Report

Investigating the Effect of Syrian Refugees on the Pharmaceutical Sector in Jordan

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Abstract

The aim of this study was to investigate the effect of Syrian refugees on the pharmaceutical sector in Jordan. Based on a standardized methodology developed by the WHO, Level II Facility (2009) structured questionnaires (including: medicine access [availability, affordability and geographical accessibility], quality, and rational use of medicines) were used to investigate the effect of Syrian refugees influx on the pharmaceutical sector in Jordan. Lists of essential medicines (N = 50) were included in the survey forms. The results showed more progress in all indicators for the public sector compared with the previous results in the 2009 survey and in comparison to the private sector. For example, access to medicines improved in the public sector while it decreased (if it did not remain the same) in the private sector. Also, average stock out duration time decreased dramatically in both public and private sectors. As indicated by the median price ratio (MPR), brand prices increased much in the public health facilities while they decreased by 23%–30% in the private sector. In northern areas where most Syrian refugees stay, a significant decrease in availability was noticed, in addition to the dramatic decrease in days of average stock out and adequate inventory record percentage of those medicines. In conclusion, despite the international help received to support health care provision and medications procurement for the refugees, more support is needed immediately.

Keywords: Jordan, Pharmaceutical sector, Syrian Refugees

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Introduction

The Hashemite Kingdom of Jordan is located in the Middle East and borders Syria, Saudi Arabia, the Red Sea, Palestine, and Iraq, covering around 90,000 sq. km. Jordan's only port lies at its southern tip, at the Gulf of Aqaba. Much of Jordan is covered by the Arabian Desert; however, the northwestern part of Jordan forms part of the Fertile Crescent. Geographically, there are three main regions in Jordan: north, central, and south. Each region contains four administrative Governorates. Jordanian policymakers strive to create the demographic of a well-educated, young population to build a dynamic, knowledge-based economy.

In 2015, the population of Jordan was 9,531,712, of whom 69.4% (6,613,587) were Jordanians. The population under 15 years of age accounted for 37.3% while only 3.2% were over the age of sixty-five years, with an average household including 4.8 persons.[1]

The Jordanian economy is dominated by tourism, financial services, transportation, manufacturing and remittances from Jordanians working abroad. Jordan's lack of arable land and insufficient supplies of water (one of the most water-scarce countries in the world) mean that agriculture is mostly a non-relevant sector and that the country invests heavily in water recycling.

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Jordan's role as an open economy makes it vulnerable to the political, economic, and social upheaval within the region; also due to this role, Jordan has developed strong relationships with its neighbors. The country has suffered widespread economic hardships because of the political turmoil in the region. Historically, Jordan has a tradition of hospitality towards asylum seekers and refugees. A vast majority of Syrian refugees are hosted in Lebanon, Turkey and Jordan.[2] Until June 2014, the total number of refugees in Jordan was 2.5 million (from Iraq, Libya, Yemen, Syria). Syrians account for almost half of the non-Jordanians (1.4 million); 53% of the refugees are under the age of 18 years (3). The large number of refugees has placed a large economic burden on the country. Jordan is struggling to support this large and still increasing number of refugees even with the current level of international financial support.

The healthcare and medical sector in Jordan is traditionally known for its high quality and standards. Hospitals in Jordan are struggling to accommodate an influx of around 70,000 Syrian refugees a month. Health services are readily available to the Syrian refugees who live in the Zaatari refugee camp. The camp is located in the northern region of the country, less than 20 km from the Syrian border, near Mafraq Governorate. However, only around 25% of the Syrian refugees in Jordan live within the camp. The other 75% live in urban areas, placing a significant burden on the country's health system.[2,4]

Jordan is classified as an upper middle income country with a current Gross Domestic Product (GDP) at market prices of US$ 39 billion and US$ 5,745 per capita of GDP (2015).[5] GDP Annual Growth Rate in Jordan averaged 4.74% from 1993 to 2015.[6]

Although Jordan has limited natural resources and imports almost all the energy it consumes, and in an era of escalating healthcare costs, prescribing costs are increasing in Jordan as well

as developed and developing countries.[7]

