respectively. Scores of 2.5 or more on Part IV indicated clinically significant PTSD. The HTQ was validated for the current study by three specialist psychiatrists and proved to have high test- retest reliability. Fifty (n=50) refugees were interviewed and then re-interviewed four days later by other assessors with results indicating a good reliability correlation coefficient and high score intra class correlation coefficient of more than 0.7. For the HTQ Part I (trauma events), which included 40 items, the test re-test reliability correlation coefficient was 0.867 with $p< 0.001$. The pretest T1 mean (SD) was 8.8 (5.7) and the posttest T2 Mean (SD) was 9 (4.6). The intra class correlation average measure was 0.920 (for the 95% confidence interval the upper band is 0.858 and the lower band is 0.955).

For Part IV HTQ (trauma symptoms), which contained 41 items, the test re-test reliability correlation coefficient was 0.882 with $p< 0.001$. The pretest T1 mean (SD) was 70.3 (7. 8) and the posttest T2 Mean (SD) was 77.3 (14.6). The intra class correlation average measure was 0.888 (for the 95% confidence interval the upper band is 0.474 and the lower band is 0.959).

Ethical considerations

Ethical approval was obtained from the Scientific Committee within the College Medicine (University of Duhok). Approval was also obtained from the ethical committees of the Directorate of Health/Duhok (DOH). Written consent forms were completed to ensure informed consent and an information sheet about the research was read out to participants by the interviewers. All data remained confidential and was securely stored by researchers.

Data analysis

Data analysis was performed using the Statistical Package for Social Science - Version 19 (SPSS v 19.0) software package. Continuous variables were expressed as means and standard deviations, and the categorical variables were presented as percentage frequencies. Subgroups were examined by Chi-square tests, and independent sample t-tests. Bivariate analysis involving

Pearson correlation was used to determine correlations between traumatic event scores and PTSD scores. The *p* values set less than 0.05 indicated statistical significance, and *p* values set below 0.001 indicated high statistical significance.

Results

A total of 820 interviews were conducted. The mean age of participants was 33.6 years old (SD=10.8). The age range was 18 to 78 years old. Socio-demographic information is provided in Table 1. The majority of participants were young (78.5%); the middle age group constituted 19.8% and elderly people constituted 1.5% of those interviewed. Women were over-represented in the sample (61.7%) and most were married (91.6%). The majority of Syrian refugees (99.6%) were Muslim. Nearly half had a primary school education; very few had a university education or higher academic degrees and most were unemployed (89%). Only a few participants or members of their families had a positive past history of diagnosable psychiatric disorders.

Table 1. Sample characteristics of Syrian refugees (N= 820 participants)

Character	Number (%)
Age	
Young (18-40 yr)	644 (78.5%)
Middle age (41-65 yr)	163 (19.8%)
Elderly (>65 yr)	13 (1.5%)
Gender	
Female	506 (61.7%)
Male	313 (38.2%)
Marital status	
Single	53 (6.5%)
Married	743 (91.6%)
Divorced	5 (0.6%)
Widowed	10 (1.2%)
Religion	
Muslim	817 (99.6%)
Yezidi	3 (0.4%)
Education level	
Primary school	308 (51%)
Secondary school	233 (38.6%)
Academic degree	59 (9.8%)
Higher education	4 (0.7%)
Work status	
Unemployed	728 (89%)
Employed	90 (11%)
Past psychiatric history of participant	
Positive	14 (1.7%)
Past psychiatric history of family member	
Positive	18 (2.2%)

The frequency distribution of cumulative exposure to traumatic events among Syrian refugees at Domiz 2 camp is presented in Table 2. More than two-thirds (78.4%) of respondents had experienced 1 to 10 traumatic events. Approximately 20.8% reported experiencing 11 to 20 traumatic events. Only 6 (0.7%) respondents had experienced more than 20 traumatic events.

Table 2. Cumulative traumatic events and frequencies of PTSD* among Syrian refugees assessed by HTQ.

Number of traumatic experiences	Refugees N/person	PTSD N (%)	PTSD cases cases N % within group
1 -10 traumas	643 (78.4%)	77	12%
11 - 20 traumas	171 (20.8%)	54	31.6%
>20 traumas	6 (0.7%)	3	50%

*Cut off point of PTSD diagnosis is 2.5 scores on HTQ.

Among 820 Syrian refugees, 134 (16.3%) were assessed as meeting the threshold for clinical PTSD on the HTQ. Only (12%) of the respondents who had experienced 1-10 traumatic events met symptom criteria for PTSD. (Table 2) The PTSD rate in those who had experienced 11-20 traumatic events was higher (31.6%). Syrian refugees who had experienced more than 20 traumatic events reported a higher rate of PTSD (50%).

