

Original Research Article

Attitude and practices of Syrian refugees towards medication: A descriptive cross-sectional study in Al-Zaatari camp in Jordan

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Abstract

Purpose: To evaluate the knowledge, attitude and practice of Syrian refugees towards the use of medications in Al Zaatari camp, which has had nearly 80,000 Syrian refugees since 2011.

Methods: A cross-sectional survey of 280 participants was conducted using a validated questionnaire between March and May 2022.

Results: Data collection involved face-to-face interviews. Over 90 % of the participants reported adherence to medication instructions from healthcare providers. However, 27.1 % of the respondents reported non-adherence to medications, mainly due to self-belief that there was no improvement, or because of perceived worsening of their health condition. Physicians (48.8 %) and pharmacists (24 %) were the main sources of medication information. Awareness and adherence to the use of supplements were sub-optimal among pregnant women.

Conclusion: This study provides an important insight into refugee awareness of health and medication. The findings reveal high level of exposure to counseling, but highlight gaps in understanding and expectations that affect medication adherence. Therefore, improving patients' education by enhancing pharmacist involvement is expected to enhance adherence to medication and health outcomes in refugee settings.

Keywords: Syrian Refugees, Zaatari camp, Medication awareness, pharmacists

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INTRODUCTION

Since the onset of the Syrian crisis, more than 5.6 million Syrian residents have fled to Jordan and other neighboring countries. Jordan alone has provided refuge to more than 1.36 million Syrians, nearly 10 % of whom are living in two formal camps at Zaatari and Azraq [1]. AL

Zaatari is considered the largest Syrian refugee camp in the world, with nearly 80,000 refugees presently housed, 42.7 % of whom are between the ages of 18 and 59 [2]. It is on record that nearly 655,435 out of 1,360,000 Syrian refugees have registered with the United Nations High Commissioner for Refugees (UNHCR) [1]. Since March 2019, Syrian refugees have had access to

public health care at a non-insured, Jordanian subsidized rate of 80 % [1]. The other options for health care are either from Non-Governmental Organizations (NGOs) or private health services. However, 15.7 % of the refugees have stated that the principal barrier to accessing health services is the financial cost involved [3].

However, health challenges in refugee populations are not limited to financial issues. Awareness of the availability of health services, awareness of the need for health care, availability of medicines, long waiting times, and transportation also affect the accessibility of health care to refugees [4]. This is aggravated by increased prevalence of non-communicable diseases (NCDs) and smoking among refugees, as well as exacerbations of respiratory illness due to poor living conditions [4,5]. Moreover, vulnerable groups such as women and children, as well as the disabled, war-wounded, mental health patients, and aged refugees, present significant challenges [1].

Medication adherence has been defined as the “active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result” [6]. Non-adherence to medication is associated with poor disease prognosis, adverse outcomes, and higher costs of care [7]. According to the World Health Organization, the potential reasons for medication non-adherence are classified into five categories of factors, viz: patient, condition, therapy, socioeconomic, and health system-related factors [8]. An adequate understanding of the reasons that may lead to non-adherence among refugees will enhance implementation of a proper intervention.

Optimization of medication use is critical to improving health care outcomes [9,10]. This is so, especially with the high prevalence of non-communicable diseases among refugees [11]. In a study conducted on adult Syrian refugees in Jordan, hypertension had the highest prevalence (9.7 %), followed by arthritis (6.8 %), diabetes (5.3 %), chronic respiratory diseases (3.1 %), and cardiovascular disease (3.7 %) [4]. However, through effective communication with patients, health care professionals can minimize medication-related problems and optimize medication use [10]. The overall health outcomes will be improved by providing accurate information and appropriate education to refugees in order to ensure proper understanding of disease management through non-pharmacologic and pharmacologic approaches. Some of the important issues that concern healthcare providers in Al Zaatari camp are the

awareness and practice of refugees regarding medicines, sources of information, and attitudes regarding the use of medicines as a treatment option.

This study was conducted to assess the experience of the refugees regarding receiving proper counseling about medications and reasons for non-adherence. In addition, an assessment on the extent of involvement of pharmacists in the education of patients on drug use was carried out.

