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A community-based survey on Syrian refugee women's health and its predictors in Şanliurfa, Turkey

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ABSTRACT

Reproductive characteristics, mental health symptoms, micronutrient deficiencies, and symptoms of sexually transmitted infections (STIs) were determined among married Syrian refugee women aged 15–49 years who were living outside of camps in 2015, using probability sampling. Of the 458 participants, 51.3 percent married before the age of 18 years. Early-age marriages and number of desired children increased after the war. In multivariable analyses, education (adjusted odds ratio [aOR] = 1.2; 95% confidence interval [CI] = 1.2–1.3) and length of stay in Şanlıurfa (aOR = 1.2; 95% CI = 1.1–1.2) were independently associated with early marriage. Approximately 16 percent of women were pregnant, and 26.7 percent of them had not received prenatal care; 47.7 percent had had a pregnancy loss; 50.8 percent reported symptoms of STIs. Of those who were sexually active, 37.8 percent were not using contraception. The prevalence of iron, B_{12}, and folic acid deficiencies was 50 percent, 45.6 percent, and 10.5 percent, respectively. Early marriage (aOR = 2.2; 95% CI = 1.4–3.5) and number of desired children (aOR = 5.03; 95% CI = 3.2–7.9) were associated with not using contraception. Most (89.7 percent) women reported at least two mental health symptoms; lack of social support (aOR = 2.6; 95% CI = 1.3–5.3), language barrier (aOR = 2.3; 95% CI = 1.01–5.2), and B_{12} deficiency (aOR = 1.8; 95% CI = 1.01–3.4) were associated with such symptoms. The findings demonstrate the need for reproductive health and psychosocial services.

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Introduction

More than 5 years of conflict in Syria, since March 15, 2011, has resulted in an unprecedented level of population displacement, the majority of whom have crossed borders to seek refuge in Turkey, Lebanon, Jordan, and Iraq. Turkey is home to the second largest population of Syrian refugees due to its open door policy and border width (United Nations High Commissioner for Refugees [UNHCR] 2014). Turkey now has a Syrian population of over 2.5 million, with

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the majority living in ten provinces in south and southeastern Anatolia. Since October 2014, studies have been conducted by the Prime Ministry of Disaster and Emergency Management Presidency and have included the registration, health, education, and access to public services, such as social assistance and labor for refugees, based on the "The Temporary Protection Directive."

Worldwide, conflict and forced displacement causes loss of lives, increased poverty, increased physical, mental, and neurological diseases, and disruption of life-sustaining services, such as those for reproductive health, including antenatal, natal, and postnatal care, and child health services. Women may be more susceptible to poor health outcomes, including mortality and morbidity (Aptekman et al. 2014; Benage et al. 2015; European Centre for Disease Prevention and Control [ECDC] 2009a, 2009b, 2010; Huffman 2009; Lindert et al. 2009; Reese Masterson et al. 2014). Specifically, micronutrient deficiencies, such as iron, vitamin B_{12}, and folate deficiencies, are significant public health problems. The main risk factors for deficiencies include a low intake of micronutrients, poor absorption of iron from high-phytate diets or phenolic compounds, and heavy blood loss as a result of menstruation or parasitic infection (Centers for Disease Control and Prevention [CDC] 2011; Ramakrishnan et al. 2012).

The prevalence of mental disorders due to disability and premature death is another important health problem. Traumatic life events are the most important determinant of mental health problems. Emotional, relational, and material losses, and experiences related to the conflict are compounded by the daily stressors of resettlement in a new country, which include language barriers, poverty, lack of resources and services to meet basic needs, difficulty accessing services, risks of violence and exploitation, discrimination, and social isolation (International Medical Corps [IMC] and United Nations Children's Fund [UNICEF] 2014; Lindert et al. 2009; Moussa 2014; UNHCR and Renewed Efforts Against Child Hunger [REACH] 2014).

