

# Behavioural and emotional symptoms among schoolchildren: a comparison between Jordanians and Syrian refugees

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## Abstract

**Background:** There is a high prevalence of mental illnesses, including depression, anxiety, nicotine dependence, and sleep disorders among Jordanian adolescents and schoolchildren. There are many young Syrian refugees in Jordan, who have an increased risk of physical and psychological illnesses.

**Aims:** To assess the behavioural and emotional symptoms among Syrian schoolchildren refugees in Jordan and their Jordanian counterparts.

**Methods:** A cross-sectional, descriptive study was conducted from October to December 2018 on Syrian and Jordanian schoolchildren, aged 12–17 years, attending the same schools in 4 cities with the highest density of Syrian refugees. A self-reported questionnaire was used to collect information about sociodemographic characteristics. The Strengths and Difficulties Questionnaire was used to measure behavioural and emotional symptoms.

**Results:** This study included 1877 Jordanian schoolchildren and 1768 Syrian schoolchildren refugees. The Syrian children's parents were significantly less educated and had significantly lower incomes and larger families than Jordanian parents had. The total difficulties and peer relationship problems were abnormally high in more than half of children. Compared to Jordanians, Syrian schoolchildren had more total difficulties (58.2% vs 52.5%), and peer relationship (55.5 vs 53.6%), conduct (47.6% vs 44.8%), and emotional problems (32.0% vs 30.8%), but they had fewer hyperactivity/inattention problems (35.5% vs 36.9%), and prosocial behaviour problems (42.5% vs 43.0%). In binary logistic regression, Syrian were more likely than Jordanian schoolchildren to experience overall difficulties and emotional symptoms.

**Conclusion:** There were significant but unspoken behavioural and emotional symptoms and mental health needs among Syrian and Jordanian schoolchildren. They are all in need of urgent psychosocial support.

Keywords: schoolchildren; Syrian refugees; Jordan; behavioural symptoms; emotional symptoms

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## Introduction

Globally, > 790 million people suffer from mental health disorders, which are one of the leading causes of disability worldwide (1,2). Mental health refers to a broad array of activities related to the mental wellbeing component of health that is defined by the World Health Organization (WHO) as “a state of complete physical, mental and social wellbeing, and not merely the absence of disease” (3). Previous studies have indicated that most adult mental disorders have their onset in youth (age 14–24 years) (4,5). Jordan is a small low- to middle-income country in the Eastern Mediterranean Region bordering the Syrian Arab Republic, West Bank, Iraq and Saudi Arabia. The mental health system in Jordan needs strengthening (6). It was chosen as the first country to implement the WHO Mental Health Action Program (mhGAP) from among 6 countries worldwide (6). Recent national Jordanian studies found a high prevalence of mental illnesses, including depression, anxiety, nicotine dependence, and sleep disorders among Jordanian adolescents and schoolchildren (7–14).

According to the United Nations High Commissioner for Refugees (UNHCR), the Syrian Civil War has led to the biggest humanitarian and refugee crisis of our time (15). As of June 2021, the UN estimated that > 5.6 million Syrian refugees were registered outside the Syrian Arab Republic, making it the world's second-largest refugee population (16). About half of these refugees were aged < 18 years, and around 40% were under 12 years (17). Jordan, a neighbouring country of Syria, has hosted hundreds of thousands of refugees from neighbouring countries since 1948. According to the national census, Jordan's population was 10.309 million in 2018 (18), with approximately 660 836 Syrian refugees: 3.8% older people, 45.2% adults and 51.0% children (19). Although the country is politically stable, there are limited economic resources to support the rapid population growth caused by the large influx of refugees. The presence of Syrian refugees has affected Jordan's economy, society, security and quality of life, and has drained the Government's resources (20). An estimate of the direct cost to the Jordanian Government to address

Syrian refugees' needs since the Syrian crisis in 2011 until 2016 was about 4.2 billion US dollars (21).

Refugees, in particular children, have an increased risk of physical and psychological illnesses (22,23). Previous studies of refugee children have reported profound adverse consequences of war-related trauma on their mental and psychosocial health, including behaviour problems, mood and anxiety disorders, post-traumatic stress disorder (PTSD), adjustment difficulties, panic attacks, self-withdrawal, aggressive behaviour, insecurity, and violence (24–28). Furthermore, war crisis and displacement have had a major impact on the academic, economic and health aspects of adolescents (29). In Jordan, a study of Syrian refugee adolescents in the Alza'atari Refugee Camp reported that adolescents struggle with grief, fear, sadness and violent behaviour (30). In another study, Syrian female adolescents showed more prosocial behaviour than boys but more emotional and conduct difficulties (31). Data on behavioural and emotional symptoms among Syrian schoolchildren refugees are scarce. Thus, this study aimed to assess schoolchildren's behavioural and emotional symptoms and compare Syrian refugees with Jordanians attending the same schools. In light of the impacts of war on Syrian refugees, we hypothesize that Syrian schoolchildren refugees would have more behavioural and emotional symptoms than their Jordanian peers.

