



اتحاد الاطباء النفسانيين العرب
ARAB FEDERATION OF PSYCHIATRISTS

The Arab Journal of Psychiatry المجلة العربية للطب النفسي

VOL. 26.2 , November 2015
المجلد ٢٦، العدد الثاني نوفمبر ٢٠١٥



The Arab Journal of Psychiatry

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- Mosey AC. Occupational therapy. Configuration of a profession. New York: Raven Press, 1981.

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امنياتى لكم بالخير والتوفيق

وليد سرحان

عمان - تشرين ثاني/نوفمبر 2015

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Editorial

The Dilemma of Polypharmacy in Psychiatry

Ahmed Okasha

معضلة التعدد الدوائي في الطب النفسي

احمد عكاشة

Abstract

The prevalence of polypharmacy in psychiatry varies between 13%-90%. The Polypharmacy can be categorized into four subtypes that span the spectrum from sensible to absurd.² Polypharmacy subtypes are the necessary, the reasonable, the ridiculous, and the hazardous.² The involvement of multiple neurotransmitter and receptor systems in illness may require multiple psychopharmacologic agents in order to selectively address each of them. The superiority of the SNR over the SSRI in several meta-analyses in unipolar depression validates this theoretical perspective that targeting two different neurotransmitter systems is better than targeting one neurotransmitter.³ In addition, the avoidance of side effects, to improve compliance and for slower tolerance, are other reasons for polypharmacy. Some 20% to 40% of patients with highly treatment-refractory illness presentations who show an excellent therapeutic response to a regimen involving one of the major mood stabilizers such as lithium, carbamazepine, or valproate will begin to experience a pattern of gradual loss of efficacy consistent with the development of pharmacodynamic tolerance. Combination treatment is associated with a slower development of tolerance than agents are with a single mechanism of action.⁵ Psychopharmacology can relieve the terrible anguish of psychosis, depression, or anxiety, but it also can carry iatrogenic risks if it is not based on scientific evidence. The practice of psychopharmacology requires the fully integrated skills of medical and psychiatric training to maximize benefit while avoiding harm. It requires basic arithmetic skills: to consider subtracting drugs, not only adding them. To some extent, polynosology and polypharmacy go together.²

Keywords: Polypharmacy, polynosology, irrational

Declaration of interest: None

Introduction

To some extent, polynosology and polypharmacy go together. The prevalence of polypharmacy in psychiatry varies between 13%-90%.

Psychiatric polypharmacy refers to the prescription of two or more psychiatric medications concurrently to a patient. It can be categorized as same-class, multi-class, adjunctive, augmentation and total polypharmacy. Despite advances in

psychopharmacology and a better understanding of the principles of therapeutics, its practice is increasing rapidly.¹

Polypharmacy can be categorized into four subtypes that span the spectrum from sensible to absurd.²

Polypharmacy subtypes: The necessary, the reasonable, the ridiculous, and the hazardous.²

Necessary polypharmacy

This variant of polypharmacy is evidence-based and proven in double-blind studies to be more effective than monotherapy. The most prominent example is adding an atypical antipsychotic to a mood stabilizer in bipolar mania. In fact, the superior efficacy of combination therapy in bipolar disorder is one of the oldest forms of rational polypharmacy, is supported by FDA trials, and is indicated whenever mood stabilizer monotherapy is not sufficient. For example, combining lithium and valproate is superior to either drug alone. Another example of FDA-approved combinations is combining small doses of an atypical antipsychotic to an antidepressant for treatment-resistant depression.²

Reasonable polypharmacy

Although many of the combinations in this category are not FDA-approved, controlled studies support their use for suffering patients. Examples include an atypical antipsychotic added to SSRI for patients with Obsessive-Compulsive Disorder (OCD) who do not improve on SSRI monotherapy; modafinil added to clozapine in patients who suffer substantial and persistent daytime sedation or somnolence; combining two antidepressants for major depressive disorder patients who partially respond to one antidepressant; combining a mood stabilizer with an antidepressant for bipolar depression to prevent mood switching;² and also, the addition of lithium to carbamazepine to reduce leukopenia.

Ridiculous polypharmacy

An absurd concoction of psychotropic drugs across several classes, often including multiple agents from one or several classes. Examples I have seen in patient records:

- Two atypicals, an anticholinergic, a mood stabilizer, an antidepressant, and two benzodiazepines.
- Three antipsychotics (two atypicals and one typical), one antidepressant, two sedative/hypnotics, and an anticonvulsant for weight control, and others.²

Hazardous polypharmacy

In this category, serious medical complications, toxic effects, or death may occur because of careless combinations of drugs that may interact to produce dangerous kinetic interactions or exacerbate a pre-existing medical condition. An example would be combining one psychotropic with another that may inhibit its metabolism, e.g. prescribing fluvoxamine to a severely psychotic patient who developed OCD while receiving clozapine. There have been several toxic reactions and even death because fluvoxamine inhibits cytochrome 1A2, which metabolizes clozapine, thus increasing clozapine blood level by 400% to 500%. Another such example would be combining two injectable drugs for agitation that may cause a serious medical complication; also, injecting a benzodiazepine such as lorazepam in a patient receiving olanzapine IM, which can cause severe respiratory depression or death. And finally, combining several drugs, each of which may prolong the QTc interval, resulting in syncope or torsade de pointes.²

Multiple Theoretical Rationales for Complex Combination Therapy

It is apparent that the clinician is most often approaching a recurrent and perhaps somewhat chronic illness. This is evident in cancer chemotherapies and therapeutics of AIDS,

rheumatoid arthritis, coronary artery disease, congestive heart failure, tuberculosis, and diabetes to name a few. These illnesses do not respond adequately to single agents and there is little reason to think that a complex multifaceted polygenic recurrent illness with prominent environmental and genetic factors would be exempt from this type of medical necessity.³

I - Multiple receptor systems

The involvement of multiple neurotransmitter and receptor systems in the illness may require multiple psychopharmacologic agents in order to selectively address each of them. Much truth in the old drugs and those multireceptor dirtier drugs, such as clozapine and lithium, work better than some of the newer selective agents. The superiority of the SNR over the SSRI in several meta-analyses in unipolar depression validates this theoretical perspective that targeting two different neurotransmitter systems is better than targeting one neurotransmitter.³

II - Avoidance of side effects

This is most clearly the case in cancer chemotherapies in which multiple agents are utilized in combination and each can be kept below the level of more extreme hematologic and other toxicities that may be life threatening. In bipolar illness, use of several agents in combination, each below their own individual side-effect threshold, may avoid side effects than using a single drug.³ This is evident in the study by Gelenberg and colleagues, in which higher blood levels of lithium, were more effective than lower levels but at cost of three times as many side effects.⁴

III- To improve compliance

Side effects are one reason for non-compliance. One can arrange for most of the agents being given in a single period, so that the number of daily doses, which is inversely proportionate to the degree of compliance, can be kept at a minimum.³

IV- Slower tolerance

Some 20% to 40% of patients with highly treatment-refractory illness presentations who show an excellent therapeutic response to a regimen involving one of the major mood stabilizers such as lithium, carbamazepine, or valproate will begin to experience a pattern of gradual loss of efficacy consistent with the development of pharmacodynamic tolerance. Combination treatment is associated with a slower development of tolerance than agents are with a single mechanism of action.⁵

Practical Principles of Polytherapy for Bipolar Illness

It would be very useful to attempt to select the initial drug most likely to accomplish a clinical remission.⁶

Soft clinical predictors:

- **Lithium** responders appear to be those with classic euphoric manic illness of an intermittent type with good well intervals and a positive family history of bipolar illness. Lithium responders prevail in the absence of substance abuse, other comorbidities, or a schizoaffective presentation.^{6,7}
- **Carbamazepine** may be more useful in those with Bipolar II presentations complicated by comorbidities and mood incongruent delusions and a negative family history for bipolar illness.^{6,7}

- **Valproate** (or divalproex sodium) may be helpful in those with dysphoric mania, greater number of prior episodes, and anxiety and migraine headache comorbidity.^{6,7}
- Good response to lamotrigine may be associated with a personal or family history of a comorbid anxiety disorder and associated presentation of faster cycling patterns.^{6,7}

Schizophrenia that is unresponsive to treatment

In a recent meta-analysis, Correll et al. presented findings arguing that antipsychotic polypharmacy may have a clinical advantage over standard (nonclozapine) monotherapy in nonresponsive patients.⁸ Clozapine remains the only proven treatment for patients who do not respond fully to other antipsychotics. Despite this knowledge, clozapine uptake is low in most communities. No randomized clinical trial has directly compared clozapine with combinations of antipsychotics.⁸

Overall, people assigned to the switch to monotherapy condition did not experience more symptoms or hospitalizations. Clozapine's superiority for refractory symptoms is not effective for every patient with treatment-resistant Schizophrenia. The drug's side effects can be limiting. At least in one-third of patients clozapine is discontinued within the first year of treatment. Because clozapine is the last step on evidence-based treatment algorithms, this presents a problem when further strategies are needed.^{9,10}

Psychiatric Polypharmacy: The Good, the Bad, and the Ugly

Prescribing thyroid medication to augment antidepressant response would be polypharmacy, while using thyroid medication to treat hypothyroidism, with concomitant antidepressant therapy for depression would not be considered polypharmacy.¹¹

Good polypharmacy

- Lithium or valproate + olanzapine, risperidone, or quetiapine for bipolar mania
- Clozapine + risperidone or aripiprazole for treatment-resistant schizophrenia
- Lithium or valproate + ziprasidone or aripiprazole for bipolar mania
- SSRI + mirtazapine for post-traumatic stress disorder
- Clozapine + haloperidol for treatment-resistant schizophrenia¹¹

The addition of bupropion, which possesses norepinephrine and dopamine reuptake inhibition to an SSRI would appear rational in the treatment of depression, despite the lack of firm double blind, placebo-controlled evidence that this combination is effective. Although there are case studies suggesting that the addition of aripiprazole or risperidone may augment response to clozapine, the only double blind studies of this combination report contradictory results.¹²

Bad Polypharmacy

- SSRI + venlafaxine in suboptimal dose for depression
- Aripiprazole (at suboptimal dosing) for mania+ quetiapine (low-dose) for sleep
- Lithium (at suboptimal dosing) + gabapentin for mood stabilization
- Citalopram + paroxetine (both at suboptimal doses) for depression

- Donepezil for dementia + oxybutynin for incontinence¹¹

Ugly Polypharmacy

- Valproic acid for mood stabilization + antiretroviral for HIV infection
- Olanzapine for psychosis + low-dose mirtazapine for sleep + valproic acid for seizures
- SSRI for depression + tramadol for pain¹¹

Irrational Polypharmacy

In a case in which an adjunctive medication is added, e.g. benzodiazepine to treat panic attacks, while waiting for an SSRI to alleviate depressive symptoms, irrational polypharmacy would occur if the benzodiazepine were continued indefinitely without attempting to reduce the dosage. Diagnostic uncertainty can result in polypharmacy as well, such as in a patient who complains of anxiety and receives a benzodiazepine, when further questioning might reveal that the anxiety is caused by worsened auditory hallucinations, in which case, the proper course would be to adjust antipsychotic medications.¹

Rationale for Polypharmacy

Polypharmacy may be on the rise because of the increased comfort clinicians feel with safety profiles and lack of drug-drug interactions among many of the newer agents and increased expectations of clinicians and their patients. Remission is only 30-40%, rather than response, has become increasingly recognized as the optimal treatment outcome.¹³ Most medication studies base drug benefit on response, defined as a 50% reduction of initial symptoms, whereas remission is considered full relief from depressive symptoms. Using polypharmacy to treat adverse effects, e.g. sildenafil or bupropion to treat SSRI-induced sexual dysfunction, is also a rational

approach. Treating comorbidities with polypharmacy - a patient with Attention-Deficit/Hyperactivity Disorder (ADHD) and depression is unlikely to achieve full remission from both disorders with monotherapy.^{14,15}

Ethical Analysis

The ethics of psychopharmacology pose many questions that cannot yet be answered due to the current state of the field. Pharmacology also seems to promote extremes of attitudes, such as "all such drugs are poisons" and the like. Under ordinary circumstances, an ethical analysis begins as an evaluation of good versus harm in various arenas of decision-making: The physician is often weighing up competing goods.¹⁶

Creative psychopharmacotherapy

A high level of care and caution is necessary during the whole course of psychopharmacotherapy to recognize any side effect and respond promptly and specifically. Creative psychopharmacotherapy demands a broad base of pharmacologic and neuroscience knowledge (evidence-based practice), personal experience (practice-based evidence) and favorable treatment context (well-being therapy, life coaching).¹⁷

Marketing depression

No one knows exactly how SSRIs work, if indeed they really do work at all. One plausible explanation is that they mask symptoms of depression in moderate cases that resolve themselves spontaneously.¹⁸ It is also well known that the more a drug is hyped in the mainstream media as a "miracle drug", the greater is the likelihood of a strong placebo effect.

The range of prescriptions for SSRIs has included severe, chronic depression (completely nonfunctional human beings); moderate cases of depression (precipitated by stress, loss of loved ones, rape, divorce, professional failure), and the completely ludicrous (the anxiety ridden, ill adjusted child, personality disorders and the like). For those who have followed the rise and fall of drugs in the marketplace, the SSRIs merely repeat a familiar pattern.¹⁸

Benzodiazepines

The drug companies and regulators had claimed that benzodiazepines were not addictive for well over a decade, but eventually it was admitted that tranquilizers such as diazepam (Valium) were indeed addictive. It is often claimed that profit driven corporations could not be expected to behave in any other manner than they do since the nature of business demands maximization of the market share and shareholder value.¹⁸

The ethics of drug-drug interactions: examples for interactions

- Antidepressants with cancer patients; SSRI may interfere with cancer drugs. Best: escitalopram and venlafaxine.
- Antidepressants with cardiac patients especially anticoagulants. Best: sertraline.
- Psychotropics in pregnant and lactating mothers.

Abuse of trust

Expanding the market for these drugs by creating dubious disease categories and then luring vulnerable individuals into SSRI therapy by direct to consumer advertising would represent, if perpetrated by a

doctor, an abuse of the trust implicit in the relationship between patient and doctor. There is no argument that SSRIs should be withdrawn from the market thus depriving clinicians and patients of their therapeutic option. We should be concerned with the ethical issues.¹⁸

Conclusion

Psychopharmacology can relieve the terrible anguish of psychosis, depression, or anxiety, but it also can carry iatrogenic risks if it is not based on scientific evidence. The practice of psychopharmacology requires the fully integrated skills of medical and psychiatric training to maximize benefit while avoiding harm. It requires basic arithmetic skills: to consider subtracting drugs, not only adding them. To some extent, polysomatology and polypharmacy go together.²

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ملخص

يوجد ترابط قوي بين استعمال التعدد الدوائي مع تعدد التشخيصات النفسية في التصنيفات العالمية والأمريكية لاضطرابات الطب النفسي وتتراوح نسبة استعمال أكثر من عقار للاضطراب النفسي بين 13-90%، وبينما تتراوح النسبة في أوروبا حوالي 30-40% فهي تصل في اليابان إلى 90%. ولا يوجد أي إحصائيات في الدول العربية، ولكن في رأبي أن تعدد العقاقير في الاضطراب النفسي قد يصل بين 80-90% بين الأطباء النفسانيين العرب ، و يصف هذا المقال أربع أنواع من التعدد الدوائي: الاستعمال الضروري ، الاستعمال المعقول الاستعمال السخيف و أخيرا الاستعمال الخطر، كذلك يصف المقال عقلانية كتابة العقاقير المختلفة في علاج الاضطراب النفسي و علاقة ذلك بعقاقير تعمل على مستقبلات عصبية مختلفة أو لتقليل الأعراض الجانبية أو لتحسين المطاوعة في تناول العلاج ،فنحن هنا أمام تعدد العقاقير الذي قد يكون جيداً أو سيئاً أو قبيحاً أو غير معقول، و ينتهي المقال بالتوصية على أن يكون الطبيب النفسي متمكناً من مهاراته الطبية و النفسانية مع مهارات إكلينيكية لزيادة المنفعة و تقليل الضرر على المريض. فنحن نحتاج لبعض المهارات الحسابية في الطرح بدلا من الجمع في وصف العقاقير النفسية المتعددة.

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Review article

Exposure to War-Related Traumata among Arab Children and Adolescents: A Review

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تعرض الأطفال والمراهقين العرب لحوادث حرب صادمة: ملخص

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Abstract

Objective: The Arab world has witnessed a series of armed conflicts with severe consequences on political, economic and social levels still unfolding. A number of publications have looked closer at the rates of war exposure among Arab children and adolescents. **Method:** A literature review on war exposure during childhood/adolescence was conducted for all countries in the Arab world up to September 15, 2014 using the search engines PubMed, and PsycINFO. **Results:** A total of 42 articles were included in this review: two about Iraq, four about Kuwait, five about Lebanon, 26 about Palestine, three about Sudan, one from Somalia and one from Syria. The majority of the studies were based on specific community samples (general, students, refugees, or residing in camps) and a minority from primary health care centers. The studies discuss a variety of traumatizing war events that were either "general" (such as witnessing injured people, and the destruction of homes) or "personal" (such as being tortured, or subjected to different forms of violence). **Conclusion:** War traumata tend to occur together and singling out one trauma and studying its mental health outcome could be misleading.

Keywords: War, traumatic events, children, adolescents, Arab world

Declaration of interest: None

Introduction

Several Arab countries have unfortunately been exposed to war in their recent history and are possibly at risk of being exposed again in the near future. At the time of this writing, a war is raging in Syria and Libya is still embroiled in the aftermath of invasion. Wars are increasingly being looked at not only in number of fatalities, but also in handicaps; the most common insidious hidden one being mental scars.

Several studies in the recent past highlighted the negative effects of war on the mental wellbeing of the youngest in Arab countries experiencing military and violent conflicts.^{1,2,3,4,5,6,7} The current paper attempts to review and shed a light on the rates and types of war exposure among children and adolescents in the Arab region towards identifying their impact on long-term mental health.

Methods

A literature review on the rates of war-related traumata among children and adolescents in the Arab world up to September 15, 2014 using PubMed and PsychInfo. The search was not limited to language. The countries or regions included in the search were: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Occupied Palestinian Territories, Gaza, West Bank, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, Yemen, Mauritania, Djibouti, Somalia, Arab, Middle East, and Gulf. Selecting primary original research studies only, a total of 42 articles were included in this review.

Results

The results of this review are presented in Table 1.

Iraq

Iraq has been exposed to various episodes of armed conflict. In 1990, Iraq invaded Kuwait which led to the first Gulf war in 1991. In 2003, the US and other allies invaded Iraq. This invasion lasted for several years with many upheavals that turned into sectarian violence continuing until the present date. Two studies from Iraq were found relevant for this review.

Ahmad, Sofi, Sundelin-Wahlsten, and Von Knorring (2000) assessed exposure to several war traumatic events in a random sample of 45 Kurdish Iraqi refugee children aged 7-17 years (mean age = 12.4 years; 53% boys) who had been exposed to the "Anfal" military operation and subsequent captivity five years earlier. Data collection took place five years after the military operation. Rates of the most hurtful experiences during captivity were: violence against a significant person (92%), witnessing the disappearance of the father (36%), seeing the mother being hurt (34%), witnessing or hearing about murder of a family member (13%), and experiencing the lack of shelter (9%).⁸

In another study conducted six months after the end of the 1991 Gulf War, Dyregrov, Gjestad, and Raundalen (2002) looked at traumatic exposures in a selected community-based sample of 107 Iraqi children, aged 6-17 years, who had experienced bombing of a shelter close to the area where they lived during the war. Close to 83% of the sample were at home when the bombing of the shelter happened and 70% went to the shelter following the bombing; 68% reported hearing screams from outside the shelter and 76% could smell burnt bodies; 58% saw dead bodies and 41% saw body parts. Nearly 30% experienced separation from their father and 37% were exposed to extreme war-related deprivation, e.g. lack of food, drink, or shelter; 20% lost close family members or relatives.¹

A nationally representative study has also been conducted in Iraq between 2007-2008 as part of the World Mental Health Surveys. Lifetime exposure to war related traumata was addressed in this study yet

the findings on childhood exposure have not been published.⁹

Kuwait

In 1990, Kuwait was invaded by Iraqi troops which were forced to withdraw in February 1991. Four studies were conducted in Kuwait describing the rates of war exposures among Kuwaiti children and adolescents. Four studies from Kuwait were included in this review.

The first study by Nader, Pynoos, Fairbanks, Al-Ajeel, and Al-Asfour (1993) examined exposure to various war traumatic events in a randomly selected pilot sample of 49 Kuwaiti school children and adolescents three months after liberation of Kuwait from Iraqi occupation. The sample was randomly selected from two out of eight supplemental summer schools and consisted of two groups arranged by age: N=13 (8-10 years), and N=36 (11-17 years) with 31% being boys. All of the participants reported at least two types of trauma exposure and on average experienced five out of the 10 types of war-related assessed experiences. The most common/frequent war events were threats related to significant other (family or friend); knowing the captured person (86%); and knowing the injured person (76%). Other war-related experiences were reported as follows: witnessing/seeing dead bodies or injured persons (65%), witnessing/seeing dead and mutilated bodies on TV (65%), feeling the threat of death (57%), feeling the threat of personal injury (41%), witnessing someone being killed or injured (35%), being injured (24%), and hurting someone else (16%). There were no significant differences in the prevalence of war exposures between genders although older participants tended to have greater war exposure.¹⁰

In a second study, Al-Eissa (1995) assessed the rate of specific war-related experiences in a randomly selected sample of 106 Kuwaiti children (age range = 7-14 years, mean age = 10.1 years, nearly 50% boys) who left for Saudi Arabia during the Iraqi invasion and a

control sample of 120 Saudi children. Data collection took place in the early period of the Gulf crisis following the summer 1990 Iraqi invasion of Kuwait. A number of war-related traumatic experiences were reported with the following rates: fighting in the neighborhood (78%), destruction of property (30%), forced displacement (11%), witnessing assault (40%), witnessing detention (22%), witnessing death (16%), witnessing kidnapping (12%), and personal experience of assault (children who themselves, their parents, or siblings were victims of assault) (7%).¹¹

Al-Khawaja (1997) assessed war trauma events experienced among a sample of 322 Kuwaiti children aged 5-16 years (mean age = 10.4; 67.4% boys) during the Iraqi invasion to Kuwait (in the summer of 1990). Close to two-thirds of children (62.7%) witnessed war trauma events and a third of them (34.5%) heard about war events. The assessed war trauma events included arrest, torture, execution, ransacking, rape, seeing and hearing shooting, and the killing of children.¹²

Hadi and Llabre (1998) looked at the types and prevalence rates of various war related experiences in a randomly selected representative sample of Kuwaiti school children (N=233, nearly 50% boys, age range = 8-12 years) one year after the liberation of Kuwait (data collection between 1991 and 1992). Almost 95% of children reported seeing injured or dead persons on TV, 62% saw photographs of injured or dead persons, 66% had a relative arrested, and 64% feared for someone else being hurt. Other types of war traumatic experiences that were less reported include: the disappearance of a relative (43%), feared being hurt (37%), and the experience of hurt by a relative (36%). Direct traumatic experiences were much less prevalent: saw an injured or dead person (15%), saw a person being killed (5.5%), being personally hurt (4%), and being arrested (2%). Boys and girls were similarly exposed.¹³

Lebanon

Lebanon has been exposed to different types of wars since the 1970s; most were between 1975 and 1990 with two other shorter wars in 1996 and 2006. Many were “internal” and opposed fighting groups within (so called civil wars) and others were “external” from outside Lebanon (mostly Syria and Israel). These wars have resulted in massive destruction of property and infrastructure, thousands of fatalities and casualties, and internal displacement of hundreds of thousands of individuals. Five studies assessed the prevalence of war exposures in Lebanese children and adolescents.

In 1985, Chimienti, Nasr, and Khalifeh (1989) assessed the prevalence of one or more of four types of war traumata in a randomly selected sample of 1039 Lebanese school children (age range = 3-9 years, mean age = 6.3 years; 47% boys) amid a general war stress situation (heavy shelling or fighting); 30% of the sample experienced one or more of four traumatic events: death of a family member, destruction of home, forced displacement of the family, and witnessing death.¹⁴

Between December 1990 and January 1991, Macksoud and Aber (1996) reported on the number and types of lifetime war trauma exposures in a randomly selected sample of 224 Lebanese school children (age range = 10-16 years, mean age = 12.5 years; nearly 50% boys) selected from population segments that were affected by the war. A list of 45 war traumata was compiled based on published literature and preliminary interviews done by the authors. On average, the number of war trauma experiences per child was six: 22% experienced one to three war traumata, 42% experienced four to six traumata, 21% had seven to nine traumata, and 15% experienced 10-20 traumata. Ten different types of war trauma categories were assessed (grouping 45 war traumata): exposure to shelling or combat (93.6%), bereavement (death of a family member or close person) (70%), displacement (forced change of home or school) (67.7%), witnessing violent acts (45%), emigration (left the country because of war) (19.1%), separation from parents (16.8%), extreme deprivation (remained without food,

drinking water, or shelter) (11.8%), victim of violent acts (14.5%), suffering physical injuries (4.5%), and involvement in hostilities (2.7%). Boys and older children were more likely to be exposed to more war traumata and to witness violent acts than girls and younger ones. The number of war traumata experienced in this sample did not vary by socioeconomic status (father's occupational status and mother's level of education), or region of residence. Children whose fathers held high-status occupations were more likely to be separated from their families and to become victims of violence, whereas those whose mothers had higher educational levels were more likely to be exposed to shelling or combat, and to leave the country with their families during the war.¹⁵

Karam et al. (2007) assessed the frequency of war events exposure, displacement and other war-related psychosocial stressors among a random representative sample of Lebanese school children and adolescents (aged 12-18 years) most affected by the July 2006 Israel war on Lebanon (residents of South Lebanon and Southern Suburbs of Beirut). Data collection took place six months after the July 2006 war events. The most common war stressors in this sample (N=709, mean age = 14.6, 46.2% boys) were seeing a lot of violence on TV (74.7%) and witnessing explosions during the war (67.0%), followed by exposure to extreme danger (43.5%), witnessing injured people (34.8%), witnessing destruction of homes (34.4%), loss of friends who moved away or immigrated (33.6%), killing of a close person (32.4%), witnessing dead people (25.8%), and the destruction of their homes (18.3%). More boys than girls significantly reported witnessing war events; yet gender did not differ on frequency of "other than witnessing" war events. Close to three quarters of the sample (76.3%) were displaced from their homes during the war, and many experienced problems while displaced such as not having some family members with them (19.9%), not being able to play or have fun (16.5%), feeling insecure (15.5%), missing basic necessities (8.3%), and being victims of violent events (3.7%).¹⁶

In another study, Karam et al. (2008b) assessed war events exposure one month after the war in a selected sample of 194 Lebanese school children from the South of Lebanon (aged 6-18 years, 50% boys) who had been heavily exposed to the 1996 Israel war on Lebanon. Using the War Events Questionnaire (Karam, Al-Atrash, Saliba, Melhem, & Howard, 1999), found that around 20% of the sample had witnessed destruction of their own home or that of a close person, and/or saw injuries of a family member or other close person, while 25% had heard of the occurrence of the aforesaid war events.¹⁷

Moreover, Karam et al. (2008a)³ conducted a nationally representative study in 2002-2003 as part of the World Mental Health survey on a sample of 2,857 Lebanese aged ≥ 18 years. The rates of different categories of war exposure during childhood were as follows: active war exposure=2%, general war exposure=35.4%; direct personal trauma=7.7% and exposure to trauma happening to others= 11.5%.¹⁸

Palestine

The struggle between the Israelis and the Palestinians has been the longest conflict in the Arab and probably in the whole modern world. This conflict which started in the earlier part of the 20th Century is still ongoing with multiple generations being affected by displacement, fatalities and a permanent atmosphere of insecurity and suffering. A total of 26 articles from Palestine were included in this review.

