Pharmaceutical situation assessment – Level II health facilities survey

SYRIAN ARAB REPUBLIC

World Health Organization
Regional Office for the Eastern Mediterranean

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Contents

Preface

The Government of the Syrian Arab Republic attaches great importance to the pharmaceutical sector and considers it an important factor in the health system. It strives to continually develop its structure and performance in order to provide safe and effective medication for each individual.

In this quest, the Ministry of Health, in collaboration with the World Health Organization, conducted a study to explore the effectiveness of the pharmaceutical sector in terms of ease of access to medicines and the quality of existing medicines whether locally manufactured or imported. The study was not intended to provide a detailed overview of the pharmaceutical sector but to provide an overview of the pharmaceutical situation in the country to assist in policy analysis and in the design of appropriate interventions.

The Ministry of Health has taken it upon itself the obligation of addressing all issues highlighted in the results of this study to develop the pharmaceutical sector and ensure the provision of the best health services to citizens.

Acknowledgements

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Conflict of Interest Statement

None of the authors of this survey or anyone who had influence on the conduct, analysis or interpretation of the results has any competing financial or other interests.

Executive summary

A field study to assess the pharmaceutical situation in the Syrian Arab Republic was undertaken in June 2009 using a standardized methodology developed by the World Health Organization (WHO).

The study was conducted using level II indicators to provide data on access, affordability, quality and the rational use of medicines in the Syrian Arab Republic. The survey was conducted in five regions: 1) Damascus; 2) Homs; 3) Aleppo; 4) Tartous; and 5) Al-Hasakeh. In each region, six public health care facilities, six private pharmacies and one warehouse were surveyed.

Access

Overall indicators of access show that key essential medicines selected for the country are partially available in public health facilities (57%), warehouses that supply the public health system (81.1%) and private pharmacies (96.3%). The length of stock-out duration does not indicate a recurrent logistic problem. The percentage of dispensed medicines was high.

From the global list of medicines, mean availability of originator brand and generic medicines in the public sector was 0.9% and 23.7%, respectively, indirectly suggesting that most patients purchase medicines in the private sector, where the mean availability of originator brand and generic medicines was 21.9% and 92.9%, respectively. In the public sector, the procurement agency purchases medicines at prices comparable to international reference prices, indicating a fair level of purchasing efficiency.

Concerning geographical accessibility, it took more than one hour to arrive at the public dispensing facility for 5.2% of patients interviewed at public dispensing facilities and similar results were obtained for those visiting private pharmacies.

Prices and affordability

The median price ratio (MPR) obtained for procurement prices at public facilities suggests that due to adequate tendering procedures, the medicine prices offered to patients in public facilities are lower than in private pharmacies.

For final patient prices for generic medicines in the public sector it was found that about one third of prices are close to the Management Sciences for Health (MSH) International Drug Price Indicator Guide and the rest of the products (18 products) are between 2 and 6 times more than those in the Guide.

The prices of insulin and ceftriaxone are lower than those in the International Drug Price Indicator Guide.

When originator brand medicines are prescribed/dispensed in the private sector, patients pay about 1.4–7.7 times more than they would for generics.

In treating common conditions using standard regimens, the amount of time that the lowest paid government worker would need to work to purchase lowest priced generic medicines from the private sector would be: 0.4 days to treat respiratory infection, 0.29 days to treat hypertension and 1.4 days to treat hypercholesterolemia.

Quality of medicines

The study was limited in measuring the quality of medicines, the most reliable way of ensuring quality of medicines in public and private health facilities surveyed is by random sampling and testing of medicines samples. However, due to financial constraints other indicators, such as the percentage of expired medicines on pharmacy shelves and adequate storage practices/infrastructure in place in public and private health facilities and warehouses, are used. Results showed 0% of medicines surveyed as expired in public and private sector facilities, while availability of good storage practices and appropriate storage infrastructure was limited in the public sector and adequate in the private sector, making the national median stand at 70% and 90%, respectively, of surveyed public and private health facilities.

Rational use of medicines

An excessive level of antibiotics and reasonable level of injectable medicines are being prescribed. In health facilities procedures to promote rational use are not in place, since the national essential medicines list was found in 26.7% and standard treatment guidelines in 13.3% of surveyed health facilities. Physicians partially consult with standard treatment guidelines. The selling of prescribed medicines without prescription seems to be a widespread practice. Most patients had been informed of how to take their medicines in public and in private pharmacies.

Additional indicators

Most dispensing facilities and private pharmacies comply with the law, since pharmacists were found to be present in most of them and the profile of health workers dispensing medicines was adequate. Physicians are the most frequent prescribers found, and a few prescribers had recently been trained in the rational use of medicines.

Conclusions

Regarding access to medicines the results of the survey showed that the availability of key medicines in the public sector is less than 60%, and the medicine pricing of almost 33% of these medicines is close to the MSH International Drug Price Indicator Guide. Strategies to improve availability and enhance affordability of medicines should be maintained in order to ensure equity in access to basic medical treatments, especially for the poor.

Appropriate use of medicines should also be promoted as the results demonstrated a very low level of awareness and utilization of rational use of medicines tools, such as the essential medicines list (26.7%) and standard treatment guidelines (13.3%). Overall, the results show that managerial and economic policies concerning pharmaceuticals should be maintained.

1. Introduction

In June 2009, the Ministry of Health conducted a nationwide study of the pharmaceutical situation in public health facilities, private pharmacies and in warehouses supplying the public sector in the Syrian Arab Republic. The main goal of the study was to document the degree of success in achieving strategic pharmaceutical objectives.

This study was conducted using the standardized methodology developed by the World Health Organization (WHO) to assess the pharmaceutical situation at the health facility using the level II questionnaire. This is an indicator-based approach that provides systematic data on access and rational use of quality medicines through a facility-based survey. The core indicators measure the most important information needed to understand the pharmaceutical situation in a country.