The health sector in Jordan is well organized in terms of legislation, structure, and function. However, the system is highly fragmented both between and within public and private programs. Jordan total health expenditure represented 7.6% of GDP. With spending on prescription drugs as one of the fastest growing cost components of modern healthcare systems worldwide,[8] Jordan is not an exception in which the expenditure on drugs accounts for 26.75% of total expenditure on healthcare services[5]; a high level compared to international and regional percentages.[9] The majority of health expenditure and financing in Jordan is through the public sector which accounts for 62% of health funding compared to 34.5% by private sector. In the public sector, the main entities for both financing and providing care are the Ministry of Health (MoH; which is composed of tertiary hospitals, primary health care centers and rural health posts), Royal Medical Services (RMS; Military sector), Jordan University Hospital (JUH) and King Abdullah University Hospital (KAUH) representing 37%, 27%, 21%, and 15.5% of drug expenditure, respectively.[10–12]

Private insurance companies cover 12.4% of the population. An additional 2.5% of the population is covered under the United Nations Relief Works Agency (UNRWA) for refugees.[10] Almost 87.5% of the Jordanian population is estimated to be insured (Table 1).

The pharmaceutical sector in Jordan is highly regulated and organized through detailed laws and regulations governing the private sectors. The Jordan Food and Drug Administration (JFDA), a semi-independent body with its board of directors headed by the Minister of Health, is the formal medicines regulatory authority as outlined by the JFDA Law.[13] Since its inception in 2003, the JFDA has built on existing laws, including the Drug and Pharmacy Law,[14] with detailed legislation and guidelines covering nearly all aspects concerning medicines.

In 2002, the MoH, with assistance from the World Bank and the World Health organization (WHO), produced and endorsed the National Drug Policy (NDP)[10] which led to establishing the Joint Procurement Department (JPD) in 2004[15] in which a formulary process was successfully outlined for the public sector by addressing choice of drugs, supply/purchase, rational use, financing, and human resource development and first tender was carried out in 2007. Expenditure and costs control, duplication elimination and achieving physical wealth by applying the economics of procuring big quantities (Economies of Scale) are some of the strategic goals of the JPD.

According to legislation, the Rational Drug Use Unit (RDU) within the JFDA is the coordinating entity for activities surrounding the rational use of medicine, including the development of standard treatment guidelines (STG) and the updating of the Jordan Rational Drug List (JRDL) and Jordan National Drug Formulary (JNDF). The process of formulating a national rational medicines list and formulary is divided into three hierarchical layers, and within those layers the process is again separated among the different public institutions. In the bottom tier are the pharmacy and therapeutics committees (PTC) of hospitals. Each hospital in the MoH and the RMS has a PTC, as well as the university hospitals.

Despite the continuous influx of Syrians fleeing the ongoing conflict in their country into Jordan since March 2011, Jordan continued to offer generous hospitality to Syrians who have crossed the borders since March 2011.

The aim of this study was to investigate the effect of Syrian refugees on the pharmaceutical sector in Jordan.

Materials and Methods

The information gathered to investigate the impact on a pharmaceutical sector includes: medicines access (availability, affordability and geographical accessibility), quality, and rational use of medicines (WHO Level II Facility Survey, 2009)[10] (Table 2); a standardized methodology developed by WHO the Level II Facility was used using a structured questionnaire as the main tool for the study.

List of essential medicines to be included in the survey forms was based on WHO global and regional lists (29 medicines including 15 key medicines),[16] and an additional 21 medicines were selected with input from a technical expert local committee based on two main criteria; first, medicines purchased by the MoH were compared and sorted according to the amounts purchased through the JPD (quantified taking into account comparative dosing schemes to correct for relative amounts purchased). Secondly, effort was put forth in order to include medicines previously included in older pricing studies, enabling linear comparisons.[10]

Medicine registration status i.e. regulatory approval for medicines to be freely sold in Jordan and other details were confirmed with the JFDA prior to final selection.

To facilitate international comparisons, medicine prices found during the survey are expressed as ratios relative to a standard set of international reference prices, known as median price ratio or MPR. The MPR is thus an expression of how much greater or lesser price of the median local medicines is compared to the international reference price; so, if MRP is greater than 1, the prices are relatively high. On the other hand, if MRP is less than 1, this means that the prices are relatively low.

