

Chronic disease and disability among Iraqi populations displaced in Jordan and Syria

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ABSTRACT

The Iraq conflict resulted in the largest displacement in the Middle East since the Palestinian crisis, and provision of health services to the displaced population presents a critical challenge. The study aimed to provide information on chronic medical conditions and disability to inform humanitarian assistance planning. Nationally representative cross-sectional surveys of Iraqi populations displaced in Jordan and Syria were conducted in late 2008 and early 2009. Clusters of 10 household were randomly selected using probability-based sampling; a total of 1200 and 813 Iraqi households in Jordan and Syria, respectively, were interviewed. The majority of respondents in both countries perceived healthcare as unaffordable but accessible; cost was an important barrier to care. In Jordan, most routine health expenditures were for medications where in Syria, expenses were divided between medical consultations and medication. Chronic disease prevalence among adults was 51.5% (confidence interval (CI): 49.4–53.5) in Syria and 41.0% (CI: 39.4–42.7) in Jordan, most common were hypertension and musculoskeletal problems. Overall disability rates were 7.1% (CI: 6.3–8.0) in Syria and 3.4% (CI: 3.0–3.9) in Jordan. In both countries, the majority of disability was attributed to conflict, prevalence was higher in men than women, and depression was the leading cause of mental health disability. Chronic illnesses, disabilities and psychological health are key challenges for the Iraqi population and the health systems in Jordan and Syria. Continued attention to the development of systems to manage conditions that require secondary and tertiary care is essential, particularly given reported difficulties in accessing care and the anticipated prolonged displacement. Copyright © 2012 John Wiley & Sons, Ltd.

KEY WORDS: refugees; conflict; chronic disease; disability; health services

INTRODUCTION

Over the past several decades, conflict-affected populations have changed to include urban populations from middle income countries with older age structures and higher chronic disease burdens (Spiegel *et al.*, 2010). Today, the majority of refugees reside in urban environments as compared with camps (UNHCR, 2010). The Balkans and

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Caucasus wars in the 1990s and the present day conflict in Iraq differ substantially from wars in developing countries that lead to the displacement of young populations into camp settings where infectious disease and acute malnutrition are major contributors to mortality (Spiegel *et al.*, 2002; Salama *et al.*, 2004). This changing demographic structure poses new challenges and necessitates a different type of response from the international community, including, identifying and enumerating displaced populations; providing access to health services, most often in the public sector, and reduction of financial barriers to care; and development of systems to address the noninfectious disease burden, which often requires complicated and expensive care at secondary and tertiary levels (Spiegel *et al.*, 2010).

There are an estimated 1.2–1.4 million Iraqis displaced in Syria and between 450 000 and 500 000 in Jordan, most of whom are displaced in the capital cities of Damascus and Amman (FAFO, 2007; UNHCR, 2009a). Arrival rates of new refugees have declined; however, only a small number of Iraqis are repatriating, which suggests that displacement may be prolonged (UNHCR, 2008; UNHCR, 2009b). The Iraqi population has placed a significant strain on host governments and their resources, particularly in the areas of healthcare and education. Despite the efforts of governments and other organizations, access to public services remains limited for many of the Iraqi population (Gavlak, 2007; Mowafi and Spiegel, 2008). Health surveillance information in both countries is not disaggregated by nationality, which makes humanitarian assistance planning difficult. We undertook this study to characterize chronic conditions and disability among the Iraqi populations in Jordan and Syria.

METHODS

Cross sectional surveys were designed to compare Iraqi populations in capital cities to those in other areas, where geographic location was hypothesized to be a key determinant of access to health services. In Jordan, 76% of Iraqis (registered and unregistered) live in Amman, and public school enrollment data indicated 74% of Iraqi children were enrolled in Amman (UNHCR, 2007a; UNICEF 2008). In Syria, 76–79% of United Nations High Commissioner for Refugees (UNHCR) registered Iraqis that reside in greater Damascus, although this figure was adjusted downward on the basis of other sources because it likely overestimates the Damascus population; the only permanent UNHCR office is in Damascus, whereas registration in other areas is conducted by mobile teams (Al Khalidi *et al.*, 2007; UNHCR 2009b). On the basis of these figures, 75% of Iraqis in Jordan and 70% of Iraqis in Syria were presumed to live in capital cities.