The main objectives of the study were to answer the following questions.

- Are medicines available and affordable in public and private dispensing facilities to treat common conditions at a primary care level?
- Do people have adequate geographical access to public and private dispensing facilities?
- Are there expired medicines in public and private dispensing facilities?
- Are medicines adequately stored and handled in public health facility dispensaries and warehouses supplying the public sector?
- Are medicines adequately prescribed, labelled and dispensed?
- Are patients informed on how to use their medicines?
- Are pharmacists present at dispensing facilities according to the law?
- Are pharmacists present at dispensing facilities?
- Which professionals are prescribing and dispensing?
- Do prescribers comply with good prescribing practices?
- How does the Syrian Arab Republic compare to other countries with regard to access and use of medicines?

2. Country information

2.1 Geographic and demographic information

The Syrian Arab Republic lies on the eastern coast of the Mediterranean sea bounded by Turkey to the north, Iraq to the east, Palestine and Jordan to the south and Lebanon and the Mediterranean sea to the west. Geographically the Syrian Arab Republic may be divided into four regions.

1. The coastal region, which lies between the mountains and the sea.
2. The mountainous region, which runs from the north down to the south of the country and includes all the mountains and hills that are parallel to the Mediterranean sea.
3. The interior region or the plains region, which comprises the plains of Damascus, Homs, Hama, Aleppo Al-Hasakeh and Dar'a and is situated to the east of the mountainous region.
4. The desert region, which consists of the desert plains situated in the southeastern part of the country at the Jordanian and Iraqi borders.

The total population is 20 125 million, with 54%, the majority of the population, living in urban areas.

The Syrian Arab Republic is a middle-income country with a gross domestic product (GDP) of 2 238 031 million Syrian Pounds (SYP). About 11.4% of the population live below the poverty line and approximately 10.9% are unemployed according to the most recent national census in the country. General data are summarized in Table 1.

Table 1. General profile of the Syrian Arab Republic

Aspect	Indicator	Value	Year
General data	Population (million)	20 125	2009
	Rural population (%)	46.5	2009
	Women (%)	48.9	2009
	Under 5 years (%)	13.3	2009
	Over 60 years (%)	5.7	2009
Socioeconomic data	Human development index	0.733	
	GDP (SYP)	2 238 031	2008
	GDP per capita expenditure on health (US$)	79.0	
	Below poverty line (%)	11.4	2004
	Unemployment rate (%)	10.9	2008
	Literacy rate (%)	83.2	2008
General health data	Infant mortality rate (per 1000 live births)	0.018	2006
	Life expectancy of population (years)	72.9	2005

Source: Central Bureau of Statistics

2.2 The health sector

In 2009, the per capita total expenditure on health was US$ 79 (based on the average exchange rate). Approximately 3.2% of GDP is spent on health. Of the total expenditure on health, 45.1% is government expenditure, which represents 6% of all government expenditures. A further 54.9% of total expenditure on health is represented by private expenditures.

The public health sector comprises three levels: tertiary hospitals, primary health care centres and secondary health centres (Table 2). Approximately 95% of the population has health coverage through universal health coverage, social schemes and private insurance. The public health sector is complemented by, e.g. private clinics and hospitals.

Table 2. Health sector structure

Facility category	Number of facilities
Primary health care centres (public + private + others)	3470
Secondary health centres (public + private hospitals and specialized centres	552

2.3 The pharmaceutical sector

There are approximately 11 111 licensed private retail medicine outlets in the country.

National medicines policy

A national medicines policy document exists in an official form. It was last updated in 2007. However, an implementation plan that sets out activities, responsibilities, budget and timelines is not in place.

Regulatory system

There is a formal medicines regulatory authority, which is funded through the regular budget from the government. Legal provisions are in place requiring transparency and accountability and promoting a code of conduct in regulatory work.

A medicines regulatory authority provides information on: legislation, regulatory procedures, prescribing information (such as indications, contra indications, side-effects, etc.), authorized companies and approved medicines.

Registration fees do not differ between originator brands and generic equivalents, but differ between imported and locally produced medicines. There are legal provisions for marketing authorization. A total of 6580 medicinal products have been approved for marketing. A list of all registered products is publicly accessible.

Legal provisions are in place for the licensing of manufacturers/wholesalers or distributors/importers or exporters of medicines.

A quality management system with an officially defined protocol for ensuring the quality of medicines is in place. Medicine samples are tested for medicines registration and post-marketing surveillance. In 2006, 14 600 samples were quality tested, with 150 failing to meet quality standards. Regulatory procedures are in place to ensure the quality of imported medicines.

Legal provisions are in place for the licensing and practice of prescribers and pharmacies. There is no obligation to prescribe by generic name in the public or private sector. Generic substitution is permitted in public and private pharmacies and there are no incentives to dispense generic medicines at public or private pharmacies.

There are provisions in the legislation and regulations of medicines covering promotion and advertising of medicines.

Medicines supply system

Public sector procurement is not pooled at the national level (i.e. there is no centralized procurement for the provinces). Public sector medicine procurement and distribution are the responsibility of the Ministry of Health, a private institution contracted by the government, individual health institutions and nongovernmental organizations. Public sector procurement is not limited to medicines on the essential medicines list. There are regulations for local preference in public sector procurement.

Medicines financing

In the Syrian Arab Republic, the total public expenditure for medicines was US$ 20 (purchasing power parity) and approximately 10% of medicines by value, were imported.

There is a national policy to provide some medicines free of charge at public primary care facilities. The following patients receive medicines for free: patients who cannot afford them, children less than five years of age, older children, pregnant women and elderly persons.