In choosing the six geographic areas, the methodology takes into account the population in a given area, and the size of that population relative to other areas. For example, in selecting the

Table 1. Health insurance coverage for Jordanians (2015).[6]

Entity	Percentage
MoH	41.7
RMS	38
Universities (JUH & KAUH)	2.5
UNRWA	2.5
Private	12.4
Others	2.5
Outside Jordan	0.5
Total	100

Table 2. Indicators and their Corresponding Survey Form Sections and Numbers.[10]

INDICATOR		SURVEY FORMS
ACCESS Availability	Availability of key medicines in public health facility dispensaries, private drug outlets and warehouses supplying the public sector (country list) Mean availability of originator brand and generic medicines in public/private sector	1, 10, 15 2, 11
	Average stock-out duration in public health facility dispensaries and warehouses supplying the public sector	4, 16
	Adequate inventory record keeping in public health facility dispensaries and warehouses supplying the public sector	4, 16
	% of prescribed medicines dispensed or administered to patients at public health facility dispensaries	6
Affordability	Patient prices of generic / innovator drug in public/private sector compared to international price index. Affordability: ratio of cost to treat common conditions using standard regiments to the lowest daily government worker wage (days' wages to purchase lowest priced generic medicines from public and private sector)	2, 11
Geographical accessibility	Geographical accessibility of public health facility dispensaries and private drug outlets	6, 14
QUALITY	% medicines expired in public health facility dispensaries, private drug outlets and warehouses supplying the public sector	1, 10, 15
	Adequacy of storage conditions and of handling of medicines in public health facility dispensaries and warehouses supplying the public sector	5, 13, 17
RATIONAL USE OF MEDICINE	Patient care indicator: % medicines adequately labeled **AND** % patients informed on how to take medicines at public health facility dispensaries and private drug outlets	6, 14
	Prescribing indicator: Average number of medicines per prescription at public & private health facilities % patients prescribed antibiotics in public & private health facilities % patients prescribed injections in public & private health facilities % prescribed medicines on essential medicines list at public & private health facilities % medicines prescribed by generic name at public & private health facilities	6, 7
	Facility specific factors for medicines rational use indicator: Availability of standard treatment guidelines **AND** essential medicines list **AND** % tracer cases treated according to recommended treatment protocol at public & private health facilities	8 9
	% prescription medicines bought with no prescription	14
OTHERS: Introductory questions in:		
% of facilities that comply with the law (presence of a pharmacist) % facilities with pharmacist, nurse, pharmacy aid/ health assistant or untrained staff dispensing		Sections A, C Sections A, C
% facilities with doctor, nurse, trained health worker/health aide prescribing % facilities with prescriber trained in rational drug unit		Section B Section B

first region Amman, which is the largest in population size, it was noted that this region contains nearly 39% of the total population. As such, the methodology design assigns the governorate of Amman two areas to be selected. Amman, according to the High Health Council (HHC) Health Map,[5] is divided into thirteen Districts or counties (called Leewa' and Qada').

This process is guided by relative location and population size, ensuring that the districts within each of the two resulting Amman areas constitute equal populations and have logical geographical proximity. Furthermore, based on the probability proportional to size (PPS) method, health facilities were selected and Jordan again was divided into a total of six geographic areas. For each geographic area, the number of public / private health facilities, and private retail outlets to be surveyed were selected randomly (Table 3); both the number of geographical areas and the total number of facilities to be surveyed are higher compared to the previous study conducted in 2009.

Results

In order to investigate the effect of Syrian refugees on the pharmaceutical sector in Jordan, the results of this study were compared to the results of the LEVEL II WHO Health Facilities Survey in Jordan in 2009. Tables 4–7 showed these comparisons as comparison of proportions between 2009 and 2014 at 95%CI in which P value <0.05 was considered significant (NB: some data is missing as it was not available or not applicable).