The earliest published study by Kostelny and Garbarino (1994) examined exposure to violence in a convenient sample of 40 Palestinian children from the West Bank two years after the onset of the first Intifada in 1987. The sample comprised of two age groups: 20 children of the age range 5-8 years and 20 of the age range 12-15 years with equal distribution of gender in both. They found that 55% of the younger age group and 85% of the older one had had direct exposure to violence. Most children had multiple exposures. The following was reported among the

groups of children aged 5-8 years and 12-15 years, respectively: tear-gassed (50% vs. 75%), threatened by soldiers (40% vs. 65%), detained by soldiers (15% vs. 65%), beaten (10% vs. 45%), shot (5% vs. 25%), and being arrested or imprisoned (0% vs. 30%). Rates of other exposures to violence (witnessing violence, knowing about a relative or close friend who had experienced violence) were reported by 70% and 95% of the younger age group of children and the older one, respectively.¹⁹

In another study, Garbarino and Kostelny (1996) assessed exposure to military violence among a sample of 150 Palestinian children (aged 6-15 years) from the West Bank three years after the onset of the first Intifada; 42.7% of children reported an Intifada-related violent event as the most severe form of violence ever witnessed. One-third of the sample (33%) reported the arrest of a family member, whereas 17% declared serious physical injuries.²⁰

In 1996, Miller, El-Masri, Allodi, and Qouta (1999) examined lifetime exposure to military/war trauma among a random sample of 669 Palestinian school children aged 6 years and up. Among the total sample, 69.5% were tear gassed, 54.4% saw shooting, fighting or explosions, and 36.9% saw family members being arrested and humiliated. The average number of different types of war trauma exposure per child was 3.4. There were no significant gender differences pertaining to the number of different types of war trauma exposure.²¹

Thabet and Vostanis (1999) examined the frequency of 21 different types of Intifada-related war traumatic experiences in a random sample of 239 Palestinian school children aged 6-11 years (mean age=8.9 years), six months after the end of the first Intifada. On average each child had four different types of war experiences. The most commonly reported war experiences were: tear gassed (56.1%), witnessing day raids (49.0%), witnessing beating of a friend (34.3%), witnessing a friend's detention (31.8%), hearing of killing of a friend (23.4%), and witnessing shooting of close relative (12.6%). Less common were direct

personal experiences: being beaten up (5.4%), witnessing house closure/demolition (2.9%), being shot by rubber/plastic or real bullets (2.5%), having limbs broken (1.2%), and imprisonment (0.8%). Older children had more war traumatic experiences than younger ones. In addition, significantly more boys than girls reported witnessing the breaking of limbs of a close friend and demolition of one's house.²²

Qouta, El-Sarraj, and Punamaki (2001) assessed the number of exposures to military traumatic events during the first Intifada in a sample of 86 Palestinian children (aged 10-12; almost 50% boys). The most commonly reported traumatic experiences were tear gas attacks (82%), night raids (74%), and having a family member in prison (53%). The least common experiences were being injured (17%), and detained (9%). Boys had significantly more military traumatic experiences than girls.²³

In 2000, early during the second Intifada, Thabet, Abed and Vostanis (2001) looked at exposure to 10 war traumatic events in 286 Palestinian children and adolescents aged 9-18 years (mean age= 13.9) from Gaza. On average, children experienced four traumatic events. More than half of the sample (61.9%) experienced four or fewer events while the rest were exposed to five or more events. Rates of war traumatic events varied as such: seeing pictures of mutilated and dead bodies on TV (92.3%), witnessing bombardment and shelling of houses (83.6%), inhaling tear gas (36.0%), hearing of the killing of a friend (34.6%), and witnessing the killing of a close relative (22.4%). The least common experience was being shot by rubber/plastic or real bullets (12.9%). Boys and children living in the city were significantly more likely to experience more traumatic events than girls and those living in refugee camps or the village. The number of war exposures did not differ significantly by age.²⁴

Qouta, Punamäki and El Sarraj (2003) and Qouta, Punamäki, and El Sarraj (2005) assessed the rates of exposures to military violence during the second Intifada in a randomly selected community-based

sample of 121 Palestinian children from Gaza aged 6–16 years, 55% boys, living in refugee camps. Almost all children (99%) experienced the shelling of their homes, 97% had witnessed shooting, fighting or explosion, and 95% were exposed to tear gas. More than half of the sample (52%) had seen a stranger being injured or killed, 36% had seen a friend or a neighbor being injured or killed, and 23% had witnessed a family member being injured. Less common events included direct personal exposures such as being shot by plastic bullets (4.2%), head injury (2.5%), and deprivation of medical help (1.7%).^{25,26}

Thabet, Abed, and Vostanis (2004) measured the rates of exposure to war traumatic events in a representative sample of 403 Palestinian refugee children from Gaza, aged 9-15 years, 47.1% boys, who have been exposed to intense military violence for 6 months since the onset of the second Intifada. Data were collected between June and July 2001. Individuals in this sample faced, on average, four different types of war traumatic experiences. Prevalence rates of individual war traumata varied as follows: seeing mutilated bodies and injured people on TV (92.1%), witnessing bombardment of other people's houses by airplanes and helicopters (71.2%), experiencing tear gas (27.8%), hearing about the killing of a close relative (25.3%), witnessing shooting of friend (24.6%), witnessing killing of a close relative (19.9%), witnessing beating of a friend (16.6%), witnessing firing on their own house by tanks and heavy artillery (7.7%), and witnessing demolition of their house (5.2%). Boys reported a higher number of war traumatic experiences. They also had more of the following: witnessing the beating of a close relative or friend, killing of a close relative, shooting of a friend, and hearing about the killing of close relative or friend. Additionally, older children and those living in camps close to settlements reported more exposure to war traumatic events than younger ones and those living in the city or the village.²⁷

In 1999, Khamis (2005) examined lifetime exposure to traumatic events in a representative sample of 1,000 Palestinian school children aged 12-16 years (52% boys, 85% from the West Bank). Of the total sample, 27% had experienced some military/ political violence-related trauma inflicted by the Israeli Army, 12.5% were injured, 9.6% had a family member killed, and 4.5% were imprisoned with beating.²⁸

Qouta and Odeh (2005) surveyed a randomly selected representative community-based sample of 944 Palestinian children aged 10-19 years (mean age=15.1 years) from Gaza in 2003 (during the second Intifada) to assess lifetime exposure to 12 different military violence-related traumatic events. Boys constituted almost half of the sample and close to three-quarters of the sample were refugee children. Commonly reported direct experiences of traumatic events were: exposure to tear gas (36.1%), followed by the shelling of their house (19.0%). Deprivation of medical help was reported at 7.7%, and being shot at with live bullets at 2.8%. Other types of exposures (based on witnessing) were reported to a much larger extent: seeing shooting, fighting, or explosions (83.2%), seeing strangers being injured or killed (66.9%), seeing a friend or neighbor being injured or killed (61.6%), and seeing a family member being injured (25.3%).²⁹

Thabet, Karim, and Vostanis (2006) examined exposure to 17 different war traumatic events in a representative sample of 308 Palestinian pre-school children selected from kindergartens in Gaza during the second Intifada. Data collection occurred between December, 2002 and February, 2003. The sample comprised of children aged 3-6 years (mean age=4.7 years), nearly 50% boys, and more than half came from refugee camps (the remaining were from villages and the city). On average, a child experienced three traumatic events (range 0-15) during the previous 12 months. Close to 79% of the sample were exposed to less than five events, 17% to 5-9 events, and 4% to 10 or more events. Commonly reported war traumatic events were: witnessing mutilated bodies and wounded people in TV (91.6%), witnessing bombardment of

other people's houses by airplanes and helicopters (51.3%), and witnessing firing at neighbor's house by tanks and heavy artillery (27.9%). Other exposures that were less commonly reported included: hearing about the killing of a neighbor (20.1%), day raids of their house (13.3%), witnessing firing at their own home by tanks and heavy artillery (9.7%), witnessing shooting of a neighbor (8.1%), witnessing demolition of their house (4.2%), and witnessing the beating or the killing of a close relative (2.9%). The number of war traumatic exposures did not differ by gender. Children who have been living in the city had significantly more exposures compared to those living in the villages or refugee camps.³⁰

Elbedour, Onwuegbuzie, Ghannam, Whitcome, and Abu Hein (2007) examined war traumatic experiences in a representative sample of 229 Palestinian school adolescents living in refugee camps in Gaza, aged 15-19 years (mean age=17.1 years), 52.8% boys, who had been heavily exposed to military violence for almost two years during the second Intifada). Data were collected in 2002. Prevalence rates of frequently reported war traumatic experiences were: witnessing killing of a friend (48.5%), family member being killed (15.7%), home being demolished (7.9%), a friend being injured through confrontation with Israeli army (6.1%), being personally shot (4.4%), family member being shot (3.5%), firing of missiles (7.9%), physical injury (2.6%), kicking and punching by the army (1.8%). 34% of the sample reported direct personal experience of traumatic events.³¹

In 2003, amid the second Intifada, Giacaman, Shannon, Saab, Arya, and Boyce (2007) assessed individual and collective exposures to violence and trauma from the Israeli military and settlers for the past 13 months in a representative sample of 3,415 Palestinian school adolescents. Data were collected between May and June, 2003. The sample comprised of nearly 50% boys and 98.5% were 15-18 years old. Overall collective exposures to violence and trauma were more common than individual exposures. Prevalence of the most commonly reported collective

traumatic experiences was as such: seeing shooting (80%), seeing a stranger being humiliated (67%), exposure to sound bombs (63%), seeing a stranger being arrested (62%), exposure to tear gas (60%), seeing shelling/ explosion (50%), and seeing a stranger being injured (49%). Other violent traumatic exposures that were experienced individually included house search (35%), body search (30%), humiliation (23%), and detention or arrest (17%). The least commonly reported events were having been beaten by Israeli settlers (2.4%), having been stripped in public (2.1%), and having one's house sealed or demolished (1.7%). Boys were significantly more exposed to military violence and trauma compared to girls particularly at the personal/ individual level such as reporting experiencing body search (54% vs. 9%), and being beaten by the Israeli army (30% vs. 2%), respectively. In addition, those who have been living in refugee camps and cities reported higher levels of exposure compared to those living in villages.³²

Abdeen, Qasrawi, Nabil, and Shaheen (2008) assessed exposure to war-related traumatic events in 2004-2005 among a nationally representative sample of 2,100 high school Palestinian students aged 14-17 years (55% boys) among which 65% were from the West bank and 35% from Gaza. Almost all the sample (99%) reported having had experienced some type of exposure to a war-related traumatic event. 26%, 41%, and 32% of the total sample reported high, medium, and low exposure levels, respectively, assessed using Haj-Yahia's 40-item Political Violence Inventory. More boys reported high exposure levels (67% vs. 33%) while more girls reported medium exposure levels (58% vs. 40%). In addition, direct exposure was more common in boys whereas "witnessing" war events was more frequent among girls.³³

Qouta, Punamäki, Miller, and El-Sarraj (2008) reported on age differences in exposure to military violence during the first Intifada in a randomly selected sample of 640 Palestinian school children (aged 6-16 years, nearly 45% boys) in Gaza). In both boys and girls, older ones had significantly

experienced more direct exposures (being detained, being injured, loss of family members, home demolition) and more witnessing of killing, fighting, and destruction than younger ones. In another selected sample of 225 Palestinian school children in Gaza (age range=10-15 years, mean age=11.4 years, 64% boys) during the second Intifada, Qouta et al. (2008) observed that boys were more likely to experience victimization, whereas girls were more likely to experience the witnessing of military violence, as they get older.³⁴

Thabet, Abu Tawahina, El Sarraj, and Vostanis (2008) examined the number and the rates of exposure to diverse war traumatic experiences in a convenient sample of 197 Palestinian children (age range=9-18 years) from Gaza who had been exposed to regular shelling for the past six months during the second Intifada). The average number of war traumatic events children had experienced during the past six months was eight. The most common war traumatic event children experienced was watching mutilated bodies and injured people on TV (98.5%), followed by witnessing signs of shelling on the ground (94.9%), hearing shelling of the area by artillery (92.9%), hearing the sounds of the jetfighters (89.8%), and witnessing bombardment of other homes (86.7%). Among other traumatic events that majority of children experienced were witnessing assassination of people by rockets (75.0%), witnessing firing by tanks and artillery on one's home (74.5%), and hearing about the killing of a close relative (61.0%). Boys were significantly more exposed to war traumatic events than girls; yet exposure did not differ by age. Children coming from high income families experienced significantly less war traumatic events compared to others.⁷

Espié et al. (2009) reported on the exposure to war traumatic events alongside lifetime trauma exposure in 650 Palestinian children \leq 15 years old recruited through home visits by the MSF (Médecins Sans Frontières/Doctors Without Borders) program in limited areas in Gaza and the West Bank from 2005 to

2008. Witnessing murder or physical abuse was the most common event reported by the sample (51.8%), followed by the destruction or loss of property (36.6%), killing of a close family member (26.9%), being forced to flee (23.8%), receiving threats (22.3%), suffering physical injury (15.5%), and imprisonment (10.3%).³⁵

In a study conducted in 2007, Massad et al. (2009) and Massad et al. (2011) assessed the number and the rates of individual war traumatic events in a randomly selected sample of 350 Palestinian preschool children based in the Gaza Strip. The sample comprised of children aged 3-6 years (mean=4.9); and 51% boys. Children experienced an average of 6 war traumatic events during the year prior to data collection. The most common war traumatic event children had experienced was hearing the sounds of jetfighters (94%), followed by watching mutilated or injured bodies on TV (93%), and hearing shelling by artillery (84%). Witnessing bombardment of houses was reported for 42% of the sample, deprivation of food, water and electricity during incursions by 25%, hearing of the killing of a close relative by 23%, and being injured due to bombardment of one's own house by 5%. The number of war traumatic exposures did not vary by age or gender.^{5, 36}

In 2003, Thabet, Ibraheem, Shivram, Winter, and Vostanis (2009) assessed the rates of 19 types of war-related traumatic events in a systematically randomly selected sample of 412 Palestinian school children, aged 12-16 years (mean age=13.7) and nearly 50% boys, from Gaza. Data were collected during the second Intifada and children were asked to report on exposure to traumatic events they had experienced in the past two years. The mean number of war-related traumatic events a child had experienced was 8.2. The most common war-related traumatic experience was watching pictures of injured people on TV (96.4%), followed by hearing an invasion (94.2%), watching home demolition on TV (93.7%), and witnessing bombardment by aircraft (91.5%). Less common traumatic experiences were witnessing the killing of a

close family member (18.4%), witnessing the bombardment of own home (16.0%), and witnessing the demolition of own home (10.2%), followed by the least common, being shot at with bullets (6.3%). Boys, older children, and those living in refugee camps were significantly more exposed to war traumatic events compared to girls, younger children and those living in a city or a village, respectively.³⁷

Dubow et al. (2010) looked at exposure to political violence and conflict in tandem with exposure to violence in other contexts (community, school, and family) in a community-based representative sample of 600 Palestinian children and adolescents (200 of each of three age groups: 8, 11 and 14 years). The date of data collection was not indicated. Each of the age groups had an even gender distribution and the sample was almost two-thirds from the West bank and one-third from Gaza strip. During the prior year, 88% of the sample reported self or significant others participation in political demonstrations, and 73% witnessed a non-violent event (such as spending extended periods of time in a security shelter). Likewise, 73% witnessed actual violent events (such as people being tortured, abused by soldiers, or held hostage). A majority (61%) had a friend or family being lost or injured. Almost all (99%) witnessed political violence on media channels. Alongside exposure to political violence, 89% of the sample reported witnessing violence in the community, 91% reported witnessing violence at school, and 68% witnessed violent argument between family members, at least once in the past year. Boys witnessed significantly higher levels of political, community, and school violence and conflict than girls, yet they did not differ in exposure to family violence and conflict. Additionally, older children had significantly more exposure to violence and conflict than younger ones across all contexts.³⁸

Peltonen, Qouta, El Sarraj, and Punamäki (2010) examined exposure to typical military traumatic events during the second Intifada in a sample of 227 Palestinian school children in the Gaza Strip, 10-14

years old (mean age=11.37 years), 64% boys, 61% had lived in urban areas, and 21% in refugee camps. Data were collected in 2006 and assessment was limited to exposure during the last year. More children reported witnessing military violent events than personal experiences of these events. The most common was witnessing air strikes, shooting and firearms battles (80%), followed by seeing other people being injured (58%) or killed (59%), having a friend being injured (34%) or killed (27%), having a family member being injured (27%), imprisoned (24%), or killed (23.5%), having their homes attacked by tanks and bulldozers (8%), and being injured (4%). Boys experienced significantly more military traumatic events than girls (mean of eight traumatic events during the past year in boys compared to six events in girls).³⁹

Punamäki, Qouta, Miller, & El-Sarraj (2011) reported on the number of lifetime war traumatic events exposure (particularly during the first Intifada) in a random sample of 640 school children and adolescents from Gaza (age range= 6-16 years). Data were collected in 1996. The mean number of lifetime war traumatic exposures was 5.6 in the sample where 56% had low exposure (two to five events) and 44% had high exposure (six to 18 events). Lifetime war events exposure did not differ by gender.⁴⁰

Kolltveit et al. (2012) studied a random sample of 139 school students aged 12-17 in Gaza. Data were collected ten months after the end of the November 2009 war. War exposure (during lifetime) was assessed using a checklist that included a list of 27 war traumatic event. The mean score on this scale was 10.42 (SD=5.35), and the most common events were: "Watching mutilated bodies on TV" (92.1%), "Hearing shelling of the area by artillery" (91.4%), "Hearing sonic sounds of the fighter planes" (85.6%), "Witnessing the signs of shelling on the ground" (78.4%), "Witnessing assassination of people by rockets" (59.0%), and "Hearing killing of a close relative" (58.3%).⁴¹

Somalia

Somalia has also witnessed several wars in the last few decades, including: the Somali National Movement war (1988), the Somali civil war (1991-1995), the war against Ethiopia (2006-2009), and the current civil war which is concentrated in Southern Somalia (since 2009). One study was found from Somalia. Kia-Keating & Ellis (2007) assessed lifetime exposure to war adversities in 76 Somali refugee adolescents aged 12-19 years (mean age=15.6) who have resettled in the USA. Of 26 possible war and refugee traumatic experiences, they had an average of 7.7 exposures during their lifetime. The date of data collection was not indicated. Rates of the most common experiences were as such: witnessing death of a family member or having to escape to avoid war or persecution (57.9%), separation from a parent for a month or longer (56.6%), having a loved one killed (51.3%), losing the family's valuable possessions (48.7%), and seeing someone injured (44.7%). Among the least common traumatic experiences were extreme deprivation of food and water (7.9%) and carrying arms to defend one's family (3.9%). Genders did not differ on number or types of war events experienced.⁴²

Sudan

Sudan has suffered a long history of civil war which ended recently with South Sudan gaining independence from the North. The three studies in the current review and reporting on the rates of war exposure were conducted on samples of refugees. The first study by Paardekooper, de Jong, and Hermanns (1999) assessed lifetime war traumatic experiences in a random sample of 316 Sudanese refugee children aged 7-12 years, 54% boys, who fled to Uganda (data collection took place November 1995-January 1996). The average number of war traumatic events experienced was 6.5. Prevalence rates of specific war traumata were: lack of food (91%), loss of family member (81%), ill health/ lack of medical care (62%), torture (28%), being lost or kidnapped (26%), witnessing the murder of a family member (19%),

isolation from family members (17%), and sexual abuse (9%).⁴³

In the second study, Geltman et al. (2005) examined war-related traumatic experiences in a convenient sample of 304 Sudanese refugee minors (mean age=17.6 years, 84% boys) who resettled in the US and were enrolled in refugee foster care programs. Data collection took place after one year to 18 months of settling in the US (February 2002 through July 2002). Rates of reported war-related and flight experiences were: witnessing close friends or family being killed (76%), being injured (74%), or tortured (60%), experiencing near-drowning (47%), having head trauma (31%), being physically injured (29%), and being tortured (20%).⁴⁴

In the third study, Morgos, Worden, and Gupta (2008) assessed exposure to 16 different types of war experiences in a randomly selected sample of 331 Sudanese refugee children, aged 6-17 years, representative of the internally displaced school-based children population from different villages in Southern Darfur, and living in refugee camp. Date of data collection took place in 2003. The average number of war traumata experienced was 8.94. Prevalence rates of different types of war experiences were: being forced to leave homes (99%), home invasion (95%), witnessing homes burned (94%), having to hide to protect self (90%), the fear of starvation (78%), witnessing the torture of family member or being tortured (76%), being threatened to be killed (50%), the death of a sibling (46%), abduction/ separation from parents (44%), witnessing rape (43%), death of one or both parents (24%), being forced to kill/hurt a family member (22%), and being raped (15%). The total number of war traumatic events experienced by children as well as exposure to specific types of war experiences did not vary significantly by gender. Yet older children (ages 13-17) reported experiencing more war traumatic events than younger ones (ages 6-12), had witnessed more shootings and torture and were more likely to be threatened to be killed, to have had a

sibling or a parent die, and to be forced to fight than younger ones.⁶

Syria

One study, currently in progress by Karam et al. (2014) (data collection: 2013-2014), assessed war exposure among a sample of 549 Syrian children enrolled in Lebanese public schools as well as 312 Syrian refugee children recruited from Social Development Centers (SDCs) from different Lebanese regions. For the school sample, the rates of exposure to war since the onset of hostility were as follows: 13.4% had their house partly/totally destroyed, 9.4% were inside their house when it got bombarded, 16.4% had a family member kidnapped, 3.7% were exposed to an armed person trying to kidnap them, 12.2% witnessed people getting tortured, 21.0% saw a dead person (not on TV), 8.1% witnessed armed people kill someone, 28.4% had a close person to them get killed, 2.8% got beaten to give information about their parents, 3.5% were injured from explosions/bombardment, and 17.6% experienced armed people entering their house. For the SDC sample, the rates of war exposure were as follows: 27.9% had their house partly/totally destroyed, 16.7% were inside their house when it got bombarded, 15.0% had a family member kidnapped, 3.7% were exposed to an armed person trying to kidnap them, 15.6% witnessed people getting tortured, 30.9% saw a dead person (not on TV), 20.4% witnessed armed people kill someone, 30.6% had a close person to them get killed, 3.3% got beaten to give information about their parents, 8.3% were injured from explosions/bombardment, and 28.9% experienced armed people entering their house.⁴⁵

Discussion

This review has attempted to collect published information on war exposure in children and adolescents in the Arab region. Due to space limitations, we will review in another sister publication the available studies of war and mental health outcomes in the Arab world.

Although we used PubMed and PsycINFO, two widely used search engines, to retrieve pertinent studies to write this review, it is possible that we missed some studies published in journals that are not indexed by the selected search engines. The literature review from the Arab world yielded articles which included the following countries exposed to armed conflict: Iraq, Kuwait, Lebanon, Palestine (Gaza and West Bank), Somalia, and Sudan. The majority of these studies (26 out of 42 published) were on Palestinian samples, and less on samples from other countries: Kuwaiti (four), Lebanese (five), Sudanese (three), Iraqi (two), and Somali (one). Indeed, studies from the Palestinian territories have been very rich in detailing the variety of traumata; some could only be described in specific wars such as seeing an adult member being humiliated or taken away to prison. The methodologies varied widely among the studies especially in terms of the instruments used though mainly in Arabic language. The majority of the studies were based on specific community samples (general, students, refugees, or residing in camps) and a minority from primary health care centers. Except for very few, most studies included both genders with almost equal proportions but with variability of age groups at times including adulthood.

Initial results from the LEBANON study, conducted by IDRAAC in 2002-2003 showed that depression and behavioral disorders are five and nine times respectively more common among people who were exposed to three or more war related traumatic events more than 10 years after the end of the internal Lebanon wars (1975-1990)^{2,3}. Many of the Lebanese interviewed in this study were children and adolescents during the internal Lebanon wars. The prevalence of war exposure in childhood and adolescence as well as the relation of these early traumata to mental health disorders are being studied using data from this study in upcoming publications. Iraq carried too its national study following the same methodology as in Lebanon but no specific data on war exposure during childhood has been published yet.

To interpret the results of this review, one has to keep in mind that there are inherent differences in the severity and type of armed conflicts occurring in each country and maybe so in several areas of the same country. There are wide differences in the instruments used to assess events, and the samples studied varied by whether they were directly exposed to war or were part of a general community sample in a country of war.

In the context of the above limitations, it is safe to say that children and adolescents in Arab countries where wars occurred have experienced multiple war related traumatizing events. These events vary from seeing atrocities on TV (98% in Palestine) to directly witnessing injured or dead bodies, witnessing their personal homes being destroyed, losing a loved one, being personally hurt or injured, and a variety of fear inducing traumata. This is especially important since war traumata tend to occur together and singling out one trauma and studying its long term effect could be misleading.

There seems to be a consistent finding where differences in exposure to war related events did not differ by gender in younger children. However, more differences are observed by number and types of war exposures in older children and adolescents, where in older age groups boys tend to be more exposed than girls in general. More so, boys seem to have had greater exposure to military-related events versus girls who experienced traumata more at a personal or individual level. There were no specific publications on children participating directly in wars, but we suspect that many boys start taking active roles (including rescue work) around puberty or in their early teens, which might partly explain higher exposure in older age adolescents. Other predictors of exposure to war traumata are more difficult to assess. Age cohorts undoubtedly differ and in some wars children of lower socioeconomic stratum were more exposed, possibly because of incapacity to flee areas of conflict, adding to economic and living conditions that were precarious to start with. How much

individual characteristics (other than demographics) render war exposure more likely is probably less important in childhood, where most traumata are of a passive nature. Still, family characteristics (temperament of adults and their choices) could be an interesting area of research. Finally, war exposure adds itself to a variety of childhood adversities experienced in non-war situations such as physical and sexual abuse, exposure to family violence, loss of one or more caretakers, etc., making the assessment of war exposure even more challenging.

Wars are brutal and research in war-afflicted areas do not lend themselves to the ideal situations of other field studies where all these parameters can be studied and well planned ahead in time. However, with the increasing experience of many in the Arab world and elsewhere, studies that combine data collection on exposure, mental and physical disabilities are becoming less difficult (granted that each war is different and each phase of the same war is unique). Thus, local adaptations to the existent wars are of utmost necessity at any point in time. Setting the stage for long term follow-up is in the realm of war exposure in children and adolescents (as well in adults) for a crucial reason: how much do individuals recall accurately war traumata at several points in time? How much is the respondent's mental state at the time of interview as well as possible exposure through the media responsible for telescoping biases? All these interesting questions need to be answered to accurately study the effect of war exposure throughout history on human beings.

Acknowledgements

This work is supported by anonymous private donations to IDRAAC, Lebanon, and unrestricted grants from Abbott, AstraZeneca, Eli Lilly, GlaxoSmithKline, Janssen Cilag, Lundbeck, Novartis, Phenicia, Sandoz, Servier, and UPO.

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المخلص

الهدف: شهد العالم العربي سلسلة من الحروب التي أدت إلى عواقب شديدة لا تزال تظهر على المستويات السياسية والاقتصادية والاجتماعية. بعض الدراسات بحثت نسب تعرض الأطفال والمراهقين العرب للحرب. طريقة البحث: أكملنا بحث علمي حول التعرض للحرب خلال مرحلة الطفولة / المراهقة لجميع البلدان في العالم العربي حتى 15 سبتمبر 2014 باستخدام PubMed، وPsycINFO. النتائج: يشمل الملخص 42 دراسة: 2 عن العراق، 4 عن الكويت، 5 عن لبنان، 26 عن فلسطين، 3 عن السودان، واحدة عن الصومال وواحدة عن سوريا. واستندت معظم الدراسات على عينات محددة من المجتمع (الطلاب، اللاجئين، أو المقيمين في المخيمات) وأقلية من مراكز الرعاية الصحية الأولية. الدراسات تناقش أحداث الحرب المروعة التي وقعت إما "بشكل عام" (مثل مشاهدة الجرحى، وتدمير المنازل) أو "بطريقة شخصية" (مثل التعرض للتعذيب أو لأشكال مختلفة من العنف). الخلاصة: لا يجوز استيراد حدث صادم متعلق بالحرب ودراسة تأثيره على الصحة العقلية.

كلمات البحث: الحرب، أحداث صادمة، الأطفال، المراهقين، العالم العربي.

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Table 1: Studies addressing the rates of exposure to war traumatic events among Arab children and adolescents

Country	Reference	Date of study	Sample size and characteristics	Age (years)	Instruments and diagnostic tools (limited to listing of instruments that were used to measure children's war exposure & mental health outcomes)
Iraq	Ahmad et al. (2000)	1993	A random sample of Kurdish Iraqi children who were still living in refugee camps five years after the Anfal military operation (N=45)	7-17 Mean=12.4	The Harvard Trauma Questionnaire (HTQ); The Child Posttraumatic Stress Disorder Reaction Index (PTSD-RI); Posttraumatic stress symptoms for children (PTSS-C)
	Dyregrov et al. (2002)	1991-1993	Community-based sample of Iraqi children who were exposed to the bombing of a shelter close to the area where children lived during the 1991 Gulf War; N=107 in 1991; N=101 in 1992; N=94 in 1993	6-17 Mean=11.5 at baseline; T1: 1991 T2: 1992 T3: 1993	War Trauma Questionnaire; Child Behavior Inventory (CBI); Posttraumatic Stress Reactions Checklist (PTSRC); Impact of Event Scale (IES); 8-item Grief Scale
Kuwait	Nader et al. (1993)	Summer 1991	Randomly selected pilot sample of Kuwaiti school children who had mid-range exposures to war events during the 1991 Gulf war (N=49)	8-17 divided as such: 8-10 (N=13); 11-17 (N=36)	Exposure to war-related experiences questionnaire; Revised child post-traumatic stress disorder reaction index (CPTSD-RI); A Grief Index
	Al-Eissa (1995)	October 1990	Randomly selected sample of exposed (E) Kuwaiti children who left to Saudi Arabia during the Iraqi invasion (N=106), and a control sample (C) of Saudi children (N=120)	7-14 divided as: 7-10 (2/3) & 11-14 (1/3); Mean (E)=10.1; Mean (C)= 10.4	A structured questionnaire developed by the authors
	Al-Khawaja (1997)	Summer 1990	Kuwaiti children who had witnessed a multitude of war trauma events during the Iraqi invasion to Kuwait (N=322)	5-16 Mean=10.4	Not clear how they assessed for war trauma events; Body language & child's behavior used as indicators of anxiety level
	Hadi & Llabre (1998)	1991-1992	Randomly selected representative sample of school children who had direct & indirect exposure to war events during the Iraqi occupation (N=233)	8-12	A structured crisis interview (CI) developed by the authors was used to assess the children's level of exposure to violence; Child Posttraumatic Stress Disorder Reaction Index (PTSDI); Children's depression inventory (CDI)

Lebanon	Chimienti et al. (1989)	Spring 1985	Randomly selected sample of school children representative of population segments exposed to a general war stress situation (heavy fighting or shelling) (N=1039)	3-9 Mean=6.3	A questionnaire developed by the authors was used to collect data on exposure to war traumas and emotional & behavioral problems in children
	Macksoud & Aber (1996)	December 1990 and January 1991	Randomly selected sample of schoolchildren (88.2% Lebanese) representative of 4 demographically different geographical areas in Lebanon who had a lifetime exposure to war events (shelling or combat, bereavement, displacement, witnessing violent acts, etc.) (N=224)	10-16 Mean age=12.5	Childhood War Trauma Questionnaire (CWTQ); Child Behavior Inventory (CBI); Post-Traumatic Stress Reaction Checklist (PTSRC)
	Karam et al. (2007)	Feb. 2007	Random sample of school children & adolescents, representative of the population most affected by July 2006 Israel war on Lebanon (South Lebanon & Southern Suburbs of Beirut); Gp 1 (N=709), Gp 2 (N=261)	Gp 1: 12-18 (mean=14.6)	Strengths & Difficulties Questionnaire (SDQ); Child-Revised Impact of Events Scale (CRIES)
	Karam et al. (2008)	1996-1997	Randomly selected sample of school children from the South heavily exposed to the 1996 Israel war on Lebanon (N=194)	6-18 at baseline T1: 1996 T2: 1997	War Events Questionnaire (WEQ); Diagnostic Interview for Children and Adolescents-Revised (DICA-R)
	Itani et al. (2014)	2002-2003	Nationally representative study as part of the World Mental Health survey (n=2857, age: 18+)	18+	Arabic version of the WHO Composite International Diagnostic Interview (CIDI) Version 3.0
	Palestine	Kostelny & Garbarino (1994)	1989	Convenient sample of Palestinian children from the West Bank exposed to military violence for 2 years after the onset of the first Intifada (N=40); Gp 1: N= 20, Gp 2: N=20	Gp 1: 5-8; Gp 2: 12-15
Garbarino & Kostelny (1996)		1990	Sample of children from the West Bank exposed to military violence for 3 years during the first Intifada (N=150)	Gp1: 6-9; Gp 2: 12-15	A violence questionnaire developed by the authors was used to assess children's exposure to political violence; Achenbach Child Behavior Checklist
Miller et al. (1999)		1996	Random sample of school children from Gaza who had a lifetime exposure to war trauma (N=669), divided into Gp 1(N=458), and Gp2 (N=211)	Gp1: 6-11 years Gp2: 12 and up	Health Reach Modified War Trauma Questionnaire; Ontario Child Health Scale (OCHS); Child Posttraumatic Stress Disorder Reaction Index (CPTS-RI)
Thabet & Vostanis (1999)		1993 (6 months post first)	Representative sample of school children from Gaza who had experienced war traumas during the last months of the first Intifada (N=239)	6-11 Mean =8.9	Gaza Traumatic Event Checklist; Rutter Scales A2 and B2; Child Post-Traumatic Stress Reaction Index (CPTSD-RI)

