

Community-Based Assessment to Determine the Seroprevalence of HBsAg, Anti-HBs, Anti-HCV, HIV, and Syphilis for Reproductive-Aged Female Syrian Refugees Living in Sanliurfa, Turkey

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Abstract

Background: Sanliurfa, a city of southeast Turkey hosted to approximately 401,050 Syrian refugees. There are no data about the sexually transmitted infections (STI) of Syrian refugees in literature. Hence, it was aimed to determine the seroprevalence of hepatitis B surface antigens (HBsAg), hepatitis B surface antibodies (anti-HBs), hepatitis C virus antibodies (anti-HCV), human immunodeficiency virus (HIV), and syphilis.

Methods: A multi-purpose cross sectional study was conducted between April and May 2015 in different districts of Sanliurfa. This study was supported by United Nations Population Fund with the project titled "Determination of General Health Status and Reproductive Health Problems in Syrian Immigrants". The sample size was calculated as 460 houses by the probability cluster sampling method. A married Syrian woman was chosen in each house, thus study was successfully carried out in 458 houses. Data included socio-demographic variables; the symptoms of vaginal purulent discharge, bleeding, abdominal pain, and dysuria were collected from each participant. Eight mL of venous blood samples were collected from participants. Sera were analyzed for HBsAg, anti-HBs, anti-HCV, HIV, syphilis.

Results: The mean age of the total participants was 30.0 ± 8.9 years. The households of the family ranged from 2 - 27; the mean household size was 9.9 ± 4.9 persons. The seroprevalence rates of the HBsAg, anti-HBs, anti-HCV seropositivity were 4.1%, 17.7%, 0.4%, respectively. No one had neither HIV nor syphilis antibodies.

Conclusions: Screening should be provided for STI for female refugees and they should be educated about the increasing awareness, transmission, control, prevention of STIs, blood-borne diseases.

Keywords: Syrian refugees; HBsAg; Anti-HBs; Anti-HCV; HIV; Syphilis; Turkey

Introduction

Since the Syrian Civil War began in 2011, approximately 7 years have passed, and most of the citizens of the Syrian Arab Republic have fled to Turkey, Lebanon, Jordan, and Iraq. The majority of the Syrian refugees fled to Turkey, due to its open gate policy and the width of its border. The Syrian refugees are either living in refugee camps or outside of them. According to data by the Ministry of the Interior, approximately about 36% of Syrian refugees are located in 20 camps in 10 cities, which are located in southern and southeastern Turkey, close to the Syrian/Turkish border, which is under intense conflict. The remaining 64% of refugees are located in cities, including the 10 abovementioned cities with refugee camps [1]. In Turkey, the population of Syrians reached to 3,572,565 as of April 12, 2018. Hence, more and more Syrian refugees are living outside of the camps. It has been reported that the official number of refugees living outside of the camps is 224,334, while remain 3,348,231 live in outside of refugee camps. If all Syrian refugees lived in a new city, it would be the fourth crowded (Istanbul, Izmir, Ankara) city in Turkey according to population size. Of all the sheltered Syrian refugees (224,334) living in Turkey, 35.4 percent (77,786) live in Sanliurfa five temporary protection camps. Sanliurfa is a city that host a total of 476,766 Syrian refugees [2]. Refugees who entered Turkey illegally or were not registered by the government either had

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relatives here or had enough money to afford to live by their own means in province centers instead of living in the camps. Generally, they live under horrific conditions in rental houses with one or more rooms, without a kitchen or bath, in a very unhygienic environment. Most spend all of the money they brought with them for such meager accommodations and must begin to work for very low wages.

The majority of the Syrian refugees living outside of the camps have worse conditions in terms of well-being, access to health care centers, or attainment and social opportunities compared to those living in camps. As a course of nature in war and forced migration, hundreds of thousands of people are likely to have been exposed to death, poverty, mental and physical disorders, communicable diseases, social exclusion, and limited access to health services that directly protect life, such as, reproductive health services [3, 4]. Many studies have emphasized that maternal and infant mortality and morbidity rates, infectious diseases, and mental disorders rates are increasing among refugees [5-12]. These inequalities and diseases are mostly faced by female refugees, although the government's improvements to a refugee's quality of life are similar to those in Lebanon, Jordan, and Iraq [13].