Table 3. Frequencies of PTSD cases among Syrian refugees experienced one or more of various traumatic events (*n*=134)

Trauma type	Refugees	PTSD cases	PTSD %
	N (%)	N (%)	within group
Lack of basic needs	812 (99%)	133 (16.2%)	16.4%
Combat situation	754 (92%)	131 (15.9)	17.4%
Violence due to belongingness	745 (90.8%)	123 (15%)	16.5%
Threats, emotional violence	444 (54.1%)	92 (11.2%)	20.7%
Murder	353 (43%)	69 (8.4%)	19.5%
Physical violence	280 (34.1%)	70 (8.5%)	25%
Separation	121 (14.8%)	31 (4.5%)	25.6%
Sexual violence	16 (1.9%)	3 (0.4%)	18.8%

Table 3 shows the frequencies of various types of traumatic experiences and it demonstrates the rates of PTSD cases among Syrian refugees who experienced one or more different types of traumatic events. The majority of Syrian refugees (99%) reported a lack of basic needs. Most of them (92%) reported violence due to being in a combat situation. Violence due to belongingness was also highly experienced by Syrian refugees (90.8%). The PTSD rate was higher (25.6%) among those who experienced one or more traumatic events involving

separation. About 25% of those exposed to physical violence reported PTSD symptomatology while 20.7% of those who had experienced threats and emotional violence met the criteria for a PTSD diagnosis. Syrian refugees who experienced other groups of trauma events had lower frequencies of PTSD.

The mean number of exposure to various types of trauma events among PTSD and non-PTSD cases is presented in Table 4. Syrian refugees who met the criteria for PTSD symptomatology had significantly higher means of traumatic events compared to non-PTSD respondents. The only exception between the two groups was exposure to sexual violence in which there was no significant difference between them.

Table 4. The mean number of exposure to various types of trauma events among PTSD (*n*= 134) vs non-PTSD cases (*n*= 686) of Syrian refugees

Type of trauma	PTSD cases trauma events Mean (SD)	non PTSD cases trauma events Mean (SD)	*p* value
Lack basic needs	0.62(0.21)	0.53(0.21)	<0.001**
Combat situation	0.41(0.19)	0.31(0.19)	<0.001**
Physical violence	0.19(0.24)	0.08(0.15)	<0.001**
Sexual violence	0.01(0.07)	0.01(0.08)	0.964
Violence due to Belongingness	0.35(0.17)	0.31(0.16)	0.009*
Threats, emotional violence	0.14(0.09)	0.11(0.11)	0.002*
Separation	0.1(0.21)	0.05(0.15)	0.001*
Murder	0.27(0.3)	0.19(0.25)	0.001*

Independent t test is highly significant when *p* value < 0.001 and is significant when *p* value < 0.05.

Table 5. Quantity vs. qualities of traumatic events' relations to PTSD symptoms' severity among Syrian refugees (N= 820).

	Trauma	PTSD score		
Traumas	Mean (SD)	Mean (SD)	Corelations	P value
Quantity of traumas				
All traumas (cumulative)	8.1 (3.9)	1.9 (0.9)	+0.232	<0.001**
Quality of traumas				
Lack of basic needs	2.8 (1.1)	2 (0.96)	+0.137	<0.001**
Combat situation	1.6 (1)	2 (0.99)	+0.178	<0.001**
Physical violence	0.6 (1)	2.2 (1.07)	+0.163	<0.001**
Sexual violence	0.02 (0.2)	2 (0.5)	0.002	0.951
Belongingness	1.3 (0.7)	1.9 (0.9)	+0.069	0.047*
Threats, emotional violence	0.6 (0.6)	2.1 (0.9)	+0.136	<0.001**
Separation	0.2 (0.5)	2.2 (1.1)	+0.113	0.001*
Murder	0.6 (0.8)	2.1 (1.2)	+0.145	<0.001**

Pearson correlation is highly significant when *p* value < 0.001 and is significant when *p* value < 0.05.

Table 5 clarifies the relationship between PTSD severity and the quality and quantity of trauma exposure. Regarding the quantity of traumas experienced by participants, a positive correlation was found between the quantity of self-experienced trauma and the severity of PTSD symptoms, which has a high statistical significance. Concerning qualities of different trauma types, the means of all groups of traumatic events, except sexual violence, were positively correlated with the means of PTSD symptomatology. The association with PTSD was highly significant in the following categories: lacks basic needs, combat situation, physical and emotional violence, and murder. PTSD symptom severity was not associated with traumas concerning sexual violence.

Discussion

Little has been reported on traumatic experiences and PTSD symptoms among Syrian refugees. The present study used the HTQ to investigate PTSD and traumatic events exposure among Syrian refugees. Stigma did not prevent participants from exploring their experiences.

The prevalence rate of PTSD among the studied sample of Syrian refugees was (16.3%). The rate was lower than reported in Syrian refugee camps in Jordan, which has been estimated to be between 36-62%.[6] Higher prevalence rates among refugees in Jordan might be due to methodological differences. Our findings suggest a similar prevalence rate of PTSD to that of Iraqi refugees resettled in Australia, which was 14.2%.[17] Similarly, the PTSD prevalence rate for Guatemalan refugees in Mexico was reported to be 11.8%.[14] Refugees in Istanbul had higher PTSD prevalence at 55.2% compared with our study,[18] which might be explained by the small sample size.