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	Intifada);				
Qouta et al. (2001)	1993 (last months of the first intifada); 1996	Sample of children from Gaza who had experienced intense military trauma events during the first Intifada (N=86);	10-12 at baseline T1: 1993 T2: 1996	Traumatic Events Checklist;; A PTSD symptoms scale by Frederick, Pynoos, and Nader (1992); Eysenck neuroticism scale (the JEPQ); Rosenberg's scale further developed by Hof- man, Beit-Hallahmi, and Lazarowitz (1982); Ontario Child Health Scale (OCHS)	
Thabet et al. (2001)	2000 (early during the 2 nd intifada)	Random sample of children and adolescents from Gaza who had been exposed to war events for few months during the 2 nd intifada; close to 60% had been living in refugee camps, 23.8% in the city, and the remaining in the village (N=286)	9-18 Mean= 13.9	Gaza Traumatic Events Checklist; Impact of Events Scale (IES)	
Qouta et al. (2003)	2002	Randomly selected community-based sample of refugee children from Gaza exposed to bombardment & shelling of homes during the 2nd Intifada (N=121)	6-16 Mean=8.2	War Trauma checklist; Child Post-Traumatic Stress Disorder Reaction Index (CPTSD-RI)	
Thabet et al. (2004)	Mid 2001	Representative sample of refugee children from Gaza exposed to intense military violence for six months since the onset of the second Intifada (N=403)	9-15 Mean=12	Gaza Traumatic Events Checklist; Child Post-Traumatic Stress Reaction Index (CPTSD-RI); Short Mood and Feelings Questionnaire (MFQ)	
Khamis (2005)	1999	Representative sample of school children, 85% from the West Bank (N=1000)	12-16	A questionnaire was used to assess exposure to traumatic events; The Child Psychological Maltreatment Scale; PTSD module of the structured clinical interview for DSM-IV, Arabic version	
Qouta & Odeb (2005)	2003	Randomly selected representative community-based sample of children from Gaza (close to ¾ were refugee children) who had a lifetime exposure to military violence-related traumatic events (N=944)	10-19 Mean= 15.1	War Trauma Checklist; Posttraumatic Stress Disorder Scale, DSM –IV criteria; Child Posttraumatic Stress Disorder Reaction Index (CPTSD-RI)	
Qouta et al. (2005)	2002	Randomly selected community-based sample of refugee children from Gaza exposed to war traumatic events during the 2nd Intifada (N=121); same sample as that in Qouta et al. (2003)	6-16	War Trauma Checklist; Child Post-traumatic Stress Disorder Reaction Index (CPTSD-RI); Rutter Parent Questionnaire (RA2)	

Thabet et al. (2006)	During the 2nd intifada	Representative sample of pre-school children selected from kindergartens in Gaza, majority living in refugee camps, exposed to different war traumatic events during the second intifada (N=308)	3-6 Mean=4.7	Gaza Traumatic Checklist – Parent Form; Strengths and Difficulties Questionnaire (SDQ); Behaviour Checklist (BCL)
Elbedour et al. (2007)	2002	Representative sample of school adolescents living in refugee camps in Gaza exposed to military violence for almost 2 years during the second intifada (N=229)	15-19 Mean=17.1	Post-traumatic stress disorder interview (PTSD-I); Beck Depression Inventory-II (BDI-II); Beck Anxiety Inventory (BAI); Coping Responses Inventory (CRI-Youth Form)
Giacaman, Abu-Rmeileh, et al. (2007)	2003	Representative sample of school adolescents from the Ramallah District, West Bank, exposed to intense military violence during the second intifada (N=3415); same sample as that in Giacaman, Shannon, et al. (2007)	15-18	Individual and collective exposure to violence and trauma scales developed by the authors; Gaza Traumatic Event Checklist-Revised; Depressive-like state scale based on DSM-IV criteria; Subjective health complaints questionnaire based on the World Health Organization's Health Behavior in School-aged Children Survey (HBSC15)
Giacaman, Shannon, et al. (2007)	2003	Representative sample of school adolescents from the Ramallah District, West Bank, exposed to intense military violence during the second intifada (N=3415)	15-18	Individual and collective exposure to violence and trauma scales developed by the authors; Gaza Traumatic Event Checklist-Revised; Depressive-like state scale based on DSM-IV criteria; Subjective health complaints questionnaire based on the World Health Organization's Health Behavior in School-Aged Children Survey (HBSC15)
Abdeen et al. (2008)	2004-2005	Representative national sample of high school students who had been exposed to war-like traumatic events; 65% of the sample from the West bank & 35% from Gaza (N=2100)	14-17	Haj-Yahia's 40-item Political Violence Inventory was used to assess exposure to war-like events; Emotional reactions to exposure (such as extreme fear, helplessness, or horror) were assessed with items derived from the DSM-IV-TR; UCLA PTSD Index adolescent version (adapted) derived from DSM-IV PTSD symptom criteria; Functional Impairment Questionnaire derived from the Child Diagnostic Interview Schedule; Hopelessness scale for children; Somatic complaints checklist; Brief COPE

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Qouta et al. (2008)	Study 1: during a calm period before the 2 nd intifada; Study 2: 2005	Study 1: Randomly selected sample of school children in Gaza exposed to military violence during the first Intifada (N=640); Study 2: Selected sample of school children in Gaza exposed to military violence during the 2 nd Intifada (N=225)	Study 1: 6-16; Study 2: 10-15 Mean= 11.4	<u>Study 1:</u> Child's victimization from military violence scale and child's witnessing of military violence scale developed by the authors; Scales of aggressive and antisocial behavior derived from the Ontario Child Health Scale <u>Study 2:</u> Gaza Traumatic Events Checklist; Multiple Aggression Questionnaire
Thabet et al. (2008)	Second Intifada	Convenient sample of children in Gaza exposed to regular shelling for six months prior to data collection (N=197)	9-18	Gaza Traumatic Events Checklist; Children's Revised Impact of Events Scale (CRIES-13); Revised Children's Manifest Anxiety Scale (RCMAS); Strengths and Difficulties Questionnaire (SDQ)
Espié et al. (2009)	2005- 2008 (calm period)	Clinical sample of children who had a lifetime exposure to traumatic war & non-war events, and were enrolled in the MSF program in Gaza and Nablus district of the West Bank from 2005 to 2008 (N=650)	≤ 15	A standardized questionnaire was used to collect data about lifetime exposure to adverse events; Clinical evaluation using a semi-structured interview based on criteria from DSM-IV-TR
Massad et al. (2009)	2007	Randomly selected sample of preschool children kindergarten- based in Gaza exposed to war traumatic events during the last months of the 2 nd intifada (N=350)	3-6	Gaza Traumatic Event Checklist; Strength and Difficulties Questionnaire
Thabet et al. (2009)	During the 2 nd Intifada	Randomly selected sample of school adolescents in Gaza exposed to a number of war traumatic experiences for 2 years during the 2 nd Intifada (N=412)	12-16 Mean=13.7	Gaza Traumatic Event Checklist; Structured Clinical Interview for DSM-IV, PTSD module
Dubow et al. (2010)	--	Community-based representative sample of children & adolescents who were exposed to ethnic-political conflict and violence besides exposure to conflict & violence in other contexts (family, community, school) during a year prior to data collection (N=600) divided equally into three age groups: 8, 11, & 14 years); 2/3 of the sample was from the West Bank and 1/3 was from Gaza; close to 1/2 reported an income below Palestinian average;	3 age groups: 8, 11 and 14	Exposure to ethnic-political conflict & violence scale adapted from Slone et al. (1999); Exposure to community violence scale derived from Attar et al. (1994) & Barber (1999); Exposure to school and inter-adult family conflict and violence scale/ measure taken from Attar et al. (1994); Child Post Traumatic Stress Symptoms Index;

					Peer report of aggression (modified version of the Peer Nomination of Aggression Inventory); Severe Physical Aggression scale; Child Behavior Checklist- Aggression scale
	Peltonen et al. (2010)	2006 (calm period)	Sample of school children in Gaza who were exposed to military traumatic events in the past year during the 2 nd intifada; majority lived in urban areas (N=227)	10-14 Mean=11.4	Gaza Traumatic Events Checklist; Child Post traumatic Symptoms (CPTS-R) scale; Child Depression Inventory (CDI); Strengths and Difficulties Scale (SDQ); Children's Loneliness & the Friendship Qualities questionnaires; Dunn Sibling Relation Scale
	Massad et al. (2011)	2007	Randomly selected sample of preschool children kindergarten-based in Gaza exposed to war traumatic events during the last months of the 2nd Intifada (N=350); same sample as that of Massad et al. (2009)	3-6	Gaza Traumatic Event Checklist; Strengths and Difficulties Questionnaire (SDQ); Pediatric Quality of Life Inventory (PedsQL 4.0)- parent report, Arabic version
	Punamäki et al. (2011)	1996	Random sample of school children from Gaza who had a lifetime exposure to war traumatic events; almost ½ lived in urban areas (N=640)	6-16 divided as : 64.5%: 6-11 years; 12.6%: 12-13 years; 20.9% : 14-16 years	War Trauma Questionnaire; Ontario Child Health Scale; Health Utilities Index Mark 2
	Kolltveit et al. (2012)	2009	School samples including a total of 139 adolescents	12-17	The Gaza Traumatic Check List Revised Child Impact of Event Scale for PTSD Revised Children's Manifest Anxiety Scale Depression Self-Rating Scale for Children
Somalia	Kia-Keating & Ellis (2007)	--	A non-random community-based sample of Somali adolescent refugees who have resettled in the USA and were currently living with family members (N=76);	12-19 Mean= 15.6	War Trauma Screening Scale (WTSS); UCLA PTSD Index for DSM-IV (PTSD-I); Depression Self-Rating Scale (DSRS)- Adolescent Version; Multidimensional Scales of Perceived Self-Efficacy (MSPSE); Psychological Sense of School Membership (PSSM) Scale

War exposure among Arab children & adolescents

Sudan	Paardekooper et al. (1999)	1995-1996	Random sample of exposed Sudanese war refugee children who fled to Uganda (N=316), compared to a control group of Ugandan children (N=80); most likely exposed to the war between government forces in the north and rebels in the south	7-12 Mean= 9.4	Trauma Event Scale, a subscale of the Harvard Trauma Questionnaire; Daily Stressors Inventory; Revised KidCope; "Michael-questionnaire" revised form of the Levonn Cartoon-based Interview for Assessing Children's Distress Symptoms; WHO Reporting Questionnaire for Children (RQC)
	Geltman et al. (2005)	February 2002 through July 2002	Convenient sample of unaccompanied Sudanese war refugee minors who resettled in the US & were enrolled in refugee foster care programs (N=304); Most likely exposed to the Darfur war	Mean=17.6	Questionnaire developed by the authors to assess migration history and exposure to traumatic events; Harvard Trauma Questionnaire (HTQ); Child Health Questionnaire (CHQ)- short form
	Morgos et al. (2008)	2003	Randomly selected sample of Sudanese refugee children representative of the internally displaced school-based children population from different villages in Southern Darfur, and living in refugee camps; Gp1 (N=189), Gp2 (N=142)	6-17; Gp1: 6-12 Gp2: 13-17	A questionnaire developed by the authors was used to collect data on war experiences; Child Post Traumatic Stress Reaction Index (CPTSD-RI); Children's Depression Inventory (CDI); The Expanded Grief Inventory (EGI)
Syria	Karam et al (under preparation)	2013-2014	A sample of 549 Syrian children enrolled in Lebanese public schools as well as 312 Syrian refugee children recruited from Social Development Centers (SDCs) from different Lebanese regions	7-17	Questionnaire developed by IDRAAC

Review article

PTSD among Children and Adolescents in the Arab World

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اضطراب عقبي الكرب الرضحي بين الأطفال والمراهقين في العالم العربي

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Abstract

A diversities of war have long been related to mental disorders. Post-traumatic stress disorder (PTSD), a syndrome referring to the constellation of symptoms experienced by a subset of traumatized individuals, has been extensively associated with war.

The rates of PTSD among the children and adolescents in the Arabic countries inflicted by war and conflict have reached alarming numbers. As much as PTSD rates vary among different populations, as much as those rates are homogeneous among these Arabic countries ranging between 35-50%.

Adolescence is considered a vulnerable stage since it is a transition period between childhood and adulthood with a great deal of psychosocial component shaped by those traumatic experiences. Nonetheless, these worrying numbers raise several questions that need to be answered concerning reliability of previous results, the effect of such disorders on the future of the nation, the mechanism parents' mental state influences their children, the significance behind highlighting PTSD, and finally the methods to deal with PTSD in these populations.

The aim of this review is to investigate PTSD in the Arab world since many of the inciting traumatic events, especially wars, have been experienced by several Arab populations. The review will compare the rates of PTSD in these Arab countries with global rates to deduce the effect of wars and conflicts on the development of PTSD.

Keywords: PTSD- War- Arab- Mental- Disorders- Children- Adolescents

Declaration of interest: None

PTSD: History and Definition

The constellation of symptoms, anxiety, breathlessness, tachycardia and hyper-arousal, observed in soldiers was termed by Dr. Jacob Mendez da Costa as "Soldier's Heart Syndrome" and later "Da Costa Syndrome" ¹. Afterwards during World War I, this syndrome was further investigated, as the introduction of advanced weapons into combat was so swift that it looked supernatural, making soldiers think that invisible enemies surrounded them. The term "Shell Shock" was coined describing symptoms of severe tremors, cyanotic

extremities, staring eyes, paralysis and unexplained deafness or blindness ^{2,3}. World War II veterans and survivors of the Hiroshima and Nagasaki atomic bombings had similar symptoms, a condition called "combat neurosis" or "operational fatigue". Psychoanalysts in the US coined the term "traumatic neurosis" in the 1900s. Now the constellation of these symptoms is termed "post-traumatic stress disorder" PTSD ¹. The term was coined in 1970 immediately after the Vietnam War, when American soldiers who participated in the war demonstrated the symptoms of

PTSD. A large group of those soldiers is still suffering from symptoms of this chronic disorder ⁴.

PTSD is classified as an anxiety disorder according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) and a neurotic stress-related and somatoform disorder according to the International Classification of Diseases, Injuries and Causes of Death (ICD-10, 1992). PTSD usually develops when the person encounters an unexpected severe traumatic stressor including war, being kidnapped or taken hostage, confinement as a prisoner of war, terrorist attack, severe car accidents, torture or violent personal sexual or physical assault. Children might develop it following the death of a loved one, witnessing a serious injury, or being the victim of sexual abuse ⁵. PTSD can also occur after a natural disaster such as a tsunami, earthquake or tornado ⁶.

During such life-threatening events, these subjects feel that their life is endangered and that they do not have control over what is happening. As a result, such individuals feel scared, angry and confused leading to the development of dissociative symptoms, severe anxiety, dissociative amnesia, and derealization and sleep disturbances ⁷. The symptoms experienced by these individuals can either resolve, or in some progress to PTSD. It is currently unclear why some people develop PTSD while others do not. The symptoms of PTSD are highly determined by the inciting traumatic event. Some of the known predisposing factors include the intensity and duration of the trauma, the distance from and extent of reaction to the event, loss of or hurting of a loved one, and the level of support these victims receive after the event ¹. Somatization, anxiety, hostility, paranoia and depression are usually seen after wildfires while veterans usually experience problems such as sleep disruption, and sleep-disordered breathing ⁸. Some patients with comorbid PTSD even experienced auditory hallucinations ⁹.

The criteria of PTSD diagnosis according to DSM-V include the exposure to actual or threatened death, serious injury or sexual violence along with the

recurrent, involuntary, and intrusive distressing memories of the traumatic event. The patient tends to persistently avoid stimuli (memories, people, places etc...) associated with the traumatic event. They also experience negative alterations in mood, cognition, reactivity or arousal beginning or worsening after the traumatic event. These may include dissociative symptoms, amnesia, exaggerated startle response, sleep disturbances, and angry outbursts. All of the aforementioned symptoms must persist for a duration of at least one month. These symptoms must be debilitating thus impairing normal life function making it difficult to participate in daily activities, social, occupational and other important areas of functioning. These symptoms cannot be attributable to physiological effects of substance abuse (alcohol, drugs, medications, etc...) or another medical condition ⁷. In DSM -5 PTSD has been moved from anxiety disorders to a separate chapter.

The aim of this review is to investigate PTSD in the Arab world since many of the inciting traumatic events, especially wars, have been experienced by several Arab populations. The review will compare the rates of PTSD in these Arab countries with global rates to deduce the effect of wars and conflicts on the development of such disorders.

The Lebanese Experience with PTSD

Lebanon is a small Mediterranean country that has been unsettled by decades of civil war, external invasions and occupation (1975-2006). First, the Lebanese experienced random shelling, kidnapping and torturing, barricaded areas and streets, and massive immigration waves during the civil war between 1975-1990. During the same period, Lebanon was invaded by Israel in 1978 and again 1982 reaching the capital of Beirut, which was hit with aerial bombing and massive destruction with a high toll of casualties. After that civil war, Lebanon was controlled by the Syrian army until 2005 and just when Lebanese thought that they were relieved another war with Israel arose in 2006 lasting for 34 days leaving

whole villages destroyed and a non-existent infrastructure along with the displacement of about 1 million Lebanese¹⁰.

One systematic review by Shaar (2013) revealed that during these wars, the prevalence rates of PTSD ranged between 8.5% and 35% for adolescents in school, and 29.3% to 32.5% for adolescent referrals having psychological or academic problems. Interestingly, it showed some increase with time as the rates ranged from 8.5% to 14.7% during the civil war, 21.6% during the Grapes of Wrath War (1996), and 15.4% to 35% during the 2006 July war¹⁰. This increase can be explained by the escalation of the ferocity of the fighting with time. The civil war was a chronic war that included random shelling, sniping, kidnapping and torture with the predetermined settlement of local warring factions allowing people to avoid certain routes and random shelling. Nonetheless, the invasion by Israel was characterized by heavy artillery fire, destruction of whole villages and neighborhoods and omnipotent air raids that was highly overwhelming and unpredictable as people could not avoid or escape; a factor that can lead to higher PTSD rates among survivors who experienced more life-threatening situations¹⁰. Further solidifying this is the finding that adolescents with visual and hearing impairment had lower PTSD compared to their normal bodied peers¹¹.

The Iraqi Experience with PTSD

Like Lebanon, Iraq has been exposed to more-or-less continuous war for more than three decades including the Iraq-Iran war (1980-1988), the civil strife of early 1990s, and finally the American invasion of Iraq followed by the civil war from 2003 leading to the present day ongoing sectarian violence, which is causing hundreds of civilian fatalities each month¹². Shockingly, one fifth of all casualties between 2003 and 2010 were caused by approximately 1000 suicide bombings¹³. Given the high rates of potential traumatic events, high rates of PTSD and other mental disorders were reported. A study exploring the prevalence of

PTSD in Baghdad after the war among people aged 18-70 years found that 35.3% reported symptoms of PTSD¹⁴. Another similar study revealed that 39% of female Iraqi college students met the criteria of PTSD¹⁵.

Pertaining to the children and adolescents, PTSD prevalence in 2006 ranged between 14% in Baghdad and 30% in Mosul, which can be explained by the higher number of traumatic events in Mosul. Results also showed that 36% of working children and 16% of schoolchildren had mental disorders, which can be explained by the fact that working children are more vulnerable and more likely to be exposed to traumatic events¹⁶. These rates have increased dramatically as shown by a study conducted in 2014 investigating the prevalence of PTSD among Iraqi secondary school students aged 16-19 in Baghdad¹². The study revealed that 92% of those exposed to traumatic events had some PTSD symptoms with 61.5% meeting the DSM-IV criteria of PTSD. There was a higher proportion of females compared to males¹². This great rise in the prevalence might be attributable to the time difference, as this generation of schoolchildren has experienced war compared to the previous generation who had a war-free stable period.

Syrian Experience

Syria went from being the third largest refugee hosting country in the world to the largest refugee producing country over the past few years. Syria has entered a profound armed conflict in 2011. This is further complicated by an ongoing refugee crisis as more than 1.9 million Syrians escaped the borders and 4.5 million were internally displaced¹⁷. Evidence shows that exposure to continuous and potentially traumatic events, forced displacement, lack of resources and security can negatively impair mental health and increase the maladaptation risks¹⁷.

The prevalence of PTSD in Syrian refugee camps in Jordan is alarming. It is estimated that 36% to 62% of adult refugees have PTSD with the main predictors

being a history of trauma before the conflict as well as exposure to fighting and hostility. Children had shooting PTSD prevalence rates ranging from 41% to 76% with the main predictors being the number of traumatic experiences related to conflict including arranged early marriages¹⁸. Similar rates were also reported in Turkish camps with PTSD seen in 61% of children in addition to high rates of anxiety 53% and depression 51%¹⁹.

Palestinian Experience

War, conflict and violence is present in all parts of the Gaza Strip and West Bank affecting virtually all Palestinian subgroups from young to old²⁰. Living in conditions of political violence and war have been described to cause children to “grow up too soon” or “lose their childhood” by forcing them to take political responsibilities before maturation²¹.

Studies have shown that at least 50% of school-aged Palestinian children have experienced at least 1 high-magnitude traumatic event in their lifetime. Political traumas inflicted by the Israeli army is the most commonly experienced event. The rates of PTSD were high with 34% of the children having the full symptomatology²². Another study reports that 55% of the children living in “hot” areas close to Israeli settlements suffered from acute levels of PTSD²⁰.

Kuwaiti Experience: Trans-generational Transmission

Kuwait has suffered the Iraqi invasion followed by the first Gulf War that resulted in the liberation of Kuwait from Iraqi occupation in early 1991. This war left many victims traumatized with the symptoms of PTSD. The problem is that it has been shown that veterans with chronic PTSD suffer from both intrapersonal and interpersonal hardships, including problems with self-disclosure, family cohesion, expression of affection, sexual intimacy, hostility and aggression^{23, 24}. These problems have a negative effect on the whole household

including the wife and children^{25, 26}. Family dysfunction is usually seen as a loss of self-esteem, increased mental disorder rates in children with symptoms resembling the traumatized parent²⁷ suggesting a trans-generational transmission of war-related trauma²⁸ which could have a biological component²⁹. Factors such as veteran’s PTSD status and combat exposure along with maternal psychosocial distress were found to interact in a way that compromised the child’s adjustment. This required the identification of these children in such potentially harmful home situations and targeting them for preventive intervention^{25, 26, 30, 31}.

A study reported that the prevalence of PTSD among Kuwaiti children is 10.6%³². Significant levels of anxiety, depression, anger, low self-esteem, and somatization were revealed in that study but surveys did not include children from military families³². In a separate study, higher anxiety, depression, and abnormal behavior scores were reported among children of prisoners of war (POWs). Children whose fathers had PTSD had significantly higher depression scores. Moreover, mother’s PTSD, depression, social status, and anxiety also significantly affected the children’s adjustment. As expected, children with both parents having PTSD had significantly higher anxiety/depression scores, but the mother’s anxiety was the most vital predictor of child outcome variables. Overall the study found that 14% of Kuwaiti children of veteran’s families had anxiety/depression disorders while 17% had defiant behavior³³.

Libyan Experience

Libya has been in an unstable political situation following the anti-governmental protests that started in February 2011, which led to the fall of the regime of Muammar Gaddafi. These racing events were associated with widespread violence and NATO military intervention³⁴. According to studies, it is predictable that exposure to conflict-related potentially traumatic events will lead to an increase in the rates of mental disorders including depression and post-

traumatic stress disorder (PTSD) in the Libyan population³⁵. The socio-economic impact³⁶ as well as the disability and burden associated with these mental disorders has been documented³⁷.

Not many studies have investigated the problem of PTSD quantitatively in the Libyan population. The first attempt to predict the mental health burden of the Libyan conflict was conducted by Charlson et al. who reported that the PTSD prevalence in populations exposed to high levels of political terror and traumatic events was estimated at 12.4%, where 50% of these cases co-occurred with depression. It is worth noting that the prevalence of all categories of PTSD ranged between 30% and 40% among studied populations³⁴. PTSD among Libyan children and adolescents has not been studied yet, however, there are efforts to assess the problem including a case series by Sulliman et al. that highlights the need for further studies to investigate the problem of PTSD in children as the rates and patterns of the disease might not conform to those seen in adults³⁸.

Brief Picture about Global Rates of PTSD

The prevalence of PTSD varies greatly among different populations. The prevalence of PTSD in children was reported to be 0.3% in China, 6.1% in New Zealand³⁹ and around 3.9% in the USA⁴⁰. On the other hand, in Arab countries affected by war and conflict, the rates of PTSD in children seem to be homogeneous, all ranging between 35-50%. Even the causes of PTSD are evidently different between these countries, conflict and war in the Arab nations versus crime 19%-75% and rape 80% in the rest of the world¹.

Effect of War on Children and Adolescents

All of these wars with unimaginable traumatic events would leave a profound mark on the population as these calamities have long been related to mental disorders, particularly in children and adolescents, with PTSD as a main war trauma outcome⁴¹. Being in a transitional

period between childhood and adulthood makes adolescents a very vulnerable and delicate group in the face of war. This transition and development is biological yet has a very large psychosocial component.

One of these great changes is the tendency of adolescents to become independent and self-determining by establishing and developing their own definition of self and who they want to be. Trauma followed by PTSD can delay these developmental processes by causing the opposite of what adolescents long for. They may become dependent on parents and others⁴², which may trigger them to find solace in alcohol or substance abuse, and anti-social behavior. This impairment can extend academically as traumatized adolescents perform lower on intelligence scales and academic achievement tests compared to less traumatized controls⁴³. Adolescents with PTSD had lower self-efficacy levels⁴⁴. What makes this problematic is that these psychological disorders are not only individual problems but also the problems of the government and society on a larger scale, especially because they are occurring in such a vulnerable generation.

Future Scope

PTSD, as investigated by these studies, seems to be a great problem in the Arab world where suffering and burden of war and conflict are more prevalent. The most alarming aspect is that very high rates of PTSD are being detected among children and adolescents, a population that will determine the future of these nations. However, this issue and such high rates of this illness raise several questions that should be answered before conclusions can be drawn.

Are these results reliable? Is there an overestimation or underestimation of the rates of this illness? The findings suggest the need to investigate in depth the problem of PTSD in the conflict-inflicted countries by several multi-regional studies using the same methods and same criteria of PTSD. Comparison of results obtained by the

same standards and criteria will help better assess the magnitude of this problem and provide the data necessary to act accordingly.

Another question should be raised based on the Kuwaiti experience: Is the mental health of children influenced by that of parents? What is the extent of this and how much can we predict trans-generational transmission of anxiety and depressive disorders? Tackling this point can be done by undergoing separate studies on the other Arab countries similar to the one done on the Kuwaiti population to further investigate the subject of trans-generational transmission.

How can PTSD among children and adolescents affect the future of the society and nation? What is the outcome and will the traces of war exemplified by PTSD impose social or even economic costs? Longitudinal cohort studies identifying children affected and following them over the long run with a thorough investigation of the evolution of their anxiety disorder, school performance, future occupational competence and social function is something that can be very beneficial in order to have a better understanding of PTSD evolution and the adversities it presents for the present and future.

PTSD has long been studied as a dual entity seen in both the aggressor and victim, something that raises a big question: Why is PTSD as a mental disorder increasingly being mentioned and investigated? Is highlighting this illness among the soldiers of the invading nation a way to diminish the guilt and responsibility for the chaos and casualties of war in order to victimize the aggressor? Contrarily, does underlining the issue of PTSD among invaded nations raise concern toward helping the victims and punishing the aggressor?

The final question is: What would be the best approach to deal with PTSD particularly among children and adolescents? What is better, a medical treatment, psychological treatment, or some combination of both? From a psychological point of view, a good debriefing would be very important to help the individuals who

experienced a traumatic or stressful event. Proposing other means to express their distress such as painting, drawing and art therapy can also help relieve stress and anxiety in a healthy manner. Interestingly, family and parent-child solidarity are considered protective for children's psychological well-being living under dangerous situations such as war^{45, 46}.

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المخلص

إن ويلات الحروب اقتترنت دائماً بالإضطرابات النفسية، وإن إضطراب عقبي الكرب الرضحي (أو إضطراب شدة ما بعد الصدمة). هو متلازمة تشير الى مجموعة من الاعراض تظهر عند فئة ممن تعرضوا للصددمات والتي كثيراً ما ارتبطت بالحروب. لقد وصل عدد الأطفال والمراهقين في مختلف الدول العربية الذين يعانون من هذا الإضطراب إلى أعداد كبيرة تثير القلق، ومع أن نسبة انتشار هذا الإضطراب متفاوتة في المجتمعات المختلفة، إلا أنها متجانسة في الدول العربية وتتراوح بين 35 – 50%. إن المراهقة تعتبر مرحلة حرجة فيها انتقال من الطفولة إلى البلوغ وهناك مساحة واسعة للأثر النفسي من الخبرات الصادمة. ومع هذا فإن هذه الأرقام المقلقة تثير تساؤلات لا بد من الإجابة عليها، حول إمكانية الاعتماد على الدراسات السابقة، وأثر هذا الإضطراب على مستقبل الأمه، وألية تأثير الحالة النفسية للوالدين على أبنائهم، وأهمية التركيز على هذا الإضطراب وفي النهاية وسائل التعامل مع هذا الإضطراب في هذه المجتمعات. الغرض من هذه المراجعة هو البحث عن هذا الإضطراب في العالم العربي حيث أن الكثير من الحروب والأحداث الصادمة يدور رحاها في عدد من الدول العربية، وسوف تقارن المراجعة المعدلات المعروفة لهذا الإضطراب في الدول العربية مع المعدلات العالمية للوصول إلى أثر الحروب والنزاعات على تطور إضطراب عقبي الكرب الرضحي.

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Vitamin D Levels in People with Intellectual Disability in Long-Stay Hospital Wards in Bahrain

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مستويات فيتامين (د) عند الأفراد من ذوي الإعاقة الذهنية في وحدات الإقامة الطويلة في مملكة البحرين

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Abstract

Vitamins are essential for normal growth and development all throughout life. Vitamin D levels (25 OH vitamin D) were measured in 62 patients with intellectual disabilities in the Psychiatric Hospital, Bahrain (32 long stay in-patients and 30-comparison group of outpatients). There is growing evidence in the literature that persons with intellectual disabilities are at risk of developing vitamin D deficiency. Low vitamin D is often attributed to lack of sunshine, poor dietary intake and the deleterious effect of some medications. The results of the study showed that the serum levels of vitamin D were significantly lower in woman when compared with men in the current sample and for the in-patients and outpatients subgroups. As expected, the results of the current study confirmed that outpatients showed higher levels of serum vitamin D than the long stay in-patients did. Sunshine exposure was virtually non-existent for most in-patients.