## Methods

### Population, sampling and ethical approval

The study was conducted on a sample of Syrian and Jordanian children, aged 12–17 years, who attended primary and secondary schools in Jordan from October to December 2018. We selected 4 large cities in Jordan (Mafraq, Sahab, Ramtha and Zarqa) because they have hosted most Syrian refugees from the 2011 Syrian civil war. Eight schools were selected randomly from each city; therefore, 32 schools were involved, 16 for boys and 16 for girls, with 5576 registered students (2120 Syrian and 3156 Jordanian). All registered students were invited to participate in the survey. Written informed consent was obtained from the children and their legal guardians. The study was approved by the Institutional Review Board of Jordan University of Science and Technology Ethical Committee. Participants did not receive any compensation or reward for their participation.

### Sample size and power

The sample size was calculated for Jordanian and Syrian schoolchildren separately. An estimate of the prevalence of behavioural and emotional problems in each group was assumed to be 50% to yield the maximum sample size. The sample size was calculated at a 2-sided alpha level of 5% and 80% power. The sample size needed to estimate the prevalence with a margin of error of 5% was 778 Jordanian and 778 Syrian adolescents. The targeted number of participants was increased to have sufficient power for subgroups defined by age and gender.

### Data collection

The self-reported questionnaire was distributed among the participants and filled in by the children themselves in the absence of teachers and other school personnel. Firstly, it included questions about gender, income, parental education and marital status (living together, separated, divorced, or widowed), living area (apartment or house), and total family size. Participant date of birth and missed sociodemographic information that was not self-reported were taken from student's school files. Questions measuring behavioural and emotional problems were administered to participants using the Strengths and Difficulties Questionnaire (SDQ).

### SDQ

The self-reported SDQ was used to measure behavioural and emotional symptoms among these children. The SDQ is a practical screening tool of the behavioural and emotional symptoms among children and adolescents, and it has been used for in-depth determination and understanding of adolescents' emotional and behavioural symptoms (32,33). The SDQ has been translated to various languages, including Arabic, and has valid and reliable crosscultural-psychometric properties (33–36). The self-reported SDQ consists of 25 items that measure 4 scales, covering four problem areas (emotional, conduct, hyperactivity/inattention, and peer problems) and a fifth scale of prosocial behaviour. The reliability (Cronbach's) was 0.82 for the overall difficulties, 0.75 for emotional symptoms, 0.72 for conduct problems, 0.69 for hyperactivity, 0.65 for prosocial behaviour, and 0.61 for peer problems (37). Also, it discriminates satisfactorily between low- and high-risk participants aged 11–16 years (37,38). The Arabic version of SDQ had satisfactory areas under the curve ranging from 0.77 for the total difficulties scale to 0.89 for the conduct problems scale. Sensitivity and specificity were 72% and 55%, respectively (36). Alyahri and Goodman tested the Arabic SDQ and reported that it accurately predicted psychiatric illness and was adequate for screening studies (39).

There are 5 items for each of the 5 scales mentioned above; each item can be marked "Not True", "Somewhat True", or "Certainly True", and each item can be scored with 0, 1 or 2. Thus, the scale score with 5 items ranges from 0 to 10 if all items are completed. The total difficulties score was generated by summing scores of the emotional symptoms, conduct problems, hyperactivity/inattention and peer problems scales but not the prosocial scale. The resulting score ranged from 0 to 40, and the cutoff values for defining abnormal attributes were used as follows: total difficulties score considered abnormal 20–40, emotional problems score 7–10, conduct problems score 5–10, hyperactivity score 7–10, peer problems score 6–10, and prosocial score 0–4 (37). Table 1 summarizes the items and abnormal scores of self-report SDQ scales.

### Statistical analysis

SPSS for Windows version 20 was used for data processing and analysis. Data were described using means