In the present study population, those experiencing fewer traumas reported lower PTSD symptoms and vice versa. Where the total number of self-reported trauma events increased, the self-reported frequency of PTSD symptoms also increased. Half of respondents with 20 or more different traumatic events developed clinically significant PTSD symptomatology. A study of PTSD among West Nile refugees showed that participants reporting 28 or more traumatic events developed the full set of PTSD symptoms.[19] As predicted, the increased PTSD rate and increased number of self-reported traumatic events paralleled the findings of other studies that assessed refugees.[19]

Although a lack of basic needs, violence due to belongingness, and combat situations were the most common trauma types experienced by the majority of Syrian refugees, PTSD symptoms were lower when compared to other trauma types. Syrian refugees who experienced traumatic events concerning separation, physical and emotional violence reported higher PTSD symptom levels (approximately 20-25%). Similar findings can be seen in a post-conflict study on the civil war in Sudan, which explored the association of individual trauma events with PTSD.[20,21]

Similar to the current findings, violence due to belongingness and the effect of ethnicity on sub-clinical PTSD were clear among Palestinians.[22] A study on Guatemalan refugees illustrated that witnessing the disappearance of a family member, being close to death, or living with more than nine people in the same home were associated with symptoms of PTSD.[14] Similarly, a study in Kaduna, Northwestern Nigeria showed that the death of a family member was an independent predictor of PTSD.[23] Threats and emotional violence were highly correlated with PTSD severity. A study among Palestinians exposed to ongoing political violence confirmed the prediction of PTSD occurring as a consequence of threats and perception of the threat of future violence.[24]

Our findings suggest that PTSD symptomatology is related to the total number of traumatic events reported and is significantly associated with all traumatic events except sexual violence. This is partly suggested by other studies which confirm the dose-response theory, meaning that it is not the severity of the single traumatic event that is linearly related to the severity of PTSD symptoms, but the cumulative effect of multiple traumas.[19,25] Additionally, Mollica *et al.* confirmed the linear relationship between severity of trauma exposure and the severity of PTSD in a study on Cambodian survivors of mass violence,[10] which supports the current study. Fawzi found that the number of traumatic events experienced was positively correlated with PTSD symptom severity in a population of Vietnamese refugees.[25] This suggests a dose-effect relationship between cumulative trauma effects and PTSD severity.

Despite the current study's prediction, no significant relationship was reported between PTSD severity and trauma concerning sexual violence. This was also the case in other studies and may be due to the fact that responses to sensitive trauma events, like rape and molestation are underreported, especially among women.[23]

Limitations

The current study has a number of limitations. First, the findings cannot be easily generalized to other studies given the participants came from only one refugee camp. Refugees living with relatives, friends or in rented accommodation were not assessed. Second, the stigma associated with sexual themes, such as sexual abuse likely made it difficult for respondents to provide definitive answers. Third, the study design is a cross-sectional survey, which cannot conclude causations. Fourth, most men living in the camp tents had daytime jobs, which was also when the interviews took place. This led to an over-representation of women in the sample. Fifth, the HTQ has not been standardized on a Syrian population, e.g. for reliability, validity, cut-off points for severity, probability of diagnosis. Finally, the current study only assessed PTSD; however, it is certainly the case that war and internal conflicts can also result in high levels of anxiety, depression, and other psychiatric disorders in those exposed to associated traumas.[26,27]

Conclusion

This current study provided evidence for the prevalence of PTSD in Syrian refugees. It indicated a linear relationship between the total number of self-reported traumas and the frequency of PTSD symptom severity. Most traumatic events were associated with PTSD symptomatology. Findings highlight the needs to reduce exposure to traumatic events by controlling the violence, decreasing wars, and providing a safe environment for refugees. For refugees in camps, individual and community-based treatment programs are needed. Providing suitable mental health services are necessary to break the cycle of violence since it can perpetuate violence. It would be important to screen for co-morbid conditions associated with PTSD, such as depression and anxiety, in future studies on Syrian refugees to help broaden the knowledge base about the mental health consequences of war and armed conflict.

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الملخص

أهداف البحث: تهدف هذه الدراسة إلى تحديد مدى إنتشار إضطراب الكرب التالي للرضح لدى اللاجئين السوريين، وإلى دراسة العلاقة بين أعراض الكرب الرضحي مع خبرات التجارب الصدمية لديهم، وتقييم فيما إذا كانت كمية أو نوعية التعرض الصدمي لها علاقة مع شدة الأعراض. **الطرق:** تم تقييم تأثير الحوادث الصدمية على نسبة إنتشار إضطراب الكرب التالي للرضح وشدة أعراضه لدى عينة عشوائية شملت 820 لاجئ سوري في مخيم دوميز 2 في شمال العراق للفترة ما بين 15 نيسان و15حزيران ،2015. تم إجراء المقابلات لجمع المعلومات الديموغرافية والإجتماعية. لمعرفة مستوى التعرض الصدمي وأعراض الكرب الرضحي تم إستعمال مقياس هارفرد للصدمة النفسية . **النتائج:** من بين العينة المدروسة وجد بأن 134(16.3%) لديهم أعراض الكرب التالي للرضح. وجدت الدراسة أن 12% من الذين تعرضوا لعدد قليل من الصدمات يعانون من الكرب الرضحي، و13.6%من الذين تعرضوا لعدد أكبر. وجد أن 50% من الذين تعرضوا لعدد كبير من الصدمات لديهم إضطراب الكرب الرضحي. كما أظهرت الدراسة بأن نسبة الكرب الرضحي كان أكبر لدى الذين تعرضوا لصدمات الإنفصال والعنف الجسدي والعاطفي. بينت الدراسة أن شدة أعراض الكرب الرضحي كان له علاقة مع جميع مجاميع الصدمات النفسية ما عدا الصدمات المتعلقة بالعنف الجنسي. **الاستنتاج:** إن شدة أعراض الكرب التالي للرضح كان له علاقة مع تراكم الصدمات النفسية ومع مختلف الانواع. يجب أن تؤخذ خطوات مهمة في توفير الحماية الإنسانية لهؤلاء الذين أجبروا على ترك بلادهم وتخطي الحدود الدولية. كما يجب تنظيم العلاج النفسي الملائم للاجئين السوريين الذين يعانون من الكرب الرضحي والمشاكل النفسية الأخرى.