Keywords: Intellectual disabilities, long-term care, sunshine exposure, vitamin D deficiency

Declaration of interest: None

Introduction

Vitamins are essential for normal growth and development all throughout life.¹ They are an integral part of the numerous chemical reactions that occur in the body, so a deficiency in one or more vitamins could result in disease. The last decade has seen a significant amount of research and discussion surrounding vitamin D.^{2,3} Humans obtain vitamin D primarily through exposure to solar ultraviolet B radiation; however, for persons who avoid sunlight exposure, live in high-latitude areas, or have dark skin, dietary or supplemental vitamin D becomes essential for maintaining optimal vitamin D concentrations. Foods that contain reasonable amount of Vitamin D include fatty fish and fortified dairy products and cereals.² Vitamin D deficiency develops when sun exposure and dietary intake of vitamin D are inadequate. However, despite the important role of sunlight in vitamin D synthesis, recent

studies have shown that the rate of vitamin D deficiency is also higher in the sunniest areas of the world, including Middle Eastern countries, such as Saudi Arabia, Qatar, United Arab Emirates, Turkey, India and Iran because of low exposure to sun due to cultural factors.^{5,6,7}

Vitamin D promotes calcium and phosphate absorption by the small intestine, mineralization of the skeleton and maintenance of extracellular calcium levels.² Many preliminary studies suggest that the effects of vitamin D go beyond preventing rickets in children and osteoporosis in adults.^{2,6} Vitamin D also has implications for a myriad of other illnesses ranging from cardiovascular to autoimmune diseases, type 1 and 2 diabetes mellitus and cancer especially of the prostate and colon. Recent studies have also linked Vitamin D deficiency with some psychiatric illnesses, including depression and anxiety.^{8,9,10}

Certain populations are at increased risk of vitamin D deficiency, the most widely recognized being the elderly, especially those in residential care or long term institutions.³ Observational studies conclude that this is due to limited natural sunlight exposure and poor oral intake of Vitamin D². It is less well known that people with intellectual disability are also at high risk of vitamin D deficiency with local studies suggesting a prevalence of 50–60% in this group.¹¹ Vitamin D deficiency in persons with intellectual disability is also attributed to the same reasons when considering those who have been institutionalized, e.g. limited sunlight exposure, poor vitamin D intake in diet and limited physical exercise.¹¹

People with intellectual disability have an increased risk of falls for multiple reasons, e.g. reduced balance and coordination associated with the underlying cause of ID such as the spasticity linked with cerebral palsy, and visual impairment, which affects up to 20% of people with intellectual disability. Vitamin D deficiency has been shown to be associated with an increased risk of falls due to effects on muscle, and if prolonged and severe, can cause a true myopathy.¹²

Other conditions with a negative effect on bone health also occur in people with intellectual disability. The prevalence of coeliac disease, which causes calcium malabsorption, is increased in people with Down Syndrome.^{1,2,3} Hypogonadism, which increases the risk of osteoporosis, is also more common in Down Syndrome and ubiquitous in Turner Syndrome.¹³

Women with intellectual disability may be long-term users of depot progesterone only oral contraceptives, both for menstrual control and contraception.¹⁴ Such preparations have been associated with reduced bone density, and although it appears that this is largely reversible after cessation in short to medium term users, the effects in long-term users are not clearly defined.¹⁵

While screening patients with intellectual disability in the long stay wards for medical problems has been recognized as valuable, vitamin D sufficiency is not

routinely included as part of the screening. However, there is evidence that such screening should be included.

In addition, the mental health consequences of vitamin D deficiency are also becoming clearer. Insufficient vitamin D has been linked to depressive symptoms, cognitive impairment, and the development of schizophrenia. There is evidence that vitamin D deficiency is also related to medical problems, such as obesity, diabetes mellitus, hypertension and other metabolic syndromes to which patients with psychiatric illnesses are particularly vulnerable. The aim of the current study was to evaluate the effect of long-term hospitalization in psychiatric hospitals on vitamin D levels in the blood supposing that those patients are less exposed to sunlight compared to patients treated in the outpatient clinics.

Methodology

Aims and objectives

The aim of the current study was to test vitamin D level (25 OH vitamin D) of patients with intellectual disabilities in the Psychiatric Hospital, Bahrain. All the patients were receiving care from the Intellectual Disability Unit. The specific objectives were as follows:

1. Perform a cross-sectional testing of the serum vitamin D level in an in-patient sample.
2. Perform a cross-sectional testing of the serum vitamin D level in an out-patient sample.
3. Compare the serum of vitamin D levels between in-patients and out-patients.

Subjects and settings

A total of 32 in-patients, 13 men and 19 women, took part in the study. Their ages ranged from 18 to 56 years, with a mean of 36.2 years.

The inclusion criteria for cases were: (1) subjects identified as cases of intellectual disability. Intellectual disability is diagnosed using standardized tests of intelligence and adaptive behavior (the ability of a person to function and perform everyday life activities).

In Bahrain, the Arabic version of The Wechsler Adult Intelligence Scale (WAIS) is used to measure intelligence in adults and older adolescents.

Data collection procedures

Consents were obtained from the subjects or their relatives and approval was sought from the relevant authority prior to the study. Arrangements were made with the laboratory services in the Salmaniya Medical Complex in Bahrain for vitamin D assay. Procedure 25-hydroxy vitamin D test was performed to measure vitamin D level using blood sample. The 25-hydroxy vitamin D test is the most accurate way to measure how much vitamin D is in human body.

Data are presented as Mean \pm SEM. Procedure t-test was used to measure any statistical differences between the groups. Statistical analyses were performed using SPSS version 18 for Windows.

The role of the psychiatrists in the current research was to screen cases to ensure that they were fulfilling diagnosis of intellectual disability; to screen subjects for inclusion/exclusions in the research study; and, to obtain patient assent and written consent from caregivers/family. They also contributed to the development of the research protocol and the write-up for publication.

Ethical considerations

Ethical approval was sought and granted from the appropriate authorities (The Research Committee, Ministry of Health, Bahrain). The concerned Consultant Psychiatrist was informed about the research and written consent was obtained from the patients' relatives to use their information.

The anonymity of the patients was safeguarded during the study by the following mechanisms:

- Each subject was coded and there were no names or other identifying information attached to the study.
- Demographic data included only the age and gender details and these were used only for the purposes of research.

Results

A total of 62 patients with intellectual disability were tested for serum level of vitamin D; 32 were women and 30 were men. The serum levels of vitamin D were significantly lower in women than in men (34.96 ± 2.4 nmol/l and 46.06 ± 2.27 nmol/l respectively, $p < 0.05$ t-test). For the entire sample ($N=62$), the mean vitamin D level was 40 nmol/l, the maximum was 82 nmol/l and the minimum was of 18 nmol/l. Hypovitaminosis D is defined by a serum vitamin D level of less than 25 nmol/l. Hypovitaminosis D was observed in 8 cases only and they were all women.

The effect of patient hospitalization due to intellectual disability-related illnesses on vitamin D was evaluated. The male outpatients ($n=17$) and inpatients ($n=13$) vitamin D serum levels were compared. Data revealed significantly lower vitamin D serum levels in the inpatients when compared to the patients treated in the outpatient clinics (41.4 ± 3.12 nmol/l, and 49.63 ± 3.01 nmol/l respectively, $p < 0.05$ t-test). However, no significant difference was found for female in-patients ($n=19$, 36.83 ± 3.41 nmol/l) and outpatients ($n=13$, 32.23 ± 3.51 nmol/l).

Male outpatients showed significantly higher levels of serum vitamin D than female outpatients (49.63 ± 3.01 nmol/l, and 32.23 ± 3.51 nmol/l respectively, $p < 0.05$, t-test). On the other hand, the serum levels of the female inpatients were not significantly different from the hospitalized male inpatients (36.83 ± 3.41 nmol/l and 41.4 ± 3.12 nmol/l respectively, $p > 0.05$, t-test).

Table 1: Serum levels of vitamin D in men and women with intellectual disability treated as in- or outpatients, (Vitamin levels are measured as nmol/l).

Men (30)		Women (32)	
Inpatients (13)	Outpatients (17)	Inpatients (19)	Outpatients (13)
32.3	82.1	25.1	69.6
59.8	27.3	29.1	21.5
55.4	53.1	18.7	38.3
45.1	58.2	33.6	31.3
48.2	54.8	36.5	23.2
46.7	40.5	18.1	39.7
51.1	54.6	23	25.6
47.1	34.8	26.5	22.3
34.8	48.2	49.3	32.7
25.3	59.8	49	25
32.3	51.2	76.4	28.4
25.3	55.4	46.3	27.7
34.8	46.7	37.4	33.7
	47.1	41.9	
	32.3	45.6	
	52.5	43.2	
	45.1	23.1	
		27.1	
		49.9	
41.4 ±3.12	49.63 ± 3.02	36.83 ± 3.41	32.23 ± 3.51

Discussion

Synthesis is the main source of vitamin D in humans. In the skin, 7-dehydrocholesterol (provitamin D3) is produced in relatively large quantities. During exposure to sunlight, ultraviolet B radiation penetrating the epidermis and dermis cleaves the B-ring of the precursor to form pre-cholecalciferol. Pre-cholecalciferol is unstable and rapidly undergoes rearrangement of its double bonds to form cholecalciferol. Thereafter it enters into the dermal capillary bed by the aid of vitamin D binding protein (DBP) and then undergoes two hydroxylation reactions, the first by the liver and then by the kidney. The formed 25(OH) 2D is the metabolite responsible for the specific vitamin D effects, the active D-hormone. This may indicate that vitamin D

production is sunlight dependent and the nutritional contribution is small. One may conclude that vitamin deficiency is more common in northern countries and especially during winter months, when sunshine is not available. Research data showed that in European countries and in northern America vitamin D deficiency is wide spread across the whole population.² However, many reports showed that hypovitaminosis was also recorded in sunny cities and countries^{17,18} including the Middle Eastern countries, such as Saudi Arabia, Qatar, United Arab Emirates, Turkey, India and Iran.¹⁹ Risk factors for hypovitaminosis D were identified as older age, being female, lower altitude, winter season, darker skin pigmentation, degree of sunlight exposure determined by clothing and cultural practices, dietary habits and food fortification with vitamin D.¹⁷

Our data showed that serum vitamin D levels in female patients with intellectual disability were significantly lower than for male patients. These results are very comparable to recorded prevalence of vitamin D deficiency for women generally. Studies showed that vitamin D levels in women are significantly lower than levels are for men.^{19,20,21,22} The lower vitamin D serum levels in our female group may be due to social factors and dressing habits. However such low serum levels of vitamin D were also recorded in other societies.^{23,24,25}

There was always uncertainty about the normal blood level for vitamin D. One suggestion was to accept the level at which the parathyroid hormone PTH is maximally suppressed, so a value around 30 ng/ml.^{26,27} Recently 25(OH) D level below 30 ng/ml are considered as insufficiency. The United States Institute of Medicine (IOM) has developed dietary reference intakes (DRI) and defined 25(OH)D < 12 ng/ml risk of deficiency, 12-20 ng/ml as risk of adequacy, and 20-50 ng/ml as adequate. It is evident that if vitamin D insufficiency is defined by the serum concentration of 25(OH) vitamin D below which plasma PTH starts to rise,² the lower normal levels could be determined by using a vitamin loading test and examine the changes of serum 25(OH)Vitamin D and plasma PTH concentrations during the procedure. Then the serum level of 25(OH) vitamin D where plasma PTH concentrations begin to form a virtual plateau can be taken as the lower normal limit. Heaney et al. (2005) reported that the maximum intestinal calcium absorption occurs when the serum 25(OH) vitamin D levels are at least 32 ng/ml. Since the maximum intestinal calcium absorption is physiologically necessary to maintain a sufficient calcium uptake, irrespective of the daily dietary calcium intake variations, the 32 ng/ml (80 nmol/l) serum concentration of 25(OH) vitamin D should be considered as the lower normal level.^{1,2}

Serum levels of 25(OH) vitamin D varies with the time of testing. It usually increases in the summer months due to abundant sunlight.²⁸ In Bahrain where this study was conducted, the sunlight is about the same throughout the

year, nevertheless, the serum levels of vitamin D were measured between the months March and June.

Our data showed that hospitalization resulted in significantly reduced vitamin D serum levels in men. There could be many reasons for these reduced levels including less exposure to sunlight, or a less varied dietary intake as well as drug induced interference with vitamin D intestinal reabsorption. The levels of vitamin D in women were not different for the in- and outpatients. No clear specific reason could be suggested, but this may indicate that the serum levels in women were already reduced and the hospitalization did not reduce it further.

In the current study, we did not measure the serum level of vitamin D in healthy controls. The extent of vitamin D reduction is therefore not conclusive. Indeed, there are many reports showing that vitamin D deficiency may be the cause or at least a contributing factor to the development of psychiatric illness. Other reports however suggest that hospitalized patients with psychiatric diseases or the treatment of the diseases themselves might be the cause of vitamin D deficiency.

It was reported that most organs and tissues in the body have vitamin D receptors²⁹ and that deficiency of this vitamin may lead to or predispose several systemic diseases including major psychiatric disorders.³⁰ There is an association between deficiency of vitamin D and depression,³¹ geriatric depression,³² anxiety disorders³³ and Schizophrenia.³⁴ A protective effect of circulating 25-OHD on neurocognitive function was also reported.³⁵ Alarming data coming from Scandinavian outpatients,³⁶ United Kingdom,³⁷ Canada,³⁰ and USA³⁸ all reporting high percentages (above 50%) of patients with vitamin D deficiency. It has also been suggested that since vitamin D deficiency was highly prevalent in psychiatric inpatients.³⁸ Screening is advisable for vitamin D as part of any health assessment for patients with major psychiatric illnesses. It has been stated that a cost-efficient alternative to screening might be to treat all patients with pharmacologic doses of vitamin D (50000 IU of ergocalciferol). In the current patient

sample with intellectual disabilities, vitamin D hypovitaminosis (serum levels lower than 25 nmol/l) was found in women only and was in 25% of the cases. This percentage is much lower than in the other countries highlighted in the current research. No specific other cause than the abundance of sunlight in Bahrain could be identified. However, since the normal value of serum vitamin D in healthy control subjects from the same region was not measured, it is very difficult to draw a valid conclusion in this paper.

In summary, we conclude that vitamin D deficiency may be a problem in psychiatric patients especially those who are treated as inpatients. We also noticed that the prevalence of vitamin D hypovitaminosis is very common in our psychiatric patients especially in females and it is might be recommended that screening of vitamin D level in those patients be included in the routine blood tests and treating those patients with therapeutic doses of vitamin D on routine basis. Future research studies with improved methodologies and the inclusion of different control groups, e.g. healthy subjects or long-stay patients without the diagnosis of intellectual disability will be recruited to better understand the problem and provide evidence-based solutions to clinically intervene.

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الملخص

تعتبر الفيتامينات أحد العناصر الضرورية للنمو والتطور خلال مراحل الحياة المختلفة. حيث تم في هذه الدراسة قياس مستوى فيتامين د لعينة مكونة من 62 من المرضى الذين يعانون من إعاقة ذهنية في مستشفى الطب النفسي، بمملكة البحرين (32 من مرضى الإقامة الطويلة مقابل 30 من المرضى الخارجيين كمجموعة مقارنة).

هناك أدلة متزايدة من البحوث الطبية أن الأشخاص ذوي الإعاقة الذهنية معرضون لخطر الإصابة بنقص فيتامين د. وغالبا ما تعزى هذه النسب المنخفضة لفيتامين د لعدم وجود تعرض كاف لأشعة الشمس وضعف المدخول الغذائي علاوة على الاعراض الجانبية لبعض الأدوية.

أظهرت نتائج الدراسة أن مستوى فيتامين د كان أقل بكثير في الإناث مقارنة بالذكور للعينة بكاملها ولعينة للمرضى الداخليين والمرضى الخارجيين كل على حدة كمجموعات فرعية. كما وأكدت نتائج هذه الدراسة نتائج الدراسات السابقة بأن المرضى الخارجيين أظهروا مستويات أعلى من فيتامين د في الدم من مرضى الإقامة الطويلة في المستشفى.

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Challenging Behavior and Psychiatric Symptoms among Adults with Intellectual Disability: Epidemiological Aspects and Family Burden

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التحديات السلوكية والأعراض النفسية لدى الكبار الذين يعانون من الإعاقة الذهنية، جوانب ديموغرافية والعبء العائلي

رمضان حسين، حنان السيد، هيام فتحى السيد

Abstract

Background: Challenging behavior and psychiatric symptoms may be a major problem in adults with intellectual disability. **Aims:** The current study assessed the rate of challenging behavior among adults with intellectual disability and investigated the associated family burden. **Subjects and methods:** Two hundred and fifty adults with intellectual disability were recruited. The Structured Clinical Interview for Diagnosis of psychiatric disorders, according to DSM-IV criteria, Checklist of Challenging Behavior, Psychiatric Assessment Schedule for Adults with Developmental Disabilities and Wechsler Adult Intelligence Scale. Zarit caregiver Burden Interview was performed to assess the associated family burden. Results: One hundred and eighteen subjects (47%) had challenging behavior. Challenging behavior was significantly positively correlated with males ($p < 0.001$) and negatively correlated with hearing impairment ($p < 0.001$). Schizophrenia and urinary incontinence were significantly found in subjects with challenging behavior ($p < 0.01$ and $p < 0.05$ respectively). Ten items of Psychiatric Assessment Schedule were significantly higher among subjects with challenging behavior. Family burden of patients with challenging behavior were significantly higher in fourteen items of Zarit Caregiver Burden Interview. **Conclusion:** Challenging behavior was common among adults with intellectual disability. Psychiatric symptoms and the degree of family burden increased especially when associated with challenging behavior.

Key words: Challenging behavior, adults, intellectual disability, family burden

Declaration of interest: None

Introduction

Intellectual disability is a disorder that includes impairments in three domains: (1) cognitive function, (2) social skills, and (3) adaptive abilities, which should be evident in early development.¹ Challenging behavior is defined as a behavior that makes the physical safety of the person or others at risk of serious danger or behavior which is likely to seriously limit or deny access to the use of ordinary community facilities.² Challenging behavior is a major problem in people with intellectual disability. The estimated prevalence of these severe behavior problems in large population studies is between 10% and 15%.^{3, 4, 5} The most common forms of challenging behavior are aggression (7%), destructive behavior (4–5%) and self-

injury (4%).³ Furthermore, the most demanding forms of these behaviors commonly persist throughout life.^{6,7,8} Challenging behavior is associated with increased use of antipsychotic medications, hospitalization and restrictive care practices.^{9,10} Challenging behaviors can also have serious disadvantages, such as interference with development, quality of life and social participation.⁴ Family and staff can find it stressful and emotionally difficult to support people with challenging behavior.¹¹

The causal and maintaining mechanisms underlying challenging behavior are multifactorial.^{12,13,14,15} It has been suggested that some challenging behavior may be caused or exacerbated by a coexisting psychiatric disorder.¹⁶ Prompt identification and treatment of these

psychiatric disorders could thus have a positive impact on the challenging behavior, and hence on the burden of care, the quality of life of the individual and caregiver and the cost-effectiveness of service provision.¹⁷ Physical factors also play an important role in different forms of challenging behavior.¹⁸

Aims

The aim of the current study was to determine the rate of challenging behavior among adults with intellectual disability; to investigate the associated sociodemographic characteristics, some physical disorders and psychiatric symptoms; and to assess the degree and types of family burden.

Participants

The current study used a cross-sectional design. It was conducted from January 2012 to December 2013. Adults with an early diagnosis of intellectual disability who asked for psychiatric treatment at the outpatient clinics of the department of Psychiatry, Mansoura University Hospital in Egypt constituted the participants. The hospital renders services to patients from the East Delta region. Outpatient clinics are run three days a week by consultant psychiatrists supported by resident doctors, psychologists and psychiatric nurses. Approval to perform the study was obtained from the hospital authority. Inclusion criteria were anyone who was 18 years or above, accompanied by a family caregiver and had an Intelligence Quotient (IQ) below 70. Exclusion criteria were dementia, delirium, and substance use. Detailed explanation was given and informed written consent was obtained from the caregivers.

Measures

Each participant received the following: (1) Face to face interviews by two trained psychiatrists, supported by the family caregiver, to identify sociodemographic characteristics, comprehensive psychiatric assessment and diagnosis of five medical conditions (hearing

impairment, impairment of vision, motor handicaps, urinary incontinence and epilepsy) – epilepsy was diagnosed when there were either recurrent attacks during the last two years or treatment with antiepileptic drugs to control seizures; (b) Structured Clinical Interview for DSM-IV (SCID1)- Arabic version¹⁹ for diagnosis of psychiatric disorders according to the DSM-IV criteria; (c) Checklist of Challenging Behaviors (CCB)²⁰ - this checklist aimed to identify the type and number of challenging behaviors exhibited by participants within three months prior to the administration of the test. The CCB was found to be a useful screening tool for challenging behavior.²¹ It is divided into two parts: Part one consisted of 14 aggressive behaviors that involved physical contact with other people and self-injury; and, Part two consisted of 18 other types of challenging behaviors. Both parts were rated on a five-point scale for frequency '1: never occurred' to '5: occurs daily or more often'.²² Participants scoring 33 or more in the total score of the scale were considered to exhibit challenging behavior;²⁰ (d) Psychiatric Assessment Schedule for Adults with Developmental Disability (PAS-ADD) Checklist²³ - this is a screening instrument designed to identify mental health problems in people with learning disability. The PAS-ADD Checklist was completed by the most suitable family member/caregiver. It was designed to be the best compromise between the loss of information resulting from binary scale and the unreliability resulting from too many points; however, because the psychometric properties of the original four-point scale were not known, items being classified into symptom present/absent;¹⁷ (e) Wechsler Adult Intelligence Scale-Arabic version (WAIS)²⁴ to measure the intelligence quotient IQ and to classify participants as having mild, moderate, severe or profound intellectual disability with IQ (69-50, 49-35, 34-20 and below 20 respectively); (f) Zarit Caregiver Burden Interview (ZBI) with the informants to assess the family burden. ZBI was developed by Zarit et al.²⁵ - it included 22

questions scored from 0 to 4, according to the presence or intensity of an affirmative response. Questions refer to the caregiver/patient relationship and evaluate the caregiver's health condition, psychological well-being, finances, and social life; the reliability of the original version was excellent.²⁶

The CCB, PAS-ADD and ZBI scales were translated by experienced staff members into Arabic, back translated into English and then retranslated into Arabic. The reliability during a short retest interval was reported to be 0.75, 0.69, and 0.71 where the Cronbach's alpha coefficient was 0.73, 0.81 and 0.66 respectively.

Statistical analysis

Data analysis and sample size calculations were performed using the statistical package for social sciences software (SPSS, version 20; SPSS Inc., Chicago, Illinois, USA). The categorical data were presented in the form of number and percentage. The continuous data were presented in the form of mean and standard deviation. Groups were compared using independent sample t-test for continuous variables. For

categorical variables, chi square was used as a test of significance of differences among groups. P value < 0.05 was statistically significant.

Results

Sociodemographic characteristics of the cohort

Two hundred and sixty five subjects met the inclusion criteria. Fifteen of them (6%) declined to participate yielding a response rate of (94%). Of 250 patients, 207 (83%) were men, 128 (51.2%) had mild intellectual disability, 63 (25.2%) had moderate intellectual disability, 36 (14.4%) had severe intellectual disability and 23 (9.2%) had profound intellectual disability; 118 (47%) exhibited challenging behavior; 132 (53%) exhibited no challenging behavior. Mean age of the challenging behavior group was 26.5 ± 3.7 years. Mean age of non-challenging behavior group was 25.7 ± 5.5 years. No significant difference was found between the two groups regarding age. Challenging behavior was significantly found in men p < 0.001. No significant difference was found between the two groups as regards the degree of intellectual disability (Table 1).

Table 1: Sociodemographic characteristics, intellectual disability and physical disorders in participants with and without challenging behavior

Variable	Participants with challenging behavior (N = 118)	Participants without challenging behavior (N = 132)	Analysis
	Mean (SD) Or n (%)	Mean ± (SD) Or n (%)	
Age (y)	26.5± (3.7)	25.7± (5.5)	t= 1.36; P> 0.05
Men	109 (92)	98 (74)	χ ² = 15.4; P<0.001**
Degree of ID			χ ² = 2.64; P> 0.05
Mild	56 (47.5)	72 (55)	
Moderate	31 (26)	32 (24)	
Severe profound	21 (18) 10 (8.5)	15 (11) 13 (10)	
Epilepsy	20 (17)	29 (22)	χ ² =0.98; P> 0.05
Hearing impairment	2 (2)	17 (13)	χ ² =11.15; P<0.001**
Visual impairment	10 (8)	13 (10)	χ ² =0.16; P> 0.05
Urinary incontinence	44 (37)	25 (19)	χ ² =10.44; P<0.01**
Motor handicaps	23 (19)	29 (22)	χ ² =0.21; P> 0.05

P- Value > 0.05 non-significant.
** Highly significant P- value.

Medical conditions in the cohort

Epilepsy was diagnosed in 49 (20%) participants. Nineteen (8%) had hearing impairment and 23 (9%) had visual impairment. Fifty-two (21%) participants had motor impairment; 69 (28%) had urinary incontinence. No significant difference was found between the challenging behavior and non-challenging behavior groups regarding the frequency of epilepsy. Participants without challenging behavior were less likely to have hearing impairment compared to participants with challenging behavior $p < 0.001$. No significant difference was found between the two groups in visual and motor impairments. Urinary incontinence was significantly found in participants with challenging behavior $p < 0.01$ (Table 1).

Items of PAS ADD in subjects with and without challenging behavior

As regarding items of PAS ADD, participants with challenging behavior were significantly higher in irritability, odd use of language, depressed mood, broken sleep, loss of concentration, hallucination, loss of interest, loss of energy, loss of appetite and non-situational anxiety than subjects without challenging behavior $p < 0.001$, $P < 0.05$, $p < 0.01$, $p < 0.001$, $p < 0.01$, $p < 0.001$, $p < 0.01$, $p < 0.001$, $p < 0.05$ and $p < 0.05$ respectively. No significant difference was found between the two groups in other items (Table 2).

Table 2: Some items of PAS ADD in participants with and without challenging behavior

Items	Participants with challenging behavior N (118) N (%)	Participants without challenging behavior N(132) N (%)	χ^2	P
Irritability	43 (36.4)	17 (12.9)	19.02	<0.001**
Odd use of language	12 (10.2)	5 (3.8)	4.06	<0.05*
Depressed mood	35 (29.7)	18 (13.6)	9.61	<0.01**
Broken sleep	21 (17.8)	5 (3.8)	13.03	<0.001**
Loss of concentration	22 (18.6)	9 (6.8)	8.09	<0.01**
Hallucination	42 (35.6)	21 (15.9)	12.87	<0.001**
Phobic anxiety	24 (20.3)	16 (12.1)	3.1	> 0.05
Repeated action	16 (13.6)	12 (9.1)	1.26	> 0.05
Loss of interest	37 (31.4)	19 (14.4)	10.39	<0.01**
Loss of energy	39 (33.1)	20 (15.2)	11.16	<0.001**
Suspicious	25 (21.2)	17 (12.9)	3.12	> 0.05
Loss of appetite	28 (23.7)	16 (12.1)	5.73	<0.05*
Non situational anxiety	23(19.5)	14(10.6)	3.85	<0.05*
Jumpy	22 (18.6)	16 (12.1)	2.1	> 0.05
Loss of self-esteem	24 (20.3)	15 (11.4)	3.81	> 0.05

P- Value > 0.05 non-significant.

* Significant P-value.

** Highly significant P- value.

Psychiatric disorders in subjects with and without challenging behavior

Schizophrenia was significantly higher in participants with challenging behavior than adults without challenging behavior $p < 0.05$. Stuttering, generalized anxiety and Obsessive-Compulsive Disorder (OCD)

tend to be more frequent in participants with challenging behavior but without reaching statistical significance. No significant difference was found between the two groups in major depression, specific phobia and bipolar affective disorder (Table 3).

Table 3: Psychiatric disorders in participants with and without challenging behavior

Disorders	Participants with challenging behavior N (118) N (%)	Participants without challenging behavior N(132) N (%)	χ^2	P
Schizophrenia	19 (16.1)	10 (7.6)	4.4	<0.05*
Major depression	16 (13.6)	12 (9.1)	1.26	> 0.05
GAD	13 (11)	7 (5.3)	2.83	> 0.05
Specific Phobia	8 (6.8)	9 (6.8)	000	> 0.05
BAD	3 (2.5)	2 (1.5)	0.29	> 0.05
OCD	4 (3.4)	1 (0.8)	2.09	> 0.05
Stuttering	3 (2.5)	0 (0)	3.47	> 0.05

GAD; generalized anxiety disorder, BAD; bipolar affective disorder, OCD; obsessive compulsive disorder

P- Value > 0.05 non-significant.

* Significant P-value.

Perceived family burden in participants with and without challenging behavior

As regarding items of Zarit Caregiver Burden Interview, the perceived family burden of participants with challenging behavior was significantly higher in fourteen items; feeling that the patient asks for more help, stress about other responsibilities, embarrassment about the patient's behavior, feeling of anger when around the patient, negative effect of care on other relationships, strain when around the patient, health

suffering, loss of privacy, suffering of social life, not having enough money to care for the patient, inability to care longer, loss of control of life, wishing to leave care for someone else, overall burden of care and total score: p <0.05, p <0.05, p <0.001, p <0.01, p <0.001, p <0.001, p <0.001, p <0.001, p <0.01, p <0.001, p <0.01, p <0.001, p <0.001 and p <0.001 respectively. No significant difference was found between the two groups in other items (Table 4).

Table 4: Some items of Zarit Caregiver Burden Interview in participants with and without challenging behavior

Item	Challenging behavior N (118) Mean ± (SD)	Non challenging behavior N (132) Mean ± (SD)	T	P
Relative asks more help	43.2± (26)	35.8± (21.7)	2.43	<0.05*
Stress about other responsibility	63.6± (76.1)	48± (39.4)	2	<0.05*
Embarrassed	48 ± (33.7)	33 ± (22.2)	4.11	<0.001**
Angry	63.4± (56.1)	45± (48.7)	2.75	<0.01**
Affect relationships	37.6± (26.2)	21.4 ± (12.8)	6.09	<0.001**
Strain	53.6± (41)	36.8± (25.7)	3.82	<0.001**
Health suffering	43.8 ± (28.7)	29.2± (19)	4.71	<0.001**
No privacy	42.2± (29.6)	26.2 ± (23.4)	4.71	<0.001**
Social life suffering	43.2± (26.6)	28.6± (19.2)	4.93	<0.001**
No enough money	43 ± (35.2)	31± (29)	2.92	<0.01**
Unable to care longer	39.6 ± (27.8)	20.4± (24.6)	5.75	<0.001**
No control of life	68.4± (57.8)	50.4 ± (49)	2.64	<0.01**
Wish to leave care	32.4 ± (27.5)	22.4 ± (16.7)	3.45	<0.001**
Uncertainty	62.8 ± (70.4)	51.2± (41.1)	1.57	> 0.05
Overall burden	48.8 ± (32.1)	31.8± (18.7)	5.04	<0.001**
Total score	46.4± 13.6	37.6± 13.1	5.21	<0.001**

P- Value > 0.05 non-significant.