**Table 1** Items and abnormal cutoff values of the self-report SDQ scales

SDQ scales	Items <sup>a</sup>	Abnormal scores
Prosocial Scale	I try to be nice to other people. I care about their feelings I usually share with others (food, games, pens, etc.) I am helpful if someone is hurt, upset or feeling ill I am kind to younger children I often volunteer to help others (parents, teachers, children)	0–4
Emotional Symptoms Scale	I get a lot of headaches, stomach-aches or sickness I worry a lot I am often unhappy, down-hearted or tearful I am nervous in new situations. I easily lose confidence I have many fears. I am easily scared	7–10
Conduct Problems Scale	I get very angry and often lose my temper <b>I usually do as I am told</b> I fight a lot. I can make other people do what I want I am often accused of lying or cheating I take things that are not mine from home, school or elsewhere	5–10
Hyperactivity/Inattention Scale	I am restless, I cannot stay still for long I am constantly fidgeting or squirming I am easily distracted, I find it difficult to concentrate <b>I think before I do things</b> <b>I finish the work I'm doing. My attention is good</b>	7–10
Peer Relationship Problems Scale	I am usually on my own. I generally play alone or keep to myself <b>I have one good friend or more</b> <b>Other people my age generally like me</b> Other children or young people pick on me or bully me I get on better with adults than with people my own age	6–10
Total Difficulties Scale	Summing scores of the scales: Emotional symptoms, Conduct problems, Hyperactivity/inattention, and Peer problems	20–40

<sup>a</sup>For all items except the 5 printed above in bold, the item is scored 0 for "Not True", 1 for "Somewhat True", and 2 for "Certainly True". For the 5 items printed in bold, the score is reversed as 2 for "Not True", 1 for "Somewhat True" and 0 for "Certainly True".

SDQ = Strengths and Difficulties Questionnaire

(standard deviation, SD) for continuous variables and descriptive statistics (frequencies and percentages) for categorical variables. The prevalence rates of emotional and behavioural problems were compared according to sociodemographic characteristics using the  $\chi^2$  test. Binary logistic regression was used to assess the differences in emotional and behavioural problems between Jordanians and Syrians while adjusting for confounding factors. The dependent variable was the participants' ethnicity, defined as 0, Jordanian nationality and 1, Syrian nationality. Age, gender, income, parents' education, parents' current marital status, living area, family size, and high risk of emotional and behavioural symptoms defined by abnormal SDQ scales' scores, above the cutoff values, were included as independent explanatory variables. The variables in the model were checked for multicollinearity using variance inflation factor. Adjusted odds ratio (OR) and 95% confidence intervals (CI) were reported.  $P \leq 0.05$  was considered statistically significant. In addition, bivariate correlation using the Pearson correlation coefficient ( $r$ ) was conducted to assess the relationships between the SDQ scales' scores.

## Results

A total of 3645 participants completed the survey and were included in this study, with an estimated participation rate of 69.1% (Figure 1). More than half of the participants were female ( $n = 2012$ , 55.2%), and their mean

(SD) age was 14.7 (1.6) years. There were 1877 Jordanian (45.6% male and 54.4% female) and 1768 Syrian refugee (43.9% male and 56.1% female) schoolchildren. The ages ranged from 12 to 17 years, with a mean (SD) of 14.8 (1.8) years for Jordanians and 14.5 (1.5) for Syrians. About 7.2% of Jordanians and 12.8% of Syrians reported that their parents were separated. Also, more Syrians than Jordanians experienced the death of at least 1 parent (9.0%) (5.6%) respectively. Table 2 shows the sociodemographic characteristics of the participants.

The Syrian parents were significantly less educated than the Jordanian parents were. More than half of Syrian children (70.9%) reported that 1 or both parents did not attend school or had primary education only. In comparison, among Jordanians, 87.0% claimed that at least 1 parent had high school or above educational level. Syrian families had significantly lower income [262.1 (179.1) Jordanian dinar (JD)/month] than Jordanian families had [616.3 (587.4) JD/month]. The average (SD) number of Syrian family members was 7.1 (2.9), compared with 6.6 (1.9) Jordanian family members. With considering 323 JD/month as the poverty line in Jordan for an average-sized family of 5.7 members (40), more than two thirds of Syrian families (76.6%) were below the poverty line, while only 25.4% of Jordanians were poor. Thus, Syrian school children came from significantly low-income households, while Jordanian school children were from middle- or high-income households.

**Table 2 Sociodemographic characteristics of Syrian schoolchildren refugees and Jordanian schoolchildren**

Variable	Jordanian adolescents		Syrian adolescent refugees		P
	n	%	n	%	
<b>Gender</b>					0.315
Male	856	45.6	777	43.9	
Female	1,021	54.4	991	56.1	
<b>City</b>					< 0.001
Mafrq	483	25.7	479	27.1	
Sahab	542	28.9	422	23.9	
Zarqa	616	32.8	468	26.4	
Ramtha	236	12.6	399	22.6	
<b>Parents' marital status</b>					< 0.001
Living together	1,636	87.2	1,381	78.1	
Separated	135	7.2	227	12.8	
1 or both died	106	5.6	160	9.0	
<b>Mother's education</b>					< 0.001
Not educated	51	2.7	112	6.4	
< than high school	355	19.1	937	53.5	
High school	815	43.9	574	32.8	
University	636	34.2	128	7.3	
<b>Father's education</b>					< 0.001
Not educated	47	2.5	81	4.6	
Below high school	341	18.3	885	50.2	
High school	878	47.2	611	34.7	
University	595	32.0	186	10.6	
<b>Total family income (JD)/month</b>					< 0.001
≤ 250	256	15.0	976	63.1	
251–500	791	46.2	487	31.5	
> 500	665	38.8	83	5.4	
<b>Housing</b>					< 0.001
Apartment	478	25.6	1,081	61.5	
House	1,390	74.4	678	38.5	
<b>Family size</b>					< 0.001
< 6	451	24.0	428	24.2	
6	479	25.5	374	21.1	
7	478	25.5	346	19.6	
> 7	469	25.0	620	35.1	