METHODS

Subjects and study design

This cross-sectional study involved a randomly selected sample of Syrian refugees living in Zaatari camp in Jordan. The study was performed between March 2022 and May 2022. The primary tool used for data collection was a pre-tested, structured (i.e., fixed set of standardized questions asked in the same order for every respondent) and validated questionnaire, based on literature review. It was developed into closed/open-ended questions and reviewed internally by the Faculty of Pharmacy, Zarqa University, Zarqa, Jordan. A pilot study was conducted prior to the commencement of the study, so as to ensure the clarity and objectivity of the questionnaire. The pilot responses to the questionnaire were collected for two weeks and evaluated for consistency and reliability before starting the main study. The questionnaire was written in Arabic, the mother tongue of the refugees, for clarity and better understanding of the questions by the respondents.

The study included all adult male and female populations (aged over 18 years) living in Al-Zaatari Refugee Camp in Jordan. The exclusion criteria covered individuals under 18 years of age, non-residents (such as NGO staff), patients who were unable to provide informed consent due to cognitive or emotional distress, and individuals who had no interest in the questionnaire or who refused to participate in the study. Each of the participants signed a consent form at the beginning of the interview as attestation of voluntary participation in the study.

Study setting and sample size

The sample size was determined via Raosoft. Using the population statistics data for the refugee (80,000) and 90 % confidence interval with 50 % expected response, a minimum of 270 Participants were required.

The Za'atari refugee camp, situated in the northern Jordanian Mafraq Governorate, was founded in July 2012 in response to the Syrian conflict. The study, which was carried out in the Za'atari refugee camp, was started as a makeshift tent collection before switching to caravans.

Although there is a thriving informal economy in the camp, its inhabitants are subject to sociological constraints such as limited mobility outside the camp, high unemployment rates, and reliance on foreign assistance for necessities like power and water. In collaboration with the Jordanian Ministry of Health (JMoH) and the United Nations High Commissioner for Refugees (UNHCR), several clinics run by foreign and local NGO employees are the main means of providing healthcare. The number of hospitals within the camp is limited. One of the few facilities available is the Moroccan Field Hospital. Thus, for advanced surgical or tertiary care, refugees are often referred to public hospitals in Mafraq or Amman, the capital of Jordan. The healthcare professionals are Jordanian doctors and nurses, as well as refugee health workers who offer their services voluntarily. These healthcare professionals play an important role in community health outreach and health education. Sometimes, refugees face health challenges due to long waiting times and limited availability of certain medications for chronic diseases, which negatively influence their health-seeking behavior.

Data collection

The data collection form was completed through private face-to-face interviews with 2 investigators in a private and quiet space. The investigators were year 4 and year 5 pharmacy students who live in Zataari refugee camp, and were trained in appropriate interviewing skills for 5 consecutive days. A simulation of the interview was conducted to improve the objectivity of the results. Voluntary participation and participant anonymity were assured and maintained to encourage open and honest responses. At the end of the interviews, the interviewers showed gratitude to the participants for participating in the study.

The validated questionnaire was divided into three parts: parts I, II, and III. Part I was the consent form in the Arabic language, in which the purpose of the study and its significance were explained, with assurance for confidentiality of the data to be collected. Part II served for the

collection of each participant's demographic data, such as age, gender, marital status, educational level, occupation, insurance status, and health status, as well as presence of chronic diseases. The third section (part III) of the questionnaire was focused on the awareness and knowledge of the participants about medications used, based on experience and sources of medical information. This part was composed of 20 questions. A set of targeted questions was available for pregnant women who agreed to join in providing answers to the questionnaire.

Ethical consideration

Ethical approval for the study was obtained from the institutional review board (IRB) committee of the Scientific Research Ethics Committee at The Hashemite University, Zarqa, Jordan (approval no. 10/5/2021/2022).

Statistical analysis

The data obtained were coded and input into IBM Statistical Package for Social Sciences (SPSS®) for Windows, Version 23, for statistical analysis. Descriptive statistics with corresponding 95 % confidence intervals were carried out.

RESULTS

Study population and demographics

A convenience sampling approach was used due to the logistical challenges of random household selection in a camp setting. However, to ensure a diverse representation of the camp population, the research team rotated recruitment times (morning and afternoon) and locations across different districts of the camp.

The potential respondents were personally contacted by the research team at high-traffic community centers in Za'atari camp, specifically around primary healthcare centers, community centers, and market areas. The process began with an initial contact, where the research team would approach the potential respondents, introduce themselves, and give a brief overview of the research objectives using a standardized recruitment script in Arabic. This was followed by a screening process where potential respondents were screened based on the inclusion and exclusion criteria. Thereafter, individuals who were willing to participate were invited to read the Information Sheet in a quiet, semi-private area. After addressing any questions, written informed consent was obtained. Once the consent was

signed by the participant, the questionnaire was administered.