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Psychoeducation for Bipolar Disorder

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التثقيف النفسي للاضطراب ثنائي القطب

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Abstract

Background: Recurrence rates and number of hospitalizations for patient with bipolar disorders remain high despite progress in psychopharmacology. Psychoeducation is an integral part of treatment for psychiatric disorders, which can improve compliance and reduce the risk of recurrence and consequent hospitalization. **Aim:** The present study assessed a six month, group psychoeducation intervention for patients with bipolar disorders. **Method:** Patients (N=45) fulfilling DSM-IV-TR criteria for bipolar disorders type[1] aged 20 to 40 years were included in the study and randomly allocated to either an intervention group (*n*=24) or a control group (*n*=21). They were selected during routine follow-up in the outpatient's' psychiatric clinic of the Armed Forces Hospital Northern Area located in the Kingdom of Saudi Arabia. **Results:** The intervention group had fewer hospitalizations and became more compliant with medication. **Conclusions:** The six-month group psychoeducation increased compliance with medication and reduced recurrence as well as the number of hospitalizations in patients with bipolar disorders.

Keywords: Psychoeducation, bipolar disorder, Saudi Arabia

Declaration of interest: None

Introduction

The chronic and recurrent nature of bipolar affective disorder affects many aspects of patients 'lives, from their interpersonal relationships to the quality of their work.[1] Quality of life for patients with bipolar disorder is impaired even during improvement. Suicide rates are reported to be as high as 20% to 30% in patients with bipolar disorder.[2]

Pharmacological treatment alone is not successful for complete remission.[3] Although medical treatment is efficacious for symptom relief, it is not completely effective for reducing disease burden and patients are not always able to regain their functions.[4] Treatment compliance is one of the prognostic predictors in bipolar disorder.[5] Psychoeducational programs in combination with pharmacotherapy were effective in improving medication adherence and global functioning of patients with bipolar disorder.[6]

Psychoeducation is any structured group or individual program that addresses an illness from a multi-dimensional viewpoint including familial, social, biological and pharmacological perspectives, as well as providing service users information support and management strategies.[7] Psychoeducation may be done in a variety of ways, such as individual treatment, group therapy, multi-family therapy, and patient-family dyadic therapy.[8] Experimental evidence has demonstrated that psychoeducation could be a part of recovery for patients suffering from psychiatric disorders such as schizophrenia and bipolar disorder.[7]

In 2009, Colom and colleagues found that a six month group psychoeducation for euthymic bipolar patients had long lasting prophylactic effects after five years of follow up.[9] In 2010, a post study by Even demonstrated that patients' participation in psychoeducational sessions resulted in a change in locus of control and this change was sustained 24 months beyond the sessions, which is seen as one of

the main benefits of psychoeducation for patients with bipolar disorder.[10]

Participating patients will interact with one another, which also helps them learn from each other and exchange their experiences, creating a sense of cohesion among them as well as acquiring new coping mechanisms. This may function as a new support network for both patients and their families.[11]

Methods

Sample

Patients (N=45) fulfilling DSM-IV-TR criteria for bipolar disorders type[1] aged 20 to 40 years were included in the study and randomly allocated to either an intervention group (*n*=24) or a control group (*n*=21). They were selected from the routine follow up of the outpatient's' psychiatric clinic of the Armed Forces Hospital Northern Area in the Kingdom of Saudi Arabia. Enrolled patients were randomly allocated to psychoeducation (yes/no) with a rate of 1:1. However, due three participants from the control group withdrawing from the study before intervention, there was unequal number of participants.

Inclusion criteria included

1- Diagnosis of DSM-IV-TR bipolar 1 disorder.
2- Being euthymic for at least six months based on clinical evaluation.
3- Treatment compliance prior to the study.

Exclusion criteria

1- Had DSM-IV-TR Axis one diagnosis of co-morbidity.
2- Mental subnormal IQ<80.
3- Organic brain damage.

