

Prevalence of and risk factors for depression among female Syrian refugees and Jordanians with chronic disease: a pilot study

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Abstract

Background: Chronic disease and depression are primary contributors to morbidity among displaced and local populations.

Aims: This study aims to address the prevalence for and risk factors of comorbid depression among Jordanian and Syrian women with known chronic disease.

Methods: To provide evidence for mental health intervention planning, we conducted a cross-sectional survey to investigate determinants of depression among female Syrian refugees and Jordanians with chronic disease living in Amman. A total of 272 female Syrian refugees and Jordanians with chronic disease were recruited from 4 clinics across Amman from June to August 2017. We compared demographic and health characteristics and depression level and identified predictors of depression via multivariable ordinal regression.

Results: Moderate to high levels of depression were reported in 55.9% of the participants, with a prevalence of 41.1% among Jordanians and 70.6% among Syrians. Syrians with chronic disease had 2.73 times greater odds of higher levels of depression than their Jordanian peers. After adjusting for age, income, spouse employment status, gastrointestinal or genitourinary disorder status, and perceived self-efficacy, Syrians were not at significantly greater odds of reporting higher levels of depression. Risk factors for higher depression levels included having an unemployed spouse, diagnosis of gastrointestinal or genitourinary disorder and low perceived self-efficacy.

Conclusion: Depression is frequently comorbid with chronic physical conditions and has a deleterious impact on health status. Mental health interventions and chronic disease management tailored to differences among local and displaced communities may reduce disease burden and disability.

Key words: depression, prevalence, risk factors, female refugees, Syrian, Jordan

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Introduction

Background

The ongoing Syrian civil war, which began in 2011, constitutes the largest refugee and displacement crisis since World War II. More than 5.6 million Syrians have fled to surrounding countries, settling primarily in Turkey, Lebanon and Jordan (1). As of January 2019, the Office of the United Nations High Commissioner for Refugees in Jordan has registered over 670 000 Syrian refugees (1). The majority of Syrian refugees in Jordan live in urban areas, with women aged 18–59 years comprising nearly a quarter of this population (1).

The protracted nature of the Syrian civil war has forced Jordanian health professionals to contend with the complexity of managing chronic conditions with limited resources. The rising prevalence of noncommunicable diseases worldwide increases the likelihood that Syrian refugees arriving in Jordan suffer from pre-existing medical conditions (2). In addition to increased chronic illnesses, high rates of mental health disorders secondary

to trauma and violence place an enormous burden on the Jordanian health care system. Female refugees with chronic disease may be at especially high risk of mental illness (3), yet the prevalence and predictors of depression for this vulnerable population have not been well researched. Moreover, studies on the mental health of Middle Eastern women rarely acknowledge the heterogeneity of the Middle East (4), and research stratified by nationality is critical in order to elucidate differences across this diverse region.

Jordanians have also experienced the epidemiological transition from primarily communicable diseases to noncommunicable diseases over the past few decades (5). As a result, local populations remain at substantial risk of developing chronic diseases and mental health disorders. In fact, a 20% prevalence of depression among Jordanians with chronic disease (6) and a 35% prevalence of depression among camp-based Syrian refugees with chronic disease in Jordan (7) have been reported previously. However, studies examining chronic disease and depression among non-camp refugees are lacking.

Given that more than 80% of Syrian refugees in Jordan live outside refugee camps (1), with nearly a third residing in the Amman Governorate, comparing risk factors for depression among non-camp Syrian refugees in Amman and Jordanians may help inform future studies and interventions targeted at individual groups.

The bidirectional relationship between depression and chronic disease has been well documented (8). Comorbid depression has a deleterious impact on the health of chronic disease patients (8). Additionally, patients with chronic disease often report higher rates of depression. In light of the increasing burden of noncommunicable diseases and depression faced by displaced populations, particularly women, we undertook this study to characterize the prevalence of, and predictors for, depression among female Jordanians and Syrian refugees in non-camp settings.

Objectives

Among female Jordanian and Syrian refugees with known chronic disease, we sought to define the prevalence of depression, the predictors of depression, and the association between chronic disease and depression, with the goal of determining the feasibility of a larger scale study. Because Syrian refugees and Jordanians receive medical aid through different and evolving health care systems, this study also seeks to identify differences in the predictors of comorbid physical and mental non-communicable diseases in order to assist service providers and policy-makers.

Methods

Data collection

A total of 272 female Jordanians and Syrian refugees recruited from 4 clinics and hospitals in Amman, Jordan participated in the study. Jordanians were recruited primarily from Jordan University Hospital and Amman Medical Center. Syrians were mainly recruited from Caritas and the Institute of Family Health clinic in East Amman. Data were collected from June until August 2017 using the Patient Health Questionnaire-Somatic, Anxiety, and Depressive Symptoms (PHQ-SADS), Multidimensional Scale of Perceived Social Support (MSPSS), General Self-Efficacy Scale (GSE), along with demographic and chronic disease surveys. All questionnaires were translated into Arabic and back-translated into English.