There are specific medicines that are free of charge, such as: medicines for malaria and tuberculosis and vaccines for sexually transmitted infections and HIV/AIDS, growth hormones, insulin, interferon, immunosuppressants and oral contraceptives. No fees are charged at primary care facilities and revenues from fees or the sale of medicines are never used to pay the salaries or supplement the income of public health personnel in the same facility. Prescribers in the public and private sector do not dispense medicines; patients take their medicines from dispensers in facilities.

Some of the population has public health insurance, which covers some medicines. The country has a policy covering medicine prices that applies to both the public sector and the private sector. It includes provisions concerning maximum wholesale mark-ups, maximum retail mark-ups, duty on imported raw materials and duty on imported finished pharmaceutical products.

The government sets the price of all originator brand products and all generic products through direct price controls and international reference pricing. There is a national medicine price monitoring system for retail and patient prices. There are regulations mandating retail/patient medicine price information to be made publicly accessible. There are official written guidelines on medicine donations that provide rules and regulations for donors and provide guidance to the public and private sectors on accepting and handling donated medicines.

Rational use of medicines

The country's essential medicines list, last updated in 2007, contains 312 simple-

substance formulations. The list is the basis for public sector procurement. There is a committee responsible for the selection of products on the national list. The Ministry of Health produces hospital and primary care standard treatment guidelines for major conditions. Antibiotics are frequently sold over the counter without a prescription, and the same occurs with injections, which are occasionally sold over the counter.

3. Methodology

3.1 Study design

The survey with level II indicators is a very important part of the pharmaceutical sector assessment. These indicators measure the outcome and impact of strategic pharmaceutical programmes in a country: improved access, quality and rational use. Access is measured in terms of the availability and affordability of essential medicines, especially to the poor and in the public sector. Measuring the actual quality of medicines by testing samples can be expensive. Instead, the presence of expired medicines on pharmacy shelves, as well as the adequate handling and conservation conditions, are indicators of the quality of medicines made available to the population. Finally, rational use is measured by examining the prescribing and dispensing habits of health providers and the implementation of key strategies such as standard treatment guidelines and essential medicines lists.

Level II indicators are measured in public health facilities, private medicine outlets, and in warehouses supplying the public sector.

Initially, five provinces were selected as "survey areas" for data collection. The major urban centre of Damascus was selected as one survey area and Al-Hasakeh was selected as representative of a low-income area. An additional three areas were chosen at random. This resulted in the following five survey areas: Damascus (major urban centre), Homs (middle area), Aleppo (north area), Tartous and Al-Hasakeh.

Figure 1. Geographic location of the five survey areas

In each survey area, six public health facilities were identified. The sample of public facilities was identified by first selecting the main public hospital, and a primary/rural health centre or lowest level public health facility. An additional four public medicine outlets (e.g. hospital medicine outlets, dispensaries) per survey area were then selected at random from all middle-level public health care facilities. For each public facility the nearest private pharmacy was visited. Additionally, one warehouse that supplies the public sector was visited in each area, resulting in 30 public health facilities and their dispensaries, 30 private pharmacies and five warehouses visited.

In each facility surveyed a set of survey forms (Annex 1) was used. This provided a standard method of gathering information in order to calculate the indicators. Box 1 summarizes the indicators and corresponding survey forms used to collect data.

Box 1. Summary list of indicators and corresponding survey form used to collect data

Indicator		Survey form
Access		
1	Availability of key medicines in public health facility dispensaries, private medicine outlets and warehouses supplying the public sector (country list)	1, 9, 13
	Mean availability of originator brand and generic medicines in the public/private sector	2, 10
2	Percentage of prescribed medicines dispensed or administered to patients at public health facility dispensaries	5
3	Average stock-out duration in public health facility dispensaries and warehouses supplying the public sector	3, 14
4	Adequate record-keeping in public health facility dispensaries and warehouses supplying the public sector	3, 14
5	Geographical accessibility of public health facility dispensaries and private medicine outlets	5, 12
6	Indicators related to affordability and prices of medicines: Patient prices for generic medicines/innovator medicines in the public/private sector Prices of generic/ innovator medicines in public/private sector compared to international price index. Affordability/ratio of cost to treat common conditions using standard regimens, to the lowest daily government worker wage for X (condition) and X (condition) (days' wages to purchase lowest priced generic medicines from the public and private sector)	2, 10
Quality		
1	Percentage of medicines expired in public health facility dispensaries, private medicine outlets and warehouses supplying the public sector	1, 9, 13
2	Adequacy of storage conditions and of handling of medicines in public health facility dispensaries and warehouses supplying the public sector	4, 11, 15
Rational use of medicines		
1	Percentage of medicines adequately labelled at public health facility dispensaries and private medicine outlets	5, 12
2	Percentage of patients informed on how to take medicines at public health facility dispensaries and private medicine outlets	5, 12
3	Average number of medicines per prescription at public health facility dispensaries and public health facilities	5, 6
4	Percentage of patients prescribed antibiotics in public health facilities	6
5	Percentage of patients prescribed injections in public health facilities	6
6	Percentage of prescribed medicines on the essential medicines list at public health facilities	6
7	Percentage of medicines prescribed by generic name (International Nonproprietary Names) at public health facilities	6
8	Availability of standard treatment guidelines at public health facilities	7
9	Availability of essential medicines list at public health facilities	7

Indicator		Survey form
10	Percentage of tracer cases treated according to recommended treatment protocol/guide at public health facilities	8
11	Percentage of prescription medicines bought with no prescription	12
Other information		
1	Percentage of facilities that comply with the law (presence of a pharmacist)	Section A, C
2	Percentage of facilities with pharmacist, nurse, pharmacy aide/health assistant or untrained staff dispensing	Section A, C
3	Percentage of facilities with doctor, nurse, trained health worker/health aide prescribing	Section B
4	Percentage of facilities with prescriber trained in rational use of medicines	Section B

Verification of availability, stock-out and expired medicines was based on a key medicines list, selected according to the first-line therapeutic choice for most common and important health conditions at the primary health care level. Availability is also measured using medicines in a global list differentiating innovator and lowest priced generics.