Study design

The present study consisted of two phases: the treatment phase comprised 26 weeks in which all patients received standard psychiatric care with naturalistic pharmacological treatment, the intervention group received additional psychoeducation, while the patients assigned to the control group met every week in groups without special instructions from the therapist. This design was aimed to control the variability induced by the possible supportive effect of group reunions themselves. The follow-up phase lasted three years during which all patients received naturalistic treatment without psychological intervention and were assessed regularly on several outcome measures. The treatment phase began in June 2011 and follow up phase was completed in December 2014.

Psychoeducation (intervention group)

Participants in the intervention group were enrolled in a psychoeducation program composed of 26 sessions of 60 minutes each aimed to improve four main issues: illness awareness, treatment compliance, early detection of prodromal symptoms and relapse, lifestyle regularity (regulate habit and sleep). The program was guided by the Psychoeducation Manual for Bipolar Disorder.[12]

A. Setting up the group:

- Ethical and ground rules for the group (confidentiality, expectations regarding practice assignments).
- Explaining the rationale for the group and its content outline.
- Explaining the schedule (timing and duration) of the group.

B. Establishing the group:

- Establishing what participants already know.
- Ensuring that all members of the group have the opportunity to present sessions (sessions were presented two times for the same items and so the participant who missed any session; had the ability to attend the same session later on).
- Ensuring that all members discuss their issues (ensuring that there is always time for participants to learn about relevant issues, to debate them and to reflect on their relevance to their own situations).

- 75% was the accepted attendance rate for every single session.

C. Content of program Figure 1 (below):

Figure 1. Content of psychoeducational program

Sessions	Content
Session 1-2 **illness awareness**	- The biological/neurophysiological basis for bipolar disorder, its heritability and its recurrent course - Potential causes of the disorder (usually biological)
Session 3-4 **illness awareness**	- Symptoms of mania and hypomania - Symptoms of depression
Session 5-6 **illness awareness**	-The evolution and prognosis of bipolar disorder
Session 7-8 **illness awareness**	-Triggers (both biological and psychological/environmental), and the role of stress in relapse
Session 9-10 **treatment compliance**	-Mood stabilizers, including their specific indications, common-side effects and the need for monitoring of plasma levels -Anti-manic medication -Antidepressants
Session 11-12 **treatment compliance**	-Factors that may influence medication adherence e.g.: *social stigma attached to taking medication *sense of a loss of control *side effects from medication
Session 13-14 **treatment compliance**	-Common patterns of adherence (e.g. absolute poor adherence, adherence to some aspects of treatment but not others, or intermittent adherence) -Different patterns of responsiveness to treatment (e.g. becoming adherent only after experiencing a number of episodes) -Adherence in relation to specific behaviors (e.g. failing to keep to regular patterns of sleep or daily activity)
Session 15-16 **early detection of prodromal symptoms and relapse**	-Identify and act on indicators of relapse, for hypomania, mania and depression -Common indicators of relapse
Session 17-18 **early detection of prodromal symptoms and relapse**	- Trusted individual with whom they can work to identify early warning signs of the onset of a new episode -Develop a list of the specific early indicators of relapse
Session 19-20 **early detection of prodromal symptoms and relapse**	-Identify responses to indicators of relapse (e.g. contacting clinicians, adjusting medication dose, adjusting social regulators etc.) - Develop a structured 'action plan' that can be used to respond to indicators of relapse
Session 21-22 **lifestyle regularity (regulate habit and sleep)**	-Importance of maintaining a regular schedule (e.g. of activity, social contact sleep, etc.)
Session 23-24 **lifestyle regularity (regulate habit and sleep)**	-Achieve a schedule that balances with their needs and interests against the need for stability
Session 25-26 **lifestyle regularity (regulate habit and sleep)**	-Reactions to stress and the ways in which these can be managed more effectively (e.g. through relaxation, or through problem-solving)

Assessments

All participants were assessed regularly for three years by the researcher psychiatrist to detect any sign of relapse. Psychiatric medication and reason for its change were recorded. Number of hospitalizations and reasons for admission were also recorded.

Main outcome measure

The primary outcome measure was time to recurrence and number of hospitalizations. This was defined as emergence of new acute episode according to DSM-IV-TR.

Results

Both groups were comparable at baseline regarding age, gender, marital status, education, diagnosis and duration of illness (Tables 1-6).

Number of recurrences and hospitalizations

Over the three-year follow-up period, people in the intervention group had less recurrence and

hospitalization than those in the control group (Table 7)

Treatment adherence

Over the three-year follow-up period, people in the intervention group were more compliant than those in the control group (Table8)

Table 1. Age distribution of intervention and control groups

Age (years)	**Group I (*n*=24)**	**Group II (*n*=21)**	***p*- value**
Mean ±SD	29.6±4.4	30±4.4	**0.523**
Range	**20-36**	**20-36**	

Table 2. Gender distribution of intervention and control groups

Gender	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value**
	NO	%	NO	%	
Men	10	41.7	8	38.1	**0.807**
Women	**14**	**58.3**	**13**	**61.9**	

Chi-square test was used

Table 3. Marital status of intervention and control groups

Marital status	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value**
	N	%	*n*	%	
Single	5	20.8	6	28.6	**0.833**
Divorced	10	41.7	8	38.1	
Married	**9**	**37.5**	**7**	**33.3**	