These clinical settings were selected because they represent sites of care for underserved Jordanians and Syrians in Amman. The University of Jordan Hospital is a large academic hospital and Amman Medical Center is a Ministry of Health clinic. Concerning Syrian refugee health care, the Jordanian government significantly increased the fees at Ministry of Health facilities in 2014 after previously providing subsidized health insurance to these refugees (13,14). As a result, many refugees now seek care at nongovernmental clinics such as Caritas and the Institute of Family Health clinic.

To ensure homogenous data collection and reduce errors, a female Jordanian interpreter assisted with survey completion. After obtaining written consent, Arabic questionnaires were distributed to the participants to self-complete. Data collection occurred in waiting rooms in hospitals or clinics, and the questionnaires took about 20 minutes to complete. Illiterate participants were guided by the interpreter, who recorded their responses.

Participants were recruited for this cross-sectional study using convenience sampling. The inclusion criteria for the study were: female Jordanian or Syrian refugee who arrived in Jordan since the start of the Syrian conflict, received medical care at a clinic or hospital in Amman, had at least one chronic disease, and aged 18–50 years. Pregnant women were excluded. Ethical approval to conduct the study was obtained from the Yale Human Subjects Committee, Jordanian Ministry of Health, Caritas Jordan, Noor Al-Hussein Foundation and Jordan University Hospital.

Dependent and independent variables

The Patient Health Questionnaire-9 (PHQ-9), which was employed as this study's main outcome measure, is a multipurpose instrument for screening and diagnosing severity of depression. The tool, consisting of the 9 Diagnostic and Statistical Manual of Mental Disorders, 4th ed (DSM-IV) criteria for major depressive disorder, contains 8 questions to assess depressive symptoms and one question to assess functional impairment. Each of the 9 items is scored from 0 (not at all) to 3 (nearly every day) (15). None/low, moderate, and high depressive symptoms correspond to scores of 0–9, 10–18, and 19–27, respectively. These levels are consistent with a meta-analysis that found a cut-off score between 8 and 11 was acceptable for diagnosing depression (16).

Nationality, the primary independent variable in this analysis, serves as a proxy for forced displacement. Additional demographic variables analysed included age, education level, number of family members, occupation, income, education, husband's occupation and housing status. All variables were converted to well-distributed categorical variables. Binary variables were created for all chronic disease data, which included 6 variables for diagnosis of each type of chronic disease, treatment status and length of treatment. The 6 categories of chronic diseases included: cardiometabolic, respiratory, neurologic/cancer, rheumatology, endocrine and gastrointestinal/genitourinary (GI/GU).

A series of questionnaires was used to identify level of social support, perceived self-efficacy, somatic symptom severity, anxiety and depression in our study population. The MSPSS is a 12-item tool to evaluate perceived adequacy of social support, an important counter to stressful life events (17). The GSE is a 10-item scale used to assess perceived self-efficacy (18). Both the MSPSS and GSE have been validated among Arab women (17,18). The PHQ-SADS comprises 3 validated questionnaires: the Patient Health Questionnaire-15 (PHQ-15), the Generalized Anxiety Disorder-7 (GAD-7), and the

PHQ-9. The internal consistency reliability measured using Cronbach's alpha for the Arabic versions of the PHQ-15, GAD-7 and PHQ-9 was 0.826, 0.763 and 0.857, respectively (19). The PHQ-15 is used to identify somatization, a substantial contributor to functional impairment. The GAD-7 is a 7-item screening tool for anxiety (19,20).

Statistical analysis

Previous studies have found a 20% prevalence of depression among Jordanians with chronic disease (6) and a 35% prevalence of depression among Syrian refugees in Jordan with chronic disease (7). In order to achieve 80% power to detect a 15% difference in prevalence of depression between Jordanians and Syrian refugees, this study required 136 Jordanians and 136 Syrians, a total of 272 participants.

Descriptive statistics on all variables were computed for the total study population, as well as separately for each nationality for the populations of Jordanians and Syrians. Bivariate analysis by nationality was performed for each variable against level of depression, our main outcome variable. Level of depression is an ordinal categorical variable having 3 levels: none/low, moderate and high. Hypothesis testing was conducted using chi-squared tests with continuity correction for categorical variables, and analysis of variance (ANOVA) was performed for continuous variables with an equal variance assumption. For categories with less than 5 individuals, Fisher's exact test was used for categorical variables and the Kruskal-Wallis test for continuous variables.