In Turkey, the majority of health-care services for refugees are provided through primary health-care centers, tent hospitals, 112 medical emergency stations, and state hospitals. Universal health coverage has led to the expansion of health insurance and health services, which has improved key maternal and child health services, including a reduction in infant and maternal mortality. A large effort was undertaken to provide field hospitals within the camps, which promote service use, with over 90 percent of refugees in camps reporting access to services (Sahlool, Sankri-Tarbichi, and Kherallah 2012). Additionally, the Ministry of Health has worked with international organizations to construct clinics. However, a government report noted that 90 percent of Syrian refugees in camps and 60 percent of those outside of camps used health services in Turkey and were satisfied with them (Oktay 2013). Despite improvements in access to curative health services, women still face inequalities in terms of preventive women's health services (Sahlool, Sankri-Tarbichi, and Kherallah 2012).

Very limited data are available on women's health among Syrian refugees in outside camps. The purpose of this study, to provide guidance for future interventions, was to determine the sociodemographic characteristics, reproductive behavior, mental symptoms, malnutrition, and reported prevalence of sexually transmitted infection (STI) symptoms in reproductive-aged female Syrian refugees living outside of the refugee camps.

Methods

Study participants

This cross-sectional study, based on the health needs assessment of women living outside of camps, was conducted in Şanliurfa, Turkey, between March and April 2015 in collaboration with the Harran University and United Nation Population Fund (UNFPA). As Şanlıurfa Province is located in Turkey's southeastern Anatolia region, which has the broadest border with Syria, most of the Syrian refugees live in this province. Approximately 290,000 people are living in camps, and 400,000 people are living outside of the camps. Approval for this study was provided by the Harran University Research Ethics Board.

We calculated that the needed sample size was 460 women, taking the sampling error to be 5.0 percent, with a one-sided test, 95% confidence level, power of 80 percent, and multiplying by 1.2 for the design effect (an adjustment made to account for cluster sampling). Cluster sampling was performed from household records prepared by the Governor of Şanliurfa, which contained a list of dwelling units with their addresses (including quarter, area, avenue, street, building, and door number). A sampling list was created from these records. Every cluster included an average of ten houses. A household was defined as a person or a group of persons living together. Random selection was employed at every stage.

In each house, all married women were screened for eligibility and asked if they would be willing to participate, and one eligible woman was randomly selected in each household. Eligibility criteria included: ability to speak Arabic, identity as a Syrian national, arrival in Şanliurfa since the conflict in Syria began in March 2011, married, and age between 15 and 49 years. Two families refused to participate (participation rate of households was 99.6 percent). A total of 961 married women aged 15–49 years were identified in 458 houses. One eligible woman from each selected house was randomly selected. A total of 458 women provided written and signed informed consent; the response rate among eligible women was 100.0 percent.

Data collection

The reproductive health questions in the interviewer-administered questionnaire were adapted from the "Reproductive Health Assessment Toolkit for

Conflict-Affected Women" (CDC 2007). The questionnaire was designed in Turkish, translated into Arabic, and pilot tested among Syrian women in Şanliurfa. The questionnaire addressed the following topics: (1) sociodemographic and displacement characteristics, (2) health problems, (3) mental health symptoms, (4) fertility characteristics, (5) micronutrient deficiencies, and (6) symptoms of STIs (bad-smelling discharge, pain during sexual intercourse). The questionnaire was administered in Arabic by a trained Syrian midwife research assistant, a laboratory technician, and a translator from the area. Symptomatic women were invited to the Harran University Medical Faculty Obstetrics and Gynecology Clinic, where an examination was conducted, and medications were initiated.

Measures

Mental health symptoms

The Arabic version of the General Health Questionnaire 12 (GHQ/12) was used for screening for mental symptoms. The 12-Item General Health Questionnaire (GHQ-12) consists of 12 items, each one assessing the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). The score was used to generate a total score ranging from 0 to 36. The positive items were rated from 0 (*always*) to 3 (*never*) and the negative ones from 3 (*always*) to 0 (*never*). High scores indicated worse health (Goldberg and Williams 1988). The Arabic versions of the GHQ-12 are valid psychiatric screening instruments (sensitivity of 0.83 and specificity 0.80).