Sample size was calculated to detect differences in prevalence of $\geq 15\%$ at the household level, on the basis of a maximally conservative prevalence of 0.50, between capital cities and elsewhere. Calculations assumed 80% power ($1-\beta$) and significance of $\alpha=0.05$; sample sizes were adjusted to account for a design effect of 1.5 (Kaiser *et al.*, 2006). This yielded minimum sample sizes of 968 for Jordan and 650 in Syria; planned samples were increased to 1200 and 800, respectively. Small clusters were used because they were feasible given the concentrated population; 120 cluster \times 10 household and 80 cluster \times 10 household designs were used, respectively, in Jordan and Syria.

In Jordan, Amman clusters were allocated at the neighborhood level using probability proportional to size sampling methods on the basis of neighborhood population estimates (UNHCR, 2007b; UNICEF, 2008). For non-Amman populations, a similar approach was used at governorate and district levels. Random start points within administrative units were selected using GPS, and the closest Iraqi household was identified via house to house search. The nine nearest Iraqi households that agreed to participate comprised the remainder of the cluster. Each household was introduced to the survey, and if they agreed, adult household member(s) were interviewed. The primary respondent was usually the male household head, although in many cases, others participated. For the Hopkins Symptom Checklist, one adult was randomly selected as the respondent. At the interview conclusion, referral to two nearest Iraqi households was requested; referral increased feasibility of the sampling methodology where it otherwise would have been difficult to locate Iraqi households.

In Syria, less information was available about the population location necessitating a stratified design for the non-Damascus population, which was divided into four regions with similar proportions of the Iraqi population. In each region, a principal city known to host a large Iraqi population was identified as the sample location; these included Aleppo, Latakia, Homs and Deir Ezzor (Al Khalidi *et al.*, 2007; UNHCR 2009c). Estimates of the Iraqi population by neighborhood or administrative subunit were also unavailable, requiring the development of a probability-based sampling frame. This was accomplished using the team of Iraqi interviewers and included the following steps: (i) comprehensive lists of neighborhoods where Iraqis reside were created for each city; (ii) neighborhoods were scored on a scale of 1–3 for size and concentration of Iraqis; (iii) scores were multiplied together to determine the selection probability; (iv) the corresponding number of paper slips were created for each neighborhood; and (v) for each city, slips were combined and randomly selected to identify cluster locations. Cluster start points were identified by locating the neighborhood center and then randomly selecting an intersecting street. Shops on the street were numbered, and one was randomly selected. The attendant was asked to refer the nearest two Iraqi households; if the attendant did not know Iraqis, the adjacent shop was visited until a household was identified. The closest household was interviewed; if nobody was home or the family declined to participate, the second household was visited. The same referral and interview process used in Jordan was applied in Syria until the cluster was complete.

The questionnaire was developed in Jordan and subsequently adapted for Syria; this included a pilot test, translation to Arabic and back translation to English. Interviewers underwent 4 days of training, which included basic interviewing techniques, informed consent, the survey instrument and sampling methods; interviewers were both Jordanian (Jordan) and Iraqi (Syria). Interviews averaged 30–50 min in duration; prospective respondents were informed that participation was voluntary and that no direct benefits were associated with interview completion. Full names and addresses were not recorded to protect anonymity. Analysis was conducted in SPSS and employed standard methods for descriptive statistics; mid-interval populations were used for denominators. The 25-item Hopkins Symptom Checklist was analyzed using an algorithm-based approach to classify individuals with depressive symptoms (Derogatis *et al.*, 1974; Mollica *et al.*, 2007). Both studies were approved by the Johns Hopkins

Bloomberg School of Public Health Institutional Review Board. The Ministry of Planning and International Cooperation approved the study in Jordan and in Syria, and the protocol was approved by a locally composed ethical review committee.