Verification of affordability of treatment, as well as compliance of prescribers, to recommended treatment protocol/guidelines was performed considering tracer health conditions treated with medicines in the global list.

Data collection methods included patient and health worker interviews after oral consent, checklist guided observation and clinical and pharmacy records review. The survey was conducted following the approval of the Ministry of Health. Local health managers were contacted for specific approval and cooperation.

The field team consisted of 15 data collectors, selected according to their qualifications as data collectors, and five supervisors who oversaw the fieldwork. All the field team members were trained in their specific roles and procedures during the inform period. Data collection took place between 10 June 2009 and 30 June 2009.

After review of the completed survey forms, data were typed into summary forms 1–4 and workbooks, both in Excel® and in freeware provided by the WHO survey package. These programs permitted indicator calculation. Indicator measures on each survey form were calculated manually and summaries were entered in an automated Excel® spread sheet. For data on medicine prices and affordability the WHO-HAI work book was used.

3.2 Limitations of the data

The study was not intended to give a detailed analysis of the pharmaceutical sector but to provide an overview of the national pharmaceutical situation in the country, to help in policy analysis and in the design of appropriate interventions.

According to WHO, the Level II core outcome indicator survey is designed to obtain relevant information from a simple-as-possible data collection process and small sample size. Larger samples give more precise results but they are costly, time consuming and require a more complex logistic infrastructure. Sample size is therefore a balance between what is desirable and what is feasible. The best sample size will be the smallest one that will result in estimates with the desired degree of precision. More details on sample bias and error are discussed in Annex 2b of the WHO operational package for assessing monitoring and evaluating of country pharmaceutical situations – Guide for coordinators and data collectors. Geneva, WHO, 2007.

The survey has been designed to provide a picture of the national pharmaceutical situation in a country. The regions and facilities selected cumulatively represent the national situation.

The sample sizes used are statistically not large enough to make inter-facility comparisons. For patient care indicators, for example, a minimum sample size of 100 would be necessary in order to make comparisons between facilities. This survey uses a sample size of 30. However, providing that the majority of the data is collected and the results are statistically different, comparisons between geographic regions can be made. Regional comparisons may be of interest where there is especially wide variation or contrasts, particularly with a group of related indicators. Regional comparisons should be conducted sparingly as not all geographic regions are represented and over-emphasizing the five regions included in the study may detract focus from the study's significance as a national survey.

4. Results and discussion

The following results are presented as medians and averages. In a series of numbers, the median is the value in the middle of the distribution. Half of the responding facilities would have reported values below the median, and half a value above the median. Similarly, the 25th and 75th percentiles are the values reported by 25% and 75% of the facilities, respectively. Because medians and percentiles are less sensitive to extreme values than means (averages), they are the best summaries of indicator data, which are highly skewed.

Table 3. Characteristics of the surveyed facilities

Region	Category of facility	Number of facilities	Number of outpatients interviewed	Observation
Region 1:	Hospital	1	30	
Damascus	Health centre	5	150	
	Warehouse	1	–	
	Private pharmacy	6	180	
Region 2:	Hospital	2	60	
Homs	Health centre	4	120	
	Warehouse	1	–	
	Private pharmacy	6	180	
Region 3:	Hospital	3	90	
Aleppo	Health centre	3	90	
	Warehouse	1	–	
	Private pharmacy	6	167	
Region 4:	Hospital	1	30	
Tartous	Health centre	5	150	
	Warehouse	1	–	
	Private pharmacy	6	180	
Region 5:	Hospital	2	60	
Al-Hasakeh	Health centre	4	120	
	Warehouse	1	–	
	Private pharmacy	6	180	

Table 3 shows the characteristics of the surveyed facilities. Table 4 presents the characteristics of the outpatients interviewed.

Table 4. Characteristics of outpatients interviewed

Category of health facilities	Number of outpatients interviewed	Female (%)	Age (%)	
Hospital	270	47.67	1) under 5 years	27.38
			2) older children	18.12
			3) adults	46.64
			4) over 60 years	7.76
Health centre	630	58.16	1) under 5 years	26.9
			2) older children	18.21
			3) adults	45..68
			4) over 60 years	9.49
			4) over 60 years	
Private pharmacy	887	42.37	1) under 5 years	20.85
			2) older children	13.3
			3) adults	51.40
			4) over 60 years	10.63
Total	1787	49.4	1) under 5 years	25.04
			2) older children	16.54
			3) adults	47.90
			4) over 60 years	9.29

Most interview data concern adult patients with approximately equal numbers of males and females. This profile was homogeneous among health services and pharmacies (Table 4).

4.1 Access to medicines

Table 5. General indicators for access

Indicator	National (median)	25th percentile	75th percentile	National average
Availability				
Availability of key medicines (country list) in:				
public health facility dispensaries	61.1%	51.3	66.6	57.7
private medicine outlets	94.4%	94.4	100	96.3
warehouses supplying the public sector	83.3%	67	94.4	81.1
Availability of key medicines (global list) in:				
public health facility/dispensaries originator medicines	0.9%			
public health facility/dispensaries generic medicines	23.7%			
private medicine outlets /originator medicines	21.9%			
private medicine outlets generic medicines	92.9%			
Percentage of prescribed medicines dispensed or administered to patients at public health facility dispensaries	100%	100	100	92
Average stock-out duration (day) in:				
public health facility dispensaries	54	20.7	149.7	100.1
warehouses supplying the public sector	29.6	7.1	40	24.2
Adequate record-keeping in:				
public health facility dispensaries	63.9%	55.5	66.6	63
warehouses supplying the public sector	89%	83.3	94.4	87.6
Geographical accessibility				
Percentage of patients taking more than one hour to travel to:				
public health facility dispensaries	0	0	0.1	5.2
private medicine outlets	0	0	0	2.4
Average transportation cost to the:				
public health facility dispensaries	15 (SYP)	8.9	29.8	23
private medicine outlets	7.1 (SYP)	0.5	22.4	15.5
Average transport cost as percentage of minimum daily salary to the:				
public health facility dispensaries	0.1	0	0.1	0.1
private medicine outlets	0	0	0.1	0.6