Out of the 300 individuals approached, 280 met the criteria and agreed to participate, resulting in a high response rate of 93 %. This high rate is attributable to the presence of the researchers in familiar community spaces, as well as the perceived relevance of the study topic to the camp residents.

The demographic characteristics of the 280 respondents are presented in Table 1. Analysis of the data showed that 65.4 % of the participants were female, with 64.6 % in the age range of 18 to 30 years. Additionally, 70.4 % of the respondents were married, while 43.9 % (123 participants) held bachelor's degrees.

Table 1: Demographic Characteristics of the study participants (n = 280)

Characteristic	n (%)
Gender	
Male	97 (34.6%)
Female	183 (65.4%)
Age	
18-25	93 (33.2%)
26-30	88 (31.4%)
31-50	70 (25.0%)
> 50	29 (10.4%)
Marital status	
Single	74 (26.4%)
Married	197 (70.4%)
Widowed	6 (2.1%)
Divorced	3 (1.1%)
Educational status	
Illiterate	100 (35.7%)
High school	55 (19.6%)
Bachelor	123 (43.9%)
Higher educations	2 (00.7%)
Occupation:	
Student	67 (23.9%)
Housewife	115 (41.1%)
Freelancer	39 (13.9%)
Retired	9 (3.2%)
Unemployed	50 (17.9%)
Presence of chronic disease	
Yes	57 (20.4)
No	223 (79.7)
Self-health assessment:	
Excellent	61 (21.8%)
Very good	95 (33.9%)
Good	85 (30.4%)
Fair	35 (12.5%)
Bad	4 (1.4%)

Furthermore, 20.4 % of the participants reported suffering from one or more chronic diseases, with hypertension being the most common health issue. These results are illustrated in Figure 1.

Data related to refugees' knowledge, awareness, and attitudes towards medication use are

presented in Table 2. The levels of these attitudes and awareness were assessed through questions structured in three distinct sections.

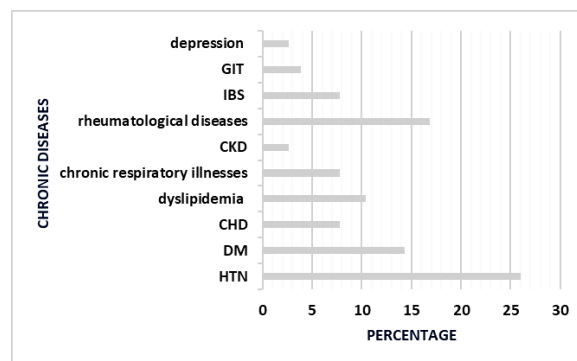


Figure 1: Percentages of chronic diseases in the study population

All participants reported using medication at least once during their stay in the camp prior to the survey. Over 90 % of the respondents adhered to the instructions provided by the physicians and pharmacists. Among those who did not adhere to the prescribed medication regimens, the most commonly cited reason was a perceived lack of improvement, as shown in Table 3. Moreover, 6.4 % of participants revealed that they had used medications at least once in their lives without consulting a healthcare provider.

Additionally, 91.1 % of the respondents admitted receiving adequate counseling regarding the prescribed medications, either from a physician or from a pharmacist, and 87.1 % had the opportunity to ask questions about the prescribed medications.

Regarding experiences and behaviors related to prescribed medications, 27.1 % reported experiencing no improvement, while 8.2 % noted worsening of disease symptoms. Furthermore, 82.5 % of the participants adhered to the guideline of not sharing prescribed medications with others.

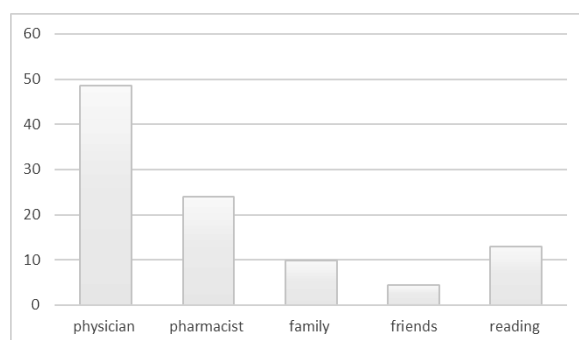
Out of 280 respondents, 111 individuals (39.6 %) reported seeking alternative methods for symptom management. Specifically, 8.9 % practiced self-care for symptoms, while 30.7 % sought assistance and followed guidance from pharmacists. Regarding the sources of drug information, almost half of the participants (48.8 %) identified physicians as the primary sources, followed by approximately 24 % of respondents who stated that pharmacists were the main sources of information. These data are illustrated in Figure 2.