RESULTS

The Jordan survey was conducted in October, 2008, and the Syria survey in March, 2009. In Syria, the non-Damascus sample was stratified across four cities that each comprised 7.4% of the sample (Figure 1). In Jordan, the non-Amman sample was distributed by region: south, 3.3%; central, 12.6%; and north, 9.5% (Figure 2). Refusal rates were 2.6% and 2.4% in Jordan and Syria, respectively, and were presumably low because responses were confidential and the survey may have been perceived as potentially leading to increases in available assistance. Arrivals in both countries peaked in 2006; however, migration to Jordan began earlier. Overall, 76.9% of surveyed households in Jordan and 97.1% in Syria were displaced by the current conflict (arrival in 2003 or later) ($p < 0.001$), and the majority of these were from Baghdad, including 76.7% in Jordan and 66.1% in Syria ($p = 0.040$). Average

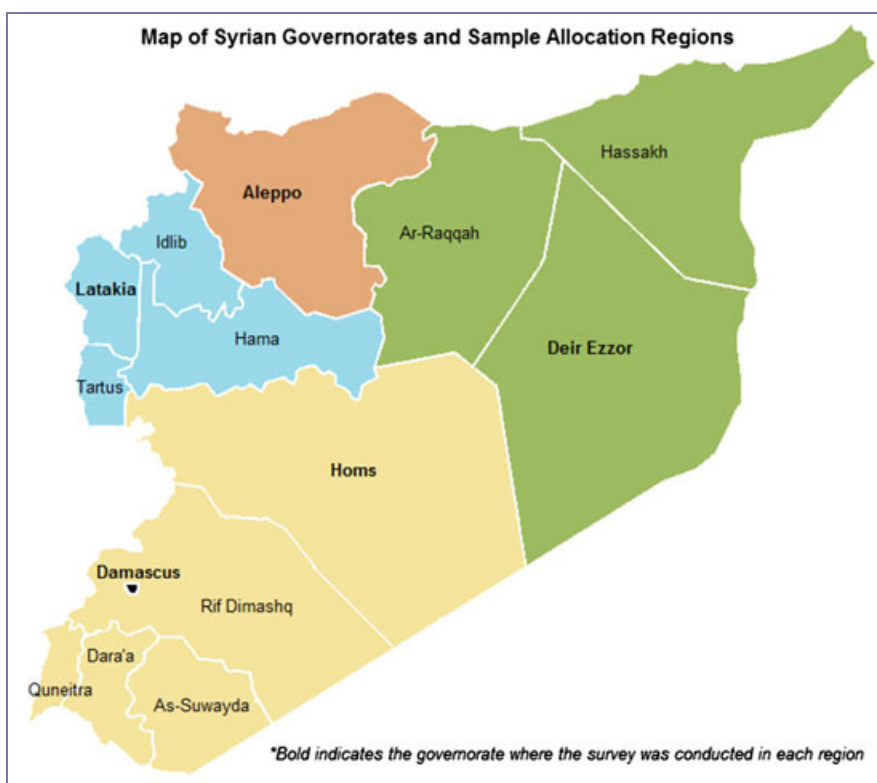


Figure 1. Map of Syrian governorates and sample allocation regions

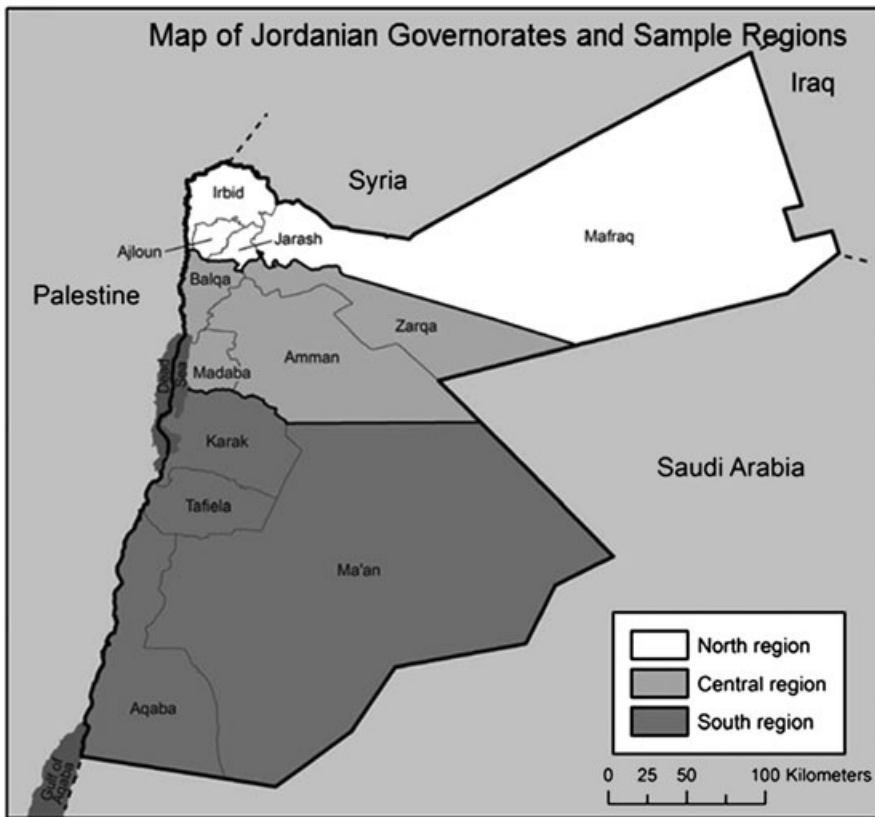


Figure 2. Map of Jordanian governorates and sample regions

household member ages were 28.7 (standard deviation (SD)=19.3) in Jordan and 27.1 (SD=17.4) in Syria. Population age distributions were similar, and in both cases, the proportion of young children and birth rates were lower when compared with national statistics for Iraq (Table 1).

In Jordan and Syria, approximately 85% of households indicated that medical attention was sought the last time it was needed; no significant differences in care seeking were observed between households in the capitals and other locations. Cost was the primary reason for not seeking care in 28% of households in Syria and 35% of households