* Significant P-value.

** Highly significant P-value.

Discussion

Challenging behavior was found in 118 (47%) participants in the current study. This rate seems to be higher compared with other studies.^{3,4,5} The high rate may be due to the inherent characteristics of the Checklist of Challenging Behavior (CCB), which included physical aggression towards others, self-injury and many other types of challenging behaviors. Adults scoring two or above in one item of CCB were considered to have challenging behavior. However, our result was similar to Tenneij and Koot¹⁵ who reported a rate of (44%) for aggression in people with intellectual disability, but in contrast to the current study, their sample was taken from residential facilities in the Netherlands. In their study, the prevalence rate of aggression included verbal aggression and aggression against property, as well as physical aggression. In the UK, the prevalence of physical aggression ranged from 23% to 14%.^{27, 28, 29} In the USA, Tsiouris et al.³⁰ reported the highest prevalence rate of physical aggression 57.6%. The study included a large sample of people who accessed community services for people with intellectual disability in New York. Despite the large sample size, the study received a low response rate and consequently the sample employed may not be representative of the total population.¹⁸ This discrepancy of the rate of challenging behavior may be due to methodological differences, including age and representativeness of the sample, the definitions of intellectual disability and problem behavior, and the type of diagnostic criteria used - all of which can result in different, sometimes contradictory prevalence rates.³¹

Challenging behavior in the current sample was significantly higher in male participants. Gender difference was reported in most of the studies that explored individual associations with aggressive behavior. One study³² has reported that physically aggressive, destructive, and verbally aggressive behaviors were associated with male gender while another study³³ reported no gender differences for aggressive behavior in schools or institutions, but an

association with male gender in day centers. It has also been reported that 65% of adults with physically aggressive behavior were women, although this was not significant in view of the small sample size.²⁷ Crocker et al.³⁴ found no gender difference for physically aggressive or verbally aggressive behavior, but male gender was individually associated with destructive behavior.³⁵

Challenging behavior in our study was not associated with increased frequency of epilepsy. This was similar to the finding of Tyrer et al.²⁹ and Matthews et al.³⁶ who reported no increased prevalence of physical aggression and other behavioral problems in adults with epilepsy compared to people without epilepsy. Specific subgroups (people with more severe or more frequent seizures and medication side effects, people with generalized EEG activity) may be at higher risk for behavioral problems.³⁷ Most of epileptic patients in the current study were controlled by medications, which may explain the negative correlation with challenging behavior.

In the present study, challenging behavior was negatively correlated with hearing impairment, which may be attributed to a tendency by participants with hearing impairment to express themselves through verbal aggression. No significant difference was detected between the two groups in terms of visual impairment. This was in contrary to De Winter et al.¹⁸ who reported that hearing impairment led to more challenging behavior in people with intellectual disability, but in the same study and similarly to the current results, visual impairment was not significantly associated with challenging behavior. Our results were similar to Sjoukes et al.³⁸ who found that visual impairment was not significantly related to challenging behavior in adults who were visually impaired or blind compared to people without visual impairment. Another study indicated that persons with self-injurious behavior were more often diagnosed with vision and hearing impairments.³⁹

Challenging behavior in the current study was significantly associated with urinary incontinence. However, it remains unclear whether there is a shared underlying mechanism (e.g. autonomic sympathetic discharge), whether the incontinence contributes to aggression (because people are ashamed or experience discomfort) or whether the aggression contributes to the incontinence.³⁵

Challenging behavior in the present study was not increased in adults with motor disorders. This was similar to Blacher and McIntyre³⁹ who found that young adults with cerebral palsy and intellectual disability had fewer internalizing and externalizing behavior problems and were less aggressive than young adults with intellectual disability only. Functional limitations associated with motor disorders seem to interfere with challenging behavior; however, the pain caused by these conditions may be associated with increased challenging behavior.³⁹

In the current study, participants with challenging behaviors were significantly higher in 10 items of psychiatric symptoms of PAS ADD Checklist. These items may reflect the underlying major psychiatric disorders like generalized anxiety, major depression or psychosis. Schizophrenia was significantly higher in participants with challenging behaviors. Stuttering, generalized anxiety and obsessive compulsive disorder were higher in participants with challenging behaviors, but without reaching statistical significance. A similar study¹⁷ reported that 23 out of the 26 items of PAS ADD were higher in the group whose challenging behavior was more demanding. Challenging behaviors in both groups were categorized into more and less demanding behaviors, which may explain the difference between the two studies. The overall prevalence of psychiatric disorders showed that people with more severe challenging behavior have twice the prevalence compared with those who had no challenging behavior. Several other studies suggested a strong correlation between behavior problems and psychiatric disorders in individuals with intellectual disability.^{41, 42, 43} These behavior problems may reflect

underlying psychopathology or a difficult life situation related to the presence of a psychiatric condition, or a difficult life situation may contribute to both psychiatric disorders and behavior problems in individuals with intellectual disability.⁴⁴

As regards to the perceived family burden, fourteen items and the total score of ZBI were significantly higher in caregivers of participants with challenging behaviors. It has been demonstrated repeatedly that caring for an adult with intellectual disabilities at home can be associated with a higher level of perceived family burden.⁴⁵ Parents may experience one or more aspects of their situation as being stressful and think that they don't have effective strategies or resources to cope with the situation.⁴⁶ In concordance with other studies,^{47,48} parents in the current study were experiencing more stress if they were caring for participants with intellectual disabilities who exhibited more behavioral problems. Van Berkum and Haveman⁴⁹ had found that especially the parents of persons with intellectual disability who lived at home, behaved offensively, were socially disturbing, and provocatively or stereotypically challenging, had a hard time caring for the participant.

Conclusion and recommendations

Challenging behavior was common among adults with intellectual disabilities. Challenging behaviors increased significantly in male participants. Schizophrenia, other psychiatric symptoms and urinary incontinence increased in participants with challenging behaviors. Perceived family burden was significantly increased where there was challenging behavior. Consequently, it is recommended to investigate every adult with intellectual disability for the associated challenging behavior and psychiatric disorders as early detection and proper management may decrease the family burden.

Strengths and Limitations

A relatively large number of people were recruited to the study with a high response rate. Scattered

psychiatric symptoms and diagnosis, some physical conditions, and perceived family burden were investigated in one study. However, the severity and types of challenging behaviors were not defined. No specific investigations were done for the medical conditions. The results cannot be generalized all over the country hence further studies are needed.

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المخلص

تمثل التحديات السلوكية والأعراض النفسية مشكلة كبيرة لدى كبار الذين يعانون من الإعاقة الذهنية. **الهدف من البحث:** دراسة معدل انتشار التحديات السلوكية والأعراض النفسية لدى كبار الذين يعانون من الإعاقة الذهنية وكذلك العبء الأسرى الواقع على العائلات. **عينة البحث وطريقته:** مائتان وخمسون من كبار الذين يعانون من الإعاقة الذهنية بقسم الأمراض النفسية في جامعة المنصورة بمصر خضعوا لكل من الفحوصات الآتية مقابلة نفسية خاصة للتشخيص تبعاً للتصنيف الأمريكي الرابع، استبيان خاص للتحديات السلوكية، جدول التقييم النفسي للأشخاص ذوي الإعاقة النمائية، اختبار وكسلر للذكاء، مقياس زارت للعبء الأسرى. **نتائج البحث:** وجد أن نسبة 47% من الأشخاص لديهم نوع أو أكثر من التحديات السلوكية ووجد أن نسبة تلك السلوكيات تزيد في الذكور عن الإناث وتقل في الذين يعانون من الضعف السمعي وقد وجد أن الفصام الذهاني والتبول اللاإرادي كان أكثر في الذين لديهم تحديات سلوكية كما وجد أن الأشخاص الذين لديهم تحديات سلوكية حصلوا على معدلات أعلى في عشر بنود على جدول التقييم النفسي للأشخاص ذوي الإعاقة النمائية، وقد وجد أن العبء العائلي في الذين يعانون من التحديات السلوكية كان أكثر في أربعة عشر عنصراً على مقياس زارت للعبء الأسرى. **الخاتمة:** التحديات السلوكية والأعراض النفسية منتشرة في الأشخاص كبار الذين يعانون من الإعاقة الذهنية مما يتطلب سرعة تشخيص وعلاج هذه الاضطرابات لتخفيف العبء الأسرى.

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Perceived Parenting Styles and Their Relation to Basic Psychological Needs Satisfaction, Mental Health and Flourishing in a Sample of Lebanese College Youth

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انماط المعاملة الوالدية وعلاقتها بإشباع الحاجات النفسية الأساسية والصحة النفسية والازدهار النفسي في عينة من طلاب

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Abstract

Objectives: The current study aimed to evaluate the factor structure of the Arabic version of the Parental Authority Questionnaire (PAQ) and the relationship of parenting styles to needs satisfaction, negative mental health, and positive mental health. **Method:** A total of 293 university students (48.1% female) completed Arabic versions of the PAQ, the Basic Needs Satisfaction in General Scale, the Psychological State Scale and the Mental Health Continuum-Short Form Scale. The factor structure of the Arabic PAQ and its relation to the demographic factors of age and gender and the three outcome measures were examined. **Results:** Three empirically derived and internally consistent factors corresponding to the three parenting styles of authoritative ($\alpha=.86$), authoritarian ($\alpha=.85$) and permissive ($\alpha=.76$) parenting were obtained. Forward regression analyses showed the authoritative parenting style as the better predictor of basic psychological needs (standardized $\beta = 0.34$, $p<.001$), mental disorder (standardized $\beta = -0.21$, $p<.001$) and positive mental health (standardized $\beta = 0.18$, $p<.01$). **Conclusion:** Findings indicate that college students in Lebanon can differentiate the authoritative, authoritarian, and permissive parenting styles; that authoritative parenting contributes most to the prediction of mental health and flourishing possibly through satisfaction of the basic needs for autonomy, competence and relatedness; and that family-informed interventions may be required to reduce risk for mental disorders and enhance positive mental health in college youth in Lebanon.

Key words: Parenting styles, authoritative, authoritarian, permissive, outcome

Declaration of Interest: None

Introduction

Parenting styles refer to warmth and control informed attitudes and behaviors parents employ with their children. Baumrind^{1,2,3} identified three distinct parenting styles in white American middle-class families; namely authoritative, permissive and authoritarian. Authoritative parents maintain a parental climate that is warm and affectionate and they are more likely to deploy control that is democratic, non-punitive and supportive of independence. On the other hand, permissive parents show low behavioral control and high warmth whereas authoritarian parents display high behavioral control and low warmth.

The Parental Authority Questionnaire⁴ (PAQ) is a widely used measure of authoritative, permissive and authoritarian parenting styles and their differential relationship to academic and psychosocial outcomes in children, adolescents, and college youth from white middle-class families in Western cultures. More specifically, PAQ scores show test-retest reliabilities ranging from .77 to .92 and low correlations ranging from .01 to .23 with social desirability scores.⁴ In relation to outcome, PAQ-derived authoritative parenting style is associated consistently with such positive outcomes as academic achievement, autonomy and self-reliance, self-esteem, self-control and emotion regulation^{3,4, 5, 7} whereas authoritarian parenting style

and permissive parenting style are correlated with such negative outcomes as anxiety, depression, substance misuse and behavioral problems in school.^{8, 9, 10, 11, 12, 13}

Cross-cultural studies on the factor structure of the PAQ, the reliability of the extracted factors and their relation to outcome have shown fewer consistencies than those in white middle-class families in the West.^{14, 15, 16, 17, 18, 19} For example, Raval and colleagues¹⁷ used exploratory and confirmatory factor analysis on the Gujarati version of the PAQ and showed that only the authoritarian scale was reliable and valid in urban, middle-class, educated families in India and linked meaningfully to youth adjustment problems. Similarly, Leung and colleagues²⁰ reported no link between authoritative parenting and academic performance in adolescents in Hong Kong and a positive rather than a negative link between authoritarian parenting and school performance.

Discrepant findings on the Arabic version of the PAQ have also been reported in the Arab world.^{21, 22, 23, 24} Administration of the Arabic translation of the PAQ to adolescents in eight different Arab countries such as Egypt, Jordan, Lebanon and Yemen and its factor analysis with a forced three-factor solution resulted in the extraction of three factors for the total sample of Arab adolescents with low to acceptable internal consistencies ($\alpha=.61$ for permissive, $\alpha=.72$ for authoritarian and $\alpha=.79$ for authoritative) and overlapping of items that is, items 1 and 24 loading on both the permissive and authoritative factors.^{21, 22} Separate factor analyses for each Arab country provided similar results for the various Arab countries, but a few PAQ items did not load appropriately on their theoretically expected factors and the problematic items were not the same for the various Arab countries.²² Item overlap and even lower internal consistencies (permissive $\alpha=.62$, authoritarian $\alpha=.64$, and authoritative $\alpha=.76$ parenting style) were reported for Egyptian adolescents.²³ On the other hand, use of the Arabic PAQ on a group of Saudi college students

supported a three-factor structure with acceptable internal consistencies for the measure.²⁴

In relation to the association of Arabic PAQ-derived parenting styles to outcome, the absence of a link between permissive parenting and negative mental health, a low positive correlation between authoritarian parenting and poorer mental health, and a positive link between authoritative parenting and better mental health are reported for Arab adolescents.²⁵ On the basis of such findings, the conclusion has been drawn that 'authoritarian parenting within an authoritarian culture does not harm adolescents' mental health as it does within the Western liberal societies' (p.262).²⁵

In the present study, we examined the factor structure of the Arabic PAQ^{4, 27} in a group of Lebanese university students. We were interested in finding out whether three internally consistent parenting styles as theorized by Baumrind^{2, 3} existed in the case of Lebanese college youth. We also examined the relation of Arabic PAQ-derived parenting styles to basic psychological needs satisfaction,^{28, 29, 30} negative mental health,²⁷ and positive mental health.^{31, 32} We were interested in expanding the relation of parenting styles to two new outcome domains-needs satisfaction and positive mental health in the Lebanese context. Finally, we investigated parenting styles in relation to the demographic factors of age and sex. While the relation of these two demographic factors to parenting styles has been studied in an Egyptian adolescent sample,²³ Arab adolescents in Israel,²⁷ and Arab adolescents²² they have not been examined in the Lebanese context.

Method

Participants and procedure

A total of 293 Lebanese youth (48.1% female) from the American University of Beirut, a private institution of higher learning, participated in the study. Participants were between the ages of 18 and 25 with a mean age of 20.43 years ($SD=1.81$). Using convenience sampling, participants were recruited from the introductory psychology courses and the college campus generally.

The students of the introductory psychology courses received an announcement of the research study and an appointment with the researcher was set for those interested students. Upon participation, they received course credit for their involvement in the study. Participants who were recruited from the university campus were approached individually and if interested were invited to participate in the study.

The questionnaire battery included a consent form, a demographic sheet, and the Arabic versions of the Parental Authority Questionnaire^{4,27} (Arabic PAQ), the Basic Needs Satisfaction in General Scale^{29,33} (Arabic BNSG-S), the Psychological State Scale^{22,26} (Arabic PSS), and the Short Form Mental Health Continuum Scale^{31,34} (Arabic MHC-SF). Measures were administered in a counterbalanced order to minimize order effects.

Instrumentation

Arabic Version of the Parental Authority Questionnaire (Arabic PAQ)^{4,27}

The 30-item Arabic PAQ is a measure of the parenting styles of authoritativeness (10 items), authoritarianism (10 items), and permissiveness (10 items). Each item requires rating by both parents from 1 (strongly disagree) to 5 (strongly agree), higher scores signifying higher parenting style.

Arabic Version of the Basic Needs Satisfaction in General (Arabic BNSG-S) Scale^{29,33}

The Arabic BNSG-S is a 21-item theoretically grounded composite measure of satisfaction of the three basic psychological needs of autonomy, competence and relatedness.^{28,29} Each of the items requires a rating from 1 (Not at all true) to 7 (Definitely true); higher total scores indicating higher needs satisfaction. Examples of items on this scale are “I consider the people I regularly interact with to be my friends”, “I feel like I am free to decide for myself how to live my life.” Internal consistencies above .80 are reported for the English version of the scale.^{29,30} In the present study, the internal consistency of the Arabic BNSG-S was $\alpha=.84$.

Arabic Version of the Psychological State Scale (Arabic PSS)^{25,26}

The Arabic PSS is a 20-item composite measure of symptoms of anxiety, depression and conduct disorder. Each of the items requires 3-point ratings (0 = no, 1 = not sure, 2 = yes); lower total scores indicating better mental health. Examples of items on this scale are “I feel distressed for any reason”, “I do not know who I am and what I want”, “I do not enjoy life”; An internal consistency of $\alpha=.88$ is reported for the Arabic version of the measure²⁵. In the present study, the internal consistency of the Arabic PSS was $\alpha=.86$.

Arabic Version of the Mental Health Continuum-Short Form (Arabic MHC-SF) Scale^{31,34}

The Arabic MHC-SF is a 14-item composite measure of emotional, psychological, and social well-being. Each item requires a rating from 1 (Never) to 6 (everyday); higher total scores indicating higher positive mental health or flourishing. On this scale, participants specify how often they felt different feelings, e.g. happy, interested in life, confident to think or express own ideas and opinions, in the past month. An internal consistency above .70 is reported for this measure³⁴. In the present study, the internal consistency of the Arabic MHC-SF was $\alpha=.89$.

Results

Arabic PAQ: Factor Structure and Reliability

The 30 items of the Arabic PAQ were subjected to a principal component analysis using SPSS Version 22. The Kaiser-Meyer-Olkin (KMO) value of .89 exceeded the recommended KMO value of .6, suggesting sampling adequacy³⁵. Similarly, Bartlett’s test of Sphericity reached statistical significance ($p<.0001$), supporting the factorability of the correlation matrix. Principal component analysis revealed the presence of seven factors with eigenvalues exceeding 1 (7.74, 3.05, 2.02, 1.25, 1.10, 1.04 and 1.00), and explaining 25.8%, 10.18%, 6.73%, 4.17%, 3.67%, 3.47% and 3.34% of the variance, respectively. Inspection of the screeplot

revealed a clear break after the third factor and use of the scree test³⁶ suggested retention of three factors for further investigation. Retention of three factors was also supported by parallel analysis³⁷ on a random data matrix of 30 variables. The first seven random eigenvalues generated by the parallel analysis were 1.64, 1.56, 1.48, 1.43, 1.33, and 1.29. As such, only three eigenvalues obtained from the principal factors analysis (7.74, 3.05 and 2.02) exceeded the corresponding eigenvalues (1.64, 1.58 and 1.48) randomly generated by parallel analysis.

The three-factor solution explained after extraction a total of 42.70% of the variance, with the first factor

contributing 25.80% of the variance, the second factor contributing 10.18% and factor 3 contributing 6.73%. To aid in the interpretations of these three factors, Oblimin rotations were performed. The pattern matrix of the three-factor solution is provided in Table 1. As can be seen, the ten items on each of the three empirically derived factors corresponded to the three parenting styles as identified by Baumrind^{1,2}. The authoritative parenting style comprised items 4, 5, 8, 11, 15, 20, 22, 23, 27, and 30; the authoritarian parenting style comprised items 2, 3, 7, 9, 12, 16, 18, 25, 26, and 29; and the authoritarian parenting style comprised items 1, 6, 10, 13, 14, 17, 19, 21, 24, and 28.

Table 1: The Pattern Matrix of Arabic PAQ Items

Item		Pattern coefficients		
		I	II	III
23.	Parents gave direction, but listened to concerns.	.82	-.16	-.01
30.	Parents discussed decisions that hurt me and admitted their mistake.	.71	.10	.05
15.	Parents gave consistent directions and guidance in a rational way.	.70	-.04	-.09
11.	Parents discussed their expectations when I felt they were unreasonable.	.65	-.10	-.10
8.	Parents directed activities through reasoning and discipline.	.62	-.03	-.18
5.	Parents encouraged verbal give and take when rules were unreasonable.	.62	.12	-.14
22.	Parents had clear standards but adjusted them to the needs of family members.	.61	.04	.30
20.	Parents took children’s opinions into consideration.	.61	.18	-.05
4.	Parents discussed reasoning behind established policy.	.54	-.04	-.24
27.	Parents gave clear directions but understood when I disagreed.	.50	.09	-.01
14.	Parents did what the children wanted when making family decisions.	.05	.65	.06
19.	Parents allowed me to decide most things for myself with little direction.	-.03	.63	-.18
13.	Parents seldom gave expectations or directions.	-.12	.60	.07
6.	Parents thought children had right to make their own decisions.	.15	.58	-.22
21.	Parents did not view themselves responsible for guiding/directing my behavior.	-.03	.58	.13
10.	Parents did not think rules/regulations of authority had to be obeyed.	-.05	.57	.05
24.	Parents allowed me to form my own view on family matters, decide what to do.	.13	.52	-.22
28.	Parents did not direct behaviors/activities/desires of the children.	.09	.49	-.14
17.	Parents were against restriction of children’s activities/decisions/desires.	.00	.56	.27
1.	Parents thought children should have their way as often as parents.	.22	.42	-.17
26.	Parents told exactly what they wanted me to do.	-.10	.10	.75
18.	Parents let me know what behavior they expected of me.	-.04	.07	.70
9.	Parents felt more force was needed to get children behave their way.	.04	.06	.67
12.	Parents thought wise parents teach their children who is the boss in the family.	.21	-.13	.64
29.	Parents insisted on conformity.	-.13	.05	.62
25.	Parents thought problems could be solved by with strictness.	-.06	.10	.59
7.	Parents did not allow questioning.	-.32	.01	.52
3.	Parents expected me to do what they wanted immediately/without questioning.	-.20	-.19	.50
16.	Parents got very upset if I tried to disagree with them.	-.16	-.20	.50
2.	Parents felt it is for our own good if we were forced to conform.	-.19	-.19	.43

The internal consistencies of the empirically derived factors were $\alpha=.85$ for authoritarian, $\alpha=.76$ for permissive and $\alpha=.86$ for authoritative. These internal consistencies are considered acceptable since they represent alpha values of .70 and higher.³⁸ They are also higher than those reported for Arab adolescents,²² Palestinian-Arab adolescents in Israel,²⁷ and Egyptian adolescents.²³

The empirically derived authoritarian parenting style scores correlated negatively with the authoritative parenting style scores ($r=-.52$, $p<.001$) and the

permissive parenting style scores ($r=-.21$, $p<.001$) while the authoritative parenting style scores correlated positively with the permissive parenting style scores ($r=.35$, $p<.001$).

Parenting Styles, Needs Satisfaction, Mental Health and Flourishing: Descriptive

The means and standard deviations of the Arabic versions of the PAQ, BNSG-S, PSS and MHC-SF scales are provided in Table 2.

Table 2: Means and standard deviations of Arabic PAQ, BNSG-S, PSS and MHC-SF Scales

	Mean	Std. Deviation
Arabic PAQ		
Authoritarian	24.59	6.54
Authoritative	37.22	5.97
Permissive	28.53	5.59
Arabic BNSG-S	4.97	.62
Arabic PSS	8.52	6.94
Arabic MHC-SF	4.36	.80

Lebanese college youth in the present sample rated the authoritative parenting style higher than the permissive parenting style ($t(292)=7.13$, $p<.001$) and the authoritarian parenting style ($t(292)=19.81$, $p<.001$) and the permissive parenting style higher than the authoritarian parenting style ($t(292)=7.93$, $p<.001$).

Arabic PAQ-derived parenting style scores did not correlate with age ($r=.07$, ns for permissive, $r=-.04$, ns, for authoritarian and $r=-.05$, ns, for authoritative). Comparisons of the sexes also failed to show differences between males and females on the authoritative parenting style ($M= 37.39$, $SD= 6.15$ and $M= 37.07$, $SD= 5.81$, respectively, $t(291) = .46$, ns) and the authoritarian parenting style ($M= 24.20$, $SD= 6.48$ for females and $M= 24.95$, $SD= 6.60$, for males, $t(291) = -.99$, ns). On the other hand, males obtained higher scores than females on the permissive parenting style

($M=29.21$, $SD= 5.42$ for males and $M= 27.80$, $SD= 5.69$ for females, $t(291) = -2.17$, $p<.05$).

In the present study, Lebanese college youth had a mean composite score on the Arabic BNSG-S that was above the midpoint ($M= 4.97$, $SD= .62$), suggesting that the basic psychological needs of the group for autonomy, competence and relatedness was more satisfied than dissatisfied. Similarly, Lebanese college youth in the present sample had a mean composite score on the Arabic PSS that was on the low end ($M= 8.52$, $SD= 6.94$), indicating that as a group they perceived themselves free from symptoms of anxiety, depression, and conduct disorder. Finally, Lebanese college youth in the present sample had a mean composite score on the Arabic MHC-SF ($M= 4.36$, $SD= .80$) that was above the midpoint, signifying that participants as a group

perceived themselves more on the side of flourishing rather than languishing.

Parenting Styles and Outcome Measures: Regression Analyses

In view of the overlap of the three parenting styles, three separate forward multiple regression analyses with the three parenting styles entered into the regression equations were conducted to evaluate their significance in predicting outcome. Only the authoritative parenting style scores predicted needs satisfaction scores ($R^2=0.11$, $F(1, 291) = 37.39$, $p < 0.001$; $\beta = .34$, $p < .001$) accounting for 11% of the variance, mental health scores ($R^2=0.04$, $F(1, 291) = 13.57$, $p < 0.001$; $\beta = -.21$, $p < .001$) accounting for 4.3% of the variance, and positive mental health or flourishing scores ($R^2=0.03$, $F(1, 291) = 9.43$, $p < 0.01$; $\beta = .18$, $p < .01$), accounting for 3.1% of the variance. Taken together, the regression analyses suggest that the authoritative parenting style contributed most to prediction of need satisfaction, mental health and flourishing of college youth in Lebanon.

Discussion

This is the first study that examines parenting styles and their relation to outcome in Lebanese college youth. As such an important purpose of the study was validation of the Arabic translations of the PAQ, the BNSG-S, the PSS, and the MHC-SF in the case of Lebanese college youth with a view to extension of such investigations to the larger youth population in Lebanon. Nevertheless, our findings on the psychometric properties of the measures require replication and further standardization. For example, a limitation of the Arabic PAQ is that it does not consider parenting which is low in both the warmth and control dimensions. Also the test-retest reliabilities and inter-rater reliabilities of scores derived from the Arabic PAQ and their relationship to social desirability are not known.

The Arabic PAQ showed a factor structure that corresponded to the triarchic model of parenting styles.^{1,2} The 43.8% variance accounted for in the

present study is higher than the 27.8% reported for Egyptian adolescents,²³ the 30.4% for Arab adolescents,²² and the 39.4% for Palestinian Arab adolescents in Israel.²⁷ In addition, the internal consistencies of the empirically derived factors were as high as those reported for the English version of the scale⁴ and higher than the reliabilities reported for adolescent Palestinian-Arabs in Israel,²⁷ Egyptian adolescents,²³ and Arab adolescents.²⁵

One possible explanation for the higher distinctiveness of the empirically derived factors in the present study is age in that participants were college youth rather than adolescents. It is likely that adolescents are less differentiating of the parenting styles of their significant others than college youth. Alternatively, it is likely that parents of university students are more differentiated in the deployment of their parenting styles than they are with adolescents.

Participants in the present study perceived their parents more authoritative than permissive or authoritarian and more permissive than authoritarian. Age was not related to parenting styles and while male college youth saw their parents employing a more permissive parenting style than did female college youth, male and female college youth did not differ in their ratings of their parents on the authoritative and the authoritarian parenting styles. These findings are inconsistent with female Arab adolescents reporting more deployment of the authoritative parenting style than their male counterparts.²² Age may explain the discrepancy in findings across the studies. It is possible that parents may rely on sex-informed parenting styles with their adolescents and gender-neutral parenting styles with college youth.

In the present study, the authoritative parenting style was the single predictor of good outcome in college youth in Lebanon: higher satisfaction of the psychological needs for autonomy, competence and relatedness, better mental health, and positive mental health. The finding of a positive link between

authoritative parenting and better mental health is consistent with findings in the west and Arab adolescents.^{3,25} The finding of authoritative parenting as the single predictor of positive outcome in college youth in Lebanon suggests a process underlying the beneficial effects of this style of parenting. It is likely that authoritative parenting contributes to satisfaction of the basic psychological needs of autonomy, competence and relatedness and that the satisfaction of these basic needs leads to not only mental health but also positive mental health or flourishing.

While our study is limited by its correlational and cross-sectional methodologies, by its reliance on self-report measures, and by its focus on university students rather than a representative sample of Lebanese, the findings on the factor structure of the Arabic PAQ nevertheless indicate that college students in this sample of Lebanese can differentiate between the three parenting styles, and as such imply that it is reasonable to apply Baumrind's^{1,3} theory to college youth in the Lebanese context. Our findings on parenting styles and outcome also have theoretical and practical implications. On a theoretical level, the developmental effects of parenting styles should be examined not only in relation to mental disorders as has been done traditionally, but also in relation to positive mental health or flourishing. On a practical level, family-informed interventions that promote authoritative parenting may be required to reduce risk for mental disorders and enhance positive mental health in college youth in Lebanon.

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ملخص

الأهداف: تهدف هذه الدراسة الى اختبار نموذج النسخة العربية من استبيان السلطة الوالدية، ودراسة علاقة أنماط المعاملة الوالدية بإشباع الحاجات الأساسية، الصحة النفسية السلبية، والصحة النفسية الإيجابية. المنهج: أكملت مجموعة تتألف من ٢٩٣ من طلاب جامعيين (48.1% إناث) النسخ العربية من استبيان السلطة الوالدية، مقياس إشباع الحاجات الأساسية، مقياس الحالة النفسية، ومقياس الصحة النفسية الإيجابية. تم اختبار تركيب/هيكل العامل في استبيان السلطة الوالدية، كما تم اختبار علاقته بالعوامل الديموغرافية كالسن والجنس وبالنتائج الثلاثة المختبرة. **النتائج:** تم الحصول على ثلاث عوامل مشتقة تجريبياً تتمتع بدرجة مرضية من الاتساق الداخلي ومطابقة لأنماط المعاملة الوالدية الثلاثة وهي النمط الديمقراطي ($\alpha=.86$)، النمط التسلطي ($\alpha=.85$)، والنمط المتساهل ($\alpha=.76$). أظهرت تحاليل الانحدار ان النمط الديمقراطي هو المؤشر الأفضل لرضى الحاجات النفسية الأساسية، الصحة النفسية السلبية، والصحة النفسية الإيجابية. **الخلاصة:** تشير النتائج ان الطلاب الجامعيين قادرين على التفريق بين أنماط المعاملة الوالدية الثلاثة، وبأن النمط الديمقراطي هو المساهم الأكبر

في تنبؤ الصحة النفسية والازدهار النفسي ربما من خلال إشباع الحاجات الأساسية للاستقلالية والكفاءة والانتماء، وبأن التدخلات العائلية قد تكون ضرورية لازمة للحد من الأمراض النفسية ولتعزيز الصحة النفسية الإيجابية للطلاب الجامعيين في لبنان.
الكلمات المفتاحية: انماط المعاملة الوالدية، الديموقراطي، المتسلط، المتساهل، نتيجة.