No data has been reported about sexually transmitted diseases in female Syrian refugees, neither in Sanliurfa nor in Turkey. Female refugees are a more vulnerable population, since they are conflict-affected women. Therefore, we aimed to investigate the prevalence of sexually transmitted infections (STIs) among reproductive-aged female Syrian refugees live in Sanliurfa in terms of educational and awareness-raising aspects in the prevention of STIs.

Material and Methods

A cross-sectional study was conducted between April and May 2015 in different districts of Sanliurfa. This study was supported by United Nations Population Fund (UNFPA) with the project titled "Determination of General Health Status and Reproductive Health Problems in Syrian Immigrants". The field study was completed in collaboration with the Harran University, UNFPA, and Sanliurfa Governorate in April 2015. The clinical examinations were performed at the Harran University in May 2015. The sample size was calculated as 460 houses (out of a total of 12,750 houses) based on the household list prepared by Sanliurfa's Governor; 95% confidence level, with a 4% confidence interval using the probability cluster sampling method. A married female reproductive-aged Syrian refugee who accepted enrolment of the study was selected randomly in each house. Hence, the study was successfully carried out in 458 houses (response rate of 99.6%).

Ethical consideration

This study was approved with title "Determination of General Health Status and Reproductive Health Problems in Syrian Immigrants" by the Ethics Committee of the Faculty of Medicine at Harran University (20.03.2015/03/14). The study data

were collected during face-to-face interviews using a structured questionnaire that was prepared by the investigators, which was first written in Turkish and then translated to Arabic. All of the participants enrolled this study were informed about and understood the aim of the study, and written consent was obtained from each participant. The data, including socio-demographic variables such as family size, age groups, education attainment, number of children, access to health services, spousal employment status, number of pregnancies, symptoms of vaginal discharge, purulent discharge, abdominal pain, vaginal bleeding, dysuria, and dyspareunia, were collected from each participant.

Gynecological examination

During home visits, when a sexually active female Syrian refugee described that she had symptoms including vaginal discharge, purulent discharge, abdominal pain, vaginal bleeding, dysuria, or dyspareunia, she was invited to the Gynecology Department of Harran University Research and Training Hospital. Once there, women with these symptoms were examined via a comprehensive visual inspection, and bimanual and pelvic examination using a speculum by gynecology and dermatology department physicians to determine and treat genital ulcers, genital warts, syphilitic chancres, and grey/yellow vaginal discharge.

At that time, 8 mL of venous blood was collected in a gel vacuum tube from each of the 458 female Syrian refugees, aged 15 - 49 years, by two Syrian nurses. The tubes were then labeled and transferred to the Harran University Vocational School Microbiology Laboratory under suitable conditions, separated by centrifugation, and stored at -20 °C until use. The sera were tested for hepatitis B surface antigens (HBsAg), hepatitis B surface antibodies (anti-HBs), hepatitis C virus antibodies (anti-HCV), and human immunodeficiency virus antigens and antibodies (HIV Ag/Ab) using the HIV Ag/Ab Combo enzyme-linked immunosorbent assay (Abbott Architect, Abbott Laboratories, IN, USA) and syphilis antibodies, which are transmitted sexually or via blood route. The ARCHITECT qualitative serological assay (HBsAg, anti-HBs, anti-HCV, and HIV Ag/Ab Combo) calculated a result based on the sample relative light unit (RLU)/cutoff RLU signal/cutoff (S/CO) values. Specimens with S/CO values ≥ 1.00 were considered reactive, while those with S/CO values < 1.00 were negative for HBs; specimens with S/CO values ≥ 10.00 were considered reactive, while those with S/CO values $< 0 - 9.99$ were negative for anti-HBs; specimens with S/CO values ≥ 10.00 were considered reactive, while those with S/CO values < 1 were negative for anti-HCV; and specimens with S/CO values ≥ 1.00 were considered reactive, while those with S/CO values < 1.00 were negative for HIV Ag/Ab Combo. Antibodies for *Treponema pallidum* were tested qualitatively using Laboquick Anti-syphilis test tape.