in Jordan. The private sector was the main health service provider in Jordan; in Syria, the Syrian Arab Red Crescent was the primary provider of health services for Iraqis, although use of the public sector was also common (Table 2). In both Jordan and Syria, approximately 5% of the population reported using other sources of care. This is likely to be consultations with Iraqi doctors who cannot work legally; given the high education levels in Jordan and Syria, traditional definitions of informal care—providers without formal education—are likely not applicable. Perceived access to medical care was similar with approximately 60% of households reporting care was accessible in both countries. In Jordan, 65% of Amman households

Table 1. Demographic characteristics

	Jordan	Syria	Iraq
Household characteristics			
Number of households	1200	813	—
Proportion in capital city (%)	74.6	70.5	—
Number of individuals	4997	3684	—
Average household size	4.5	4.6	6.2*
Female headed households (%)	20.2	25.1	10.2*
Households w/a member completing secondary education (%)	89	93	—
Population characteristics			
Males (%)	48.8	49.2	50.6†
Females (%)	51.2	50.8	49.4
Children, 0–5 years (%)	11.6	8.0	14.3*
Children, 0–17 years (%)	36.2	35.7	47.8‡
Working age adults, 18–59 years (%)	56.0	59.1	—
Older adults, >60 years (%)	7.8	5.1	4.5*
Key demographic rates			
Crude birth rate (per 1000/yr)	20.4	8.6	31*–32‡
Crude death rate (per 1000/yr)	2.3	3.4	5.0*–9.0‡

*The Iraq Ministry of Health. The Iraq Family Health Survey 2006/7. URL: http://www.emro.who.int/iraq/pdf/ifhs_report_en.pdf, accessed July 27, 2009.

†US Census Bureau. International Database, Iraq Country Statistics. URL: <http://www.census.gov/ipc/www/idb/>, accessed July 27, 2009.