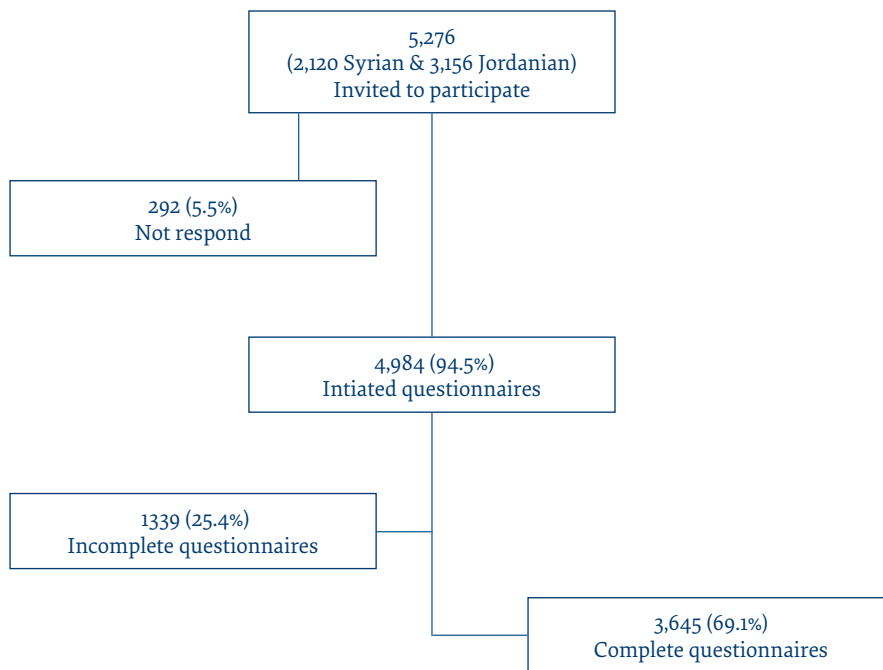
JD = Jordanian dinar.

The total difficulties score was abnormally high ( $\geq 20$ ) in 55.2% of all school children, and more than half of Jordanian and Syrian schoolchildren had peer relationship problems (53.6% and 55.5%, respectively). Besides peer relationship problems, Syrian schoolchildren refugees had more conduct problems (47.6%), emotional symptoms (32.0%), and total difficulties (58.2%) compared to Jordanians (44.8%, 30.8% and 52.5% respectively). In contrast, Syrian schoolchildren refugees had less hyperactivity/inattention problems (35.5%) than their Jordanian peers (36.9%), and they had fewer prosocial

behaviour problems (42.5% vs 43.0%, respectively). Figure 2 shows the percentages of Syrian schoolchildren refugees who scored above the clinical cutoff values of the SDQ scales compared to Jordanians.

Logistic regression analysis indicated that Jordanian and Syrian schoolchildren differed significantly in overall difficulty, emotional symptoms, and peer relationship problems (Table 3). Syrian schoolchildren refugees were more likely to develop overall difficulties and emotional symptoms than Jordanian schoolchildren were. In