Chi-square test was used

Table 4. Education of intervention and control groups

Education	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value**
	N	%	*n*	%	
Illiterate	6	25.0	7	33.3	**0.923**
Primary school	8	33.3	7	33.3	
Preparatory school	7	29.2	5	23.8	
Secondary school	**3**	**12.5**	**2**	**9.5**	

Chi-square test was used

Table 5. Diagnosis of intervention and control groups

Diagnosis	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value**
	N	%	*n*	%	
Mixed	10	41.7	8	38.1	**0.833**
Manic	9	37.5	7	33.3	
Hypomania	**5**	**20.8**	**6**	**28.6**	

Chi-square test was used

Table 6. Duration of illness of intervention and control groups

Duration of illness	**Group I (*n*=24)**	**Group II (*n*=21)**	***p*- value**
Mean± SD	4.2 ±1.3	4.5±0.8	**0.433**
Range	**2-7**	**3-6**	

Unpaired *t*-test was used

Table 7. Number of recurrence and hospitalization before and after psychoeducation program

No. of hospitalizations	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value[1]**
	before	after	before	after	
Mean± SD	2.4±1.3	0.8±0.7	2.8±1.6	3.4±1.6	**0.356**
Range	2-5	0-2	0-5	1-6	**0.000**
***p*-value[2]**	**0.002**		**0.008**		

[1]comparison between group I and group II by using Mann-Whitney U test
[2] comparison between before and after by using Wilcoxon Signed Rank test

Table 8. Compliance of intervention and control groups after psychoeducation program

Compliance	**Group I (*n*=24)**		**Group II (*n*=21)**		***p*- value**
	n	%.	*n*	%	
12 month after discharge	20	83.3	13	61.9	**0.105**
24 month after discharge	18	75.0	10	47.6	**0.059**
36 month after discharge	**16**	**66.7**	**7**	**33.3**	**0.026**

Chi-square test was used

Discussion

The present study targeted patients with bipolar affective disorder and demonstrated the efficacy of psychoeducational group programs for enhancing bipolar type[1] outcomes. In the psychoeducation group, over the three-year follow up, there was a statistically significant difference in recurrence of bipolar episodes and hospitalization before and after the psychoeducational program. Participants in the psychoeducation group also became more compliant to their treatment. The study had limitations as the outcome involved episodes, which needed hospitalization.

Results demonstrated fewer recurrences and hospitalizations after the psychoeducation program, which was consistent with Colom *et al.* [9] who found that at five years follow-up the number of

hospitalizations per individual was lower for people receiving psychoeducation. The study also found a significant effect of group psychoeducation on time spent ill which was not highlighted in the present study.[9]

In a similar study, patients with bipolar disorder who were free of comorbid disorders and had been in remission for at least six months had a lower recurrence rate after group psychoeducation.[13]

Our findings were also consistent with another study that noted a decrease in relapse and hospitalization and higher reported levels of quality of life in the group receiving psychoeducation.[14] In addition, Valentina *et al.* supported the view that group psychoeducation is an effective way to prevent hospitalization and decrease hospital days in pharmacologically treated patients with bipolar illness.[15] A systematic review also concluded that group psychoeducation appeared to be effective in preventing relapse in bipolar disorder.[16]

In the present study, results for compliance were inconsistent when compared with findings from a five-year follow up study by Colom *et al*. who concluded that psychoeducation was ineffective for adherence to medication while in our study we found significant differences between the two groups. The psychoeducation group was more compliant with medication. This can be explained by identification of the early signs of relapse, which can improve insight and consequently adherence to treatment.

According to Perry *et al*. identification of prodromal signs would be especially efficacious for preventing mania, but not depression;[17] the study of Dominic provided evidence that cognitive psychotherapy can be protective for both depression and mania when patients are taught full cognitive psychotherapy skills to cope with their illness.[18]

According to David and Miklowitz, who reviewed randomized trials of adjunctive psychotherapy for bipolar disorder, “treatment that emphasizes medication adherence and early recognition of mood symptoms has a stronger effect on mania, whereas treatment that emphasizes cognitive and interpersonal coping strategies has a stronger effect on depression.”[13]

The orientation to avoidance of sleep deprivation, which is a trigger factor for a bipolar episode, could help reduce the number of recurrent episodes. Interventions especially, but not exclusively, aimed at improving sleep have been proven to be effective in people with bipolar disorders.[19]

The improved understanding about the disorder and increased awareness is an important factor underlying the positive effects of psychoeducation, especially regarding empowerment for decision-making, which may include dose modification of certain medication as soon as some warning signs are detected, if the psychiatrist is not available at that point.[20]

Conclusion

A six-month group psychoeducation program included four main issues: illness awareness, treatment compliance, early detection of prodromal symptoms and relapse, lifestyle regularity (regulate habit and sleep), which increased compliance to medication and reduced recurrence and number of hospitalizations in patients with bipolar disorders.