This study shows that access to medicines improved as availability and inventory record keeping of WHO key medicines improved by 6%-10% in the public sector while access decreased (if it did not remain the same) in the private sector. Also, average stock out duration time decreased dramatically in both public and private sectors indicating that quantities ran out quickly due to increased demand as a result of hosting a significant percentage of Syrian refugees relative to the Jordanian population (Tables 4–7). The results also showed more progress in all indicators for

Table 3. Study sample selection.[10]

	Study Sampling
Geo-graphic areas	**6** Largest urban area 5 other administrative areas randomly chosen (in one or two stages) with probability proportional to population size and the percentage of Syrian refugees
Public health facilities	**36 (6 per area)** 1 main public hospital (usually district or regional) per area 5 randomly selected public facilities in area randomly from strata at different distances from main hospital (Exclude health facilities or dispensaries if they are not expected to stock a full supply of essential medicines)
Private health facilities	**Up to 36 (up to 6 per area)** Randomly selected private, mission, or other NGO health facilities that would both be expected to prescribe and dispense medicines
Private retail outlets	**72 (12 per area)** 2 randomly selected licensed retail outlets per public facility
Total	**108 to 144**

the public sector compared with the previous results in the 2009 survey and in comparison to the private sector.

As shown in Table 4, better access was noted in the public sector compared to the private in time required to travel to the nearest health facility. In addition, availability of the lowest priced generic among the entire WHO 50 medicines improved significantly in both public & private sectors. Brands availability did not change.

Based on the MPR, WHO's 50 medicines brand prices showed a considerable increase (4-folds; MPR from 0.95–3.81) in the public health facilities while they decreased by 23% (MPR 19.76-15.96) and 30% (MPR from 19–14.51) in the private hospitals pharmacies and private pharmacies, respectively, indicating the positive impact of new pharmaceutical pricing instructions developed by the JFDA in decreasing medicines prices in the private sector in Jordan.[15]

On the other hand, MPR did not change for the lowest generic medicines in the public health facilities, indicating that demand increased as a result of increasing the number of beneficiaries as a result of influx of refugees, while they decreased by 1% (MPR from 11.02–10.94) and 7.5% (MPR from 9.75–9.07) in the private hospitals pharmacies and private pharmacies, respectively. Furthermore, the cost of all medicines dispensed from public facilities increased dramatically by more than one-third.

Quality indicators improved modestly as shown in Table 5.

Table 6 showed the significant improvement in patient care regarding rational use of medicines through greater involvement of patient education and counseling by the dispensing pharmacist in the public health facilities. At a time of big improvement in the public sector in this regard, private sector remains at the same level and even worse in dispensing antibiotics without a prescription.

This study demonstrated that the availability of pharmacists at the time of visit in public health facilities was much lower than private facilities, suggesting an increased workload as a result of increasing demand of pharmaceutical services due to higher number of patients after arrival of Syrian refugees. Although there was some improvement in the private sector, both private and public sectors are still in need of more training for health professionals about rational use of drugs (Table 7).

Comparing to the results of the 2009 study, analysis of the same access indicators was performed (as per geographical area) in areas where most Syrian refugees currently live in high numbers compared to other areas in Jordan. This included Northern and North Eastern areas (KAUH, Yarmouk, Ramtha, Mafraq, and Khaldia) as shown in Table 8. There is a significant decrease in the availability of both the 15 WHO key medicines as well as the 50 essential ones, alongside a considerable decrease in days of average stock out and adequate inventory of those medicines.

Discussion

As Jordan continues to accommodate large influx of Syrian refugees and is faced with rising drug costs, health care policy makers in Jordan have focused on methods of cost containment,[17] in addition to looking for economic support from the international community.

According to the Jordan Response Plan 2015, the health sector urgently requires the continuation of humanitarian assistance to cope with the immediate health needs of refugees, while simultaneously strengthening systems to maintain and restore quality and extend coping capacity for future inflow of more refugees.[18]

The negative impact of Syrian refugees on Jordan through extreme demographic stress, high burden on health, water, sanitation, shelter, jobs and education may lead to high tensions between Jordanian and Syrian communities that might end in conflicts.

The disproportionate focus on camps is unjustified as 70% of Syrian refugees live outside, not inside camps.