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Frequency, Severity and Types of Aggressive Behavior among Patients with Schizophrenia at Psychiatry Outpatients Clinic in Comparison to Normal Controls

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تردد وشدة وأنواع السلوك العدواني بين مرضى الفصام المترددين على عيادة الامراض النفسية بالمقارنة بالأفراد الطبيعيين

نوال رفعت، ماجدة فهمي، وفاء الليثي، هايدي حسن، خالد عبد المعز

Abstract

Background: Aggression in schizophrenia is heterogeneous in its origin and manifestations. People with schizophrenia are more likely to be violent than members of the general population. **Objectives:** The present study aimed to assessing the frequency, severity and types of aggressive behavior among a sample of patients with schizophrenia at psychiatry outpatients' clinic in comparison to normal controls. **Methods:** The Arabic version of modified overt aggressive scale (MOAS) was used to assess aggression in 30 patients with schizophrenia who all attended the psychiatric outpatient clinic in Suez Canal University hospital and 30 participants as controls. **Results:** All patients showed variable degrees of verbal aggression, aggression against property and physical aggression; 80% of patients showed auto aggression. It was found that modified overt aggressive scale total score was higher in patient group compared to control group. **Conclusion:** Aggression is a common complication in schizophrenia when compared with the control group. All cases showed variable degrees of various types of aggression.

Key word: Schizophrenia, aggression

Declaration of interest: None

Introduction

Schizophrenia is a mental illness that usually strikes in late teens-early adulthood with equal prevalence rates observed among men and women. Schizophrenia consists of a mixture of symptoms commonly divided into two major categories, positive and negative.¹

Beyond the negative and positive symptoms, schizophrenia can include three other symptom dimensions: cognitive symptoms (poor attention, impaired executive functioning), affective symptoms and aggressive symptom.²

Human aggression is any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior. Violence is aggression that has extreme harm as its goal, e.g. death. All violence is aggression, but many instances of aggression are not violent.³

Therefore, there is good evidence from epidemiological studies that the diagnosis of schizophrenia is associated with an increased risk of violence in the community, which persists with increasing age, is found in both males and females, and is strongly associated with comorbid substance abuse. This poses a serious burden for relatives, staff, and society as a whole and, last but not least, patients with psychoses themselves due to the subsequent stigmatization. In hospital settings, violent behavior of patients with psychoses is associated with involuntary treatment, lack of insight into their illness and treatment, cognitive distortion, disorganization, and positive symptoms.⁴

In the 1980s, expert opinion suggested that there was no increased risk for violence in individuals with schizophrenia and other psychoses. Nevertheless, the conclusions of the link between schizophrenia and violence changed in the late 20th Century. New epidemiological evidence has emerged, that has

radically challenged this view. It is now generally accepted that people with schizophrenia are significantly more likely to be violent than members of the general population although the proportion of societal violence attributable to this group is small.⁵

Aim

This present study was designed to assess the frequency, types and severity of aggressive behavior among a sample of patients with schizophrenia at a psychiatry outpatients' clinic in comparison to normal controls.

Subjects and method

The study is carried out as a comparative case control study in the psychiatry outpatient clinic in Suez Canal university hospital.

The sample consisted of 30 patients diagnosed with schizophrenia according to DSM-IVTR criteria who were either in acute relapse or on maintenance antipsychotic treatment coming for follow-up. Patients were aged 18 to 45 years old.

The study excluded patients with comorbidity with other psychiatric disorders, substance abuse or comorbidity with medical conditions. An equal number (n=30) were enrolled as a control group whose age, gender and social class matched a group from the general population attending a blood bank at Suez Canal University hospital and were not suffering from any psychiatric disorders at the time of assessment.

Sample size

The sample size was calculated from this equation:-

$$n = c + \frac{P_1Q_1 + P_2Q_2}{d^2} + \frac{2}{d}$$

Where

C: is a constant and it equals 10.51 with a power of 90% and alpha error of 0.05.

P1: is prevalence of aggressive behavior among patients with chronic schizophrenia = 12.5.

Q1: 1- P1.

P2: is prevalence of aggressive behavior among normal population = 10.5.

Q2: 1 - P2.

d: 10% will be added as expected drop out.

So, n = 30 participants for each group with a total N=60 for both groups.

Data collection

The clinical data were collected by the researcher using a semi-structured psychiatric sheet of Suez Canal university hospital for both case and control groups.

Assessment of aggression was made by using the Modified Overt Aggression Scale (MOAS). It consists of four categories: (1) Verbal Aggression, (2) Aggression against Property, (3) Auto aggression, and (4) Physical aggression. Within each category, aggressive behavior is graded according to its severity in a range of 0-4 (from 0 "none" to 4 "extreme" violence). The most severe aggressive event within each category was multiplied by its designated weight factor and then summed to yield a total aggression score. Scores range from 0 to 40, with higher scores indicating more aggression.⁶ The scale was applied for assessing recent episode of aggressiveness, e.g. within the week prior to the study visit. The Arabic version was used in the study.^{7,8}

Data management and statistical analysis

Data were analysed using SPSS version 15 (SPSS Inc., Chicago, IL, USA). Quantitative data were expressed as means ± SD while qualitative data were expressed as numbers and percentages. Student t test were used to test significance of difference between two means while Chi square were used to test significance of difference between qualitative data. Multiple logistic regressions were used to assess frequency of different aggressive behavior and to correlate different risk factors to this behavior. A probability value (p-value) < 0.05 was considered statistically significant.

Results

Demographics

Eligible participants were patients diagnosed with schizophrenia and normal controls without the condition were recruited to the current study. Patient

and control groups were subdivided into three age groups (21-30, 31-40 and 41-45 years). However, statistically insignificant differences between both groups regarding age and gender distribution were noted (P= 0.6 and 0.5 respectively); see Table 1.

Table 1: Age and gender distribution among both patients and control groups

		Patient group (n=30)		Control group (n=30)		P-value
		Frequency	Percentages	Frequency	Percentages	
Age (years)	21-30	12	40 %	15	50 %	0.6 (NS)
	31-40	12	40 %	15	50 %	
	41-45	6	20 %	0	0 %	
Gender	Male	18	60 %	12	40 %	0.5 (NS)
	Female	12	40 %	18	60 %	

Modified Overt Aggression Scale (MOAS)

All eligible participants in patients and control groups were studied for aggression distribution according to Modified Overt Aggression Scale (MOAS), which is divided into four types; verbal aggression, aggression

against property, auto-aggression and physical aggression.

1- Verbal aggression:

Verbal aggression was subdivided into five grades. There was a highly statistically significant difference of grades of verbal aggression between the two studied groups (P=0.0001); see Table 2.

Table 2: Distribution of verbal aggression among both patient and control groups

	Patient group (n=30)		Control group (n=30)		P -value
	Frequency	Percentages	Frequency	Percentages	
Grade (1)	0	0 %	3	10 %	0.0001*
Grade (2)	6	20 %	15	50 %	
Grade (3)	6	20 %	9	30 %	
Grade (4)	12	40 %	3	10 %	
Grade (5)	6	20 %	0	0 %	

2- Aggression against property:

Aggression against property was subdivided into five grades. There was a highly statistically significant

difference of grades of aggression against property among the two studied groups (P=0.005); see Table 3.

Table 3: Distribution of aggression against property among both patient and control groups

	Patient group (n=30)		Control group (n=30)		P-value
	Frequency	Percentages	Frequency	Percentages	
Grade (1)	0	0 %	12	40 %	0.005*
Grade (2)	2	6.7 %	9	30 %	
Grade (3)	13	43.3 %	9	30 %	
Grade (4)	11	36.7 %	0	0 %	
Grade (5)	4	13.3 %	0	0 %	

3- Auto-aggression

Auto-aggression was subdivided into five grades. There was a highly statistically significant difference of grades

of auto-aggression between the two studied groups (P=0.0001); see Table 4.

Table 4: Distribution of auto-aggression among both patient and control group

	Patient group (n=30)		Control group (n=30)		P-value
	Frequency	Percentages	Frequency	Percentages	
Grade (1)	6	20 %	27	90 %	0.0001*
Grade (2)	4	13.3 %	3	10 %	
Grade (3)	13	43.3 %	0	0 %	
Grade (4)	3	10 %	0	0 %	
Grade (5)	4	13.3 %	0	0 %	

4- Physical aggression

Physical aggression was subdivided into five grades. There was a highly statistically significant difference of

grades of physical aggression between the two studied groups (P=0.0001); see Table 5.

Table 5: Distribution of Physical Aggression among both patient and control group

	Patient group (n=30)		Control group (n=30)		P-value
	Frequency	Percentages	Frequency	Percentages	
Grade (1)	0	0 %	9	30 %	0.0001*
Grade (2)	4	13.3 %	12	40 %	
Grade (3)	4	13.3 %	9	30 %	
Grade (4)	20	66.7 %	0	0 %	
Grade (5)	2	6.7 %	0	0 %	

* Mann-Whitney test

Distribution of modified MOAS score

The MOAS score was higher in the patient group compared with control group with a statistically

significant difference between the two groups (P = 0.002); see Table 6.

Table 6: Total Aggression score among both patient and control group

		Patient group (n=30)	Control group (n=30)	P-value
Total aggression score	Mean ± SD	23.9 ± 6.8	7.3 ± 4.7	0.002*
	Range	12 – 36	0 – 13	

Discussion

Characteristics of the sample

1. Age and gender

The demographic features of the current study were those of n=30 participants with an established diagnosis of schizophrenia, according to DSM-IVTR criteria, who presented to the psychiatry outpatient clinic in Suez Canal University Hospital; and a similar number of normal controls for comparison. The majority of participants with schizophrenia were aged from 18-40 years while the control group were aged from 21-40 years old.

2. Frequency and type of aggression

Aggressive behavior was studied in both case and control groups using the Modified Overt Aggression Scale (MOAS).

Verbal aggression

All participants with a diagnosis of schizophrenia showed variable degrees of verbal aggression (100%). However, a high percentage of patients (40%) showed impulsively threatened violence toward others or self (grade 4). Unlike the case group, 90% of the control group were verbally aggressive to varying degrees. A high percentage of subjects (50%), included in grade 2, shouted angrily, cursed mildly, or made personal insults. Bobes J. et al, (2009), showed that verbal aggression was present in 97.6 % of cases (40 patients) as follows: only 2.4 % (one patient) showed no verbal aggression; 15 patients (36.6%) shouted angrily, cursed

mildly, or made personal insults (grade 2); 14 patients (34.2%) cursed viciously, were severely insulting or had tempered outbursts (grade 3), but 10 patients (24.4%) impulsively threatened violence toward others or self (grade 4). Lastly, only one patient (2.4%) threatened violence toward others or self repeatedly or deliberately.⁹

Jones et al. (2001), studied associations between aggressive behavior in patients with schizophrenia and catechol-O-methyltransferase genotype in a sample of men and 44 women with schizophrenia. The patients in the current sample showed a high level of aggression as follows: 52% verbal aggression in male patients (46% in females).¹⁰

Aggression against property

Among cases, all participants (100%) showed variable degrees of aggression against property or objects. A high percentage of participants (43.3 %) threw objects, kicked furniture, defaced walls (grade 3) and (36.7 %) broke objects or smashed windows (grade 4). In the control group, (60%) showed variable degrees of aggression against property which included the following: (30%) slammed doors, ripped clothing, urinated on the floor (grade 2); (30%) threw objects, kicked furniture, and defaced walls (grade 3). However, no one was included in grade 4 or 5 of aggression against property. Bobes J. et al. (2009) showed that aggression against property was present in 63.4% of cases (26 participants) as follows: only 31.6% (12 participants) showed no aggression against property; 16

participants (42.1%) slammed doors, ripped clothing, urinated on the floor (grade 2); eight participants (21.1%) threw objects, kicked furniture, and defaced walls (grade 3), but two patients (5.3 %) broke objects or smashed windows (grade 4). Lastly, no one was included in grade 5 (set fires, threw objects dangerously).⁹ Jones et al. (2001), showed 39% aggression against objects among men and 25% among women.¹⁰

Auto-aggression

In the group of participants with a diagnosis of schizophrenia, (80%) showed auto-aggression; a high percentage of participants (43.3%) engaged in head banging, hit fists into walls or threw themselves onto the floor (grade 3). Compared to this group, 90% of controls showed no auto-aggression (grade 1). Only 10% who were included in the mild grade (2) picked or scratched skin, pulled hair out, hit self without injury.

Bobes J. et al. (2008) reported that auto-aggression was present in 19.5 % of cases (eight participants) as follows: only four participants (13.3%) picked or scratched skin, pulled hair out, hit self without injury (grade 2) and the same percentage engaged in head banging, hit fists into walls or threw themselves onto the floor (grade 3). No one was included in grade 4 or 5 of auto-aggression.⁹ Jones, et al, (2001), reported that 23% of men exhibited auto-aggression and 9% of women.¹⁰

Physical aggression

All participants showed variable degrees of physical aggression (100%). A high percentage (66.7%) attacked others causing mild injuries like bruises, sprain, welts, etc. (grade 4). In the control group, 70% of exhibited physical aggression as follows: 40% made menacing gestures, swung at people, and grabbed clothing (grade 2). In addition, 30% stroked, pushed, scratched or pulled the hair of others without injury (grade 3). No one was included in grade 4 or 5. Bobes J. et al. (2008) showed that physical aggression was reported in 41.5% (17 participants) as follow: 13 participants (33.7%) were included in grade 2. In addition, the remaining four participants (8.9%) were included in grade 3. No one

showed grade 4 or 5 of physical aggression.⁹ Jones et al. (2001) reported that 39% of male participants in the sample exhibited physical aggression compared with 34% of women.¹⁰

In the present study, verbal aggression, aggression against property, physical aggression was reported in all participants diagnosed with schizophrenia; auto-aggression was reported in 80%. In addition, aggression was represented, with all its types, in a high percentage of controls. This could be explained by the fact that aggressive behavior is complex and multifactorial. Some important underlying causes are inappropriate adherence to treatment, comorbid conditions, e.g. substance abuse; the disease process itself produces hallucinations and delusions which may provoke violence.¹¹ All these causes are agreed by previously mentioned studies. In addition, the small sample size of the present study may have played a role. Finally, in the present study the aggression scale total score was higher in participants diagnosed with schizophrenia compared to controls with a statistically significant difference between the two groups while, Tilman Steinert et al. (1999) showed in their study that mean \pm SD total aggression scores were 8.69 ± 8.02 for men (4.47 ± 6.27 for women).¹²

Limitations

A significant limitation of the present study was the small sample size. In addition, violence was assessed irrespective of the timing of the diagnosis of schizophrenia, e.g. violence before and after diagnosis, which would likely overestimate the effects of the illness. The MOAS has not been standardized on Egyptians. The lack of nationally documented studies on schizophrenia among Egyptian patients represented a difficulty in generalizing the findings. We had to rely on participants and their families to assess adherence levels without any objective measurement to support what was being reported, which likely affected our assessment.

Conclusion

Aggression is a common complication in schizophrenia compared to control group. All cases showed variable degrees of various types of aggression. Aggressive behavior was represented highly in the control group; a fact that suggests that there are other risk factors associated with aggression than being schizophrenic despite this being a leading cause according to our study.

Recommendations

- Programs that support patient management should be planned, including stress management program for those patients with stressful life events that impair their functioning.
- Family psycho-education to decrease the burden on family caregivers.
- Regular follow-up for early detection of symptoms in high-risk individuals and relapse prevention.
- Careful follow-up of patients with aggressive behavior to prevent recurrent violent episodes.

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المخلص

مقدمة: احتماليات مريض الفصام الذهاني للسلوك العدوانى هو عنصر هام من عناصر الرعاية النفسية للمريض. حيث أن هذا السلوك العدوانى يشكل عبئاً خطيراً على اقارب المرضى والفريق المعالج والمجتمع ككل والمرضى أنفسهم. **الهدف:** في الدراسة الحالية، تم تقييم وجود نوبات عدوانية، بما في ذلك نوع العدوانية وشدتها ونسبتها بين مرضى الفصام بالمقارنة بالأفراد الطبيعيين. **الطريقة:** تم تطبيق الدراسة على عينة تتكون من 30 مريض بالفصام من المرضى المقيمين بالقسم الداخلي للأمراض النفسية بالمستشفى الجامعي وايضاً المرضى المترددن على العيادات الخارجية للمستشفى، و30 اخرين من الأفراد الطبيعيين باستخدام مقياس العدوانية العلني المعدل، لتقديم بيانات عن معدل انتشار العدوانية والعنف في الأفراد المصابين بالفصام. **النتيجة:** تكونت عينة البحث من 60% من المرضى الذكور و40% من الاناث، تتراوح أعمارهم بين 18 – 45 عام وأظهرت الدراسة أن جميع المرضى لديهم نسب متفاوتة من العنف وان مرضى الفصام أكثر عنفا من الافراد الطبيعيين.

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Metacognitive Functions in a Sample of Egyptian Patients with Obsessive-Compulsive Disorder

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الوظائف ما وراء المعرفة في عينة من المصريين المصابين باضطراب الوسواس القهري

محمد عبد الحكيم سليم، سامح أحمد سعادة

Abstract

Objective: Metacognition has been considered an important factor in the development and maintenance of various psychiatric disorders, especially in Obsessive-Compulsive Disorder (OCD). The aim of the current study was to explore the role of metacognition in the pathogenesis of obsessive-compulsive symptoms in an Egyptian sample. **Methods:** Forty patients with OCD and 46 age and gender matched controls were recruited. Participants were evaluated using The Yale-Brown Obsessive-Compulsive Scale (YBOCS), the Responsibility Attitude Scale (RAS), and the Metacognition Questionnaire-30 (MCQ-30). **Results:** As hypothesized, the OCD group scored significantly higher than the control group in all dimensions in addition to the total score of the MCQ-30. Effect sizes were highest for cognitive confidence, risks, control, and total score. A strong positive correlation was found between dimensions of MCQ and YBOCS severity score. After controlling for responsibility score, only two correlation coefficients for two subscales of MCQ-30 scale became non-significant. **Conclusions:** Metacognition plays an important role in the pathogenesis of OCD as evidenced by elevated dysfunctional metacognitive beliefs in patients with OCD. Cognitive therapies based upon cognitive formulations of OCD according to these results will be valuable in treating OCD symptoms.

Key Words: Obsessive, compulsive, metacognition, responsibility

Declaration of interest: None

Introduction

Obsessive-Compulsive Disorder (OCD) is a common psychiatric illness characterized by intrusive repetitive thoughts and/or behaviors which cause marked distress.¹ Neuropsychological functioning in individuals with OCD has been an area of recent research in order to understand the neurobiological basis of obsessive-compulsive symptoms. Metacognition refers to the psychological structures, knowledge, events and processes involved in the control, modification and interpretation of thinking itself. In other words, it is the process of thinking about "thinking," knowing about "what we know" and "what we don't know," and the ability to control our own thoughts.² Metacognition has been considered an important factor in the development and maintenance of various psychological disorders, especially in

generalized anxiety disorder (GAD)³ and OCD.⁴

Dysfunctional Metacognitive beliefs were positively correlated with obsessive-compulsive symptoms.⁵⁻⁸ Certain metacognitive dimensions ("uncontrollability and danger" and "need to control thoughts") are of central importance in OCD. Some types of obsessions, such as obsessions of doubt and indecisiveness, exhibit a more common and substantial relationship with metacognition.⁶ Changing meta-cognitive beliefs and replacing maladaptive strategies with adaptive coping strategies can help to control symptoms of obsession in individuals.⁷ Metacognitive beliefs were recently shown to be independently associated with the quality of life in OCD patients.⁹

Two different cognitive models of obsessive-compulsive symptoms were presented. The first model,

presented by Wells¹⁰ gives a central and necessary role for metacognitive beliefs in determining the meaning and danger of thoughts/feelings and the need for control. The second model, presented by Salkovskis,¹¹ attached a central and necessary role to beliefs and appraisals concerning responsibility. The metacognitive and responsibility models are quite similar on the idea that a central feature of OCD consists of negative interpretations of intrusive thoughts. Both models assume that an individual's appraisal of obsessive thoughts and response to such thoughts contribute to OCD. However, each one emphasizes different aspects of belief and some unique processes in the development and persistence of the disorder.¹²

Wells proposed that our understanding of obsessive problems would be further advanced by examining the role of 'metacognitive' processes and beliefs (that is, attempts to regulate thoughts and beliefs about thoughts and thought processes) in their development and persistence.¹³ Two broad domains of belief are emphasized in the model: beliefs about the importance/meaning and power of thoughts, and beliefs about the need to control thoughts and/or perform rituals.¹⁴ In contrast, the responsibility model emphasizes the construct of inflated responsibility as the central cognitive component driving obsessive problems.¹¹ Responsibility is defined as "the belief that one has power which is pivotal to bring about or prevent subjectively crucial negative outcomes".¹² The model proposed by Salkovskis¹¹ may be elaborated in the fact that people with OCD perceive an intrusive thought as evidence that they may be responsible for harm to self or others if they did not take preventive action. These responsibility appraisals are causing emotional responses that motivate the need to carry out compulsive acts or rituals.

Several studies investigated the differential impact of dysfunctional metacognition and responsibility in OCD. Most results showed that the relationship between responsibility and obsessive-compulsive symptoms is statistically dependent on metacognition and that metacognition positively correlates with obsessive-

compulsive symptoms independently of responsibility. Responsibility appraisals, based on Salkovskis model of OCD, were also shown not to be associated with obsessive-compulsive symptoms when metacognitive beliefs were controlled for, suggesting that such appraisals may actually stem from metacognitive processes.^{12, 14}

On the neurobiological level, metacognitive regulation was related to attention, executive control, conflict resolution, error correction, inhibitory control, and emotional regulation. These aspects of metacognition were presumed to be mediated by a neural circuit involving midfrontal brain regions.¹⁵⁻¹⁷ Patients with OCD have repeatedly shown cognitive dysfunction in executive function, attention, nonverbal memory, and visuospatial skills.¹⁸⁻²¹ Based on the findings of neuroimaging studies, an orbitofrontal-striatal model has been postulated as an abnormal neural circuit that mediates symptomatic expression of OCD.²² The metacognitive model was clinically applied to treat OCD²³⁻²⁸ in addition to other psychiatric disorders, with promising results.²⁹⁻³¹

The aim of the current study was to explore the role of metacognition in obsessive-compulsive symptoms and to explore whether previous results would be replicated in an Egyptian sample. To test the metacognitive model of OCD, five hypotheses were examined:

- Patients with OCD will score significantly higher on metacognitive constructs compared to community controls.
- Metacognitive beliefs and responsibility will each be positively correlated with OCD symptoms.
- Metacognitive beliefs will be positively correlated with responsibility.
- The relationship between responsibility beliefs and OCD symptoms will be dependent on metacognition, e.g. responsibility will not add significantly to the prediction of OCD symptoms when metacognition is controlled.

- The relationship between metacognitive beliefs and OCD symptoms will be independent of responsibility, e.g. metacognition will add significantly to predicting symptoms when responsibility is controlled for.

Subjects and Method

Patients with OCD were recruited from the outpatient clinics of Tanta Psychiatry and Neurology Center - Tanta University and Tanta Mental Health Hospital. The sample included 40 patients diagnosed as having OCD according to DSM IV-TR criteria. A control sample that consisted of 46 age and gender matched healthy individuals were recruited from the students in Al-Azhar University in Cairo. After obtaining informed consent, all participants were subjected to a full psychiatric history and mental status examination. Any unexpected risks during the course of the research were explained to the participants and to the ethical committee of the Faculty of Medicine - Tanta University that approved the study. Participants with neurological diseases that might affect their cognitive performance, e.g. cerebrovascular stroke, and those with substance abuse disorders, were excluded. The following psychometric tools were applied:

- Fahmy and El-Sherbini scale³² was used to collect demographic and socioeconomic data.
- Yale-Brown Obsessive-Compulsive Scale (YBOCS).^{33,34} An Arabic version³⁵ of the YBOCS was utilized to give a measure of the severity of OCD symptoms. The interview has a considerable inter-rater reliability, ranging from 0.80 to 0.98, a good internal consistency, ranging from 0.69 to 0.91, and good convergent and discriminant validity when compared with other measures for OCD symptom severity.
- The Metacognition Questionnaire-30¹⁴ is a 30-item self-report scale measuring beliefs people have about their thinking. Responses are ranked

on a four-point scale ranging from 1 (do not agree) to 4 (agree very much). The questionnaire includes five subscales, which are: (1) positive worry beliefs, (2) beliefs about uncontrollability and danger of thoughts, (3) beliefs about cognitive competence, (4) beliefs about need to control thoughts, and (5) cognitive self-consciousness. The MCQ-30 has good reliability and validity¹⁴ with Cronbach coefficient alphas for subscales ranging from .72 to .93. Test-retest reliability, after a period of 22-118 days was good with coefficients of .75 for the total scale and .59-.87 for subscales. The scale was translated into Arabic by the authors of the current study after gaining permission from the author of the scale. After translating the scale, it was presented, with a copy of the original scale, to three bilingual specialists in psychology and psychiatry to assure the proficiency of the translation process. A pilot study was then conducted to assure the reliability of the scale in the Egyptian community. The researchers used Cronbach coefficient alphas for subscales ranging from .589 to .883. The researchers also used split-half reliability for subscales ranging from 0.634 to 0.886 on a sample of 60 volunteers in Egypt with and age range of 20-45 years.

- The Responsibility Attitude Scale (RAS)¹¹ is a 26- item self-report scale that measures beliefs about responsibility. The RAS has good reliability and validity and reported a Cronbach coefficient alpha of .92 and a test-retest reliability coefficient of .94 over a period of three weeks. The authors of the current study translated the scale into Arabic after getting permission from the author and presented the translation with a copy of the original scale to three bilingual specialists in psychology and psychiatry. The scale was also piloted on the previously described sample. The Cronbach coefficient alpha for the total score was 0.723. Split-half reliability coefficient was 0.777

Data were analysed using the Statistical Package for Social Sciences (SPSS) version 19.

Results

Of the total sample of participants with OCD (n = 40), 12 (30%) were men and 28 (70%) were women. Their ages ranged from 20 to 45 years with a mean of 32.17 and SD of 10.21 years. Regarding controls, (n=46), 17

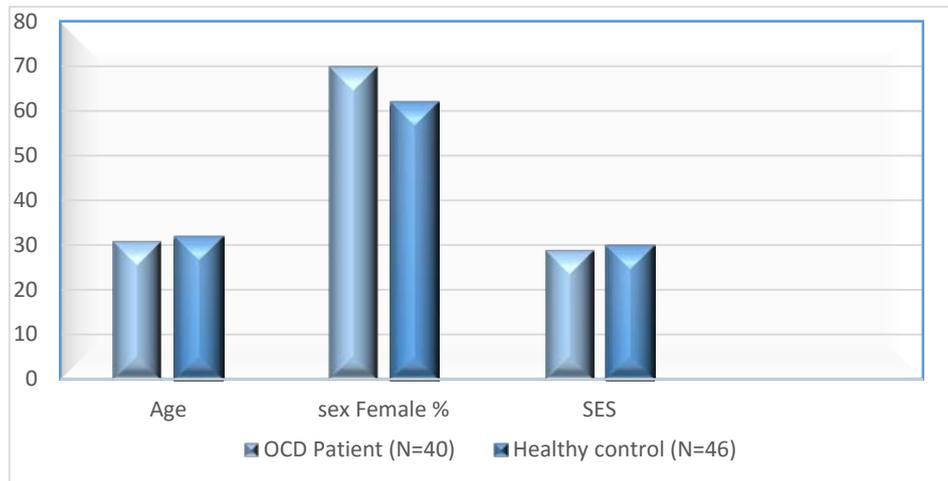
(36%) were men and 29 (63%) were women. No significant differences were found between both groups ($\chi^2 = 0.5$; p value = n.s.). The ages of the control group participants ranged from 20 to 45 years with a mean age of 33.39 and SD of 9.09 years, which was not statistically different from those in the group with OCD ($t = 0.6$; p value = n.s.). Socioeconomic status was also matched with no statistically significant differences between the two groups ($t = 1.2$; p value = n.s.); see Table 1, Figure 1.

Table 1: Group differences on demographic variables

variable	OCD Participants (N=40)		Healthy control (N=46)		Statistic	p value
	Mean	(SD)	Mean	(SD)		
Age	32.2	(10.2)	33.4	(9.1)	t = 0.6	0.6
Gender (women %)	70		63.04		$\chi^2 = 0.5$	0.5
SES	29.8	4.3	31.2	5.4	t = 1.3	0.2

SES = Socio-economic Status according to Fahmi and El-sherbini scale

Figure 1: Group differences in demographic variables



As seen in Table 2, Figure 2, there were statistically significant differences between the group with OCD and the control group in the dimensions of metacognitive functions. As hypothesized, significant differences were found between healthy controls and the group with

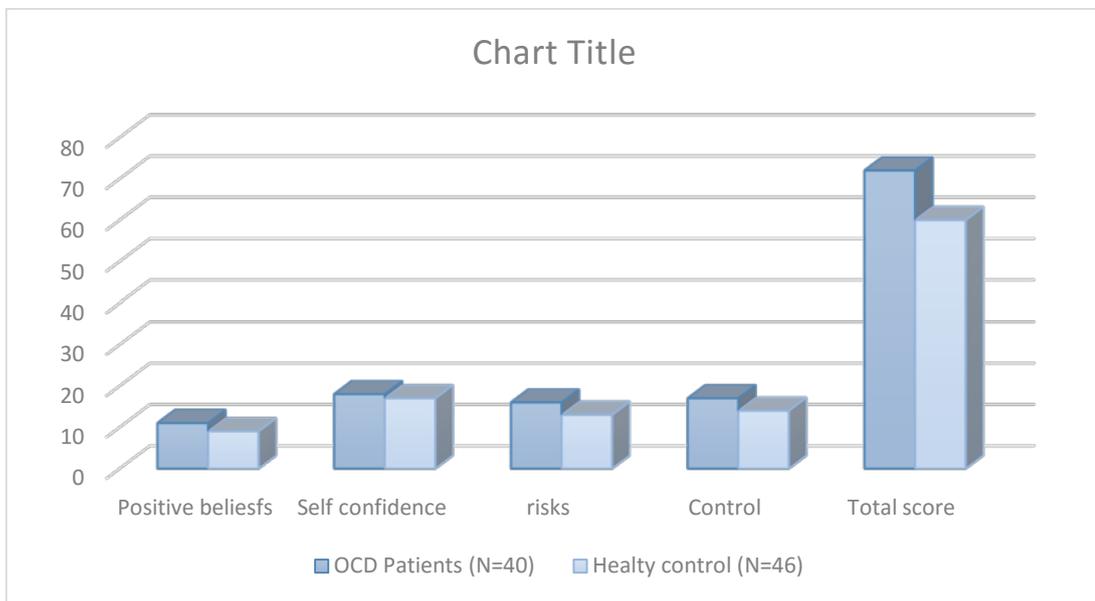
OCD in MCQ dimensions. The group with OCD scored significantly higher in all dimensions and in the total score of the MCQ scale. Effect sizes were highest for cognitive confidence, risks, control, and total score.