Micronutrient deficiencies

To determine the prevalence of nutrient deficiencies among participants, blood was drawn from the antecubital vein and collected in amber-colored polypropylene tubes. The samples were transported on ice packs from the nine provinces to the laboratory at the Harran University Medical Hospital, for separation of the serum by centrifuging, within approximately 2 hours. The serum was collected in Eppendorf vials, labeled, and stored at −80°C until the vitamin $B_{12,}$ ferritin, serum iron, and folate analyses.

Smoking status

Participants were asked, "Do you smoke cigarettes?" Yes was defined as "at least 1 cigarette every day." Negative responses were coded as 0.

Social support

Participants were asked, "When you need help, is there anyone from whom you can get support?" Yes was coded as 1, negative responses were coded as 0.

Sociodemographic variables

Women's age, household size, number of having and desired number of children, length of stay in Şanlıurfa after the war (months), and education (years) were measured as continuous variables. Early marriage was defined as a formal marriage or informal union entered into by an individual before reaching the age of 18 years and was coded as 1, and older than 18 years was coded as 0. The unmet need for family planning was defined as those who were sexually active but were not using any method of contraception and reported not wanting any more children or wanting to delay pregnancy. Work of the husband was coded as professional jobs (doctor, engineer, teacher, etc.), nonprofessional jobs (cleaner, load carrier, construction worker, etc.), or unemployed. Pregnancy loss was defined as miscarriage, stillbirth, or medically based termination.

Data analyses

SPSS 11.0 statistical software was used for data entry and analyses. Dependent variables were early marriage, use of contraception, and mental health symptoms. Independent variables were women's age, household size, length of stay in Şanlıurfa since the war, educational attainment, number of children, number of desired children, micronutrient deficiencies, knowing Turkish language, social support, smoking, work of husband, history of pregnancy loss, and having an illness. Bivariate associations were estimated using chi-square tests (for categorical variables) or *t*-test (for continuous variables), respectively. Risk factors associated with any of the outcomes of interest and covariates associated with both risk factors and outcomes at $p < .05$ were retained in multiple logistic regression models to examine the relationships between the independent and dependent variables using adjusted odds ratios (aORs) and 95% confidence intervals (CIs). The fit of model was tested using the Hosmer and Lemeshow goodness-of-fit test.

Results

Description of participant population

Of the 458 displaced reproductive-aged female Syrian refugees interviewed, the mean age was 29.9 ± 8.9 years. About 15 percent of the women were illiterate, and 23 percent reported having 10 or more years of education (Table 1). The number of people living together in the family ranged from 2 to 27, mean 9.9 (±4.9). Participants reported a crowded family with 35 percent living with more than 10 people in a house. Among the participants, 88.6 percent stated that they were housewives; approximately 8 percent had careers as teachers, doctors, nurses, and engineers; and 5 of the 38

Table 1. Descriptive characteristics of participants (Syrian married women refugees aged 15–49 years, living outside of camps in Şanliurfa, Turkey), 2015, $n = 458$.

Variables	Frequency	Percent
Age groups, years		
15–19	49	10.7
20–24	99	21.6
25–29	92	20.1
30–34	82	17.9
35–39	51	11.1
40–44	51	11.1
45–49	34	7.4
Educational attainment		
Illiterate	69	15.1
1–4 years	36	7.9
5–9 years	247	53.9
Upper 10 years	106	23.1
Household size		
Less than 5	83	18.1
6–10	215	46.9
11–15	101	22.1
16 or more	59	12.9
Working status of husbands		
Unemployed	222	49.3
Nonprofessional* jobs	213	47.4
Professional jobs	14	3.3
Duration in Turkey, months		
Less than 3	76	16.6
4–12	206	45.0
13 or more	176	38.4
Knows Turkish language	48	10.5
Self-reported general health status		
Good	362	79.0
Acceptable	71	15.5
Poor	25	5.5
Smoking	49	10.7
Have any diseases	79	17.2
Currently use medication for any condition	54	11.8
Total	458	100.0

*Cleaner, load carrier, construction worker, etc.

women reporting those professions (13.2 percent) stated that they still worked. Of the women interviewed, 16.6 percent stated that they had entered Turkey in the past 3 months; nearly 38 percent said that they had been living in Şanlıurfa for 13 months or longer, and approximately 10.5 percent stated that they could speak Turkish well enough to conduct their daily lives.