Many hospitals in the north have recorded 100% occupancy rates and an increase in daily workload by up to 50%. Public health services are stretched to their limits and some medicines and vaccines are running short.[18] For example, Syrian refugee cancer cases presented at health facilities in Jordan rose from 134 in 2011 to 188 in 2012, and during 2013, there were around 300 cases of renal failure among Syrian refugees attending MoH hospitals. Other common diseases and conditions among Syrian refugees presenting at MoH facilities outside camps include: war-related trauma surgery (amputations, disability, rehabilitation, burns, bullet and artillery wounds), mental health (anxiety, depression, schizophrenia, Post Traumatic Stress Disorder), maternal health

Table 4. Comparison of access indicator between 2009 & 2014.[10]

Access:	2009 Median	2009 Average	2014 Median	2014 Average	*P*-Value (Averages 2009-2014)
Availability of 15 WHO Key Medicines (%) in Public facilities pharmacy	73.00%	73.50%	**86.67%**	**84.07%**	0.0828
Public warehouses	83.00%	79.90%	**83.34%**	**83.34%**	0.4813*
Private hospitals pharmacy	93.00%	92.10%	**86.67%**	**84.93%**	0.0836
Private pharmacies	100.00%	95.60%	**93.33%**	**90.92%**	0.1524
Adequate inventory record keeping (%) of 15 WHO Key Medicines in Public facilities pharmacy	86.70%	83.10%	**93.33%**	**88.70%**	0.2016
In Public warehouses	93.30%	89.90%	**93.33%**	**93.33%**	0.3254
In Private hospitals pharmacy	86.60%	65.60%	**86.67%**	**74.61%**	0.1205
Average stock-out duration (days) in Public facilities pharmacy	22.60	33.40	**25.52**	**35.98**	0.6712
In Public warehouses	41.39	43.30	**19.22**	**19.22**	0.0001*
In Private hospitals pharmacy	0.00	13.30	**5.27**	**13.44**	0.9743
% of prescribed medicines dispensed or administered to patients from exit interview at Public facilities pharmacy	96.00%	95.00%	**95.80%**	**94.25%**	0.7952
At Private hospitals pharmacy	100%	99%	**100%**	**99%**	1
Number of medicines purchased			**1.90**	**1.96**	-
Affordability: Cost for all medicines dispensed from Public facilities pharmacy	0.72	0.95	**0.688**	**1.288**	0.8031
from Private hospitals pharmacy	4.88	7.67	**21.8**	**19.25**	0.0095*
from Private pharmacies	7.04	7.71	**7.44**	**8.88**	0.7406
% of patients taking more than one hour to travel to Public facilities pharmacy		7.00%	**0**	**5.70%**	0.6739
Private hospitals pharmacy		4.50%	**0**	**12.17%**	0.0345*
Private pharmacies		2.00%	**0**	**2.90%**	0.6522
% of patients taking between 30 minutes to one hour to travel to Public facilities pharmacy			**18.34%**	**23.17%**	-
Private hospitals pharmacy			**30%**	**32.70%**	-
Private pharmacies			**12.50%**	**18.80%**	-
% of patients taking less than 30 minutes to travel to Public facilities pharmacy			**81.67%**	**72.20%**	-
Private hospitals pharmacy			**60%**	**55%**	-
Private pharmacies			**80%**	**77%**	-
Average transport cost to minimum daily salary Public facilities pharmacy			**0.107**	**0.138**	-
Private hospitals pharmacy			**0.304**	**0.382**	-
Private pharmacies			**0.115**	**0.161**	-
Availability of all 50 medicines: availability of brand in public health facility		1%		**2%**	0.5284
private hospitals pharmacy		42%		**53%**	0.0844
private pharmacies		37.80%		**51.00%**	0.0376*
Availability of lowest priced generic in public health facility		62.90%		**75.00%**	0.0388*
In private hospitals pharmacy		64.80%		**77.00%**	0.0336*
In private pharmacies		76.60%		**83.00%**	0.2075
The MPR of the 50 medicines: brand medicines in					
Public facilities pharmacy	0.95		**3.81**	**3.81**	-
Private hospitals pharmacy	19.76		**15.96**	**24.43**	-
Private pharmacies	19.00		**14.51**	**23.28**	-
Procurement			**3.17**	**3.17**	-
The MPR of lowest priced generic medicines in Public facilities pharmacy	1.01		**1.04**	**1.78**	-
Private hospitals pharmacy	11.02		**10.94**	**13.47**	-
Private pharmacies	9.75		**9.07**	**12.63**	-
Procurement	0.75		**0.87**	**1.49**	-
* Significant (<0.05 at CI 95%)					