‡UNICEF. Iraq Country Statistics, 2007. URL: http://www.unicef.org/infobycountry/iraq_statistics.html, accessed July 24, 2009.

perceived medical services as accessible compared with 54% of households outside Amman ($p=0.003$). Health services were perceived as affordable by 36% of Amman households and 22% of non-Amman households ($p<0.001$) despite significantly greater mean monthly health expenditures among Iraqis in Amman ($p=0.047$). The majority of health expenditures in Jordan went towards medications, with 76% of households reporting medication expenditures in the preceding month. In Syria, 79% of non-Damascus households reported care was accessible compared with 50% of Damascus households ($p<0.001$). Healthcare was perceived as affordable by 40% of Damascus households and 32% of non-Damascus households ($p=0.079$); monthly health expenditures were similar across locations; health expenditures in Syria were divided relatively evenly between consultations and medications.

Chronic medical conditions were defined as requiring four or more medical visits in the preceding year or where daily, weekly or monthly medication or treatment is required. Chronic conditions were reported by 51.5% (confidence interval (CI): 49.4–53.5) of adults in Syria and 41.0% (CI: 39.4–42.7) of adults in Jordan. The most common were hypertension and musculoskeletal problems with prevalence rates between 17% and 20%; other common conditions, with prevalence rates between 7% and 11%, included gastrointestinal problems, diabetes and cardiovascular disease (Table 3). No significant differences in chronic disease prevalence by sex were observed in either country. Prevalence rates increased with age. In Syria, no access to health services for chronic medical conditions was reported by 19% of respondents;

Table 2. Access to medical care

	Jordan	Syria	<i>p</i> -value
Care seeking			
Sought care last time medical attention was needed (%)	85.8	84.4	0.393
Location where care was sought (most recent visit)			
Government facility (%)	11.3	18.8	<0.001
Red Crescent or not-for-profit provider (%)	23.3	56.6	
Private facility or provider (%)	60.6	19.1	
Other (%)	4.8	5.4	
Households with a member hospitalized within past year (%)	30.2	43.1	<0.001
Median length of hospital stay (nights)	2	2	—
Median daily cost of hospital stay (USD)*	71	109	—
Use of government health facilities			
Household has member ever used a government facility (%)	31.5	67.1	<0.001
Mean household visits to government facility, past 6 months	4.0 (5.0)	6.4 (7.4)	<0.001
Perceived access to health services			
We are able to get medical care when necessary (%)	62.5	58.8	0.105
We can always afford medical care (%)	32.4	23.5	<0.001
We have access to the medical specialists we need (%)	53.3	40.8	<0.001
We receive enough information to stay healthy (%)	55.4	30.4	<0.001
Monthly spending on health			
Mean monthly expenditure on health (USD)*	70.0	91.4	0.175
Median monthly expenditures on health (USD)*	26.8	45.7	—

* Conversion rates of USD 1.41/JD 1 and SYP 46/USD 1.

59% reported poor access and 23% good access to services. In Syria, access to medication for chronic conditions mirrored health services, with 24% reporting no access to medication, 53% poor access and 24% good access. Access to health services for chronic medical conditions was not included in the Jordan questionnaire; among those with chronic medical conditions in Jordan, 91% reported being prescribed medication and 92% were currently taking medication for chronic condition(s).

Disabilities were defined as physical or mental conditions that limit normal function and are long term in nature and unlikely to change within the next few months. The disability rate for all ages was significantly greater in Syria than Jordan (Table 3). In both countries, approximately half of physical disabilities and the majority of mental disabilities were attributed to conflict; the conflict-related disability rate in Syria was 1.6 (CI: 1.0–2.4) times greater than in Jordan possibly because of later arrival of the population. In Jordan, physical and mental disability rates were similar, whereas in Syria, mental disability occurred nearly twice as frequently as physical disability. Overall, men were more likely to be disabled than women in both Jordan (odds ratio (OR) = 1.3, CI: 1.0–1.8) and Syria (OR = 1.4, CI: 1.1–1.9). Odds of physical disability in Jordan and Syria, respectively, were 1.6 (CI: 1.0–2.8) and 2.7 (CI: 1.8–4.3) times greater among men than women. Leading causes of physical disability in Syria included physical defect either from birth defect or injury (42%), mobility impairment (22%), hearing impairment (13%), vision impairment (11%), speech impairment (8%)