There are two percentage availability indicators: the country list (SF1–SF9) which is a key medicines list for common health conditions at the primary health care level and the global list (SF2–SF10). The results for the country list and global list are shown in Figures 1 and 2 respectively. Figure 3 shows the average stock-out duration in public health facility dispensaries and in warehouses supplying the public sector. Figure 4 shows the distribution of facilities according to the percentage of prescribed medicines dispensed or administered.

As Table 5 shows, the availability of key medicines reached 57.7% in public health facility dispensaries, 96.3% in the private medicine outlets, and 81.1% in the warehouses supplying the public sector, showing a different performance of this indictor among these sectors, being better in the private medicine outlets.

A high percentage of patients obtained their prescribed medicines at public health facility dispensaries, with 92% of all prescribed medicines dispensed or administered to patients at public health facility dispensaries. There was a uniform performance of this indicator among the health facilities.[1]

While the availability of essential medicines is 61.1% in the public sector (Figure 1), this high percentage of dispensed medicines can be explained by the prescribing of available medicines at the time of the patient's visit.

Table 5 also shows that the stock-out duration was 100 days/year in public health facilities and 24.2 days/year in the warehouses, indicating that this group of facilities are adequately supplied with medicines most of the time. As greater facilities showed adequate record-keeping it can be inferred that they manage information concerning the stock control of medicines.

The median for the percentage of patients taking more than one hour to travel to a medicine dispensing facility was 0% for both the public and private sector, indicating better geographical accessibility for the public/private sector.

As Table 5 shows, the average transport costs to the public and private dispensary facilities comprise 0.1 and 0.6 of the minimum daily salary respectively, indicating a medium burden to poor people.

[1] We can explain this high percentage of dispensed prescribed medicines, while the availability of essential medicines is 61.1%.

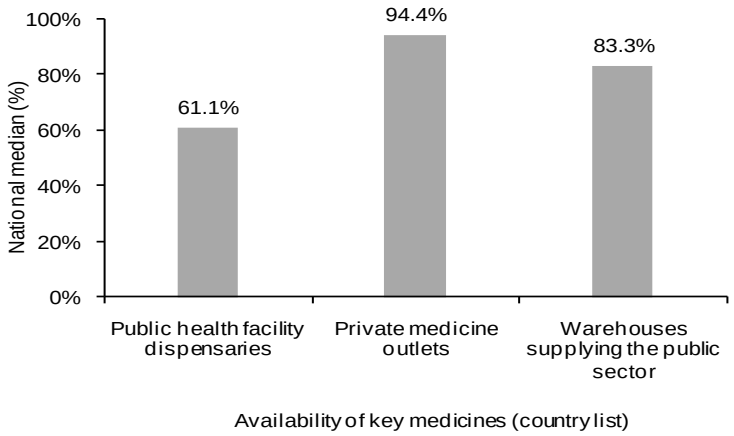

Figure 1. Availability of key medicines (country list) in public health facility dispensaries, in private medicine outlets, and in warehouses supplying the public sector

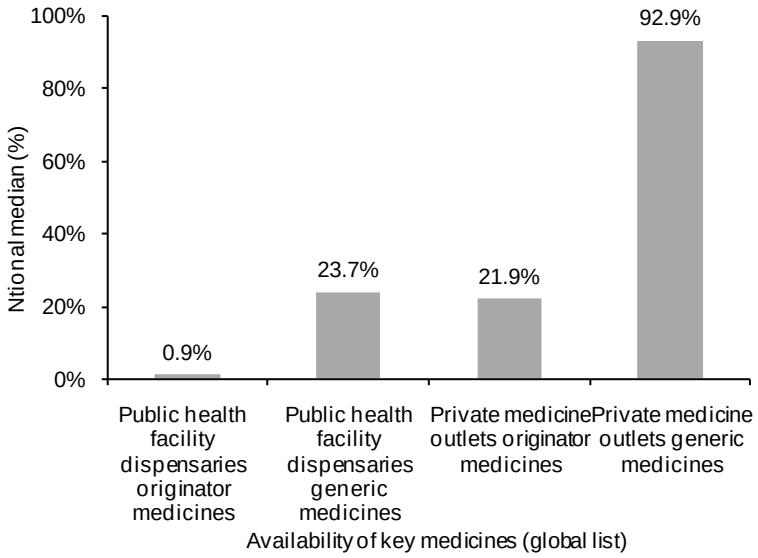

Figure 2. Availability of key medicines (global list) in public health facility dispensaries, in private medicine outlets

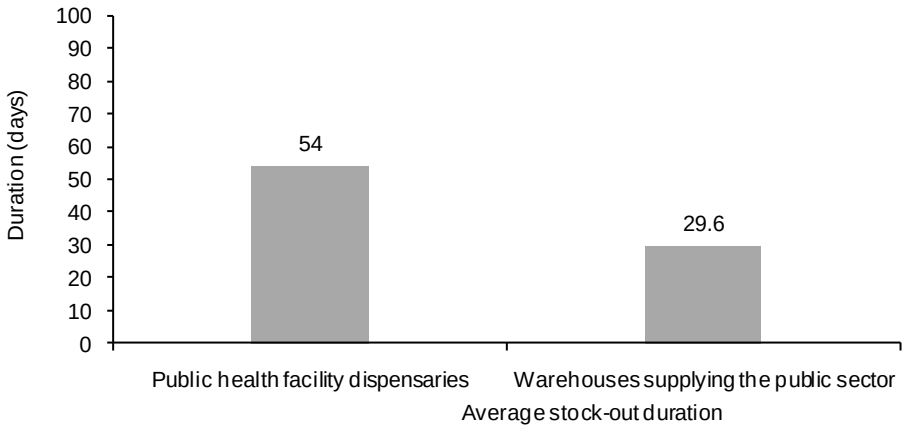

Figure 3. Average stock-out duration in public health facility dispensaries and in warehouses supplying the public sector