Table 2: Group differences on dimensions and total score of MCQ scale

Variable	OCD Participants (N=40)		Healthy control (N=46)		Statistic	d	P value
	Mean	(SD)	Mean	(SD)			
Cognitive confidence	12.57	(3.63)	9.65	(2.70)	t = 4.389 **	0.98	≤0.001
Positive beliefs	10.52	(1.96)	9.04	(3.31)	t = 2.475 *	0.54	0.01
Self confidence	18.47	(3.17)	16.89	(3.25)	t = 2.278 *	0.49	0.03
Risks	14.67	(1.68)	11.26	(3.68)	t = 5.388 **	0.99	≤0.001
Control	16.17	(2.50)	13.47	(4.20)	t = 3.543 **	0.78	≤0.001

** Significant at 0.01* Significant at 0.05

Figure 2: Group differences on dimensions and total score of MCQ scale



As hypothesized, correlation coefficients showed in Table 3, Figure 3 revealed a strong correlation between dimensions of MCQ-30 and YBOCS severity score, whereas they also showed significant correlation

coefficients between MCQ-30 and RAS scales. The correlation coefficient between Responsibility scale and YBOCS scale ($r=0.701$) was significant at 0.01.

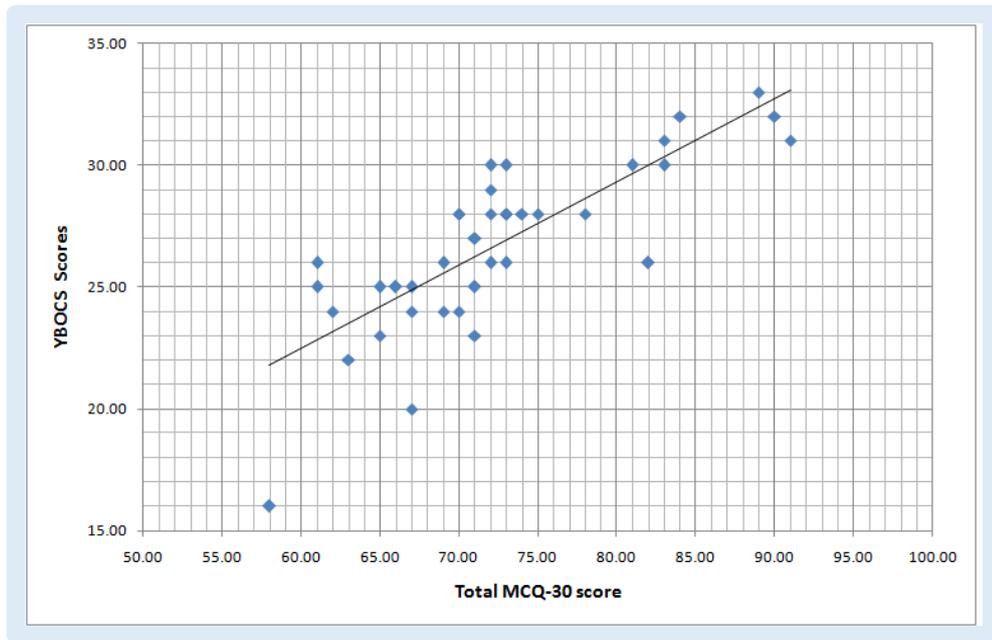
Table 3: Correlations between dimensions and total score of MCQ scale

Dimension of MCQ	YBOCS	Responsibility scale
Cognitive confidence	0.612**	0.386*
Positive beliefs	0.285	0.450**
Self-confidence	0.570**	0.394*
Risks	0.342*	0.345*
Control	0.384*	0.308*
Total score	0.792**	0.631**

* Correlation is significant at the 0.05 level (2-tailed).

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

Figure 3: Correlation between the YBOCS scores and total score of MCQ scale



Only two subscales of MCQ-30 scale (namely, positive beliefs and risks) lost their significant correlation with

YBOCS after the statistical control for RAS score (Table 4).

Table 4: Partial correlations between dimensions and total score of MCQ scale after controlling for Responsibility scale

Dimension of MCQ	YBOCS
Cognitive confidence	0.519**
Positive beliefs	0.047
Self-confidence	0.449**
Risks	0.150
Control	0.248*
Total score	0.632**

* Correlation is significant at the 0.05 level (2-tailed).

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

Discussion

Our results are consistent with the hypothesis that negative metacognitive beliefs are generally associated with the pathogenesis of OCD as evidenced by elevated metacognitive beliefs in patients with OCD as compared with healthy controls. These findings are consistent with a growing body of evidence from many studies^{7, 12-14, 17, 23, 36-38} that dealt with the relationships between

metacognitive factors and psychopathology of OCD.

Certain metacognition sub dimensions (“uncontrollability and danger” and “need to control thoughts”) are of central importance in OCD. Patients with OCD mistrust their memory and attention as the most important cognitive functions. They are also losing control of their thoughts and interpreting this feeling as dangerous. Cucchi et al.¹³ also reported that the same metacognitive dimensions differed from the healthy

controls with the highest effect sizes.

Responsibility, as measured by the RAS, was positively associated with OCD symptoms, as found in previous studies.^{11,39} The present findings support Wells⁴ metacognitive model as metacognitive beliefs were positively correlated with OCD symptoms. In addition, the present findings corroborate findings that have demonstrated correlations between dimensions of the MCQ-30 and OCD symptoms.^{4, 37, 38, 40}

In the meta-cognitive model of Wells,^{2, 4} two subscales of the MCQ, uncontrollability and danger, and need for control, were markers for the dysfunctional meta-cognitive beliefs in OCD. In a study by Myers and Wells,¹² it was found that the need to control thoughts and beliefs about harm or danger resulting from thoughts contribute to obsessive symptoms independently of responsibility and other types of anxious disturbance, such as worry. However, after controlling for responsibility, the correlation between OCD symptoms and metacognitive beliefs were lower in value which mean that responsibility is also playing a significant role in only two dimensions of metacognitive (positive beliefs and risks) which, in turn, highlight the important role played by responsibility in the relationship between metacognitive and OCD symptoms. It may be concluded that metacognitive beliefs are playing a more significant role in OCD symptoms than responsibility, which plays a considerable role especially in positive beliefs and risks.

The cross-cultural differences might significantly affect the cognitive and metacognitive constructs, especially those of responsibility. A recent study reported culture-specific factors in a sample of Turkish patients with OCD who showed more tendencies to utilize worry and thought suppression in comparison to Canadian participants with OCD who tended to use self-punishment more frequently⁴¹ Yorlmaz and Isik⁴² also suggested that cultural context might have relative impact on certain correlates. A recent replication of the metacognitive role in the pathophysiology of OCD was reported in a Muslim, but non-Arabic speaking

population in Iran.⁴³ In addition, Aghea and colleagues⁷ carried out a study on an Iranian sample to examine the relationship between cognitive beliefs, meta-worry with obsessive-compulsive symptoms in a non-clinical population. The results showed that there is a significant and positive relationship between meta-cognitive beliefs and obsessive symptoms are found.

Finally, it is important to highlight the limitations of this study. First, the small size of the sample might limit the generalization of the results on patients with OCD in general. Second, diagnosis of OCD was based on clinical judgment according to the criteria of DSM-IV-TR and was not based on a validated structured interview. Third, the study design did not control for comorbid psychiatric disorders, especially depressive disorders which have a high rate of comorbidity in individuals with OCD. Finally, any influence of psychoactive medications on the cognitive and neurophysiological outcomes cannot be ruled out.

To our knowledge, this is the first study to explore the relationships between metacognition, responsibility, and OCD symptoms in an Arabic speaking sample. The present study supports the hypothesis that metacognition is generally associated with OCD as evidenced by elevated dysfunctional metacognitive beliefs in patients with OCD. Such beliefs can be understood as generic vulnerability factors to OCD and as elements that can aggravate the disorder, and thus must be taken into account when treating the condition. Cognitive therapies based upon cognitive formulations of OCD according to these results in the Arab population will be valuable in treating OCD symptoms.²⁸ More research is needed to explore the specific characteristics of the metacognitive constructs in Arabic speaking patients with OCD in comparison to other cultures.

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موضوع البحث: يعتبر مفهوم "ما وراء المعرفة" عاملاً مهماً في تطور وعلاج مختلف الاضطرابات النفسية، خاصة في اضطراب الوسواس القهري (OCD). وقد كان الهدف من الدراسة الحالية استكشاف الدور الذي يلعبه هذا المفهوم "ما وراء المعرفة" في التسبب في أعراض الوسواس القهري في عينة من المصريين. طرائق البحث: تم اختيار أربعين مريضاً ممن يعانون من الوسواس القهري وستة وأربعين شخصاً صحياً كمجموعة ضابطة متجانسة إحصائياً مع المرضى في متغيرات السن والجنس والمستوى الاقتصادي الاجتماعي. وتم تقييم أعراض الوسواس القهري باستخدام مقياس بيل براون للوسواس، كما تم تعريب وحساب الخصائص السيكومترية وتطبيق استنباطي اتجاهات المسؤولية وما وراء المعرفة - نسخة العبارات الثلاثين. النتائج: سجلت مجموعة المرضى المصابين بالوسواس القهري درجات أعلى بكثير من المجموعة الضابطة في جميع الأبعاد الفرعية، بالإضافة إلى النتيجة الكلية، لاستنباط ما وراء المعرفة - 30. وتميزت الأبعاد الخاصة بالثقة المعرفية والمخاطر والسيطرة، بالإضافة إلى النتيجة الإجمالية، بأحجام تأثيرية مرتفعة. وقد تم تسجيل تناسب طردي قوي بين أبعاد ما وراء المعرفة وبين شدة أعراض الوسواس القهري. وعند استبعاد التأثير الخاص بالشعور بالمسؤولية عن الأفكار فإن معظم الأبعاد الخاصة بما وراء المعرفة قد احتفظ بعلاقته الطردية الدالة بشدة الوسواس ولم يفقد هذه العلاقة سوى في بعدين من أبعاد ما وراء المعرفة. خلاصة البحث: يرتبط الاختلال في مفاهيم ما وراء المعرفة بأعراض الوسواس القهري. وقد يؤدي فهمنا لهذه العلاقة إلى صياغة جديدة للبناء المعرفي لمرض الوسواس القهري مما يفيد في تطوير علاجات معرفية جديدة لهذا المرض.

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استبيان ما وراء المعرفة

تعريب: د. سامح أحمد سعادة - د. محمد عبد الحكيم سليم

يتعامل هذا الاستبيان مع المعتقدات التي يتبناها الناس عن أفكارهم. سوف تجد أدناه قائمة بالعديد من المعتقدات التي عبر عنها بعض الناس. من فضلك اقرأ كل عبارة وعبر عن مدى موافقتك على محتواها بشكل عام عن طريق رسم دائرة الرقم المناسب. من فضلك أجب على كل العبارات، علماً بأنه لا توجد إجابات صحيحة وأخرى خاطئة.					رقم الحالة:
		العمر:	سنة	شهر	
		الجنس:	ذكر	أنثى	
البعد الأول: الثقة المعرفية					
العبارة					
أوافق جداً	أوافق إلى حد ما	أوافق قليلاً	لا أوافق إطلاقاً		
4	3	2	1	1 لا أتق في ذاكرتي	
4	3	2	1	2 ذاكرتي ضعيفة	
4	3	2	1	3 ثقتي محدودة في ذاكرتي عن الأحداث	
4	3	2	1	4 ثقتي محدودة في ذاكرتي عن الأماكن	
4	3	2	1	5 ثقتي محدودة في ذاكرتي عن الكلمات والأسماء	
4	3	2	1	6 تخونني ذاكراتي في كثير من الأحيان	
البعد الثاني: المعتقدات الإيجابية					
العبارة					
أوافق جداً	أوافق إلى حد ما	أوافق قليلاً	لا أوافق إطلاقاً		
4	3	2	1	1 يساعدني القلق في ترتيب أفكاري.	
4	3	2	1	2 يزيد القلق من قدرتي على تحمل الضغوط / الظروف	
4	3	2	1	3 أحتاج إلى القلق حتى أعمل بكفاءة.	
4	3	2	1	4 يساعدني القلق في حل مشاكلي.	
4	3	2	1	5 أحتاج إلى القلق حتى أبقى منظماً	
4	3	2	1	6 يساعدني القلق في تجنب المشكلات في المستقبل.	
البعد الثالث: الثقة المعرفية بالذات					
العبارة					
أوافق جداً	أوافق إلى حد ما	أوافق قليلاً	لا أوافق إطلاقاً		
4	3	2	1	1 أنا على وعي دائم بتفكيري.	
4	3	2	1	2 أهتم جداً بالطريقة التي يفكر بها عقلي.	
4	3	2	1	3 أفكر كثيراً حول أفكاري.	
4	3	2	1	4 أتفحص أفكاري بشكل مستمر.	
4	3	2	1	5 أراقب أفكاري.	
4	3	2	1	6 أنا على وعي بالطريقة التي يعمل بها عقلي عندما أفكر في حل لمشكلة ما.	

A Pilot Study on the Prevalence of Psychiatric Disorders among Saudi Children and Adolescents: a Sample from a Selected Community in Riyadh City

Omar Al-Modayfer, Yousra Alatiq

دراسة إستطلاعية عن نسبة انتشار الاضطرابات النفسية بين الأطفال والمراهقين في السعودية: عينة مختارة من مدينة سكنية في الرياض

عمر المديفر، بسرى العتيق

Abstract

Objectives: Studies have shown that mental health problems at an early age can lead to greater impairment in adult life. Epidemiological evidence on the prevalence and incidence of mental health disorders is fundamental for planning mental health services. However, these data are lacking in Saudi Arabia. The current study examined the prevalence of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City. **Methods:** This two-stage epidemiological study used the Strengths and Difficulties Questionnaire (SDQ) to screen all eligible participants for the presence of a possible psychiatric disorder. The screening was followed by the use of a structured psychiatric interview (MINI-Kid), which was administered to a subsample to confirm the presence or absence of psychiatric disorders. **Results:** In the first stage, N= 924 participants were screened with n=226 receiving follow-up interviews. The overall prevalence of any psychiatric disorder was 36.3% (39.2% for children and 34.1% for adolescents). For the overall sample, behavioral disorders were more common than emotional disorders (25.7% vs. 21.7%). The most common specific disorders were oppositional defiant disorder (15.9%), attention-deficit/hyperactivity disorder (8.4%), general anxiety disorder (7.8%) and separation anxiety (7.8%). Only having internet in the house and the mother's education were predictors of having psychiatric illness among the adolescents, but these were not predictors among the children. **Conclusion:** The rate of psychiatric disorders among Saudi children and adolescents is within the wide range reported by international studies, but is associated with specific social predictive factors.

Keywords: Psychiatric disorders, prevalence, children, adolescents, Saudi Arabia

Conflict of Interest: None

Introduction

The study of child and adolescent mental health disorders is increasingly important, as these disorders involve significant impairments in general functioning, marked deterioration among different domains of quality of life and increased health care utilization.^{1,2} There is substantial agreement among epidemiologists that mental health problems at an early age can lead to greater impairment in adult life. A 2003 World Health Organization (WHO) report noted that the "Lack of attention to the mental health of children and adolescents may lead to mental disorders with lifelong consequences, undermines compliance with health

regimens, and reduces the capacity of societies to be safe and productive".³

Epidemiological evidence on the prevalence and incidence of mental health disorders is fundamental for planning mental health services.⁴ While psychopathology in children and adolescents is not uncommon (the mean prevalence estimate is between 15.0% and 17.5%),⁵ many conditions are commonly unrecognized. A Western study found that only 27% of children with a psychiatric disorder had been in contact with a health care specialist.⁶ In an Arab community sample, 1 in 7 children had a psychiatric disorder that involved significant functional impairment, but none of

them had received professional health care.⁷ Epidemiology studies of child and adolescent mental health problems shape the rational planning of service delivery, improve early detection and allow professionals to develop prevention programs for this vulnerable group.

In the past decade, large-scale child and adolescent psychiatric epidemiology studies have become increasingly common in developed countries, especially in the United States and the United Kingdom.^{4,5} In comparison, such studies are much less common in the Arab world and the Gulf countries, with the exception of a limited number of studies from the United Arab Emirates.⁷⁻⁹ To the best of our knowledge, there are no data on the child and adolescent population in Saudi Arabia. Using data from studies in other countries allows for estimates of mental health problems in general. However, the planning of local health service delivery should be based on results from local communities; therefore, research into mental health problems in Saudi Arabia is warranted.

The proposed study is a community-based study from Saudi Arabia that examines the prevalence and incidence rates of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City. This is a community with a population of approximately 3000, consisting of families that are expected to be representative of the average professional Saudi family. The community is also a contained population that allows a community-inclusive survey to be conducted. This is a much-needed study that is believed to be a significant step to expanded epidemiological research that can have important clinical implications.

Methods

The current study was a two-stage epidemiological study that investigated the rates of psychiatric disorders in a community-based sample of Saudi children and adolescents. The sample included all individuals aged

4-17 years old who lived in a selected community in Riyadh. The first stage involved the use of a self-report questionnaire the Strengths and Difficulties Questionnaire (SDQ) to screen eligible participants for the presence of a possible psychiatric disorder as reported by a parent (primarily the mother). Participants who scored higher than the cut-off point on the screening measures were identified as the high-risk (screen-positive) sample. Participants who scored below the cut-off point were identified as the low-risk (screen-negative) sample. To confirm the presence of a psychiatric disorder among the high-risk participants, the second stage involved detailed structured interviews with a parent (primarily the mother). An equal number of low-risk participants were randomly identified as a comparison group and were interviewed.

Sample

Participants were recruited from a selected community in Riyadh City, which is a housing compound for government sector employees and their families (no specific details are given to ensure participant confidentiality). This is a contained population, which represents a small city with its own schools and health care facilities therefore; it allows a community-inclusive survey to be conducted, which will feed into the mental health service provided for them.

The original population of the study sample was approximately three thousand. All children and adolescents living in this community were eligible to participate in the survey and were all invited to take part in the current study. The total sample screened at stage one was N=924 respondents (children=355, adolescents=569) from 293 families, of which 528 participants were invited to the interview in the second stage. Only n=226 individuals (children=97, adolescents=129) from 138 families agreed to participate further and completed the interview. The current report provides the results from the second stage.

Procedures

After receiving ethical approval, all families of children and adolescents were invited through the community health care center to participate in the study. Researchers explained the research rationale and procedures to the parents, and the parents signed consent forms.

Stage One: Only parents who consented completed individual screening questionnaires about their children. The screenings were completed by trained psychologists who assisted the participants in completing the survey.

Stage Two: Children and adolescents who were identified as high risk based on the screening questionnaire were invited for the follow-up interview. An equal number of low-risk participants were matched for age and gender and were randomly selected and were invited for the interview. All interviews were conducted by trained psychiatrists.

Instruments

Demographic questionnaire: The demographic questionnaire was a structured questionnaire that covered age, years of education, parental marital status, parental education, parental occupation, quality of marital life, number of children in the household, chronic life difficulties, family history of psychiatric disorders and alcohol problems in the family.

Strengths and Difficulties Questionnaire (SDQ):¹⁰ The SDQ is a brief, friendly and nonintrusive self-rated questionnaire that covers common areas of emotional and behavioral difficulties. The questionnaire consists of 25 items that are divided into five scales: conduct, hyperactivity, emotional problems, peer problems and prosocial scales. The SDQ has proven to be a valid and reliable screening measure for mental health difficulties

in young people. The Arabic version has also displayed good psychometric properties¹¹ and is available in a parent version.

The MINI International Neuropsychiatric Interview for Children and Adolescents (MINI-Kid):¹² The MINI-Kid is an abbreviated structured psychiatric interview that takes approximately 15-20 minutes to administer. The MINI-Kid uses decision-tree logic to assess the major child and adolescent DSM-IV and ICD-10 Axis I disorders. The interview elicits all of the symptoms that are listed for major Axis I diagnostic categories and for suicidality. The MINI has been validated against other structured interviews, including the English version of the Structured Clinical Interview (SCID-P) and the English and Arabic versions of the Composite International Diagnostic Interview (CIDI). There is no validation data on the Saudi sample; therefore, we are only using the Arabic version validated on an Egyptian sample.¹³ The MINI-Kid-Parent interview was used to interview parents about the symptoms of their children.

Results

Demographic characteristics of the screened and interviewed samples

The screened sample (N=924) and the interviewed sample (n=226) did not differ in many of the demographic variables reported in Table 1. The only exceptions were that the interviewed sample reported higher perceived stress than the screened sample (45.7% vs. 32.4%, $p=.003$), and the interviewed families had more children below the age of 18 (4.72 ± 1.5 vs. 4.10 ± 1.7 , $p\leq .001$). At the interview stage, there were no significant differences between interview participants and those who chose not to participate.

Table 1: Demographic characteristic of screened and interviewed sample*

<i>Individual Characteristics</i>	<i>All Screened (n=924)</i>		<i>Interviewed(n=226)</i>		<i>P Value</i>
	<i>Child (n=355)</i>	<i>Adolescent (n=569)</i>	<i>Child (n=97)</i>	<i>Adolescent (n=129)</i>	
Age: Mean (SD)	8.06 (1.4)	15.0 (2.7)	8.05 (1.4)	14.8 (2.7)	0.46
Gender (Male)	52.7	58.3	49.0	44.9	0.39
Had failed school	2.2	0.0	6.1	6.9	0.64
Freq school absence	12.1	11.1	6.0	5.5	0.82
Chronic medical condition, e.g. DM, epilepsy, asthma, allergy	23.6	30.7	23.4	26.9	0.40
History of psychiatry visit	3.6	1.1	2.9	4.7	0.29
<i>Family Characteristics</i>	<i>Family (n=293)</i>		<i>Family (n=138)</i>		<i>P Value</i>
Father's age: Mean (SD)	42.8 (7.8)		43.2 (6.6)		
Mother's age: Mean (SD)	36.8 (6.0)		37.0 95.1)		0.59
Father's education:					
Illiterate	1.03		1.22		
School education	75.9		77.6		0.83
Higher education	23.1		21.1		
Mother's education:					
Illiterate	16.9		15.1		
School education	61.5		64.4		0.76
Higher education	21.5		20.5		
Socioeconomic status:					
7000 and below	22.9		23.4		
7000-10000	36.5		43.1		
10000-13000	19.1		18.8		0.18
13000 and above	21.5		14.6		
Internet in the house	72.2		73.0		0.77
Number of family member Mean (SD)	8.0 (2.4)		8.2 (2.4)		0.42
Number of children below 18yrs in the family: Mean (SD)	4.1 (1.7)		4.7 (1.5)		<.0001
Stress in the family	32.4		45.7		0.003
Father hits children	22.7		25.2		0.50
Mother hits children	35.7		38.0		0.58

*Data are given as percentage unless otherwise indicated.

Prevalence of psychiatric disorders

Table 2 displays the prevalence estimates and 95% CIs for DSM-IV diagnoses for the full sample and separated by age (child age between 4-10 and adolescent age between 11- 17). The overall prevalence of any psychiatric disorder was 36.3% (39.2% for children and 34.1% for adolescents). For the overall sample, behavioral disorders (e.g. attention deficit hyperactivity

disorder, conduct disorder and opposition defiant disorder) were more common than emotional disorders (e.g. affective disorders and anxiety disorders) (25.7% vs. 21.7%). Among specific diagnoses, the most common disorders were oppositional defiant disorder (15.9%), ADHD combined (8.4%), general anxiety disorder (7.8%) and separation anxiety (7.8%). For the child sample, the most common disorders were separation anxiety (14.4%), oppositional defiant

disorder (12.4%) and ADHD combined (11.3%). For the adolescent sample, the most common disorders were

oppositional defiant disorder (18.6%), generalized anxiety disorder (10.1%) and ADHD combined (6.2%).

Table 2: Prevalence rate of psychiatric disorders*

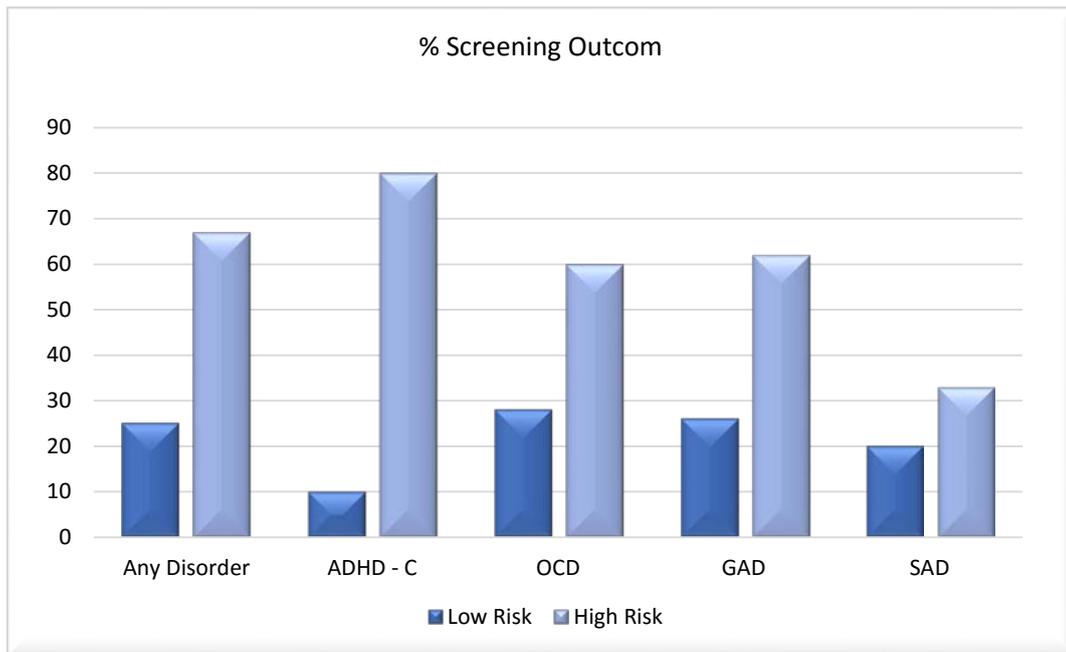
<i>Diagnosis</i>	<i>Overall</i>	<i>Child</i>	<i>Adolescent</i>
Attention deficit/hyperactivity disorder:			
Combined	8.4	11.3 (0.0-0.2)	6.2 (0.0-0.1)
Inattentive	3.1	3.1 (0.0-0.1)	3.1 (0.0-0.1)
Hyperactivity	5.3	8.2 (0.0-0.1)	3.1 (0.0-0.1)
Behavioral disorders:			
Conduct disorder	1.8	2.1 (0.0-0.1)	1.5 (0.0-0.05)
Oppositional defiant disorder	15.9	12.4 (0.1-0.2)	18.6 (0.1-0.3)
Affective disorders:			
Major depression- current	3.5	1.0 (0.0-0.05)	5.4 (0.0-0.1)
Major depression- lifetime	3.5	1.0 (0.0-0.05)	5.4 (0.0-0.1)
Dysthymia	0.9	1.0 (0.0-0.1)	0.8 (0.0-0.04)
Anxiety disorders:			
General anxiety disorder	7.9	5.1 (0.0-0.1)	10.1 (0.0-0.2)
Separation anxiety	7.9	14.4 (0.1- 0.2)	3.1 (0.0-0.1)
Social phobia	4.9	5.1 (0.0-0.1)	4.6 (0.0-0.1)
Specific phobia	5.3	6.2 (0.0-0.1)	4.6 (0.0-0.1)
Panic	0.9	1.0 (0.0-0.05)	0.8 (0.0-0.04)
Obsessive Compulsive Disorder	0.4	0	0.8 (0.0-0.04)
Posttraumatic Stress Disorder	0.9	2.1 (0.0-0.1)	0
Adjustment disorder	0.9	1.0 (0.0-0.05)	0.8 (0.0-0.04)
Aggregated categories:			
Any psychiatric disorder	36.3	39.2 (0.3-0.5)	34.1 (0.2-0.4)
Any behavioral disorder	25.7	24.7 (0.2-0.3)	23.4 (0.2-0.3)
Any affective or anxiety disorder	21.7	23.7 (0.2-0.3)	20.2 (0.1-0.3)

*Data are given as prevalence (95% confidence interval).

Relationship between the screening measure and the diagnostic interview

The percentages of high-risk (screen-positive) and low-risk (screen-negative) on the screening measures across the common psychiatric diagnoses are shown in Figure 1. The parent SDQ identified 52% of the participants diagnosed with any psychiatric disorder. Over three-

quarters (78.9%) of the participants diagnosed with ADHD combined, 57% of those diagnosed with oppositional defiant disorder, 58% of those diagnosed with generalized anxiety disorder and 35% of those diagnosed with separation anxiety disorder were also identified by their parents as high risk.



Predictors of psychiatric disorders

None of the independent variables was a statistically significant predictor of psychiatric disorders among children (see Table 3). However, children who were hit by their fathers (but not by their mothers) had an increased likelihood of a psychiatric disorder (OR=3.30, 95% CI (.958-11.366), p=0.058). Adolescent participants who had internet access were 25% more likely to have a psychiatric disorder compared with

adolescents who did not have internet access (OR=0.254, 95% CI (0.072-0.897), p=0.033). Finally, mother’s education was also a predictor of psychiatric illness among adolescents; specifically, the adolescents of mothers who only had a high school education had an 11% higher likelihood of having a psychiatric illness compared with adolescents of mothers with higher education (OR=.114, 95% CI (.013-.981), p=0.048).

Table 3: Predictors of psychiatric disorders*

<i>Variables</i>	<i>Child</i>	<i>Adolescents</i>
Mother’s education	NA	0.1 (0.0-1.0), p=0.05
Internet in the house	NA	0.2 (0.1-0.1.0), p=0.033
Father hits children	3.3 (0.96-11.4), p=0.058	NA

*Data are given as odd ration (95% confidence interval) and P value. NA indicates not applicable.