Unadjusted results

Most of the participants rated their overall health as good (79 percent), with 5.5 percent rating their health as poor. The majority (89.3 percent) reported never having smoked. A total of 17.2 percent of respondents reported having an illness, including hypertension, diabetes, renal failure, cardiovascular

disease, goiter, or rheumatic disease. Current medication use was reported by 11.8 percent.

Approximately 9 out of 10 women stated nutrition and shelter needs as primary issues (Table 2). The third most important issue was employment (82.1 percent). Approximately one in two women stated longing for relatives in Syria, and about 40 percent stated a disease of her own or in her family as the most important problems faced. While approximately only 6 percent of women reported the problem of access to health-care services, 3.5 percent reported children's education, and 1.3 percent reported security issues as important concerns.

Among the respondents, 55.8 percent had a consanguineous marriage, and the majority of these marriages were to nephews, with 51.3 percent of women having been married before reaching 18 years of age (Table 3).

The interviewed women were asked "Did any of your daughters marry before 18 years of age after coming to Turkey?", and 14.2 percent of women answered "yes." When asked why, the first answer given was poverty. The other answers given were listed as "She has grown, she will set up her home," and "There is war and she will be safer there."

Among all respondents, 29.6 percent gave birth before the age of 18 years. The prevalence of giving birth before the age of 18 years among women under 24 years of age was significantly higher than in other age groups ($p < .05$). Among survey participants, 16.4 percent said that they were pregnant; 26.7 percent of these women reported that they had not received any antenatal care. Nearly half (47.7 percent) of all respondents had a history of pregnancy loss, and 50.8 percent of participants reported malodorous discharge or painful sexual intercourse.

The frequency of any use of contraception was 20.5 percent, and the unmet need for contraception was 37.8 percent. When combined with the withdrawal method, the total unmet need was 56.9 percent.

In all age groups, the mean desired number of children was significantly higher than number of having children the women had ($p < .05$) (Table 4). In addition, the mean number of desired boys was significantly higher than that of girls in all age groups ($p < .05$).

Table 2. Concerns reported by Syrian married women refugee participants aged 15–49 years, living outside of camps in Şanliurfa, Turkey, 2015, $n = 458$.

Problems	Frequency	Percent
Nutrition	428	93.4
Shelter	420	91.7
Find a job	376	82.1
Longing to close	245	53.5
Health problems	191	41.7
Access to health services	26	5.7
School problems	16	3.5
Security	6	1.3

Table 3. Fertility characteristics and reproductive health problems reported by Syrian married women refugee participants aged 15–49 years, living outside of camps in Şanliurfa, Turkey, 2015, n = 458.

	Frequency	Percent
Consanguineous marriages		
No	201	44.2
Brother's children	175	37.8
Cousin's children	82	17.5
Marriage age, years		
>18	223	48.7
≤18	235	51.3
15–24 years	104	22.7
25–34 years	63	13.8
35–49 years	68	14.8
Childbirth age, years		
>18	278	70.4
≤18	117	29.6
15–24 years	53	13.4
25–34 years	31	7.8
35–49 years	33	8.4
History of pregnancy loss	218	47.7
Have symptoms of sexually transmitted diseases	232	50.8
Currently pregnant	75	16.4
No antenatal care	20	26.7
Using family planning* methods	78	20.5
Unmet contraceptive needs**	48	37.8

*Denominator is nonpregnant women and have the chance of pregnancy (78/381*100).
**Denominator is nonpregnant or have the chance of pregnancy and have desired number of children.

Half of the participants had an iron deficiency; 45.6 percent had a vitamin B_{12} deficiency, and 10.5 percent had a folic acid deficiency (Table 5). Approximately four out of five women had an iron, B_{12}, or folic acid deficiency. No correlation was found between the iron, vitamin B_{12}, folic acid deficiencies, and prenatal and postnatal care-taking, being pregnant, number of people in the family, having a job, and reported nutritional problems ($p > .05$).