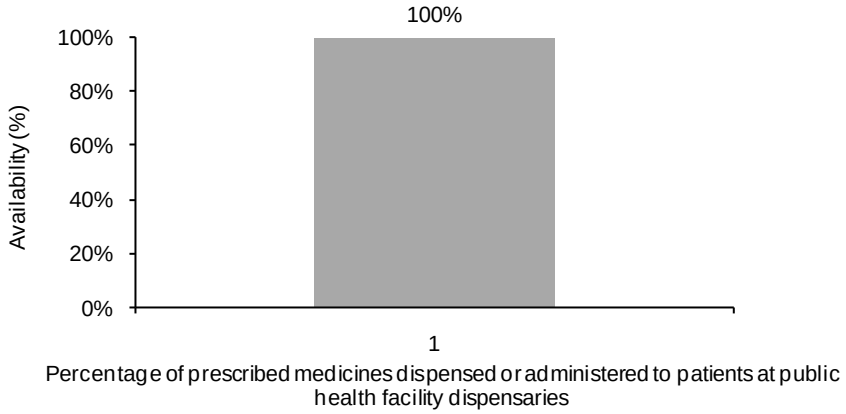

Figure 4. Distribution of facilities according to the percentage of prescribed medicines dispensed or administered

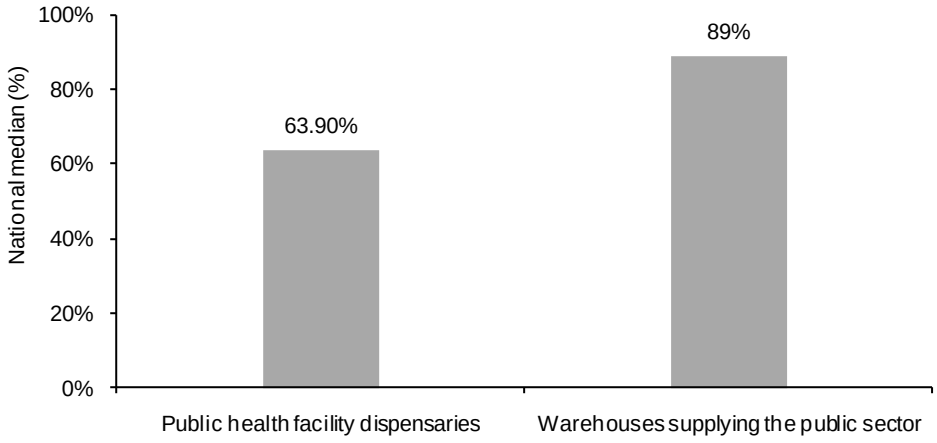

Figure 5. Adequate record-keeping in public health facility dispensaries and in warehouses supplying the public sector

4.2 Prices and affordability

Table 6. Lowest prices of key medicines in public and private sector procurement

Lowest price paid in public sector procurement	Lowest price paid in the private sector	Medicines and unit
8	12	Oral rehydration solution
1.3	2.25	Metronidazole (500 mg/tab)
3.7	4.25	Amoxicillin (500 mg/cap)
1.65	2.15	Hyoscine bromide (10 mg/tab)
2	4	Ciprofloxacin (500 mg/tab)
0.633	0.92	Paracetamol (500 mg/tab)
4	4.5	Gentamicin eye drop (3 mg/ml)
0.945	1.833	Diclofenac (50 mg/tab)
1.7	2.16	Atenolol (50 mg/tab)
2	2.4	Enalapril (10 mg/tab)
1.095	1.16	Furosemide (40 mg/tab)
1.795	3.33	Ranitidine (150 mg/tab)
4.47	5.55	Insulin (intermediate-acting (unit)/injection)
0.8625	1.065	Glibenclamide (5 mg/tab)
0.5	0.8	Dexamethasone (0.5 mg/tab)
0.7	1.03	Metoclopramide (10 mg/tab)
0.535	0.6	Salbutamol inhalation (100 mg/dose)
0.9	0.875	Diazepam (5 mg/tab)
3	3.5	Albendazole (200 mg/tab)
9.1	10.448	Atorvastatin (20mg/tab)
1.92	2.04	Carbamazepine (200 mg/tab)
3.2	4	Chloramphenicol eye drop
2.7	3.25	Fluoxetine (20 mg/tab)
2.8385	2.5	Gliclazide (80 mg/tab)
1.4	1.75	Ibuprofen (400 mg/tab)
3.45	3.75	Lisinopril (10 mg/tab)
1.19	1.82	Metformin (500 mg/tab)
1.2	2.4	Nifedipine (20 mg/tab)
1	1.75	Amitriptyline (25 mg/tab)
2.775	3.5	Captopril (25 mg/tab)
20	22.88	Ceftriaxone injection (1g/vial)
0.21	0.4	Co-trimoxazole susp (8+40 mg/ml)
9.2	11.424	Omeprazole (20 mg/cap/tab)
12.7	15.2	Simvastatin (20 mg/cap/tab)

Table 6 shows that prices in the private sector are moderately higher than prices in public sector procurement. Therefore, procuring only low priced quality generics could lead to significant savings and more cost-efficient use of available public funds.