Figure 1 Participants flow chart

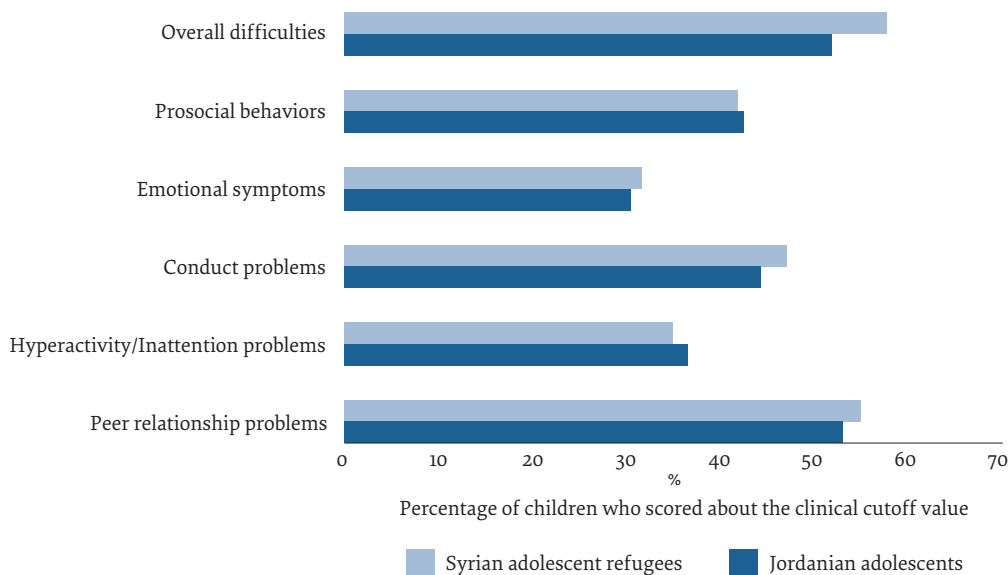


contrast, they were less likely than their Jordanian peers to have peer relationship problems.

The emotional and behavioural problems of the SDQ scales were assessed for gender difference. Girls had a higher risk of developing emotional symptoms (36.4%) and hyperactivity/inattention problems (40.7%) than boys were (25.1%, 30.8% respectively) ( $p < 0.001$  for each scale). Conduct problems,  $p$ -value=0.003 were more common among boys than girls (48.8% vs 44.0%). Also, ( $p < 0.001$  for each scale) boys had more peer problems (62.9%) and abnormal prosocial behaviours (52.1%) compared to girls (47.7% and 35.1%, respectively).

Regarding the parental social situation, 266 (7.3%) experienced the death of at least 1 parent, and 362 (9.9%) reported parents' separation, while most children ( $n=3017$ , 82.8%) lived together with their both parents (Table 4). Those who had a history of parental death scored significantly higher on overall difficulties, emotional symptoms, and conduct problems scales compared with children who lived together with their parents or whose parents were separated ( $p < 0.005$  for each scale). School children who experienced parental separation had significantly more peer relationship problems (71.5%) and more prosocial behaviour problems (54.4%) than those with parental death (60.2% and 40.4%, respectively), and

Figure 2 The emotional and behavioural problems among Jordanian schoolchildren and Syrian schoolchildren refugees in Jordan





**Table 3 Differences in behavioural and emotional symptoms between Jordanian and Syrian schoolchildren**

SDQ scales (abnormal scores)	Beta coefficient	Adjusted odds ratio <sup>a</sup>	95% confidence interval		P
Total difficulties (20–40)	0.358	1.431	1.071	1.912	0.015
Prosocial behaviours (0–4)	0.009	1.009	0.818	1.244	0.933
Emotional symptoms (7–10)	0.247	1.156	1.007	1.326	0.039
Conduct problems (5–10)	-0.104	0.901	0.713	1.140	0.386
Hyperactivity/inattention problems (7–10)	-0.128	0.880	0.706	1.096	0.254
Peer relationship problems (6–10)	-0.234	0.791	0.631	0.992	0.042

<sup>a</sup>Adjusted for age, gender, income, mothers' and fathers' levels of education, parents' current marital status, living area, and family size.  
SDQ = Strengths and Difficulties Questionnaire.

who lived with both parents (52% and 41.5%, respectively) ( $p < 0.001$  for each scale).

SDQ scale scores showed a negative correlation between prosocial behaviour and emotional symptoms ( $r = -0.332$ ,  $P < 0.001$ ), conduct problems ( $r = -0.415$ ,  $P < 0.001$ ) and peer relationship problems ( $r = -0.239$ ,  $P = 0.001$ ). In contrast, emotional symptoms' score was positively correlated with conduct problems ( $r = 0.545$ ,  $P < 0.001$ ), hyperactivity/inattention symptoms ( $r = 0.457$ ,  $P < 0.001$ ), and peer problems ( $r = 0.370$ ,  $P < 0.001$ ). Also, conduct problems were significantly associated with hyperactivity/inattention symptoms ( $r = 0.420$ ,  $P < 0.001$ ) and peer problems ( $r = 0.218$ ,  $P < 0.001$ ). Finally, hyperactivity/inattention symptoms were positively but weakly correlated with peer relationship problems ( $r = 0.057$ ,  $P = 0.002$ ).

## Discussion

The prevalence rates of behavioural and emotional symptoms for all SDQ domains were common among both Syrian and Jordanian schoolchildren. Syrian schoolchildren refugees had a higher risk of developing total difficulties and emotional symptoms than their Jordanian peers had. Experiencing death or separation of parents, low parental educational levels, low family income, and large family size were prevalent among Syrian refugees, contributing significantly to developing behavioural and emotional problems. Thus, these challenges affect the mental health and psychosocial wellbeing of Syrian refugee children.