We performed multivariable ordinal logistic regression for the outcome variable of level of depression, with the assumption that the difference between none/low and moderate depression is equal to the difference between moderate and high depression. Predictor variables were selected on the basis of their bivariate association with the outcome variable in the 2 study populations of Jordanians and Syrians living in Jordan, as well as the variables that were found to be significantly associated in the literature (6,21–23). For each predictor variable identified in the multiple ordinal regression model, adjusted odds ratios (OR) and their associated 95% confidence intervals (CI) were obtained. Data were analysed using R-3.4.4.

Results

Population characteristics of female Jordanians and Syrians stratified by nationality

Participants were typically between 35–50 years old, married, educated, and unemployed (Table 1). The majority of patients had no more than one chronic disease (57.0%), the most common of which were cardiometabolic (41.9%), rheumatologic (38.2%) and endocrine (23.2%) conditions. Most patients reported either none/low (44.1%) or moderate (44.1%) depression, moderate somatic symptoms

(60.7%), and moderate anxiety (42.6%) as determined through validated survey instruments. Overall, the cohort had moderate/high perceived self-efficacy (64.0%) and high perceived social support (80.9%) (Table 1).

The Jordanian women had higher levels of education (more than primary school) (95.6% vs 47.8%; $P < 0.001$), home ownership (59.6% vs 0.0%; $P < 0.001$), employment (28.7% vs. 0.7%; $P < 0.001$), and income (95.6% vs 50.7%. $P < 0.001$) than the Syrians (Table 1). We found a lower proportion of Jordanians were married compared with Syrians (73.5% vs 92.6%; $P < 0.001$), yet a greater proportion of Jordanians had a spouse who was employed (65.4% vs 41.2%; $P < 0.001$).

Syrians had a higher overall chronic disease burden (52.9% vs 33.1%; $P = 0.001$), categorized by the number of chronic disease diagnoses, and the higher incidence of cardiometabolic disease (50.7% vs 33.1%; $P = 0.005$), rheumatologic disease (47.1% vs 29.4%; $P = 0.004$) and GI/GU disorders (25.7% vs 11.0%; $P = 0.003$) than Jordanians (Table 1). However, Syrians reported lower rates of endocrine disease (15.4% vs 30.9%; $P = 0.005$) and neurologic disease/cancer (5.1% vs 13.2%; $P = 0.036$) compared with Jordanians. Syrians more frequently reported experiencing moderate to high levels of depression ($P < 0.001$), somatic symptoms ($P < 0.001$) and anxiety ($P < 0.001$) than Jordanians. Syrians also reported lower levels of perceived self-efficacy (50.0% vs 22.1%; $P < 0.001$) and social support (24.3% vs 14.0%; $P = 0.045$).

Depression prevalence among female Jordanians and Syrians

Overall, 120 (44.1%) participants reported none/low levels of depression, 120 (44.1%) reported moderate levels of depression, and 32 (11.8%) reported high levels of depression (Table 1). Our results show that 41 (30.1%) Jordanians had moderate depression and 15 (11.0%) had severe depression compared to 79 (58.1%) and 17 (12.5%) Syrians, respectively. Eighty (58.8%) Jordanians and 40 (29.4%) Syrians reported none/low depression levels, respectively.

Population characteristics of female Jordanians and Syrian refugees stratified by nationality and depression level

We found no significant association between level of depression and participants' age, marital status, number of family members, employment status, spouse's occupation, chronic disease burden, chronic disease classification (except for GI/GU), receiving treatment and duration of treatment (Table 2). However, higher PHQ-15 severity, higher GAD-7 severity, and lower MSPSS scores were significantly associated with level of depression and nationality among both cohorts. Among Jordanians, our analysis identified significant associations between depression level and lower income level ($P = 0.014$), renting instead of owning a house ($P = 0.033$) and lower GSE score ($P = 0.041$). Statistically significant differences in level of depression were seen for lack of spouse employment ($P = 0.006$), spouse occupation ($P = 0.017$) and diagnosis of GI/GU disease ($P = 0.003$) among Syrians (Table 2).

Table 1 Sociodemographic and health characteristics of Jordanian and Syrian women, Amman, 2017