At least two symptoms in the mental health assessment using the GSA/12 were reported by 89.7 percent of the women (Table 6).

Findings from multiple logistic regression models

Estimates from multiple logistic regression models showed that less education (aOR = 1.2; 95% confidence interval [CI] = 1.2–1.3) and shorter length

Table 4. Mean number of women having children and the desired number of children according to the women's age group among Syrian married women refugee participants aged 15–49 years, living in Şanliurfa, Turkey, 2015, n = 458.

	Mean (*SD*) number of children			Mean (*SD*) desired number of children		
Age group, years	Girl	Boy	Total	Girl	Boy	Total
15–24	0.6 (±0.8)	0.6 (±0.8)	1.3 (±1.1)	2.2(±0.9)	2.7 (±1.4)	4.9 (±2.0)
25–34	1.5 (±1.2)	1.5 (±1.3)	3.1 (±1.8)	2.3(±1.1)	2.7 (±1.2)	5.0 (±2.1)
35–49	2.4 (±1.8)	2.7 (±1.7)	5.2 (±2.8)	2.7(±1.4)	3.3 (±1.3)	6.1 (±3.0)
Total	1.5 (±1.5)	1.6 (±1.5)	3.1 (±2.5)	2.4(±1.2)	2.9 (±1.3)	5.3 (±2.4)

Table 5. Micronutrient deficiencies of Syrian married women refugee participants aged 15–49 years, living outside of camps in Şanliurfa, Turkey, 2015, *n* = 458.

	Frequency	Percent
No deficiencies	99	21.6
Serum iron or B_{12} or folate	359	78.4
Serum iron deficiency (<50 ug/dL)	229	50.0
Ferritin deficiency (≤4.63 ng/mL)	62	13.5
B_{12} deficiency (<187 pg/mL)	209	45.6
Folate deficiency (<3.1 ng/mL)	48	10.5

of stay in Şanlıurfa (aOR = 1.2; 95% CI = 1.1–1.2) were associated with early age at first marriage (Table 7). No significant association was observed between early marriage and independent variables, including age of women, household size, knows Turkish language, and social support ($p > .05$).

Adjusted results also indicated that early marriage (aOR = 2.2; 95% CI = 1.4–3.5) and having reached the desired number of children (aOR = 5.03; 95% CI = 3.2–7.9) were associated with the use of contraception (Table 7), but no significant associations were observed with other socio-demographic variables and use of contraception ($p > .05$). A higher number of household members, husband working in any job, and longer length of stay in Şanlıurfa were negatively associated with number of desired children ($p < .05$).

From the multiple logistic regression analysis, the prevalence of two or more mental symptoms had 2.6-fold (95% CI = 1.3–5.3) increased odds associated with the absence of social support, 2.3-fold (95% CI = 1.01–5.2) increased odds associated with ability to speak Turkish language, and 1.8-fold (95% CI = 1.01–3.4) increased odds associated with B_{12} deficiency (Table 7). No significant relationship was observed between the presence of mental symptoms and educational attainment, household size, number of children,

Table 6. Reported symptoms by GHQ-12 of Syrian married women refugee participants aged 15–49 years, living outside of camps in Şanliurfa, Turkey, 2015, *n* = 458.

Symptoms	*N*	Percent
Loss of sleep due to worry	90	20.2
Felt constantly under strain	102	22.9
Unable to concentrate	153	34.4
Playing an unuseful part	132	28.8
Unable to face problems	151	33.9
Incapable of making decisions	159	34.7
Unable to overcome difficulties	245	55.1
Feeling reasonably unhappy	355	80.0
Unable to enjoy day-to-day activities	347	78.3
Feeling unhappy and depressed	308	69.2
Losing confidence	64	14.0
Thinking of self as worthless	64	14.0
Two or more symptoms	411	89.7
No symptoms	47	10.3

Table 7. Results of the multiple logistic analyses for associations of sociodemographic characteristics with early marriage, use of contraception, and mental health symptoms, among Syrian refugee participants aged 15–49 years living outside of camps in Şanliurfa, Turkey, 2015, $n = 458$.