The Syrian refugees suffered from conflict-related violence coupled with the ongoing stressors

related to displacement, explaining their emotional and behavioural problems. Our findings highlighted increased emotional and behavioural problems among child survivors of the Syrian Civil War by showing high rates of possible peer relationship, conduct and prosocial problems. In Turkey, another neighbouring country of the Syrian Arab Republic and the largest Syrian refugee-hosting country (16), the prevalence estimates of behavioural and emotional symptoms among Syrian refugee children were higher than those in the general population (41). In another Turkish study, prevalence rates among Syrian refugee children were as high as our findings, with 64.9% for peer relationship problems, 45.5% for emotional problems, 39% for total difficulties, 27.3% for conduct problems, 19.5% for hyperactivity problems and 2.6% for abnormal prosocial behaviours (42). In Iraq, all Yazidi children and adolescents, who were forcibly displaced following war, exhibited several psychiatric symptoms and disorders; 50% had 1 symptom, and 50% had more than 1 (43). A study of the epidemiology of PTSD and depression among refugee children resettled in developed countries reported high incidence rates for depression and PTSD (44).

Our study demonstrated high levels of peer relationship and prosocial problems that are not commonly studied among child survivors of war. This indicates that adverse psychological consequences of war-related experiences might not be limited to emotional problems. Similarly, high prevalence rates of conduct problems were noted among Syrian children; not often studied among child survivors of war and violence. These findings

**Table 4 Effects of parents' marital status on emotional and behavioural problems of schoolchildren**

SDQ scales (abnormal scores)	Children living together with both parents n = 3017 (%)	Parents' separation n = 362 (%)	Parental death n = 266 (%)	P
Total difficulties (20–40)	1603 (53.2)	229 (63.3)	179 (67.5)	< 0.001
Prosocial behaviours (0–4)	1252 (41.5)	197 (54.4)	107 (40.4)	< 0.001
Emotional symptoms (7–10)	908 (30.1)	120 (33.1)	114 (43.0)	< 0.001
Conduct problems (5–10)	1360 (45.2)	177 (48.9)	140 (52.8)	0.032
Hyperactivity/inattention problems (7–10)	1086 (36.2)	120 (33.1)	108 (40.8)	0.147
Peer relationship problems (6–10)	1563 (52.0)	259 (71.5)	159 (60.2)	< 0.001

SDQ = Strengths and Difficulties Questionnaire.

shed light on the importance of addressing behavioural symptoms as much as emotional problems.

Unexpectedly, Jordanian schoolchildren studying at the same schools as Syrian schoolchildren refugees were found to have comparatively high levels of behavioural and emotional symptoms. The prevalence rates of emotional and behavioural problems among Jordanian school children were higher than those in other countries, including New Zealand, where prevalence rates ranged from 2% for peer problems to 11% for conduct problems (45), Islamic Republic of Iran (6–24% for all SDQ domains) (46), and other countries in the Middle East (47).

However, our results are concordant with other reports from Jordan (48–50). Behavioural and emotional symptoms among Jordanian schoolchildren could be attributed to the dearth of adolescent and child mental health services in Jordanian schools, as only 12% of schools offer counselling services (6). Also, mental health illiteracy, shortage of research, and limited advocacy bodies are other reasons for this finding. Jordan suffers from limited natural resources, low- to middle-income rates and economic challenges that have been worsened by the Syrian and Iraqi crises. The large number of Syrian refugees entering the country had a substantial impact on the country's economy and social structure, with many Jordanians facing job shortages and intense competition for scarce resources. Other significant challenges facing Jordan include high unemployment, and continued pressure on the existing national health system and services. Economic challenges, job competition, and limited schools and national resources have created significant concerns for some Jordanian families that could reduce their mental wellbeing and capacity to care for children. Jordanians continue to suffer and share scarce resources with the Syrians, while the Syrians have demonstrated remarkable resiliency after several years of resettlement (5).

Emotional symptoms and hyperactivity/inattention problems were more prevalent among girls than boys, while conduct and peer relationship problems and prosocial behaviour were higher among boys than girls in our study. Our findings are concordant with Çeri et al. who reported more emotional problems among girls and more conduct problems among boys (42). Thus, traumatic events may influence boys and girls in different ways; for example, boys are prone to externalization or behavioural problems, while girls are prone to internalization problems (depression and anxiety disorders) after traumatic events (51). Therefore, precise evaluation of psychiatric disorders should be conducted to explore the effects of displacement and war on mental health regardless of gender.

Our findings demonstrated negative correlations of prosocial behaviours with emotional, conduct and peer relationship problems. Thus, prosocial skills could be a protective factor against developing mental health symptoms and psychosocial problems. In contrast, emotional, conduct, hyperactivity/inattention, and peer relationship problems were positively correlated.