Characteristic	Total (n = 272)		Jordanian (n = 136)		Syrian (n = 136)		P-value
	No.	%	No.	%	No.	%	
Age (years)							0.574
18–34	67	24.6	36	26.5	31	22.8	
35–50	205	75.4	100	73.5	105	77.2	
Marital status							< 0.001
Not married	46	16.9	36	26.5	10	7.4	
Married	226	83.1	100	73.5	126	92.6	
No. of family members							0.057
1–6	197	72.4	106	77.9	91	66.9	
7–12	75	27.6	30	22.1	45	33.1	
Education level							< 0.001
No education/primary	77	28.3	6	4.4	71	52.2	
More than primary	195	71.7	130	95.6	65	47.8	
Employed							< 0.001
Yes	40	14.7	39	28.7	1	0.7	
No	232	85.3	97	71.3	135	99.3	
Monthly income (JD)							< 0.001
< 200	73	26.8	6	4.4	67	49.3	
≥ 200	199	73.2	130	95.6	69	50.7	
Housing status							< 0.001
Own	81	29.8	81	59.6	0	0.0	
Rent	185	68.0	49	36.0	136	100.0	
Other	6	2.2	6	4.4	0	0.0	
Spouse employed							< 0.001
Yes	145	53.3	89	65.4	56	41.2	
No	79	29.0	11	8.1	68	50.0	
Not applicable	48	17.6	36	26.5	12	8.8	
Spouse occupation							< 0.001
Government	45	16.5	45	33.1	0	0.0	
Private/agricultural	101	37.1	45	33.1	56	41.2	
Not applicable	126	46.3	46	33.8	80	58.8	
Disease burden							0.001
1 disease	155	57.0	91	66.9	64	47.1	
> 1 disease	117	43.0	45	33.1	72	52.9	
Cardiometabolic disease							0.005
No	158	58.1	91	66.9	67	49.3	
Yes	114	41.9	45	33.1	69	50.7	
Respiratory disease							0.445
No	241	88.6	123	90.4	118	86.8	
Yes	31	11.4	13	9.6	18	13.2	
Neurological disease/cancer							0.036
No	247	90.8	118	86.8	129	94.9	
Yes	25	9.2	18	13.2	7	5.1	
Rheumatologic disease							0.004
No	168	61.8	96	70.6	72	52.9	
Yes	104	38.2	40	29.4	64	47.1	

Table 1 Sociodemographic and health characteristics of Jordanian and Syrian women, Amman, 2017 (concluded)

Characteristic	Total (n = 272)		Jordanian (n = 136)		Syrian (n = 136)		P-value
	No.	%	No.	%	No.	%	
Endocrine disease							
No	209	76.8	94	69.1	115	84.6	0.005
Yes	63	23.2	42	30.9	21	15.4	
GI/GU disease							
No	222	81.6	121	89.0	101	74.3	0.003
Yes	50	18.4	15	11.0	35	25.7	
Receiving treatment							
Yes	240	88.2	123	90.4	117	86.0	0.347
No	32	11.8	13	9.6	19	14.0	
Treatment duration (years)							
< 1	49	18.0	21	15.4	28	20.6	0.228
1–5	92	33.8	49	36.0	43	31.6	
> 5	92	33.8	55	40.4	46	33.8	
Not applicable	30	11.0	11	8.1	19	14.0	
PHQ-9: Depression Scale							
None/low	120	44.1	80	58.8	40	29.4	< 0.001
Moderate	120	44.1	41	30.1	79	58.1	
High	32	11.8	15	11.0	17	12.5	
PHQ-15: Somatic Symptom Severity Scale							
None/low	66	24.3	50	36.8	16	11.8	< 0.001
Moderate	165	60.7	73	53.7	92	67.6	
High	41	15.1	13	9.6	28	20.6	
GAD-7: Anxiety Severity Scale							
None/low	94	34.6	64	47.1	30	22.1	< 0.001
Moderate	116	42.6	56	41.2	60	44.1	
High	62	22.8	16	11.8	46	33.8	
General Self-Efficacy Scale							
Low	98	36.0	30	22.1	68	50.0	< 0.001
High	174	64.0	106	77.9	68	50.0	
Multidimensional Perceived Scale of Social Support							
Low	52	19.1	19	14.0	33	24.3	0.045
High	220	80.9	117	86.0	103	75.7	

GI/GU = gastrointestinal/genitourinary.

JD = Jordanian dinar.

Risk factors for depression among female Jordanians and Syrians

Without adjusting for other covariates, we found that the female Syrian refugees had 2.73 (95% CI: 1.71–4.39) times the odds of reporting higher levels of depression than the Jordanian women. However, after adjusting for age, monthly income, spouse employment status, GI/GU disorder status, and perceived self-efficacy, we found that the Syrians were not at statistically significantly higher odds of reporting higher levels of depression than the Jordanians (OR = 1.47; 95% CI: 0.81–2.67) (Table 3). Women with unemployed spouses had 130% greater odds

(OR = 2.30; 95% CI: 1.26–4.25) of reporting higher levels of depression than women with employed spouses. Furthermore, women who had a GI or GU disorder had almost double the odds (OR = 1.96; 95% CI: 1.06–3.63) of having higher levels of depression than women without these diseases. We also identified that women with none/low self-efficacy had nearly double the odds of experiencing higher levels of depression than women with high self-efficacy (OR = 1.99; 95% CI: 1.19–3.32). Increased chronic disease burden, chronic disease treatment status or length, and perceived social support were not predictive of increased depression levels.