Table 2: Knowledge, awareness, and attitudes of the study population regarding medication

Parameter	Yes	No
Part A: Experience Regarding Counseling		
1. Have you ever received enough counseling for medications being dispensed?	255 (91.1%)	25 (8.9%)
2. Have you had the chance to ask questions on your mind regarding medication being dispensed?	244 (87.1%)	36 (12.9%)
Part B: Self-experience with prescribed medication		
1. Have you ever taken prescribed medication without any improvement in your health condition?	76 (27.1%)	204 (72.9%)
2. Have you ever taken a prescribed medication that resulted in worsening of your clinical condition?	23 (8.2%)	257 (91.8%)
3. Have you ever shared any of your prescribed medications with others?	49 (17.5%)	231 (82.5%)
Part C: Adherence to counseling information		
1. Are you adherent to the instructions given to you by your physician regarding the use of your medicine?	258 (92.1%)	22 (7.9%)
2. Are you adherent to the instructions given to you by the pharmacist regarding the use of your medicine?	257 (91.8%)	23 (8.2%)
3. Did you ever stop any of your prescribed medicines without a physician/pharmacist consultation?	75 (26.8%)	205 (73.2%)
4. Have you ever used drugs without an obvious reason?	18 (6.4%)	262 (93.6%)
5. Do you consider yourself adherent to your drug regimens?	204 (72.9%)	76 (27.1%)

Table 3: Common reasons for non-adherence to medications among participants

	Reason	n (%)
Which of the following are the causes for your medication non-adherence?	Non-improvement in condition	12 (4.3%)
	Side effect of medication	7 (2.5%)
	No reason	42 (15%)
	Feeling of improvement	3 (1.1%)

**Figure 2:** Sources of information on drugs**Table 4:** Patterns and levels of care for pregnant refugees

Level of Care	Percentage of respondents
Adherence to pregnancy supplements	31.7
Regular laboratory check-ups	88.9
Regular clinic check-ups	65.0
Receiving proper drug instructions for safe use	87.3
Receiving caution regarding high-Risk medication use during pregnancy	66.6
Hospital staff as the source of drug instructions and caution	61.8

This study was also focused on pregnant women as a vulnerable minority group, thereby

emphasizing the necessity of addressing their specific medical needs through general health maintenance, regular physician visits, and laboratory checks. There were 63 pregnant women among the 183 female participants included in the study. Some targeted questions were developed for this population to assess the patterns and levels of care, as presented in Table 4.

The patterns of care and health-seeking behaviors among pregnant refugees are summarized in Table 4. Overall, the results indicate a structured level of maternal care within the camp, characterized by high engagement with clinical and diagnostic services. The results showed that pregnant women in the camp were closely monitored, with majority of participants attending regular laboratory check-ups (88.9 %) and regular clinic check-ups (65 %). This suggests that the healthcare infrastructure in the camp effectively facilitates routine prenatal monitoring. Furthermore, there is a strong emphasis on medical safety and education: 87.3 % of respondents received proper drug instructions, and 66.6 % were explicitly cautioned regarding the risk associated with the use of high-risk medications during pregnancy.

Hospital staff were identified as the primary source of medical guidance (61.8 %), indicating

that professional healthcare providers are the central pillar of maternal care in the camp. Despite this high level of clinical supervision and instruction, a significant disparity was observed in nutritional adherence, as the adherence to essential pregnancy supplements was low (31.7 %). This finding suggests the existence of specific socioeconomic or logistical barriers to consistency in consumption of prescribed supplements.

DISCUSSION

Jordan has provided refuge to more than 1.36 million Syrians. With nearly 10 % of the refugees living in two camps, these Syrians have become part of the Jordanian society. In addition to the pitfalls associated with seeking medical care and medication for the refugees, it is considered important to examine the actual practice and attitude of this population towards healthcare. To the best of our knowledge, this study is the first of its type to assess the knowledge, awareness, and attitude of Syrian refugees in Jordan towards medication use. The refugee sample studied was diverse, comprising the Al-Zaartari camp population of both sexes, with different ages and diverse educational backgrounds. The main findings demonstrated a high prevalence of exposure to instructions from healthcare providers (91.10 %) and a low percentage of self-care treatment. The survey showed that patients had good counseling experience, which reflects good patient-physician communication, as well as the presence of skilled, well-trained pharmacists in the refugee community. The patients' adherence to medications prescribed by healthcare providers reflects good literacy in medication, and the adherence helps in preventing drug misuse, side effects, toxicity, and therapeutic failure, especially for patients with chronic diseases. This finding is clinically significant in that medication adherence reduces mortality and morbidity and improves quality of life, especially in a vulnerable population such as refugees. However, this finding differs from results reported in previous studies conducted among Southeast Asian refugees, in which the prevalence of adherence was not more than 12 % [12].