Therefore, they could be risk factors for mental health symptoms and other psychiatric disorders by deteriorating social attendance. These findings were reported by Çeri et al. (42).

In Jordan, the focus on mental health services for citizens and refugees is insufficient; available resources are limited, with only 3 mental health hospitals, a specialized psychiatric hospital for children, and low rates of psychiatric beds for the population (1:10 000) (19, 52). Besides, there are only 1 psychiatrist, 2 psychiatric social workers, and 0.04 psychiatric nurses for 100 000 inhabitants in Jordan (52). The lack of insurance coverage for Syrian refugees and the Jordanian community with mental illnesses in the private sector and their high cost exacerbates affordability issues. Also, all primary health care facilities in Jordan are physician-based, in which primary health care physicians are allowed to prescribe psychotropic medications but with restrictions.

To date, no fixed budget is dedicated to mental health services. Despite recent efforts to shift attention and resources to community-based services, the majority (estimated > 90%) of financial resources for mental health are currently directed towards tertiary hospitals treating mental disorders. This has represented a considerable challenge to expanding community-based services.

A lack of psychiatric facilities, mental health awareness, professional training, and culturally sensitive psychiatry treatment in Jordan, and poor cooperation between centralized treatment services and clinicians, coupled with social barriers, such as stigma and beliefs about mental illnesses, family structures, education, and religion, have been identified as significant challenges to mental health systems in Arab countries including Jordan (53–56). Thus, the Jordan Ministry of Health National Center for Mental Health is invited, as a leader of mental health services in Jordan, to make improvements by incorporating mental health care into primary care; increasing mental healthcare awareness among primary care physicians to improve screening; providing training for specialists in mental health; improving social services in communities; and promoting community psychology programmes. Solid educational campaigns are suggested to occur at all levels to inform the public about mental health issues, with a goal of reducing stigma and encouraging those in need to access available services. Also, prioritizing the developmental needs of children and adolescents (emotional, social, educational, physical and cognitive) in schools is needed, including support to parents desperate to ensure the wellbeing of their children.

This study had a few limitations. The lack of available data on nonrespondents and the cross-sectional design are inherent limitations that could affect interpretation of the results. Although the relatively large sample was collected from different areas, the achieved representativeness was low, limiting our findings to the broader populations of Jordanian and Syrian schoolchildren. Thus, the results are unlikely to be generalized beyond the people who responded. The response rate (69%) was good, but

monetary incentives are suggested to achieve a better response rate, and we suggest inserting an instructional manipulation check such as a blue-dot task to increase the statistical power and reduce the signal-to-noise ratio. Additionally, because this was a survey-based study in the absence of teachers and other school personnel, the results are subject to recall, and we could not check if participants' responses were accurate. The factors associated with the psychological symptoms may not be actual risk factors. Thus, longitudinal studies are more likely to yield conclusive information on the prevalence and associated risk factors than cross-sectional studies are.

## Conclusion

Behavioural and emotional symptoms are common among Syrian schoolchildren refugees and Jordanian children sharing the same schools. Syrian schoolchildren refugees have a higher risk of developing total difficul-

ties and emotional symptoms than their Jordanian peers have. This necessitates swift interventions to improve adolescents' wellbeing and their psychosocial needs. Thus, we urgently recommend supporting the children's refugees and their peers of the host country with psychosocial support programmes, community outreach activities, awareness campaigns, and other educational programmes. Experiencing death or separation of parents, low parental educational levels, low family income, and large family size, as well as peer relationship, conduct and hyperactivity problems are risk factors for mental health symptoms. On the other hand, prosocial behaviours can serve as protective factors against mental health symptoms. Thus, targeting vulnerable groups is also crucial for implementing effective interventions. We call for increasing awareness of adolescents and parents towards mental health illnesses and available services. Also, more studies are suggested to explore the causes and associated factors with behavioural and emotional symptoms among Syrian and Jordanian schoolchildren.

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## Symptômes comportementaux et émotionnels chez les écoliers : comparaison entre les Jordaniens et les réfugiés syriens

### Résumé

**Contexte :** La prévalence des maladies mentales, notamment la dépression, l'anxiété, la dépendance à la nicotine et les troubles du sommeil, est élevée chez les adolescents et les écoliers jordaniens. De nombreux jeunes réfugiés syriens en Jordanie présentent un risque accru de maladies physiques et psychologiques.

**Objectifs :** Évaluer les symptômes comportementaux et émotionnels chez les écoliers syriens réfugiés en Jordanie et leurs camarades jordaniens.