Statistical analysis

Data entry and analyses were performed using the Statistical Package for the Social Sciences, version 11.5. Associations

Table 1. Prevalence of the Seropositivity for Hepatitis B and Hepatitis C, HIV Markers and Syphilis of Female Reproductive-Aged Syrian Refugees (N = 458)

	N	%
HBsAg positivity (≥ 1.00 S/CO)	19	4.1
Anti-HBs positivity (≥ 10.00 S/CO)	81	17.7
Anti-HCV positivity (≥ 1.00 S/CO)	2	0.4
HIV Ag/Ab combo (≥ 1.00 S/CO)	0	0.0
Syphilis	0	0.0
Total	458	100.0

among the variables were assessed using crude odds ratios, and 95% confidence intervals (95% CI) were calculated and Chi-square analyses were performed. The level of statistical significance was accepted as $P < 0.05$ for each statistically significant factor.

Results

A total of 458 female Syrian refugees were enrolled in this study. The mean age of the participants was 30.0 ± 8.9 . The family households ranged from 2 - 27 people and the mean household size was 9.9 ± 4.9 people. As seen in Table 1, the seroprevalence rates of the HBsAg, anti-HBs, and anti-HCV seropositivity were 4.1%, 17.7%, and 0.4%, respectively, among the total 458 female Syrian refugees. None of the women were found to have HIV or syphilis antibodies (0%).

The age at the start of sexual activity in a Syrian refugee family ranged from 11 to 38, and the mean sexual activity age was 18.9 ± 4.1 . Of these women, 71.0% were married as a result of their family's decision.

Of the 458 participants, 50.8% (232) expressed that they had symptoms of vaginal discharge, purulent discharge, abdominal pain, vaginal bleeding, dysuria, and dyspareunia. Of the 232 female Syrian refugees, 157 with symptoms and who were not pregnant were called and invited to Harran University Gynecology Department. Of those 157 participants, 56% (88 female Syrian refugees) accepted the invitation to the hospital and were examined by physicians. They were examined via speculum and ultrasound, and treated by physicians according to their diagnosis. Genital warts, genital ulcers, and chancroids were not detected among the female Syrian refugees. The results of the gynecological examinations are given in Table 2.

Of the 232 symptomatic female Syrian refugees, 4.3% (10) had HBsAg positivity, and of the 226 asymptomatic refugees, 4% (9) had HBsAg positivity. There was no significant association between the symptoms and HBsAg positivity ($P > 0.05$). Of the 232 symptomatic female Syrian refugees, 19.4% (45) and of the 226 asymptomatic refugees, 16.0% (36) had anti-HBs seropositivity. There was also no significant association between the symptoms and anti-HBs or HCV positivity ($P > 0.05$).

There was no significant association between hepatitis B, hepatitis C, HIV/AIDS, syphilis, and the family size, age

Table 2. Diagnosis of The Sexually Transmitted Diseases of Female Syrian Refugees With Symptoms (Vaginal Discharge, Purulent Discharge, Abdominal Pain, Vaginal Bleeding, Dysuria and Dyspareunia) According to Pelvic and Ultrasound Examination (N = 88)

Diagnosis	N	%
No problem	38	43.2
Vaginitis	15	17.0
Col-vaginitis	13	14.8
Vulvovaginitis	18	20.5
Cervical cancer	2	2.3
Candidiasis	1	1.1
Ria image of intracavitary	1	1.1
Genital warts	0	0.0
Genital ulcer	0	0.0
Chancroid (soft chancre)	0	0.0
Total	88	100.0

group, education attainment, number of children, spousal employment status, number of pregnancies, or arrival time in Turkey ($P > 0.05$) (Tables 3, 4). Only access to health services was found to be significantly associated with anti-HBs positivity ($P < 0.05$) (Table 4).

Discussion

To the best of our knowledge, this study provides the first data on sexually transmitted and blood-borne infections, including syphilis, hepatitis B, hepatitis C, and AIDS/HIV, among female Syrian refugees living outside of refugee camps in Turkey. The seroprevalence rates of HBsAg, anti-HBs, and anti-HCV seropositivity in this study were found as 4.1%, 17.7%, and 0.4%, respectively.