Variables	Odds ratios	95% confidence interval
Early marriages		
Low education level (4 years or less)	1.22	(1.16–1.29)
Decreasing duration in Şanlıurfa	1.18	(1.12–1.24)
Do not use contraception		
Marriage age ≤18 years	2.22	(1.42–3.47)
Does not have number of desired children	5.03	(3.21–7.88)
Decreasing age of women	0.96	(0.95–1.02)
Decreasing household size	0.98	(0.95–1.03)
Mental health symptoms		
Lack of social support	2.63	(1.31–5.29)
Do not know Turkish	2.30	(1.01–5.24)
B_{12} deficiency	1.76	(1.01–3.38)

having a job, smoking, having wage-earning employment, presence of a diagnosed disease, and presence of a disease that required constant drug use in bivariate analyses ($p > .05$).

Discussion

This study provides, to the best of our knowledge, unique data on the scope of health problems among married female Syrian refugees aged 18–49 years, living outside of refugee camps in Turkey. The results highlight important gaps in services and practice that must be addressed.

About one in three women in the present study lived in homes in which the number of family members residing was 11 or more. In a Lebanese study, the mean household size was 10.5 people, and approximately half of the households had 12 or more people (Strong et al. 2015). Among the respondents in the present study, 17.2% percent stated that they had a disease, and about 12 percent stated that they used medications for the disease. The most frequent problems reported by the majority of female Syrian refugees in this study were lack of nutrition and shelter and finding a job. Crowded living is an important risk factor for disease, and it dramatically increases the nutrition and housing problems (Strong et al. 2015). When evaluated generally, 40 percent of the participants reported health problems themselves or in their families, and when they were sick, about 6 percent reported that they had difficulty obtaining health-care services.

Only 5.5 percent of respondents in the present study described their general health status as poor. In the same region, having the highest mortality and morbidity ratio and similar cultural characteristics, 33 percent of the female seasonal agricultural workers in the same age group reported their health status as poor (Şimşek et al. 2015). The majority of reproductive-aged female Syrian refugees perceived their general health status as good, due to escaping from war zones and living in a safe area.

Over half of the women (55.8 percent) in this study were in consanguineous marriages, including marriages to their brother's children. The practice of consanguineous marriage has been the culturally preferred form of marriage in most Arab countries because it is thought that it strengthens family ties and promotes family stability, reduces dowry or brides' wealth payment requirements, simplifies premarital negotiations, offers greater compatibility between spouses and other family members, offers a lower risk of hidden financial and health issues, and keeps family property within the parental families. Previous research has found powerful links between consanguineous marriages and child morbidity and mortality, such as stillbirth, neural tube defects, loss of hearing, and congenital anomalies (Bittles 2013; Islam 2012; Maghsoudlou et al. 2015; Shawky et al. 2012). Community-based and culturally sensitive health education programs and genetic counseling should be implemented in line with the World Health Organization (WHO) recommendations to minimize the negative health consequences of consanguinity for child health.

In this study, half of the women had married while below the age of 18 years, and approximately one-third of women had children before the age of 18 years. The creation of a secure environment and ensuring the continuity of social support and assistance for the prevention of early marriage for girls in refugee groups is important (Adams, Rabbani, and Ahmed et al. 2013).

In all of the age groups of women in this study, the desired number of children was higher than the number of children they had. Results from previous research also indicate that poor reproductive health is related to refugee status and inadequate antenatal care (Aptekman et al. 2014; Benage et al. 2015; Reese Masterson et al. 2014). Our study results support this finding: 16 percent of the women were pregnant; nearly half of respondents had pregnancy losses including miscarriage and stillbirth; about 38 percent of respondents reported unmet contraceptive needs, and half of the women had a gynecologic infection. These findings indicate the need to increase awareness and access to antenatal and gynecologic care and increase availability of midwives to provide these services in a culturally sensitive manner. The focus on family planning needs for refugees is critical. Access to family planning, including modern contraception, empowers refugees, particularly women and their husbands, to make important decisions about their reproductive health.