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الملخص

ان معدلات تكرار حدوث نوبات اضطرابات المزاج ثنائي القطب لا تزال مرتفعة على الرغم من التقدم المحرز في علم الصيدلة. والتثقيف النفسي هو جزء لا يتجزأ من علاج الاضطرابات النفسية التي تؤثر على الامتثال للعلاج، ويقلل من خطر تكرار النوبات وما يترتب عليها من دخول المستشفى. تهدف هذه الدراسة التداخلية لتقييم فائدة التثقيف النفسي للمرضى الذين يعانون من اضطرابات المزاج ثنائي القطب. وأدرجت في هذه الدراسة خمسة "وأربعين من المرضى الدين يعانون من اضطرابات المزاج ثنائي القطب من النوع 1 الذين تتراوح أعمارهم بين 20 و40 سنة. الفريق (الذين تلقوا التثقيف النفسي) يتألف من أربعة وعشرين مريضاً مقارنة بمجموعة المراقبة من واحد وعشرين مريضاً. وتم اختيارهم خلال المتابعة الروتينية في عيادة الطب النفسي في "مستشفى القوات المسلحة المنطقة الشمالية" في المملكة العربية السعودية. وخلصت النتائج الى ان المجموعة التي تلقت التثقيف النفسي لمدة ستة أشهر كانت أكثر امتثالاً للعلاج واقل في معدلات تكرار النوبات ودخول المستشفى وان الفارق دو دلالة احصائية.

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رسالة الى المحرر:

مستجدات الأصل الجيني والبيولوجي للفصام

أديب العسالي

الفصام اضطراب نفسي منهك يتظاهر بإهلاسات وتوهمات واضطراب تفكير وعزلة عاطفية وتراجع الأداء المعرفي. وهو اضطراب شائع الحدوث يصيب تقريباً واحد بالمئة من الناس ويغلب أن تبدأ أعراضه في أواخر المراهقة وبداية سن الرشد.

مازالت الآليات الإمراضية البيولوجية للفصام مجهولة رغم مرور أكثر من قرن على وصف هذا الاضطراب للمرة الأولى ورغم توفر براهين من دراسات الأسر والتوائم والتبني على أن الوراثة تلعب دوراً أساسياً في حدوثه[1] وعلى أن معظم خطر الإصابة به هو خطر موروث [2].

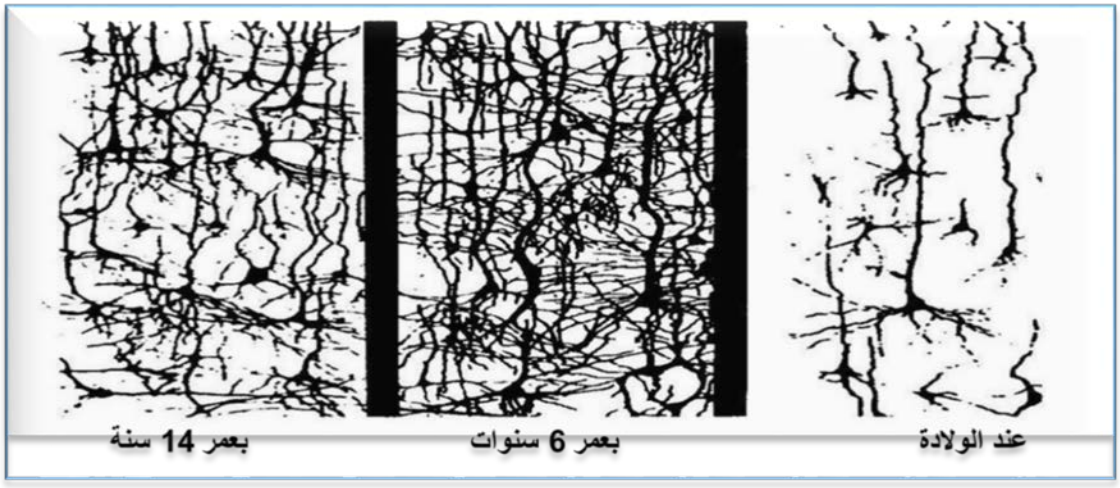
شهدت السنوات القليلة الماضية تقدماً ملحوظاً في دراسات الترافق الجيني الهادفة إلى ايجاد دنا DNA نوعي مرافق للإصابة بالفصام. نجم هذا التقدم أساساً عن تطبيق تقنيات جينومية متطورة على عينات دنا كبيرة جداً عقب تشكيل "مجموعة عمل الفصام" في "تجمع جينوم الطب النفسي"[3]. فقد قام هذا التجمع العلمي العالمي في العام 2014 بتحديد أكثر من مئة ناحية في الجينوم البشري تحمل عوامل خطورة للفصام [4]. وقد تكلل هذا التقدم مؤخراً بدراسة جينية رائدة وصفت اكتشاف المورثة النوعية المسؤولة عن أشد عوامل الخطورة هذه وربطته بحدثيه بيولوجية نوعية في الدماغ. قدمت هذه الدراسة للمرة الأولى فهماً مبتكراً للأصل البيولوجي للفصام، حيث بينت أن فرط "التشذيب المشبكي "synaptic pruning للوصلات بين الخلايا العصبية قد يؤهب للفصام. [5]