Table 7. Comparison between originator price and the lowest price in the private sector

Lowest price	Originator price	Medicines and unit
12	*	Oral rehydration solution
2.25	3.25	Metronidazole (500 mg/tab)
4.25	*	Amoxicillin (500 mg/cap)
2.15	*	Hyoscine bromide (10 mg/tab)
4	*	Ciprofloxacin (500 mg/tab)
0.92	3.125	Paracetamol (500 mg/tab)
4.5	*	Gentamicin eye drop (3 mg/ml)
1.833	10.25	Diclofenac (50 mg/tab)
2.16	6.07	Atenolol (50 mg/tab)
2.4	*	Enalapril (10 mg/tab)
1.16	9	Furosemide (40 mg/tab)
3.33	10	Ranitidine (150 mg/tab)
5.55	*	Insulin (intermediate-acting (unit)/injection)
1.065	*	Glibenclamide (5 mg/tab)
0.81	*	Dexamethasone (0.5 mg/tab)
1.03	*	Metoclopramide (10 mg/tab)
0.6	*	Salbutamol inhalation (100 mg/dose)
0.875	3.25	Diazepam (5 mg/tab)
3.5	*	Albendazole (200 mg/tab)
10.448	*	Atorvastatin (20mg/tab)
2.04	7.05	Carbamazepine (200 mg/tab)
4	*	Chloramphenicol eye drop
3.25	*	Fluoxetine (20 mg/tab)
2.5	6.5	Gliclazide (80 mg/tab)
1.75	3.54	Ibuprofen (400 mg/tab)
3.75	13.5	Lisinopril (10 mg/tab)
1.82	2.625	Metformin (500 mg/tab)
2.4	*	Nifedipine (20 mg/tab)
1.75	*	Amitriptyline (25 mg/tab)
3.5	9.25	Captopril (25 mg/tab)
22.88	*	Ceftriaxone injection (1g/vial)
0.4	0.8	Co-trimoxazole susp (8+40 mg/ml)
11.424	*	Omeprazole (20 mg/cap/tab)
15.2	*	Simvastatin (20 mg/cap/tab)

Table 7 shows that the lowest priced generics ranged from 1.4 to 7.7 times the originator products.

Table 8 shows that about one third of prices are close to the MSH International Drug Price Indicator Guide and the rest of the products (18 products) are between 2 and 6 times more than that. Insulin and ceftriaxone cost less.

Table 8. Public health facility: cost of key medicines comparison with international price

Ratio of national price to international reference price	Lowest price paid In the public sector procurement	MSH 2008	Medicines and unit
2.19	0.173	0.0794	Oral rehydration solution
3.7	0.028	0.0076	Metronidazole (500 mg/tab)
1.78	0.08	0.045	Amoxicillin (500 mg/cap)
1.38	0.0358	0.0259	Hyoscine bromide (10 mg/tab)
1.15	0.043	0.0372	Ciprofloxacin (500 mg/tab)
3.62	0.013	0.0038	Paracetamol (500 mg/tab)
2.05	0.0869	0.0423	Gentamicin eye drop (3 mg/ml)
4.27	0.0205	0.0048	Diclofenac (50 mg/tab)
2.31	0.036	0.016	Atenolol (50 mg/tab)
1.78	0.043	0.0244	Enalapril (10 mg/tab)
5.95	0.023	0.004	Furosemide (40 mg/tab)
1.64	0.039	0.0237	Ranitidine (150 mg/tab)
0.08	0.097	1.177	Insulin (intermediate-acting (unit)/injection)
4.16	0.018	0.0045	Glibenclamide (5 mg/tab)
2.17	0.0108	0.005	Dexamethasone (0.5 mg/tab)
2.81	0.0152	0.0054	Metoclopramide (10 mg/tab)
1.29	0.0116	0.009	Salbutamol inhalation (100 mg/dose)
3.9	0.019	0.005	Diazepam (5 mg/tab)
2.17	0.065	0.03	Albendazole (200 mg/tab)
NA	0.197	NA	Atorvastatin (20mg/tab)
2.01	0.041	0.0207	Carbamazepine (200 mg/tab)
1.22	0.069	0.057	Chloramphenicol eye drop
4.51	0.058	0.0137	Fluoxetine (20 mg/tab)
NA	0.061	NA	Gliclazide (80 mg/tab)
3.49	0.0304	0.0087	Ibuprofen (400 mg/tab)
NA	0.075	NA	Lisinopril (10 mg/tab)
1.47	0.025	0.0175	Metformin (500 mg/tab)
NA	0.27	NA	Nifedipine (20 mg/tab)
3.68	0.021	0.0059	Amitriptyline (25 mg/tab)
4.27	0.060	0.0141	Captopril (25 mg/tab)
0.56	0.43	0.7632	Ceftriaxone injection (1g/vial)
NA	0.0045	NA	Co-trimoxazole susp (8+40 mg/ml)
6.09	0.2	0.0328	Omeprazole (20 mg/cap/tab)
4.38	0.27	0.0629	Simvastatin (20 mg/cap/tab)

Table 9. Affordability of standard treatment regimens

Day's wages	Total cost of treatment	Total of units per treatment	Treatment duration (in days)	Medicine	Disease
0.4	89.25	21	7 days	Amoxicillin 500mg/cap	Adult respiratory infection
0.29	64.8	30	30 days	Atenolol 50 mg	Hypertension
1.4	313.44	30	30 days	Atorvastatin 20 mg	Hypercholesterolemia

Affordability is calculated as the number of days that the lowest paid unskilled government worker (at the time of survey) would have to work to pay for a treatment course.

A government worker earns 223 SYP (approximately US$ 4.8). Table 9 shows that the worker needs to work 0.4 days to treat a respiratory infection and to work 0.29 days to treat hypertension and to work 1.4 days to treat hypercholesterolemia.