Table 2 Distribution of sociodemographic and health characteristics among 272 Jordanian and Syrian women in Amman, 2017

Characteristic	Jordanian women, depression level						Syrian women, depression level							
	None/low		Moderate		High		P-value	None/low		Moderate		High		P-value
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Total	80	58.8	41	30.1	15	11.0		40	29.4	79	58.1	17	12.5	
Age (years)							0.15							0.106
18–34	18	50.0	11	30.6	7	19.4		12	38.7	13	41.9	6	19.4	
35–50	62	62.0	30	30.0	8	8.0		28	26.7	66	62.9	11	10.5	
Marital status							0.643							0.238
Not married	19	52.8	13	36.1	4	11.1		4	40.0	3	30.0	3	30.0	
Married	61	61.0	28	28.0	11	11.0		36	28.6	76	60.3	14	11.1	
No. of family members							0.075							0.541
1–6	58	54.7	37	34.9	11	10.4		24	26.4	55	60.4	12	13.2	
7–12	22	73.3	4	13.3	4	13.3		16	35.6	24	53.3	5	11.1	
Education level							0.429							0.363
None/primary	2	33.3	3	50.0	1	16.7		21	29.6	40	56.3	7	10.8	
More than primary	78	60.0	38	29.2	14	10.8		19	29.2	39	60.0	6	9.4	
Employed							0.555							0.299
Yes	21	53.8	12	30.8	6	15.4		1	100.0	0	0	0	0	
No	59	60.8	29	29.9	9	9.3		39	28.9	79	58.5	17	12.6	
Income level (JD)							0.014							0.634
< 200	79	60.8	36	27.7	15	11.5		22	31.9	40	58.0	7	10.1	
≥ 200	1	16.7	5	83.3	0	0.0		18	26.9	39	58.2	10	14.9	
Housing status							0.033							NA
Own	51	63.0	25	30.9	5	6.2		0	0.0	0	0.0	0	0.0	
Rent	27	55.1	12	24.5	10	20.4		40	29.4	79	58.1	17	12.5	
Other	2	33.1	4	66.7	0	0.0		0	0.0	0	0.0	0	0.0	
Spouse employed							0.689							0.006
Yes	56	62.9	24	27.0	9	10.1		21	37.5	33	58.9	2	3.6	
No	5	45.5	4	36.4	2	18.2		13	19.1	43	63.2	12	17.6	
NA	19	52.8	13	36.1	4	11.1		6	50.0	3	25.0	3	25.0	
Spouse occupation							0.065							0.017
Government	24	53.3	13	28.9	8	17.8		0	0.0	0	0.0	0	0.0	
Private/agricultural	33 ()	73.3	11	24.4	1	2.2		21	38.2	33	58.9	2	3.6	
NA	23	50.0	17	37.0	6	13.0		19	23.8	46	57.5	15	18.8	
Disease burden							0.80							0.363
1 disease	52	57.1	28	30.8	11	12.1		22	34.4	36	56.3	6	9.4	
> 1 disease	28	62.2	13	28.9	4	8.9		18	25.0	43	59.7	11	15.3	
Cardiometabolic disease							0.37							0.802
Yes	53	58.2	30	33.0	8	8.8		18	26.9	40	59.7	9	13.4	
No	27	60.0	11	24.4	7	15.6		22	31.9	39	56.5	8	11.6	
Respiratory disease							0.723							0.959
Yes	71	57.7	38	30.9	14	11.4		35	29.7	68	57.6	15	12.7	
No	9	69.2	3	23.1	1	7.7		5	27.8	11	61.1	2	11.1	
Neurologic disease/ cancer							0.714							0.989
Yes	70	59.3	36	30.5	12	10.2		38	29.5	75	58.1	16	12.4	
No	10	55.6	5	27.8	3	16.7		2	28.6	4	57.1	1	14.3	
Rheumatologic disease							0.407							0.547
Yes	58	60.4	26	27.1	12	12.5		24	33.3	40	55.6	8	11.1	
No	22	55.0	15	37.5	3	7.5		16	25.0	39	60.9	9	14.1	

Table 2 Distribution of sociodemographic and health characteristics among 272 Jordanian and Syrian women in Amman, 2017 (concluded)