Although 92.1 and 91.8 % of participants reported adherence to physician and pharmacist counseling tips, respectively, self-discontinuation of medication still existed. One systematic review discussed factors that lead to poor patient adherence from the patient perspective such as negative beliefs, e.g., low degree of perceived necessity, fear of side effects, preference of lifestyle changes to medicines, aversion for

injections (e.g., insulin injection), low level of literacy in matters related to health, and gender, especially younger female gender [13]. In 2020, a study conducted among hypertensive patients in Al-Zaartari Refugee Camp revealed that the strong drivers for non-adherence were initiation of new treatment, negative side effects of medications, low degree of literacy on health, dissatisfaction with the service delivery, and financial reasons [14].

Two factors may explain the results obtained in the population studied here: (i) exposure to counseling does not guarantee understanding of the information provided, and (ii) expectations on the duration between treatment and manifestation of benefits and/or side effects may not be clearly communicated. This interpretation is supported by patterns in self-reported experiences. More than 1 out of 4 participants reported "no improvement" with a prescribed medication (27.1 %), while 8.2 % of the respondents felt worse when using the medications. This suggests that setting expectations and addressing early issues might not be sufficient. When asked directly about reasons for non-adherence, the most common responses were "no reason", "no improvement", "side effects", and "feeling better". These responses indicate a mix of knowledge gaps, symptom-driven decisions, and limited follow-up. However, the participants consistently reported positive experiences with prescribed medications, citing reductions in the degrees of the primary complaints. This may be attributed to the high prevalence of counseling received by participants from healthcare providers. There was a significantly high degree of exposure of the patients to counseling. This demonstrates the physicians' perception of the importance of counseling in improving clinical outcomes, as 85 % of the physicians believed that patients needed extra medication information, which is consistent with the findings in an earlier study [15]. In addition, participants' reliance on healthcare providers (physicians and pharmacists) as primary sources of drug information reached 72.64 %. This high confidence rate encourages adherence, thereby leading to compliance with instructions and overall satisfaction with treatment.

In the analysis of the sources of care-seeking among the participants, 25 % identified pharmacists as the main source of care. This suggests that pharmacists serve as accessible and trusted problem-solvers, although their role as a primary source of structured education and follow-up remains under-formalized [16]. Therefore, integrating pharmacists into the care

pathway as a matter of policy, especially at dispensing points and during early treatment periods, could transform these informal touch points into systematic adherence support [17-18]. Pregnant women gained special interest in the survey, and based on the results obtained, the poor knowledge of the importance of supplements during pregnancy may have led to high percentage of non-adherence to supplement use among pregnant women. This situation may literally affect fetal growth and health after birth. However, a good percentage of women showed adherence to laboratory checkups and clinic checkups. Moreover, there was an appreciable percentage of counseling for pregnant women on proper instructions for safe use of drugs, as well as caution on the high risks associated with the use of some medications during pregnancy.

Strengths and limitations of this study

The strength of the study is based on its originality, being the first to evaluate Syrian refugees' awareness of health issues. However, the one major limitation of the study is that the population investigated represents less than 10 % of the refugees in Jordan. Thus, the results are of limited generalizability. Therefore, there is need for further studies using more objective tools to address the actual medication adherence of the refugees and overall improvement in health.

CONCLUSION

This survey highlights the necessity to improve and increase knowledge of drugs among Syrian refugees to influence their trust in the use of medications while improving medication adherence. These goals may be achieved by having well-trained pharmacists who devote quality time to counseling, as well as good communication among the health workers in the refugee camp.

DECLARATIONS

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Ethical approval

This study was approved by the institutional review board (IRB) committee of the Scientific

Research Ethics Committee at The Hashemite University, Zarqa, Jordan (approval no. 10/5/2021/2022).

Use of Artificial intelligence/Large language models

The authors confirm that AI-based tools were used solely for language editing and manuscript polishing purposes (e.g., grammar, phrasing, and clarity). No AI tools were used to generate content, interpret data, or influence study design, results, or conclusions. All intellectual contributions, study analyses, and interpretations reported in the manuscript are the original work of the authors.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of interest

No conflict of interest is associated with this work.

Contribution of authors

We declare that this work was done by the author(s) named in this article, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

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