Table 5. Comparison of quality indicator between 2009 & 2014.[10]

Quality	2009 Median	2009 Average	2014 Median	2014 Average	*P*-Value (Averages 2009-2014)
Expired Medicines of 15 WHO Key Medicines % in Public facilities pharmacy		2.4		**0**	-
Public warehouses		0		**0**	1
Private hospitals pharmacy		0.40%		**0.43%**	0.9709
Private pharmacies		0.10		**0.0**	0.7048
Adequate conservation conditions in store room% in Public facilities pharmacy	80%		**80%**	**78%**	-
Public warehouses	90%		**95%**	**95%**	-
Private hospitals pharmacy	90%		**90%**	**85%**	-
Private pharmacies	80%		**85%**	**81%**	-
Adequate conservation conditions in dispensing area% in Public facilities pharmacy	80%		**80%**	**80%**	-
Private hospitals pharmacy	90%		**90%**	**90%**	-
Private pharmacies	80%		**90%**	**84%**	-

Table 6. Comparison of rational use indicator between 2009 & 2014.[10]

Rational use	2009 Median	2009 Average	2014 Median	2014 Average	*P*-Value (Averages 2009-2014)
Patient care indicators: % of medicines adequately labeled to patients from exit interview at Public facilities pharmacy	75%	61%	**100%**	**97.57%**	0.0001*
At Private hospitals pharmacy	100%	99%	**100%**	**98.95%**	0.9690
At Private pharmacies	94%	79%	**100%**	**87%**	0.0905
% of patients Know how to take medicines at Public facilities pharmacy	100%	94%	**100%**	**97%**	0.0001
Private hospitals pharmacy	100%	100%	**100%**	**100%**	1
Private pharmacies	100%	99%	**100%**	**97.76%**	0.0001
Prescribing indicators: Average number of medicine prescribed from exit interview at Public facilities pharmacy	**2.67**	**2.97**	**2.87**	**3.26**	0.8962
At Private hospitals pharmacy	**2.70**	**2.62**	**2.50**	**2.74**	0.9536
At Private pharmacies			**1.60**	**1.62**	-
% of female patients from exit interview at Public facilities pharmacy			**51.50%**	**54.00%**	-
Private hospitals pharmacy			**50%**	**49%**	-
Private pharmacies			**50%**	**48%**	-
Average number of medicine prescribed from exit outpatient record at Public facilities pharmacy		3.00	**2.95**	**3.09**	0.9673
At Private hospitals pharmacy		2.80	**3.00**	**2.93**	0.9514
% of female patients from outpatient record at Public facilities pharmacy			**50%**	**53%**	-
Private hospitals pharmacy			**50%**	**49%**	-
% of antibiotic prescribed at Public facilities pharmacy		56.80%	**48.35%**	**49%**	0.2208
At Private hospitals pharmacy		56.10%	**70%**	**66%**	0.1102
% of injection prescribed at Public facilities pharmacy		15.60%	**9.34%**	**12.55%**	0.4889
At Private hospitals pharmacy		26.30%	**20.00%**	**28.83%**	0.6578
% of prescribe medicines from JRDL at Public facilities pharmacy		97.80%	**100.00%**	**100.00%**	0.0743
Private hospitals pharmacy		94.30%	**80.00%**	**81.40%**	0.0027*
% of medicines prescribed by generic name at Public facilities pharmacy		8.30%		**5.90%**	0.4587
Medications requiring prescription but purchased without prescription at private pharmacies	21.30%	22.60%	**37.75%**	**41.35%**	0.0018*