Characteristic	Jordanian women, depression level						Syrian women, depression level							
	None/low		Moderate		High		P-value	None/low		Moderate		High		P-value
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Endocrine disease							0.872							0.857
Yes	54	57.4	29	30.9	11	11.7		33	28.7	67	58.3	15	13.0	
No	26	61.9	12	28.6	4	9.5		7	33.3	12	57.1	2	9.5	
GI/GU disease							0.631							0.003
Yes	72	59.5	35	28.9	14	11.6		33	32.7	61	60.4	7	6.9	
No	8	53.3	6	40.0	1	6.7		7	20.0	18	51.4	10	28.6	
Receiving treatment							0.058							0.844
Yes	74	60.2	38	30.9	11	8.9		34	29.1	69	59.0	14	12.0	
No	6	46.2	3	23.1	4	30.8		6	31.6	10	52.6	3	15.8	
Treatment duration (years)							0.079							0.556
> 1	13	61.9	8	38.1	0	0.0		5	17.9	21	75.0	2	7.1	
1–5	32	65.3	13	26.5	4	8.2		13	30.2	23	53.5	7	16.3	
> 5	31	56.4	17	30.9	7	12.7		16	34.8	25	54.3	5	10.9	
NA	4	36.4	3	27.3	4	36.4		6	31.6	10	52.6	3	15.8	
PHQ-15 severity							< 0.001							< 0.001
Low	35	70.0	14	28.0	1	2.0		10	62.5	6	37.5	0	0.0	
Moderate	43	58.9	22	30.1	8	11.0		27	29.3	57	62.0	8	8.7	
High	2	15.4	14	28.0	6	46.2		3	10.7	16	57.1	9	32.1	
GAD-7 severity							< 0.001							< 0.001
None/low	57	89.1	7	10.9	0	0.0		21	70.0	9	30.0	0	0.0	
Moderate	23	41.1	29	51.8	4	7.1		14	23.3	45	75.0	1	1.7	
High	0	0.0	5	31.3	11	68.8		5	10.9	25	54.3	16	34.8	
GSE scale score							0.041							0.183
None/ low	68	64.2	29	27.4	9	8.5		22	32.4	41	60.3	5	7.4	
High	12	40.0	12	40.0	6	20.0		18	26.5	38	55.9	12	17.6	
MSPSS score							0.008							< 0.001
None/low	8	42.1	5	26.3	6	31.6		7	21.2	14	42.4	12	36.4	
High	72	61.5	36	30.8	9	7.7		33	32.0	65	63.1	5	4.9	

JD = Jordanian dinars.

NA = not applicable.

GI/GU = gastrointestinal/genitourinary.

PHQ-15 = Patient Health Questionnaire-15.

GAD-7 = Generalized Anxiety Disorder-7.

GSE = General Self-Efficacy.

MSPSS = Multidimensional Scale of Perceived Social Support.

Discussion

This study compared the prevalence and risk factors of depression among female Syrian refugees and Jordanians with chronic disease. We found that approximately half of the total study population reported moderate to high depression, which was comorbid in less than half of the Jordanians and nearly three-quarters of the Syrian refugees. This prevalence of depression is substantially higher than reported in prior studies, which have found depression in 35% of Syrian refugees suffering from chronic diseases (7), with depression prevalence among all refugees varying from 3% to 85.5% (22,23).

Although most research examining the psychosocial needs of displaced Syrians in Jordan is carried out in refugee camps, more than 80% of registered Syrian refugees live in non-camp settings, demonstrating a need to understand the burden of depression among non-camp dwelling refugees (1). The higher prevalence of depressive symptoms among non-camp refugees may be partially attributable to post-resettlement hardships such as finding employment restricted work permits and adapting to a new cultural, economic and political environment without the embedded social support group that a camp would afford. A study examining the connection between self-care activities and depression

Table 3 Multivariable ordinal regression analysis for the association of each independent variable with level of depression among 272 female Jordanians and Syrian refugees, Amman, 2017

Characteristic	Adjusted OR (95% CI)	P-value
Age		
18–34	1	
34–50	0.69 (0.39–1.23)	0.209
Monthly income (JD)		
≥ 200	1	
< 200	1.33 (0.73–2.42)	0.353
Employed spouse		
Yes	1	
No	2.30 (1.26–4.25)	0.007 ^a
Not applicable (not married)	0.892 (0.71–1.13)	0.331
Nationality		
Jordanian	1	
Syrian	1.47 (0.81–2.67)	0.203
GI/GU disease diagnosis		
No	1	
Yes	1.96 (1.06–3.63)	0.031 ^a
Perceived self-efficacy		
High	1	
Low	1.99 (1.19–3.32)	0.008 ^a

OR = odds ratio; CI = confidence interval; JD = Jordanian dinars; GI/GU = gastrointestinal/genitourinary.

^aVariables statistically significantly associated with level of depression, $P \leq 0.05$.

among Jordanians with diabetes reported that 70% of participants had depressive symptoms (6). There has been limited research on the link between mental health and chronic disease among Jordanians.

Our sample size calculation suggests that our study is adequately powered; however, sampling at clinics and hospitals serving primarily low-income Jordanians and Syrians may have resulted in disproportionately high levels of depression compared with the overall population. Moreover, an all-female cohort may have increased depression prevalence (3,4). In addition to potential hormonal contributors, women are predisposed to factors that increase the likelihood of depression (4). Among Middle Eastern women, these may include financial dependence, sexual violence, changing roles of women in Arab culture, orthodox customs and an increased willingness to report depressive symptoms to health care providers (4). Furthermore, depression is more common among displaced women than men (24).