**Méthodes :** Une étude transversale descriptive a été menée d'octobre à décembre 2018 dans un groupe d'écoliers syriens et jordaniens, âgés de 12 à 17 ans, qui fréquentaient les mêmes écoles dans quatre villes ayant la plus forte densité de réfugiés syriens. Un questionnaire auto-administré a été utilisé pour recueillir des informations sur les caractéristiques socio-démographiques. Le questionnaire sur les points forts et les difficultés a été utilisé pour évaluer les symptômes comportementaux et émotionnels.

**Résultats :** La présente étude portait sur 1877 écoliers jordaniens et 1768 écoliers syriens réfugiés. Les parents des enfants syriens étaient nettement moins instruits, avaient des revenus considérablement inférieurs et des familles plus nombreuses que les parents jordaniens. Les difficultés totales et les problèmes de relations entre pairs étaient anormalement élevés chez plus de la moitié des enfants. Par rapport aux Jordaniens, les écoliers syriens avaient davantage de difficultés totales (58,2 % contre 52,5 %), de problèmes de relations entre pairs (55,5 % contre 53,6 %), de problèmes comportementaux (47,6 % contre 44,8 %) et émotionnels (32,0 % contre 30,8 %), mais ils avaient moins de problèmes d'hyperactivité/inattention (35,5 % contre 36,9 %) et de problèmes liés aux comportements prosociaux (42,5 % contre 43,0 %). À la régression logistique binaire, les écoliers syriens étaient plus susceptibles que les écoliers jordaniens d'éprouver des difficultés générales et des symptômes émotionnels.

**Conclusion :** Les écoliers syriens et jordaniens présentaient des symptômes comportementaux et émotionnels importants, mais non exprimés, ainsi que des besoins en matière de santé mentale. Ils avaient tous besoin d'un soutien psychosocial urgent.



## الأعراض السلوكية والعاطفية بين تلاميذ المدارس: مقارنة بين الأردنيين واللاجئين السوريين

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### الخلاصة

الخلفية: توجد معدلات انتشار عالية للأمراض النفسية، ومنها الاكتئاب والقلق والاعتماد على النيكوتين واضطرابات النوم، بين المراهقين وتلاميذ المدارس في الأردن. وفي الأردن كثير من اللاجئين السوريين الشباب الذين يزداد خطر إصابتهم بأمراض بدنية ونفسية.

الأهداف: هدفت هذه الدراسة إلى تقييم الأعراض السلوكية والعاطفية بين التلاميذ السوريين اللاجئين في الأردن ونظرائهم الأردنيين.

طرق البحث: أجريت دراسة وصفية مقطعية في الفترة من أكتوبر/ تشرين الأول إلى ديسمبر/ كانون الأول 2018 على التلاميذ السوريين والأردنيين، الذين تتراوح أعمارهم بين 12 و17 عامًا، ويذهبون إلى المدارس نفسها في 4 مدن بها أعلى كثافة للاجئين السوريين. واستخدم استبيان ذاتي الإبلاغ لجمع معلومات عن الخصائص الاجتماعية والسكانية. واستخدم استبيان مواطن القوة والصعوبات لقياس الأعراض السلوكية والعاطفية.

النتائج: شملت الدراسة 1877 تلميذًا أردنيًا و1768 تلميذًا سوريًا لاجئًا. وكان المستوى التعليمي لآباء الأطفال السوريين أقل كثيرًا، كما كانت دخولهم أقل كثيرًا، وأسرههم أكبر عددًا مقارنةً بالآباء الأردنيين. وكانت الصعوبات الإجمالية ومشكلات العلاقات بين الأقران مرتفعة ارتفاعًا غير طبيعي في أكثر من نصف الأطفال. ومقارنةً بالأردنيين، واجه التلاميذ السوريون قدرًا أكبر من الصعوبات الإجمالية (58.2٪ مقابل 52.5٪)، ومشكلات علاقات الأقران (55.5٪ مقابل 53.6٪)، ومشكلات السلوك (47.6٪ مقابل 44.8٪)، والمشكلات العاطفية (32.0٪ مقابل 30.8٪)، لكن كانت مشكلات فرط النشاط/ عدم الانتباه (35.5٪ مقابل 36.9٪)، ومشكلات السلوك الاجتماعي (42.5٪ مقابل 43.0٪) لديهم أقل. وفي الانحدار اللوجستي الثنائي، كان التلاميذ السوريون أكثر عرضةً للصعوبات العامة والأعراض العاطفية مقارنةً بالتلاميذ الأردنيين. الاستنتاجات: كانت هناك أعراض سلوكية وعاطفية واحتياجات صحية نفسية كبرى، وإن كانت غير معلنة، بين التلاميذ السوريين والأردنيين. وهم جميعًا في حاجة إلى دعم نفسي اجتماعي عاجل.

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