The seroprevalence of HBsAg positivity was 4.1% among reproductive-aged female Syrian refugees in Sanliurfa. This result was higher than that reported in the literature, which was a hepatitis B virus (HBV) seroprevalence rate of 2.8% among health-care workers in Syria [14], a rate of 3.2% among migrants living on Greek/Turkish borders [15] and a rate of 1.49% as reported to Syrian Ministry of Health among population attending to premarital clinics [16]. This was lower than the reported rate of 7.8% HBV seropositivity in a study including hemodialysis patients in Syria [17], and it was also lower than other results of the studies conducted on various occupational groups in Syria [18-20] and other findings in the literature which estimated a chronic hepatitis B rate of 5.6% among Syrian migrants living in the United States, a hepatitis B rate of 8.3% among migrants living in Vietnam and HBsAg rate of 5.7% among female farm workers in southeastern Turkey [21-23]. In the present study, the rate of HBsAg (4.1%) might have seemed lower and insignificant. However, the risk of exposure to hepatitis B might be increased due to the context of the conflict, the nature of forced migration, challenging liv-

Table 3. HBsAg Positivity According to Selected Independent Variables

Variables	Total		HBsAg (+)		HBsAg (-)		Fisher's exact test, P; OR (95% CI)
	N	%	N	%	N	%	
Household size							
6 or below	126	27.5	5	4.0	121	96.0	0.57; 0.94 (0.33 - 2.66)
7 or above	332	72.5	14	4.2	318	95.8	
Age groups							
15 - 18 years	34	7.4	1	2.9	33	97.1	0.59; 0.69 (0.9 - 5.28)
19 years or above	424	92.6	18	4.2	406	95.8	
Education level							
Illiterate	69	15.1	2	2.9	67	97.1	0.43; 0.65 (0.15 - 2.9)
Primary school or above	389	84.9	17	4.4	372	95.6	
Number of children							
4 or below	342	74.7	13	3.8	329	96.2	0.34; 0.72 (0.27 - 1.95)
5 or above	116	25.3	6	5.2	110	94.8	
Employment of husband							
Yes	232	50.7	13	5.6	219	94.4	0.88; 0.46 (0.17 - 1.23)
No	226	49.3	6	2.7	220	97.3	
Access to health service							
Yes	26	5.7	1	3.8	25	96.2	0.71; 1.09 (0.14 - 8.48)
No	432	94.3	18	4.2	414	95.8	
Interpregnancy interval							
2 years or below	166	73.8	5	3.0	161	97.0	0.59; 0.89 (0.17 - 4.69)
3 years or above	59	26.2	2	3.4	57	96.6	
Arrival to Turkey							
0 - 12 months	282	61.6	10	3.5	272	96.5	0.28; 0.68 (0.27 - 1.71)
13 months or above	176	38.4	9	5.1	167	94.9	
Total	458	100.0	19	4.1	439	95.9	

ing conditions, and unsanitary conditions. The seroprevalence rates of anti-HBs was 17.7% in this study, which means that approximately one out of every five female Syrian refugees had been exposed to the HBV at some point in their lives. This result might be dangerous for women with an inter-pregnancy interval of less than 2 years, i.e. they might transmit the infection to their infants. It has been reported that migrants from high-prevalence countries are exposed to higher than average rates of hepatitis B and HIV/AIDS compared to the majority of populations in Europe [24].

In this study, the seropositivity of anti-HCV, at a rate 0.4%, was lower than the seroprevalence rate of the HCV, which was reported to be approximately 1% and 2% in the Northern Africa/Middle Eastern region, Syria, and Greek/Turkish borders [15, 18, 19, 25]. The finding of this study was consistent with those reported in other studies conducted among general population in Syria [16, 26]. This finding was also similar with the data obtained from Syrian Ministry of Health (2015) that presented the rate of 0.11% among the population attending to premarital clinics in Syria [16].

In this study, none of the female Syrian refugees were found to have HIV or syphilis antibodies (0%), which had been reported in a community-based study on 18- to 49-year-old reproductive-aged migrant women in Vietnam [22]. In another study, the seroprevalence of HIV was found as 0.3% [15], which is higher than the results of the present study (0%).