A number of factors were predictive of higher levels of depression among both cohorts. For instance, spouse unemployment was highly predictive of increased depression levels. Previous research suggests that difficulty managing chronic conditions or caring for family members with mental and physical illnesses contributed to unemployment among Iraqi refugees (25). The relationship between unemployment and financial

distress, leading to continued unemployment, is also well documented (26). However, few studies have reported the relationship between mental health of the patient and his or her spouse's employment status. Interestingly, income was not a significant predictor of depression in our population.

We found that a GI/GU disease diagnosis was associated with an increased likelihood of higher depression levels. Depression is a known contributor to the pathogenesis of various gastrointestinal illnesses including irritable bowel syndrome, inflammatory bowel disease and ulcerative colitis, and urologic diagnoses such as incontinence (27,28). Chronic inflammation, identified through biomarkers interleukin-6 and C-reactive protein, may play a role in the relationship between depression and inflammatory diseases (29). In addition, a study demonstrated that patients with multiple lower urinary tract symptoms experienced high levels of psychiatric morbidity (30).

Low perceived self-efficacy was associated with higher levels of depression. A strong sense of self-efficacy, especially helpful among vulnerable populations exposed to frequent adversity, has been linked to improved health and social integration (31). Highly efficacious patients are more likely to perceive obstacles as challenges to be mastered, in turn lowering stress and reducing susceptibility to depression (32). A recent study found an association between a higher perceived ability to handle traumatic events and improved psychological adaptation among Syrian refugees (33). We did not find any statistically significant association between low perceived social support, an established contributor to mental health issues (34), and higher levels of depression. This suggests that among female Syrians and Jordanians with chronic disease perceived self-determination may play a greater role in reducing depression than the extent of one's social network. For instance, showing refugees traumatic pictures after recalling self-efficacious memories has been shown to decrease distress (35). Increasing accessibility of factors that may reduce post-migration stressors, such as loss of community support, lack of employment opportunities, social isolation, and cultural differences, may improve self-efficacy and coping with adversity (36).

While Syrians have greater odds of experiencing higher levels of depression than Jordanians, we found that after adjusting for sociodemographic characteristics, disease status and levels of self-efficacy, there was no longer a significant difference between these 2 populations. Thus, by changing some of the modifiable risk factors of depression, as identified in this study, it may be possible to make meaningful reductions in the odds of experiencing depression in this population. Specifically, investment in public health interventions that are aimed at improving self-efficacy in the Jordanian and Syrian populations will likely reduce rates of depression. Examples of such interventions include positive self-efficacy induction, in which refugees retrieve mastery-related autobiographical memories shown to promote

greater distress tolerance (35), and providing role models for newly arrived refugees, suggested in a self-efficacy study among Afghan and Kurdish refugees (32). Labour laws limiting the provision of work permits for Syrian refugees in Jordan may be influencing the likelihood of higher levels of depression in Syrians (37), as indicated by the increased odds of higher levels of depression among women whose husbands were unemployed and the finding that there was a greater proportion of unemployed husbands among Syrian than Jordanian women in our sample. Lastly, providing women's health services to vulnerable populations, as well as mental health services for survivors of sexual traumatic events, remains critical. Potential interventions for Jordanians include mindfulness and increased social support, which have been shown to improve psychological well-being and quality of life among Jordanian women with breast cancer (38).

This study had several limitations. We employed self-reporting instruments, leading to possible recall and self-report bias. In addition, the cross-sectional nature of our study precludes causal explanations related to risk factors. Predictors were selected based on prior studies, but others may have been selected, including past trauma, personal loss and lack of access to food or water (23,36). Finally, we used convenience sampling, which

brings all the limitations inherent in a non-probability sample. However, these limitations are mitigated by the pilot study design, which is intended to assist with future studies employing probability sampling, and is not intended to be representative of the broader population.

Conclusion

Comparing factors influencing depression in female Syrian refugees and their Jordanian counterparts allows mental health interventions and chronic disease management to be tailored to differences, and similarities, among local and displaced communities. Spouse unemployment, lower perceived self-efficacy, and diagnosis of GI/GU disease were associated with increased rates of depression regardless of nationality. These groups should be targeted for depression prevention and treatment. Such findings are important considerations for mental health programs and for developing comprehensive interventions designed to address individual patient needs.

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Prévalence et facteurs de risque de la dépression chez les réfugiées syriennes et les Jordaniennes atteintes de maladies chroniques : une étude pilote

Résumé

Contexte : Les maladies chroniques et la dépression sont les principales causes de morbidité parmi les populations déplacées et locales.

Objectifs : La présente étude vise à évaluer la prévalence et les facteurs de risque de comorbidité dépressive chez les femmes jordaniennes et syriennes atteintes de maladies chroniques connues.