Private hospitals pharmacy		1.80%		**4.86%**	0.1947
Facility specific factors indicator: availability of actual STGs for both pneumonia and hypertension at Public facilities pharmacy		27.80%		**30.00%**	**1**
At Private hospitals pharmacy		35.30%		**39.00%**	0.5489
Availability of EML (rational drug list) at Public facilities pharmacy		66.70%		**80.00%**	0.0170*
Private hospitals pharmacy		41.20%		**78.00%**	0.0001*
Availability of the following medications for treating Non-bacterial diarrhea in child < 5 years					
At public: ORS	70%	62%	75%	72%	0.0936
antibiotics	60%	57%	55%	56.67%	0.9583
antidiarrheal	14%	31%	0	25.28%	0.3207
At private: ORS	80%	69%	80%	66.50%	0.6754
antibiotics	30%	36%	50%	62%	0.0001
antidiarrheal	40.00%	32.00%	20.00%	29.10%	0.6209
Availability of medications for treating Mild pneumonia At public: any 1st line	50.00%	43.00%	60.00%	52.91%	0.1201
prescribed > 1	10.00%	21.00%	10.00%	20.55%	0.9307
At private: any 1st line	0.00%	7.00%	10.00%	22.17%	0.0011*
prescibed > 1	10.00%	31.00%	20.00%	29.10%	0.7449
Availability of medications for treating Non-pneumonia at public any antibiotic	100.00%	97.00%	100.00%	85.28%	0.0019
At private any antibiotic	80.00%	79.00%	100.00%	85%	0.2164
* Significant (<0.05 at CI 95%)					

Table 7. Comparison of other indicators (comply with laws) between 2009 & 2014.[10]

Other indicators (comply with laws)	**2009 Median**	**2009 Average**	**2014 Median**	**2014 Average**	***P*-Value** (Averages 2009-2014)
Is a pharmacist present at time of visit in Public facilities pharmacy			**1.00**%	**77.78%**	-
Private hospitals pharmacy			**1.00**%	**95.20%**	-
Private pharmacies			**1.00**%	**84.70%**	-
Complies with law in Public facilities pharmacy			**1.00**%	**77.78%**	-
Private hospitals pharmacy			**1.00**%	**95.20%**	-
Private pharmacies			**1.00**%	**84.70%**	-
Who is dispensing during the visit in Public Health Facility Pharmacist		93.80%	**1.00**%	**66.67%**	0.0001*
Pharmacy aid		75.00%	**1.00**%	**80.56%**	0.2913
Who is dispensing during the visit in Private Hospital Pharmacist		76.50%	**1.00**%	**90.50%**	0.0024*
Pharmacy aid		70.60%	**0.00**%	**47.80%**	0.0003*
Who is dispensing during the visit in Private Pharmacy Pharmacist		79.20%	**1.00**%	**84.70%**	0.2581
Pharmacy aid		43.70%	**0.00**	**41.67%**	0.7475
Who is prescribing during the visit in Public Health Facility doctor			**1**	**1**	-
Nurse			**0**	**0**	-
Who is prescribing during the visit in Private hospital doctor			**1**	**1**	-
Nurse			**0**	**0**	-
Who is the most senior prescriber in Public Health doctor			**1**	**1**	-
Who is the most senior prescriber in Private Hospital doctor			**1**	**1**	-
did the most prescriber got training RDU in public health			**0.00**	**0.25**	-
did the most prescriber got training RDU in private hospital			**1.00**	**0.52**	-
* Significant (<0.05 at CI 95%)					

Table 8. Access indicator among areas where Syrians are available compared to national results (2014).

Indicator	Nat Med	Nat Aver	KAUH	Yrmk	Ramtha	Sarih	Mfrq1	Mfrq2	Khaldia
Availability of 15 WHO Key Medicines % in Public facilities pharmacy	**86.7%**	**84.1%**	73.3%	80%	93.3%	66.7%	86.7%	73.3%	80%
Adequate inventory record keeping (%)of 15 WHO Key Medicines in Public facilities pharmacy	**93.3%**	**88.7%**	73.3%	80%	93.3%	80.0%	86.7%	73.3%	93.3%
Average stock-out duration (days) in Public facilities pharmacy	**25.5**	**35.9**	0.0	25.0	5.4	28.9	4.6	20.3	20.6
% of prescribed medicines dispensed to patients from exit interview at Public facilities pharmacy	**95.8%**	**94.3%**	100%	86.7%	100.0%	81.8%	92.6%	98.4%	97.5%
Cost for all medicines dispensed from Public facilities pharmacy	**0.69**	**1.29**	3.53	1.67	0.69	0.48	0.86	0.44	0.67
% of patients taking more than one hour to travel to Public facilities pharmacy	**0.0**	**5.7%**	33.3%	0.0	6.7%	0.0	13.3%	3.3%	0.0
% of patients taking between 30 minutes to one hour to travel to Public facilities pharmacy	**18.4%**	**23.2%**	20.0%	16.7%	6.7%	0.0	73.3%	56.7%	23.3%
% of patients taking less than 30 minutes to travel to Public facilities pharmacy	**81.7%**	**72.2%**	46.7%	83.3%	86.7%	100%	13.3%	40%	76.7%
Average transport cost to minimum daily salary Public facilities pharmacy	**0.11**	**0.14**	0.51	0.00	0.11	0.17	0.21	0.90	0.05
Average % Availability of generic 50 Medicines		**78.7%**	72.3%	63.8%	65.9%	65.9%	85%	40.4%	40.4%