Half of the participants in this study had an iron deficiency; 45.6 percent had a vitamin B_{12} deficiency, and 10.5 percent had a folic acid deficiency, and three quarters of the women had one of these three deficiencies. Maternal malnutrition has been associated with an increased incidence of fetal loss and adverse birth outcomes for children, with iron deficiency anemia being linked to increased risk for maternal mortality, low birth weight, lowered

resistance to infection, and poor cognitive development (Ramakrishnan et al. 2012). An Australian study found that one-third of those from Bhutan and Iran, a quarter of those from Afghanistan, and 16.5 percent of the whole refugee cohort had Vitamin B_{12} deficiency, much lower than the prevalence found in the present study (Benson et al. 2013). In another study of 326 refugees undertaking post-arrival screening in Minnesota, Texas, and Utah, 27 percent of those from Bhutan and 12 percent from Somalia had vitamin B_{12} deficiencies (CDC 2011). Low maternal levels of Vitamin B_{12} appear to be an independent risk for neural tube defects (Molloy et al. 2009). A recent finding from South Australia indicated an increased prevalence of neural tube defects in offspring of women from the Middle East and South and Central Asia (Benson et al. 2013). Debate has been evolving about whether Vitamin B_{12} should be added to folic acid as a supplementation or should be routinely checked and supplemented in pregnancy (Abdollahi et al. 2008; Heseker et al. 2009; Vanderjagt et al. 2009). Prevalence rates of micronutrient deficiency in the present study was higher when compared to other studies, so that vitamins containing B_{12}, iron, and folate should be included in an emergency aid kit for women in this age group.

Approximately 90 percent of women reported at least two mental health symptoms. As with other populations affected by collective violence and displacement, the most prevalent and clinically significant problems among Syrian women in our study were symptoms of emotional distress including depressive symptoms, prolonged grief disorder, posttraumatic stress disorder, and various forms of anxiety (Almoshmosh 2015; Hassan et al. 2016; Parker 2015; Ventevogel et al. 2015). Difficult life circumstances often contribute to phenomena such as demoralization and hopelessness, which may be related to profound and persistent existential concerns of safety, trust, coherence of identity, social role, and society. It is also crucial for general health-care practitioners to be well prepared to assess and manage any mental health and substance abuse conditions among conflict-affected Syrians. The WHO and the UNHCR have developed the mhGAP Humanitarian Intervention Guide to ensure the inclusion of mental health within basic primary care services. Interventions aimed at improving living conditions and livelihoods may significantly contribute to improving the mental health of refugees and internally displaced persons, perhaps more than any psychological and psychiatric intervention (Ventevogel et al. 2015).

Based on the findings of the present study, taking initiatives intended to eliminate iron and vitamin B_{12} deficiencies in female Syrian refugees in the 18–49 year age group and the development of social support systems and opening of Turkish literacy courses would be effective in protecting their mental health.

This study had several limitations. First, although we selected a representative probability sample, the results cannot be generalized to all of the

married Syrian refugee women in Turkey, particularly to those who live in camps or other provinces. Second, the data were cross-sectional, and thus causality cannot be inferred. Longitudinal analyses would help to understand better the underlying causal nature of the relationships among the study variables. Third, standard instruments were not used for ascertaining information on potential confounding variables, including social support, and risk factors, including smoking. This could have resulted in misclassification of information and/or lack of comparability of findings with those from prior studies that did use standard instruments. In addition, the data were self-reported and thus may have been subject to recall bias and misclassification because reporting of disease was not validated against medical records.

However, this study provides much-needed baseline data to assess the rapidly evolving situation among Syrian refugee women. Despite its limitations, this study provides important information about a vulnerable population that continues to grow as the conflict shows no signs of abating. In addition, information gained from this study may assist in planning for future humanitarian crises involving large numbers of displaced women and children. Qualitative studies and operational research are needed in this area.

Conclusions

The results of this study contribute to the understanding of health needs among married women refugees and, in particular, those in the Middle East. Offering primary health-care services is urgently needed, including nutrition, reproductive health services, and integrated mental health services through health promotion strategies outside of camps.

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