Méthodes : Afin de fournir des données probantes pour la planification des interventions de santé mentale, nous avons mené une enquête transversale sur les déterminants de la dépression chez les réfugiées syriennes et les Jordaniennes atteintes de maladies chroniques vivant à Amman. De juin à août 2017, 272 réfugiées syriennes et Jordaniennes atteintes de maladies chroniques ont été recrutées dans quatre dispensaires d'Amman. Nous avons comparé les caractéristiques démographiques et sanitaires ainsi que le niveau de dépression et identifié des prédicteurs de dépression par le biais d'une régression ordinaire multivariable.

Résultats : Des niveaux modérés à élevés de dépression ont été signalés chez 55,9 % des participantes, la prévalence étant de 41,1 % chez les Jordaniennes et de 70,6 % chez les Syriennes. Les Syriennes atteintes de maladies chroniques avaient 2,73 fois plus de risques de souffrir de niveaux plus élevés de dépression que leurs homologues jordaniennes. Après ajustement en fonction de l'âge, du revenu, de la situation professionnelle du conjoint, de la présence de troubles gastro-intestinaux ou génito-urinaires et de l'auto-efficacité perçue, les Syriennes n'étaient pas significativement plus susceptibles de signaler des niveaux de dépression plus élevés. Les facteurs de risque pour des niveaux de dépression plus élevés comprenaient le fait d'avoir un conjoint sans emploi, le diagnostic de troubles gastro-intestinaux ou génito-urinaires et une faible auto-efficacité perçue.

Conclusion : La comorbidité dépressive est souvent fréquente en présence de maladies physiques chroniques et a un impact délétère sur l'état de santé. Des interventions dans le domaine de la santé mentale et une prise en charge des maladies chroniques adaptées aux différences entre les communautés locales et déplacées peuvent réduire la charge de morbidité et les incapacités.

معدل انتشار الاكتئاب في صفوف النساء الأردنيات واللاجئات السوريات المصابات بأمراض مزمنة وعوامل الخطر المرتبطة به: دراسة تجريبية

ماديسون شارب، أليسا باربيا، مأمون أهرام، رفقي محمود، كافيي خوشنود

الخلاصة

الخلفية: تُعد الأمراض المزمنة والاكتئاب من الأسباب الرئيسية التي تؤدي إلى المراضة في صفوف النازحين والسكان المحليين.

الأهداف: هدفت هذه الدراسة إلى التصدي لانتشار الاكتئاب المصاحب وعوامل الخطر المرتبطة به في صفوف النساء الأردنيات والسوريات المصابات بمرض مزمن معروف.

طرق البحث: لتوفير الدلائل اللازمة لتخطيط التدخلات في مجال الصحة النفسية، أجرينا مسحاً مقطوعياً لاستقصاء مُحدّات الاكتئاب في صفوف الأردنيات واللاجئات السوريات المصابات بمرض مزمن ممن يعيشن في عمّان. وشارك في المسح ما مجموعه 272 امرأة أردنية ولاجئة سورية مصابة بمرض مزمن من 4 عيادات في جميع أنحاء عمان في الفترة من يونيو/ حزيران/ إلى أغسطس/ آب 2017. وعقدنا مقارنة بين الخصائص السكانية والصحية ومستوى الاكتئاب، وحددنا العوامل المنبئة بالاكتئاب من خلال الانحدار الترتيبي المتعدد المتغيرات.

النتائج: أبلغ 55.9% من المشاركات عن مستويات متوسطة إلى مرتفعة من الاكتئاب، بمعدل انتشار 41.1% بين الأردنيات و70.6% بين السوريات. وكانت احتمالية وجود مستويات أعلى من الاكتئاب لدى السوريات اللاتي يعانين من أمراض مزمنة أكبر 2.73 مرة من نظرائهن الأردنيات. وبعد التصحيح لمراعاة السن والدخل ووضع عمل الزوج وحالة اضطرابات الجهاز الهضمي أو الجهاز التناسلي البولي والكفاءة الذاتية المتصورة، لم تكن احتمالات إبلاغ السوريات عن مستويات أعلى من الاكتئاب أكبر بكثير. وتشمل عوامل الخطر المرتبطة بارتفاع مستويات الاكتئاب الأزواج العاطلين عن العمل، وتشخيص اضطرابات الجهاز الهضمي أو الجهاز البولي التناسلي وانخفاض الكفاءة الذاتية المتصورة.

الاستنتاجات: كثيراً ما يصاحب الاكتئاب حالات مرضية بدنية مزمنة، مما له تأثير ضار على الحالة الصحية. ومن شأن تدخلات الصحة النفسية والتدبير العلاجي للأمراض المزمنة المصمّم بما يناسب الاختلافات بين المجتمعات المحلية ومجتمعات النازحين أن يؤدي إلى تقليص عبء المرض والعجز.

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