In the present study, when the risk factors associated with hepatitis B and anti-HBs were evaluated, it was seen that the family size, age group, education attainment, number of children, spousal employment status, number of pregnancies, and arrival time in Turkey were not significant for hepatitis B or C infection. This might be as a result of living with other Syrian refugee families in a very crowded house or room, and living in unsanitary conditions. Due to changes in their social and economic conditions, changes in sexual behavior, poor housing, and overcrowding, all of the Syrian refugees tend to be at risk of exposure to hepatitis B, hepatitis C, HIV/AIDS, syphilis, etc. In the present study, access to health services was found to be significant for anti-HBs positivity. Of the female Syrian refugees, 5.7% had difficulties accessing health services. This

Table 4. Anti-HBs Positivity According to Selected Independent Variables

Variables	Total		Anti-HBs (+)		Anti-HBs (-)		Fisher's exact test, P; OR (95% CI)
	N	%	N	%	N	%	
Household size							
6 or below	126	27.5	23	18.3	103	81.7	0.47; 1.10 (0.62 - 1.80)
7 or above	332	72.5	58	17.5	274	82.5	
Age groups							
15 - 18 years	34	7.4	8	23.5	26	76.5	0.35; 1.48 (0.64 - 3.40)
19 years or above	424	92.6	73	17.2	351	82.58	
Education level							
Illiterate	69	15.1	9	13.0	60	87.0	0.18; 0.66 (0.31 - 1.40)
Primary school or above	389	84.9	72	18.5	317	81.5	
Number of children							
4 or below	342	74.7	63	18.4	279	81.6	0.39; 1.23 (0.69 - 2.18)
5 or above	116	25.3	18	15.5	98	84.5	
Employment of husband							
Yes	232	50.7	42	18.1	190	81.9	0.056; 0.94 (0.58 - 1.53)
No	226	49.3	39	17.3	187	82.7	
Access to health service							
Yes	26	5.7	1	3.8	25	96.2	0.038 ; 5.68 (0.75 - 42.55)
No	432	94.3	80	18.5	352	81.5	
Interpregnancy interval							
2 years or below	166	73.8	28	16.9	138	83.1	0.60; 0.99 (0.45 - 2.20)
3 years or above	59	26.2	10	16.9	49	83.1	
Arrival to Turkey							
0 - 12 months	282	61.6	50	17.7	232	82.3	0.54; 1.001 (0.62 - 1.65)
13 months or above	176	38.4	31	17.6	145	82.4	
Total	458	100.0	81	17.7	377	82.3	

rate was lower than that of the data reported by The Disaster and Emergency Management Presidency (AFAD) in Turkey, where 41.9% of female Syrian refugees who lived outside of the camps did not visit health care centers and 54.6% had difficulty in finding medicine [27]. This may be as a consequence of improvements in access to health services provided by governmental offices and university in Sanliurfa.

In the present study, one out of every two female Syrian refugees had vaginal purulent discharge, abdominal pain, vaginal bleeding, dysuria, and dyspareunia, which is evidence of STIs. Otherwise, it was found that the symptoms were not associated with the seropositivity of HBsAg and anti-HBs, HCV positivity.

The strength of this study was to provide a health screening program for a vulnerable population who were refugees in Turkey. The limitation of this study is that we could not include local population and compare the results between refugees and local population. Since this study was a part of the project titled "Determination of General Health Status and Reproductive Health Problems in Syrian Immigrants" which

was supported by UNFPA and the project included only Syrian immigrants.

Control and screening of STIs and blood-borne diseases should be provided for female Syrian refugees. They might easily transmit STIs and blood-borne diseases to their partners and infants; therefore, it is important that these female refugees should be educated about the increasing awareness, transmission, control, and prevention of STIs and blood-borne diseases. Healthy living areas, access to health and gynecologic care utilization should be implemented for these female refugees. Female Syrian refugees who are susceptible should be vaccinated against to hepatitis B or other sexually transmitted diseases.

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Conflict of Interest

The authors have declared that no competing interest exists.

Author Contributions

NYD, ZS, MA, GY designed data collection tools, monitored data collection for the whole trial, wrote the statistical analysis plan, cleaned and analysed the data, and drafted and revised the paper. They are guarantor. NYD, ZS, MA analysed the data, and drafted and revised the paper. NYD, ZS, FYZ wrote the statistical analysis plan, monitored data collection for the whole trial, and revised the draft paper. MA, NGH examined the patients. NYD and GG analysed the sera of patients. All members of the study designed the trial.

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