Discussion

The present study’s 36.3% rate of psychiatric disorders was based on a selected community sample using parent reports on the MINI structured diagnostic interview. The present study is similar to the study by Alyahri and Goodman,¹⁴ which also employed a two-stage design, but focused on schoolchildren between 7 and 10 years

old; the current study used a community-based sample with a wider age range. As evidenced by Eapen and colleagues,^{7,9} the rate of psychiatric disorders can be higher when the sample is collected from the community rather than schools.

The community study from Al Ain in the United Arab Emirates⁷ showed a lower rate than the current study

(36.3% vs. 22.2%). The Al Ain study selected a community sample and applied a two-stage design; however, the rates of psychiatric disorders were based on the best-estimated diagnoses from two informants (the mother and the child) using the Kiddie-Schedule for Affective Disorder and Schizophrenia (K-SDS). In contrast, the rate in the current study was estimated based on information that was reported by the mother and information from the MINI structured interview. The K-SDS yields a lower rate compared with other diagnostic interviews.⁵ Therefore, our relatively higher rate compared with these Arab studies may reflect the difference in methodology regarding informants and the use of diagnostic tools.

This is also true when comparing our study with Matsuura et al. who found the rate of psychiatric disorder to be around 12%.¹⁴ However, a study done by Giel and colleagues¹⁵ in collaboration with the WHO to study psychiatric disorders in developing countries have found the rate of psychiatric disorder up between 12-30%. This is close to the finding of the current results. Considering specific disorders, our study showed more behavioral disorders than emotional disorders (25.7% vs. 21.7%). This contrasts with the Alyahri and Goodman study,¹⁴ that found anxiety disorder to be the most common diagnosis, with a rate of 9.3%, followed by behavior disorder, with a rate of 7.1%. These findings contrast with Eapen's study, which found a 4.8% rate for emotional disorder and a 3.0% rate for externalizing disorder.⁹ This result may reflect that parents, who were the primary source of information, are better reporters of external symptoms, whereas children and adolescents are better reporters of internal symptoms.¹⁷

Previous studies and surveys have found psychiatric disorders to be associated with specific factors, such as family socioeconomic status and parental education and occupation.¹⁸ One explanation for the impact of maternal education on children's general health and mortality is that the economic advantage associated with education accounts for half of the overall association between psychiatric disorder and parental education.¹⁹ Our study failed to find a link with socioeconomic

status, but found that mother's education was a significant predictor of adolescent psychiatric disorders. The fact that our sample came from relatively homogenous middle-class families may explain why economic status failed to account for psychiatric disorders and therefore cannot be accounted for the link between mother education and adolescent psychiatric disorder in this study. Rather, there might be other variables that mediate this link. Further research will need to explore this point.

Another interesting link was found between adolescent psychiatric disorders and having access to internet in the house. Internet usage has been identified as a possibly problematic behavior since the late 1990s. Young reported significant behavioral differences between internet users and internet non-users that were similar to characteristics of impulse control disorder.²⁰ Since then, the issue of internet addiction has become more common and recognized as a psychiatric problem. A recent review found that internet addiction is often comorbid with other psychiatric disorders, such as ADHD, depression and social phobia, which suggests that careful assessments and interventions are warranted when internet use is a concern.²¹ The present study did not measure internet usage or addictive behavior in this regard; therefore, the question of whether having internet at home reflects problematic internet usage and is associated with psychiatric disorders remains open.

Limitations of the current study need to be addressed. First, the sample was based on a selected community from Riyadh City. While the sample is considered to be fairly representative of the average professional Saudi families, the generalizability of the results needs to be confirmed by further studies. Second, the response rate for the second stage was relatively low which emphasizes the need to interpret these results with caution. Moreover, the results were based on information obtained from one informant. Other sources of information, such as the fathers or the children/adolescents themselves, should also be explored. Finally, our study failed to identify predictors of child psychiatric disorders, which can likely be attributed to the small sample size.

Having acknowledged these limitations, the current findings have important clinical implications for child and adolescent mental health research and service planning. This is especially important since information on this area is very limited in Saudi Arabia.

Conclusion

The current study was a two-stage epidemiological survey that examined the prevalence of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City. The overall prevalence of any psychiatric disorder was 36.3% (25.7% for behavioral disorders and 21.7% for emotional disorders). The differences in methodology affect the comparability with other studies; the use of a community sample and the reliance on information from the mother may have contributed to a relatively higher rate compared with other Arab studies. Having internet in the house and mother's education were the only predictors of psychiatric disorders in the adolescent sample.

Acknowledgment

We would like to thank all participants for giving their time to participate in the study. In addition, we thank the research assistants who help in collected the data and Dr. Fahad Aljarbou for facilitating the data collection.

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المخلص

أظهرت الدراسات العالمية أن المشاكل النفسية التي يتعرض لها الفرد في سن مبكرة يمكن أن تؤدي إلى تدهور كبير في أدائه في مرحلة الرشد. ولذلك تعد الأبحاث التي تعنى بمدى نسبة انتشار الاضطرابات النفسية أمراً أساسياً في التخطيط للخدمات الصحية النفسية في أي مجتمع؛ لكن هذا النوع من الدراسات محدود جداً في المملكة العربية السعودية. ولهذا سعت الدراسة إلى البحث في نسبة انتشار الاضطرابات النفسية لدى الأطفال والمراهقين السعوديين الذين يعيشون في المجتمع السكني الذي جرى اختياره في مدينة الرياض. **الطرق:** طبقت هذه الدراسة على مرحلتين: اعتمدت المرحلة الأولى على مسح العينة المختارة باستخدام استبيان نقاط القوة والضعف (SDQ)، لفحص مدى احتمال وجود اضطراب نفسي لدى جميع المؤهلين للمشاركة؛ وتبع ذلك المرحلة الثانية، مرحلة المقابلة، باستخدام المقابلة المقننة (MINI-KID)؛ والتي أجريت على عينة فرعية لتأكيد وجود أو عدم وجود أي اضطرابات نفسية. **النتائج:** تم فحص 924 من المشاركين في المرحلة الأولى، وخضع 226 مشاركاً للمقابلات في المرحلة الثانية. وكان معدل انتشار أي اضطراب نفسي هو 36.3% (39.2% للأطفال و34.1% للمراهقين). وقد كانت الاضطرابات السلوكية الأكثر شيوعاً عن الاضطرابات العاطفية (25.7% مقابل 21.7%)؛ أما من ناحية الاضطرابات المحددة فكانت النتائج كالتالي: اضطراب السلوك المضاد (15.9%)، واضطراب فرط الحركة وتشتت الانتباه (8.4%)، واضطراب القلق العام (7.8%) وقلق الانفصال (7.8%)، كما توصلت الدراسة إلى أن لوجود شبكة الإنترنت في المنزل، ومستوى تعليم الأم، قدرة على التنبؤ بوجود اضطراب نفسي بين عينة المراهقين فقط. **الخلاصة:** أن معدل الاضطرابات النفسية بين الأطفال والمراهقين من عينة الدراسة يقع ضمن الحدود الواسعة، والتي ذكرت في دراسات عديدة؛ ولكن عوامل التنبؤ بهذه الاضطرابات مرتبطة بعوامل اجتماعية مختلفة.

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Substance Abuse among Inmates of Prison in Erbil City

Sirwan K. Ali

تعاطي المخدرات بين نزلاء السجن في مدينة أربيل / العراق

سيروان كامل علي

Abstract

Background and objectives: A large proportion of people imprisoned for criminal acts have a history of substance use. Many continue to use drugs while in prison. There have been no recent studies of substance use in prisoners within our community and, thus, the present study was conducted to estimate the prevalence of substance abuse and dependence in prisoners. **Methods:** This study was conducted at directorate of adult reformatory prison in Erbil city from 15 March to 15 September 2014. A convenient sample of 100 convicted male inmates was selected. After randomization, each prisoner was assessed using a semi-structured interview based on the DSM IV. Drug abuse patterns and the relationship between addiction, crime prevalence, and some personal as well as socio-demographic characteristics were studied. **Results:** Characteristics such as age, education level, economic status, residence, had effects on the rate of drug use and, on crime commitment and its re-occurrence. Accordingly, younger age, lower socioeconomic status and urban residence demonstrated a relationship with tendency to commit crime and repeat it while employment had no significant effect. **Conclusion:** The prevalence of substance abuse and dependence, although highly variable, is typically higher in prison than the general population. This highlights the need for screening for substance abuse and dependence at entry into prison alongside an effective treatment during sentencing and follow-up on discharge. Specialist addiction services for prisoners will have the potential to make a considerable impact on the prison population of Erbil.

Key words: Substance abuse, inmates, prison, Erbil

Declaration of interest: None

Introduction

The relationship between offending and substance misuse has been demonstrated in a variety of criminal justice, mental and medical settings. Recently, associations between individuals with a clinical diagnosis of substance abuse and subsequent violent offending have been shown in a large prospective study of patients¹ and in a national study of all psychiatric patients discharged into the community.² Estimates of the burden of substance abuse and dependence in the criminal population would, therefore, be useful to inform service development and public health interventions.

A large number of studies have estimated the prevalence of substance misuse in the prison population, with prevalence estimates varying widely^{3,4,5,6}. For example,

there is a six-fold variation in reported alcohol problems, and a two- to three fold variation in the prevalence of substance dependence. As it is emphasized in the professional literature, substance abusers and addicts are rejected by society, cannot find employment and – irrespective of their punishment – are additionally rendered by society as being criminals and avoided in their environment. This problem results in a vicious circle: prison - release after serving the sentence - lack of chances to rejoin the society - another offence.⁷

Drugs have become a central theme and dominating factor in the relationships between inmates and between inmates and staff. Many security measures are aimed at controlling drug use and drug trafficking within the prison system. Daily prison routines are in many respects dictated by drug-dependent inmates and drug-related problems: drug-related deaths, drug-induced

cases of emergency, increase in the number of people who use drugs.⁸

Therefore each year, as the substance use increases in society, many criminals are imprisoned as a result.⁹ Although two objectives of punishment and reform have been defined for prison, the reality is that people enter a wide network of criminals after imprisonment, which can encourage them to commit more professional crimes according to differential association theory.¹⁰ 'This is because of inadequacy in the correctional and rehabilitating measures for prisoners, which turns prison into a school for learning crime, compared with the first imprisonment; prison inmates are more prone to re-commit a crime.'¹¹

One of the most effective measures in this regard is to gain a broader idea of the problems and to explore factors intensifying drug-related crimes in society. Prison is utilized as the main form of punishment throughout the world¹⁰ and they are expected to hold a great number of individuals who have addiction related convictions.^{12,13,14,15} As a result, prison may serve as one of the most suitable places for identifying socio-demographic and socio-cultural characteristics of prisoners linked to drug use and drug related crimes, as well as the pattern and the relationship among these factors and the type and incidence of crime and deviance.

As there have been no recent studies of substance use in prison inmates within our community, we have conducted the present study on the prevalence of substance abuse and dependence in inmates, which may enable estimates of appropriate provision of treatment services in custody and for the planning of thorough care services on release into the community.

Improving health in penitentiaries, with respect to human rights, is the main objective of the study.

Methods

The present study was conducted at the directorate of the adult reformatory prison in Erbil, which is known as Al-Mahatta prison. It was conducted from 15 March to

15 September 2014. A convenient sample of 100 convicted male inmates from a total of 510 prisoners was selected randomly by taking every fifth/one from the official list of names. Their ages range from 19-66 years.

Design

The power sample size estimation was achieved by adopting the software (Decision Analyst STATS 2.0) depending on the total population of inmates with a maximum acceptable percentage point of error being 5% and desired confidence level of 95%. The analysis estimated a minimum of 64 participants out of the total 510. After randomization each inmate was assessed through semi-structured questionnaire as an interview based on the DSM IV.¹⁶

Measures

The questionnaire was translated from Arabic¹⁷ to Kurdish by language experts from the college of linguistic studies. It was then reviewed by eight experts in the field of psychiatry who gave their opinion; it was then back translated into Arabic. A pilot study was conducted based on the questionnaire to find out its suitability and time required for assessment. The studied pilot samples were removed from the main sample. Socio-demographic characteristics had been used for all inmates participating in the study and permission to conduct the study was taken from the general directorate of social reformatory.

Ethics and consent

Consent was obtained from all participants recruited to the study after discussing the aims of the present work. Confidentiality was also assured and participants were aware that they could withdraw from the study at any time.

The current study, like several others that examine the relationship between substance use and crime rates, relies solely on self-reports of crime and substance use. Although we summarized evidence that self-reports of

crime in this sample are credible, the probability of this pattern of differential validity is reduced by the design of our data collection, which obtained all self-reports at one point in time; however, the possibility remains that subjects underreported their crimes more for those months when they recalled not using drugs than for those months when they recalled using drugs.

Exclusion criteria

- Any inmate who suffered from major mental illness and diagnosed by psychiatrist
- Inmates who declined to participate
- Uncooperative inmates
- Inmates with poor physical health

Data storage and analysis

Collected data underwent cleaning and storage in a Microsoft Excel database and subsequently analyzed using SPSS version 19.0. Descriptive statistics were

used to compute means and standard deviations for numerical variables as well as frequencies for nominal and ordinal variables. Significance of association between various variables and substance use was tested using the Chi square test statistic (χ^2) and a finding of $p < 0.05$ was considered statistically significant, when the expected count of more than 20% of the cells of the table was less than 5 Fishers exact test was used. The variables strength of association with substance use was also ascertained through multiple logistic regression analyses.

Results

According to the findings of the present study, only 11% of the studied sample was above 45 years of age, 24% from rural roots, 8% had obtained a high education and 5% were had a high professional skill or occupation (see Table 1).

Table 1: The Socio-demographic characteristics of the studied sample

Demographic characteristics	N	%
Age in years		
<25	15	(15)
25-34	39	(39)
35-44	35	(35)
45+	11	(11)
Marital status		
Single	42	(42)
Married	48	(48)
Divorced	10	(10)
Residency		
Urban	24	(24)
Rural	76	(76)
Education level		
Illiterate	7	(7)
Read and write	20	(20)
Primary school	32	(32)
Intermediate and secondary school	33	(33)
High education	8	(8)
Occupation		
Unskilled	58	(58)

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Low professional skill	37	(37)
High professional skill	5	(5)

It was also evident that 24% of the prisoners were drug abusers and the relation between some demographic variables and addiction is shown in Table 2.

Table 2: Relation between some demographic variables and substance abuse

Variable	No dependence		Drug dependent		P Value
Age/ years					
< 25	13	86.7%	2	13.3%	0.091*
25-34	27	69.2%	12	30.8%	
35-45	30	85.7%	5	14.3%	
>45	10	90.9%	1	09.1%	
Total	76	76.0%	24	24.0%	
Marital status					0.546
Single	31	73.8%	11	26.2%	
Married	36	75.0%	12	25.0%	
Divorces	09	90.0%	1	10.0%	
Residency					0.219
Urban	16	66.7%	8	33.3%	
Rural	60	78.9%	16	21,1%	
Education					0.362*
Illiterate	6	85.7%	1	14.3%	
Read and write	17	85.0%	3	15.0%	
Primary school	22	68.8%	10	31.3%	
Intermediate school	28	84.8%	5	15.2%	
Secondary school	7	87.5%	1	12.5%	
Occupation					0.026*
Unskilled	49	84.5%	9	15.5%	
Low professional	25	67.6%	12	32.4%	
High professional	2	40.0%	3	60.0%	
Total	76	76.0%	24	24.0%	

* By Fisher exact test
P value ≤0.05 is significant

The results were statistically not significant between addiction and age groups of the sample. Marital status, residency and educational level, only statistically significant association were observed between substance abuse and occupation of the studied

population. Dependence found more (35.5%) among those participants with a sentencing period of (5-10 years) while the lowest percentage (only 20%) was observed among those with more than 10 years of imprisonment (see Table 3).

Table 3: Relationship between sentencing period and substance abuse among the studied sample

Sentencing period/ years	No dependence		Dependence		P value
< 1	14	73.7%	5	26.3%	0.609*
1-4	11	78.6%	3	21.4%	
5-10	11	64.7%	6	35.3%	
> 10	40	80.0%	10	20.0%	
Total	76	76.0%	24	24.0%	

Quarrels, traffic violation, illicit drug and terror crimes were associated with a higher percentage of drug dependence (50%, 40%, 26%, and 25% respectively) table (4).

Table 4: Relation between types of the crime and substance abuse among the studied sample

Types of the crime	No dependence		Dependence		P value
Terror	3	75.0%	1	25.0%	0.753*
Forgery	7	87.5%	1	12.5%	
Murder	28	80.0%	7	20.0%	
Sexual assault	5	83.3%	1	16.7%	
Illegal drugs	7	63.6%	4	26.4%	
Debt problems	3	100.0%	0	0%	
Robbery	8	80.0%	2	20.0%	
Traffic violation	6	60.0%	4	40.0%	
Prostitution	4	80.0%	1	20.0%	
Bribery	2	100.0%	0	0%	
Quarrel	1	50.0%	1	50.0%	
Problem destruction	1	100.0%	0	0%	
Homosexuality	3	100.0%	0	0%	
Total	76	76.0%	24	24.0%	

Fischer exact test*

A statistically significant relationship was found between circumstance of the crime and substance dependence; 45.3% of the studied sample committed their crime as a group while only 17.6% accused for crime were doing it as individual act (see Table 5).

Table 5: Relation between circumstances of the crime and substance abuse among the studied sample

Circumstances of the crime	No dependence		Dependence		P value
Individual	61	82.4%	13	17.6%	0.011
Group	15	57.7%	11	42.3%	
Total	76	76.0%	24	24.0%	

Another significant relationship was found between alcohol use during the criminal act and the offence (see Table 6).

Table 6: The effect of alcohol on the studied sample

Alcohol effect	No dependence		Dependence		P value
Without alcohol effect	62	81.6%	14	18.4%	0.02
With alcohol effect					
Total	14	58.3	10	41.7%	
	76	76.0%	24	24.0%	

Participants with previous sentences were associated with higher rates of dependence (42.9% in comparison with

those with no detention history 20.9%); see Table 7.

Table 7: Relation between previous sentences and substance abuse among the studied sample

Previous sentences	No dependence		Dependence		P value
No previous- sentences	68	79.1%	18	20.9%	0.094
Previous sentences					
Total	8	57.1%	6	42.9%	
	76	76.0%	24	24.0%	

Logistic-regression analysis showed a significant association between substance dependence with the following variables: high-level occupations (OR =

14.7), low-level occupations (OR=4.7), committing the crime as a group (OR=4.4), and alcoholic (OR=5.3); see Table 8.

Table 8: Logistic regression test among significant variables (occupation, circumstance of the crime and alcohol use)

Variables	B	p	OR	95% C.I. for OR	
				Lower	Upper
Occupation		.011			
Unskilled (reference)			1		
High level	2.691	.019	14.748	1.556	139.809
Low level	1.559	.009	4.752	1.468	15.387
Circumstance of crime					
Circumstance crime - individual (reference)			1.000		
Circumstance of crime (group)	1.495	.009	4.458	1.461	13.606
Alcoholic	1.686	.006	5.398	1.638	17.794
Constant	-2.982	.000	.051		

Discussion

Research in the field of substance abuse and dependence in Iraq and the region is scant. Results of a literature search showed that research in this field was largely neglected in the past. However, recent research interest has been observed. Works on tobacco and smoking was relatively high compared to other substances of abuse

like illicit drugs and medicinal agents.¹⁸ In Iraq, the population size is 32.58 million, number of documents was eight while number of published documents per million is 0.25% and h index is 2.¹⁸

Arab countries have reported a wide variety of substances and medications being abused. Substance abuse and dependence prevalence in Egypt was 8%,

3.5% respectively^{20,21,22} and abuse of tramadol in Egypt and other Middle Eastern countries has reached an alarming level.^{18, 19}

However, the WHO atlas on substance use disorders provides epidemiologic data regarding alcohol and drug use disorders obtained from available governmental data and available published literature.²³ For example, in KSA, Egypt and Jordan, prevalence estimates of alcohol use disorders (12-month prevalence, %) among women, older than 15 years old was zero while among men older than 15 years old was 0.44 in Egypt, 0.38 in KSA and 0.32 in Jordan. On the other hand, prevalence estimates of drug use disorders were 1.3, 0.63, and 0.01 among males in Egypt, Jordan and KSA respectively. These prevalence estimates were lesser than that reported from Israel.²³

The present study was carried out on 100 inmates in the directorate of adult reformatory prison in Erbil city, called Al-Mahatta prison was conducted from 15 March to 15 September 2014. The findings indicated that, although 14% of the studied population was jailed for drug addiction, drug consumption and dependency were found among 24% of inmates, which is much higher than the general population. Life time use of alcohol was 6.38% and for substance abuse 0.35% in the Kurdistan region, according to the last mental health survey conducted by the Ministry of Health and WHO in 2004.²⁴ Addictions were to drugs such as benzodiazepine, opium, and or alcohol.

It was reported that some inmates use drugs in prison to fight boredom and to help them deal with the hardships of prison life or to overcome a crisis, such as receiving bad news, conviction or experiencing violence. From this, it can be suggested that imprisonment provides reasons for taking drugs or continuing the habit as well as prompting relapse after a period of withdrawal. The prevalence of substance use disorders has been estimated to be between 23% and 50% in Western studies.²⁵ The high rates found in the present investigation suggest that prison health services have additional challenges in low-income countries, particularly where there is a large prison population

related to illegal drug trafficking and use. Models of effective prison healthcare in Iraqi that could be used in future would need to address these additional challenges.

According to research in the United States in 2010, 70% of male inmates abused drugs; this figure is significant compared to the 11.2% rate of drug abuse in the entire male population.²⁶ Alcohol is highly correlated with aggressive crimes. According to reports, criminals who abused drugs and alcohol simultaneously committed 21.4% of aggressive crimes. Among individuals who were arrested in Australia during 2004, 82% had a history of drug abuse, 69% had abused drugs at least 6 months before their arrest and 62% frequently abused drugs.²⁷

Substance abuse and dependence among different studies varies between 24-70%. There may be a number of reasons for this heterogeneity, such as differences in study design. Some heterogeneity between studies was also explained by factors in the study design, such as whether or not the interview was conducted by a psychiatrist. Estimates of prevalence tended to be lower when conducted by a psychiatrist rather than a trained interviewer. Furthermore, sensitivity analyses indicated that the prevalence estimated from studies giving a combined category of abuse/dependence tended to be different from those reporting dependence alone. This was particularly marked for drug diagnoses in men and suggests the need for more precise definitions of substance abuse and dependence to be employed in future prison research so that more reliable estimates of prevalence can be made.^{25, 28}

A higher percentage of drug addiction was observed in the urban population in comparison with the rural population, which indicates a positive relationship between urban status and drug use as well as crime re-occurrence. In addition, the findings of the present research showed significant differences between the number of high skilled employed, low skilled and unskilled employed inmates among the population of drug users. Hence, unemployment could not be regarded as the only influential variable on using drugs in the

studied population probably due to the limited number in each of the employment categories. However, this was not the case for other influential variables affecting economic and social status; in other words, there was an significant relationship between the level of education and using drugs: the rate of using drugs was higher among those who had a degree above primary school level than in those with a lower degree. From a sociological perspective and, according to the structural-functional analysis, there is a close relationship between deviances' type, pattern, and dispersion with the features of socio-economic and socio-demographic variables. Researches findings,^{29, 30,31,32,33} in most societies, including countries in the neighboring area, have shown that patterns of deviant and criminal behaviors vary based on the socio-economic conditions of the areas. Drug addiction research indicated that the experience of using drugs has an apparently constant relationship with age^{34,35,36,37} and the beginning of addiction is generally in late teenage and early adulthood.³⁸ Age ranges of the inmates studied in Erbil for the current research were also examined. The results showed that most inmates (87%) were below the age of 40 years and a limited percentage of dependence was found among those who were above 45years indicating that as age increases, the rate of drug use decreases (see Table 2). Still this phenomenon is not clearly shown in our studied sample due to the limited number of participants.

In the report of the research conducted about drug abuse and addiction,³⁹ it was maintained that drug use was the underlying reason for many crimes such as murder, robbery and rape. There is a large body of research from all over the world, which supports the correlation between addiction and crime.^{40, 41, 42} In the present study, alcohol consumption was reported by a high percentage of participants (41.7%), which was significant statistically. Generally, there is a direct relationship between the level of drug abuse and the committed crimes. With increased drug abuse, the delinquency rate and its intensity increased. Addicts tend to have low levels of employment and it follows that their economic circumstances lead them to commit

crime to acquire drugs because they are less likely to have sufficient income to meet their needs. That is why they turn to illegal activities such as smuggling, drug dealing, theft and prostitution. Such prospects can maintain a repetitive cycle of poverty, addiction, and crime highlighting the necessity for developing preventive strategies.⁴³

On the other hand, research on alcohol use and crime has more often suggested a direct pharmacological effect of alcohol use on violence and hence a larger effect on violent crimes than on property crime. A number of controlled laboratory studies have shown that alcohol intoxication is related to aggression when the subject is provoked.^{44, 45, 46} Statistics related to alcohol use by violent offenders generally indicate that about half of all homicides and assaults are committed when the offender, victim, or both have been drinking.⁴⁷ Rates of homicide and other violent crime have also been related to alcohol availability and per capita consumption.^{48,49,50}

The present study identified a different prevalence of psychiatric diagnoses among offence categories; however, there was no statistically significant relationship between drug addiction and specific offence categories possibly as the numbers of such inmates are relatively low within a given crime grouping. In particular, financial offenders had lower rates of drug abuse. The most detailed study of risk factors for inmates found that those convicted of sex offences had increased scores for substance dependence (see Table 4). The present finding is comparable with findings in English and Welsh prisons.⁵¹

Quite interestingly, about 14% of those imprisoned at the time of the current study had previous arrests and 40% had drug addiction problems. This finding is statistically significant when compared with inmates jailed for a first offence, which highlights the importance of initiating and sustaining a collaborative effort between the legal and the health sectors on multiple levels including (but not limited to): regular updating of the legislative process on the use and misuse of substances and related offenses, availability of

adequate medical care and referral system in the detention centers, and counseling in the treatment institutions, and above all the need to activate the existing interagency bodies that deal with the different facets of this significant health problem. Our findings suggest that there is a role for thorough screening of inmates at reception for substance abuse and dependence and for appropriate treatment facilities, both within the prison and on release by provision of appropriate through care, e.g. continuing maintenance prescribing and relapse prevention work. The current results may also imply a need for further structured input from specialist addiction services in prison. This would conform to recommendations of equivalence of care in the treatment of physical and mental illness for inmates and the general population.^{52,53} Given the prevalence of substance abuse among repeat offenders in treatment, future research needs to (a) identify the causal relationships among substance abuse, alcohol problems, and repeated criminal behavior; (b) examine the factors that distinguish repeat offenders from onetime offenders; and (c) structure and evaluate treatment to address the psychiatric issues that contribute to repeat behavior. In summary, a vast amount of research suggests that (1) drug use increases crime, and (2) drug treatment reduces drug use as well as crime.

Limitations

The present study has a number of limitations. Inherent to the methodology is our inability to generalize the current findings to the entire Iraqi population because participant numbers were low; participants were male only and recruitment was from one prison located in Erbil. However, there is no evidence that the selected prison was different from other Iraqi prisons. Some aspects of diagnosis require more detailed historical information that the researchers were unable to corroborate. Notwithstanding these limitations, the present study has several strengths, namely its ultimate goal, which is to use the findings generated from this quick screening (rather than a full-fledged diagnosis) of

the drug use situation for the purpose of advocating and orienting policy action.

In conclusion, the results of the current study on 100 inmates within one of Erbil's main prisons shows that demographic characteristics are closely related to drug use and committing crime. Therefore, the adult males, one of the most important human and social assets of the country, are also the most vulnerable and have a greater tendency to use drugs and commit crime. That is why it is essential that authorities control a growing trend toward alcohol and substance misuse in order to achieve a healthier society. The higher number of inmates who use drugs among city residents and people with low material and cultural assets shows that it is necessary to control the problems caused by expansion of cities and prioritize programs that develop the community economically, socially and culturally to prevent expansion of social deviations.

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الخلاصة

الخلفية والأهداف: نسبة كبيرة من الناس الذين يدخلون العمل الإجرامي لهم تاريخ في تعاطي المخدرات. يستمر العديد من هؤلاء إلى استخدام العقاقير أثناء وجودهم في السجن. بيئة السجن قد تؤثر بشكل إيجابي على بعض متعاطي المخدرات، ومساعدتهم لوقف أو تقليل تعاطي المخدرات، ولكن السجن للبعض الآخر قد يكون بيئة سلبية للتحويل إلى أنماط أكثر ضرراً في تعاطي المخدرات. بما أنه لا توجد هناك أية دراسات ذات علاقة أجريت مؤخراً في تعاطي المخدرات بين السجناء في مجتمعنا، أجرينا هذا البحث لدراسة انتشار تعاطي المخدرات ودرجة الاعتماد عليها بين السجناء. **الطرق:** أجرينا هذه الدراسة في مديرية السجون الإصلاحية للبالغين في مدينة أربيل، والمعروفة باسم سجن المحطة، خلال فترة 6 أشهر (ما بين 15 مارس حتى 15 سبتمبر 2014). تم أخذ عينة ملائمة من 100 سجين ذكر من أصل العدد الكامل للنزلاء خلال فترة الدراسة. بعد التوزيع العشوائي جرى تقييم كل سجين من خلال المقابلة شبه المنظمة على أساس DSM IV. تمت دراسة أنماط تعاطي المخدرات والعلاقة بين الإدمان وانتشار الجريمة مع دراسة بعض المتغيرات الاجتماعية والديموغرافية. **النتائج:** ظهر لنا بأن خصائص معينة مثل العمر والمستوى التعليمي والوضع الاقتصادي والعمري لها تأثير على معدل تعاطي المخدرات والقيام بالجريمة وإعادة حدوثها. كما تبين لنا أن الأصغر سناً وتردي الوضع الاجتماعي والاقتصادي والإقامة في الحضر لهم تأثير أكبر لارتكاب الجريمة وتكرار ذلك في حين أن العمل الوظيفي ليس له تأثير كبير. **الاستنتاج:** إن مدى انتشار تعاطي المخدرات والاعتماد عليها على الرغم من عدم الاستقرار فيهما ظاهرة ذات حجم أعلى بين السجناء أكثر من عموم السكان، مما يسلط الضوء للحاجة إلى الكشف عن تعاطي المخدرات والاعتماد عليها عند الداخلين حديثاً إلى السجن. كما أن العلاج الفعال أثناء احتجازهم والمتابعة عند الإفراج عنهم مع توفير خدمات معالجة الإدمان المخصصة للسجناء لديها القدرة على إحداث تأثير كبير على سكان السجن في أربيل.

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