تم في هذه الدراسة جمع عينات دنا من أكثر من مئة ألف شخص من 30 دولة مختلفة خلال السنوات الخمس الماضية، وتم إجراء تحليل تفصيلي لحوالي 65000 جينوم بشري بهدف توضيع مناطق من الجينوم البشري تؤوي أنماطاً جينية تزيد من خطر الفصام. وقد بين ذلك التحليل أن الترافق الأشد هو بين خطر الفصام وبين ناحية من دنا الصبغي 6 تحتوي على مئات الجينات. من تلك الجينات جين غير اعتيادي يسمى "مكون المتممة 4 "complement component 4" "ويعرف اختصاراً بالرمز C4. فبعكس معظم الجينات، يمتاز C4 بدرجة عالية من التنوع البنيوي، إذ يختلف الناس بامتلاكهم لأنماط مختلفة ولأعداد متفاوتة من نسخ هذا الجين .

تضمنت هذه الدراسة الرائدة أيضاً قياس فعالية الجين C4 في حوالي 700 عينة من أدمغة بشر متوفين، فأثبتت أن بنية (دنا) الجين C4 تتناسب مع فعالية (رنا RNA) الجين C4 في كل من تلك الأدمغة. وبتطبيق هذه النتائج لاستنتاج فعالية الجين C4 من بيانات جينوم 65000 شخص مصابين أو غير مصابين بالفصام، تم التوصل إلى ترافق صارخ، فبعض أشكال الجين C4 البنيوية كانت مترافقة باشتداد فعالية ذلك الجين، مما يجعل الشخص أكثر عرضةً للإصابة بالفصام.

من المعروف أن لمكون المتممة 4 (C4) دور هام في الاستجابة المناعية للأمراض المعدية، إذ يُعَلِّم هذا البروتين الأجسام الدقيقة المعدية infectious microbesلكي يتم تدميرها من قبل الخلايا المناعية، أما فهم كيفية ترافقه بخطر الإصابة بالفصام فتطلب دمج نتائج الدراسة الوراثية بنتائج دراسات بيولوجية عصبية كانت قد بينت أن C4 يلعب دوراً مفتاحياً في تشذيب المشابك العصبية خلال فترة نضج دماغ الفأر. بينت تلك الدراسات أن C4 ضروري لكي يتم إيداع بروتين آخر (وهو مكون آخر للمتممة رمزه C3) في المشابك كإشارة بأنه يجب تشذيب تلك المشابك. وقد بينت تلك الدراسات أيضاً أنه كلما ازدادت فعالية C4 عند الحيوان كلما تم التخلص من مشابك أكثر في وقت مفتاحي من تطور الحيوان.

قد تلقي نتائج هذه الدراسة الضوء على ملاحظات معروفة منذ سنوات طويلة ومازالت بحاجة للتفسير. فمن المعروف أن أعراض الفصام يغلب أن تبدأ في أواخر المرهقة، وهي الفترة التي يخضع فيها الدماغ البشري بشكل طبيعي لتشذيب مشابك واسع وخصوصاً في القشرة الدماغية (الطبقة الخارجية من الدماغ المسؤولة عن العديد من المظاهر المعرفية) (الشكل 1). يمكن لفرط تشذيب المشابك في المراهقة وبداية سن الرشد بسبب زيادة فعالية C4 أن يؤدي الى الأعراض المعرفية للفصام. قد يفسر ذلك ظاهرة بدء أعراض الفصام في أواخر المراهقة، كما قد يفسر أيضاً سبب أن أدمغة الأفراد المصابين بالفصام تميل لأن تكون ذات قشرة دماغية أرق وعدد مشابك أقل من الناس غير المصابين بالفصام .



الشكل 1: يكون عدد المشابك محدوداً عند ولادة الجنين، ويزداد عددها بشكل مدهش خلال السنوات الأولى من العمر، ثم تخضع للتشذيب بحيث يصبح عددها عند الراشد حوالي نصف عددها عند الطفل.

تمثل هذه الدراسة [5] نقطة تحول حاسمة في الصراع ضد المرض العقلي إذ تمثل فتحاً قد ينعكس على تطوير طرق جديدة للكشف المبكر ومعالجة وحتى الوقاية من الفصام، ففهم الأصل البيولوجي للفصام قد يشجع تطوير معالجات يمكنها ان تخفض مستوى التشذيب المشبكي في أفراد يبدون أعراضاً مبكرة للفصام، وتلك مقاربةً مختلفة جذرياً عن المعالجات الطبية الراهنة التي تستهدف فقط أعراض الفصام وليس جذوره السببية.

تفصلنا بالطبع سنوات عديدة عن ايجاد معالجات مبنية على نتائج هذه الدراسة، ولكن هناك كنوز معرفية متوفرة عن المتممة يمكن استغلالها، حيث يتم حالياً تطوير أدوية مضادة للمتممة بغية علاج أمراض أخرى.

الملاحظة الأهم هي أن النتائج الجديدة تمهد لطريقة تفكير جديدة بكيفية حدوث الفصام، وهو أمر ننتظره منذ وقت طويل.

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