Table 3. Prevalence of chronic health conditions among adults by age and sex

	Prevalence (95% CI)	By sex		By age group (years)				
		Males	Females	18–49	50–59	60–69	≥70	
Jordan (N)	3414	1505	1689	2412	392	249	141	
Hypertension	19.6% (18.3–21.0)	17.9%	21.0%	9.3%	38.8%	61.0%	68.8%	
Musculoskeletal	18.5% (17.2–19.9)	15.3%	21.4%	12.0%	32.9%	40.6%	51.1%	
Digestive	11.3% (10.3–12.4)	11.8%	11.0%	8.7%	16.6%	20.1%	27.0%	
Diabetes	9.1% (8.2–10.1)	10.7%	7.8%	3.8%	18.4%	32.1%	34.8%	
Cardiovascular	6.7% (5.9–7.6)	7.3%	6.2%	3.0%	12.2%	18.1%	34.0%	
Lung/respiratory	3.1% (2.5–3.7)	2.6%	3.5%	2.6%	3.6%	5.2%	5.7%	
Kidney	1.9% (1.5–2.4)	2.1%	1.8%	1.4%	3.8%	4.8%	1.4%	
Cancer	1.3% (0.9–1.7)	1.7%	1.0%	0.9%	2.8%	3.6%	1.4%	
Others	13.7% (12.6–14.9)	13.4%	14.0%	11.6%	16.6%	20.1%	30.5%	
Any condition	41.0% (39.4–42.7)	40.2%	41.7%	30.6%	64.5%	78.7%	86.5%	
Syria (N)	2342	1164	1170	1874	283	141	44	
Hypertension	19.6% (18.0–21.3)	20.2%	19.0%	12.2%	45.9%	52.5%	61.4%	
Musculoskeletal	16.6% (15.1–18.2)	13.3%	19.7%	13.9%	25.8%	29.1%	31.8%	
Digestive	7.1% (6.1–8.2)	7.6%	6.6%	6.1%	11.7%	11.3%	9.1%	
Diabetes	7.6% (6.6–8.7)	9.2%	6.0%	3.7%	19.8%	27.7%	31.8%	
Cardiovascular	7.8% (6.8–9.0)	8.9%	6.5%	3.4%	18.4%	34.8%	40.9%	
Lung/respiratory	6.0% (5.1–7.1)	4.5%	7.5%	5.7%	7.1%	7.1%	9.1%	
Kidney	2.9% (2.3–3.7)	3.2%	2.7%	2.5%	3.5%	6.4%	4.5%	
Cancer	0.6% (0.4–1.1)	0.2%	1.0%	0.4%	1.8%	0.7%	2.3%	
Others	29.8% (28.0–31.7)	26.8%	32.9%	26.8%	35.0%	50.4%	59.1%	
Any condition	51.5% (49.4–53.5)	50.4%	52.5%	45.3%	71.3%	83.0%	86.6%	

and polio (3%). In Jordan, principal causes of physical disability were polio (24%), mobility impairment (11%), hearing impairment (11%), vision impairment (8%) and physical defects (8%). Depression accounted for 72% of mental disabilities in Jordan and 75% in Syria ($p=0.563$); no significant difference was observed by sex in either location. When depressive symptoms were assessed in a random subsample of household members using a confidential questionnaire, women were more likely than men to have depressive symptoms in both Jordan (OR: 1.6, CI: 1.1–2.4) and Syria (OR: 2.5, CI: 1.8–3.5). Sex-specific depressive symptom rates were significantly higher in Syria than in Jordan among men, at 37% and 12%, respectively, (OR: 4.3, CI: 3.0–6.2) and among women at 60% and 18%, respectively, (OR: 6.6, CI: 4.8–9.2) (Table 4).