(Slightly higher pregnancy and delivery rate among Syrian refugee women), child health (acute respiratory illnesses, diarrheal diseases, vaccine preventable illnesses, genetic disorders e.g., thalassemia, other blood disorders, phenylketonuria, etc.), and other chronic non-communicable diseases (asthma, diabetes mellitus, high blood pressure, cardiovascular conditions, renal failure, cancers, autoimmune disease, etc.).[3] Despite this, Jordan remains committed to providing humanitarian aid to Syrian refugees. Nevertheless, Jordan can no longer bear alone this impact and needs now and in the coming years, a significant investment from the donor community to sustain health services for Jordanians and Syrian refugees.

The prime ministry approved of the minister of health's decision (Nov 2011) regarding treating Syrian refugees the same as noninsured Jordanians when seeking health services (Cabinet Decree of 16 May 2012: Syrian refugees granted free access to national health care services)[19] (the total health cost of Syrians for the year 2015 is estimated at $311 million, and cost per each refugee is around $311).[18] Unfortunately, due to the escalating costs, the Jordanian government was forced to stop providing free healthcare for Syrian refugees as of December 2014 after 4 years of the Syrian conflict i.e. in 2015 refugees outside camps are treated as Jordanians who are not insured by MoH.[20]

Access to medicines improved in 2014 in the public sector, which could be attributed to the efforts made by Jordanian government giving more attention to this sector over the private sector compared to the 2009 data. Quality indicator improved ensuring that the government made efforts to develop warehouses as well as medicines dispensing points in the public health facilities.

Despite donations received by the Jordanian government to procure medicines from funding countries such as Kuwait,[4] cost of all medicines dispensed from public facilities increased dramatically by more than one-third.

In conclusion, Jordan, a country with small economy and scarce resources, is affected significantly by the large number of Syrian refugees relative to its small population throughout the last four years, particularly in the health sector. Despite the international help received to support provision of healthcare and medicines procurement to the Syrian refugees as most of them are children and elderly people, more support is needed urgently.

Future implications

Syria is the world's biggest humanitarian crisis. Due to the absence of any political solution in Syria, it can be expected that most Syrian refugees will remain in Jordan for many years to come. The international community has helped trying to reduce the pressure on countries hosting refugees by supporting them in providing access to jobs and education that will benefit both refugees and host communities; but matching resources with needs is increasingly difficult. Continuation of the existing approach means urgent needs will not be met.[18] A new paradigm is necessary, promoting economic development and opportunities in Jordan to the benefit of Jordanians and Syrian refugees. A conference was held in London in Feb 2016 to Support Syria and the region.[21] This brought together world leaders from around the globe to rise to the challenge of raising the money needed. The UK, Germany, Kuwait, Norway, and the United Nations co-hosted the conference to raise significant new funding to meet the immediate and longer term needs of those affected.

Jordan has significant fiscal needs of its own, exacerbated by conflicts in the region, the cutting of its principal exports

routes and markets (Iraq, Yemen, Libya) and the cost of hosting refugees. It needs additional funding to provide direct support for Syrian refugees, as well as ensuring that the communities hosting them are not adversely affected. Jordanians need to see that the international community is not prioritizing support to refugees to their detriment. New investment in Jordan is needed; a vital part of attracting business and stimulating economic growth is improved access to the EU market.[21] Pledges made in London amount to around $700 million of grants in support of the Jordan Response Plan for 2016, additional pledges already made will contribute to the aim of providing around $700 million in grants for 2017 and 2018. The international community commits to continuing to work with Jordan in the years ahead to manage any remaining financing gaps.

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