DISCUSSION

As compared with national statistics for Iraq, displaced populations in Jordan and Syria are older and young children are noticeably underrepresented (Iraq MOH, 2007; US Census Bureau IDB, 2009). Profiles of the Iraqi populations displaced in Jordan and Syria are similar to other middle income countries, with sizeable older populations and high chronic disease burdens (WHO, 2004). It is possible that health status of displaced Iraqis may be worse than that of host country populations (FAFO, 2007; UNHCR, 2007c). The observed health service demand and high utilization rates may be attributed to poor health status in addition to high levels of education and health awareness and the legacy of high quality and readily accessible health services in Iraq (Mowafi and Spiegel, 2008; ICRC, 2009). Evidence from populations affected by natural disasters and conflict shows that exacerbation of existing chronic conditions is a cause of excess morbidity and mortality (Spiegel and Salama, 2000; Chan and Sondorp, 2007). Management strategies for noncommunicable diseases, including both preventative and curative approaches, should be prioritized in emergency-affected populations, particularly those from middle income countries that are more advanced in the demographic and epidemiologic transitions (Spiegel *et al.*, 2010).

High prevalence of chronic disease and disability and the difficulties Iraqis face in accessing care and medication illustrate the challenges of healthcare provision to displaced populations in more developed contexts (Spiegel and Salama, 2001). Iraqi populations in Jordan and Syria receive subsidized care at government and Red Crescent facilities; however, the public sector is generally perceived to be overburdened, and plans to increase service availability have yet to be realized. UNHCR and its partners have sought to address demand for specialty care by developing referral guidelines that aim to standardize procedures, enhance documentation and control health service costs (Mowafi and Spiegel, 2008). Despite these efforts, the per beneficiary cost is the greatest among all UNHCR programs (Spiegel *et al.*, 2010). Improvements in systematic approaches to chronic disease management, which address the concerns of equity and continuity of care, are needed in emergency contexts and also more broadly in low and middle income countries (Mowafi and Spiegel, 2008; Spiegel *et al.*, 2010). High rates of mental disability and depressive symptoms are consistent with evidence that mental health is a key concern in conflict-affected populations and a major cause

of disability worldwide, which suggests that additional attention to mental health and psychosocial support services is also warranted (Mollica *et al.*, 2004; IASC, 2007; WHO, 2009).

Considerable challenges are inherent to the assessment of displaced urban populations, and this study is no exception. It is possible that sampling missed certain population subgroups or that within cluster referral resulted in sampling bias. The first household in each cluster was located by shopkeeper referral; it is possible that the referring business could have been a pharmacy in several instances and that selection could have been biased towards frequent pharmacy users including households with young children and/or whose members had a chronic disease. Given that only the first household in the cluster was located by shop referral, significant sampling bias is unlikely because 90% of households were referred by other Iraqi households, and for the remaining 10% selected by referral, it is unlikely that a pharmacy was the referral point in most cases. Procedural differences, including different sample designs and interviewer nationalities varied, which may have influenced comparisons. Chronic conditions and disabilities were reported by respondents and their household members; it was not possible to verify conditions with medical records, which created the potential for inaccurate reporting that may have biased the reported prevalence rates. The surveys were conducted at different times in Jordan and Syria; however, results are likely comparable because it is unlikely that this had any effect on perception and recall of chronic disease. Finally, inherent differences in the Iraqi populations that migrated to Jordan and Syria likely influenced levels of vulnerability, perceptions and attitudes towards disease, and care seeking behaviors. Inability to characterize the impact of selective immigration policies on population characteristics and the religious, ethnic, educational and economic differences of the Iraqi populations in Jordan and Syria make it difficult to assess homogeneity of the populations and limit the ability to make comparisons about disease patterns and health service use in the two populations.

The complex procedures and high costs associated with the management of chronic illness, disability and psychological care will remain key challenges for the displaced Iraqi population. In both Jordan and Syria, the majority of households perceived medical care to be expensive and cost was a barrier to care seeking; improved access to medications and specialized care were also widely perceived needs by the displaced Iraqi population. This suggests that additional support to poor households through cash grants or expansion of subsidized care, or universal access to a standardized package of health services that includes all levels of care, would be beneficial. Health information systems, as well as consistent application of referral procedures, would increase equity, provide a basis for cost reductions and provide much needed information for health service planning. Effective targeting of resources from host governments and the international community is essential, particularly if the health of the Iraqi population is to be maintained over an extended period of displacement.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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