4.3 Quality of medicines

Table 10 shows that the percentage of expired medicines was 0% in the public health facility dispensaries, private medicine outlets and warehouses supplying the public sector, indicating that expired medicines were found in none of these facilities.

The best result for the adequacy of infrastructure for conservation conditions of medicines was found in the private sector, and the worst in the public sector, rating 90% and 70%, respectively (Table 10).

Since most results here were good it is possible to infer that the quality of medicines provided in the country is an important concern as part of the supply channel.

There are very limited indicators on quality. This discussion has to be focused on how poor storage and handling, as well as expired medicines, can affect the quality of medicines for patients at the end of distribution channel.

Table 10. General indicators for quality of medicines

Indicator	National (median)	25th percentile	75th percentile	National average
Percentage of medicines expired in				
public health facility dispensaries	0	0	0	0
private medicine outlets	0	0	0	0
warehouses supplying the public sector	0	0	0	0
Adequacy of storage conditions of medicines in				
storerooms of public health facility dispensaries	75	60	80	69.7
dispensing rooms of public health facility dispensaries	70	60	80	70.8
storerooms of private medicine outlets	90	70	90	79.2
dispensing rooms of private medicine outlets	90	70	90	82
storerooms of warehouses supplying the public sector	90	50	90	72

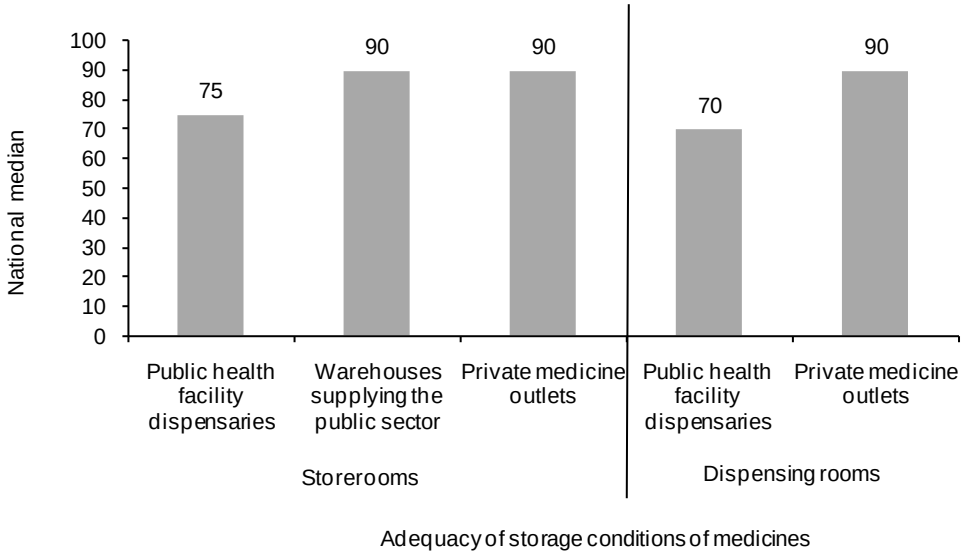

Figure 6. Adequacy of infrastructure of conservation conditions of medicines

4.4 Rational use of medicines

Table 11. General indicators for access

Indicator	National (median)	25th percentile	75th percentile	National average
Prescribing indicators				
Average number of medicines per prescription at public health facility dispensaries and public health facilities (SF6)	2.1	1.9	2.4	2.1
Average number of medicines per prescription at public health facility dispensaries and public health facilities (SF7)	2.1	1.9	2.4	2.1
Percentage of patients prescribed antibiotics in public health facilities	68.3	54	75.3	63.9
Percentage of patients prescribed injections in public health facilities	13.3	6.6	38.3	21.9
Percentage of prescribed medicines on the essential medicines list at public health facilities	100	95.4	100	93.7
Patient care indicators				
Percentage of medicines adequately labelled at public health facility dispensaries	100	92	100	93
private dispensaries	91.7	71.3	100	80.6
Percentage of patients who know how to take medicines at public health facility dispensaries	87	60	100	79
private dispensaries	100	83.8	100	87.8
Prescription medicines bought without prescription	19.6	4.6	36.9	24.6
Facility-specific factors for the rational use of medicines	**National percentage**			
Availability of standard treatment guidelines at public health facilities	13.3			
Availability of essential medicines list at public health facilities	26.7			

As Table 11 shows, the essential medicines list and the standard treatment guidelines were found in 26.7% and 13.3%, respectively, of the public health care facilities, indicating that these fundamental documents are not available to health care professionals (Figure 12). The average number of medicines per prescription at the public facility dispensaries was 2.1, which may be considered adequate (Figure 7).

The percentage of patients prescribed antibiotics in public health facilities was 63.9%, which may be considered high, indicating irrational prescribing patterns for this group of medicines (Figure 8).

The percentage of patients prescribed injections in public health facilities was 21.9%, which may be considered high, indicating irrational prescribing patterns for this group of medicines (Figure 8).

The following values are sometimes used as a reference: 30% for antibiotics and 20% for injections, which indicates that over prescribing is not taking place.

The average number of medicines prescribed is 2 per consultation (Table 11). However, standards for these indicators can be complex. The optimal value largely depends on disease patterns, policies and treatment guidelines and so may vary. Note also that these are for general outpatient consultations.

Prescribers are unlikely to adhere to treatment guidelines. There are, however, guidelines for specific diseases and also a draft for treatment guidelines for primary health care, which is not widely applied (Table 12, Figures 13–15).

A median percentage of 100% was found for medicines prescribed according to the national essential medicines list, indicating a good adherence of physicians to this list.

The percentage of medicines adequately labelled was 93% and 80.6% at public health facility dispensaries and at private pharmacies, respectively. It was also found that a high percentage of people know how to take their medicines at the public health facility dispensaries and private pharmacies (Figure 9).

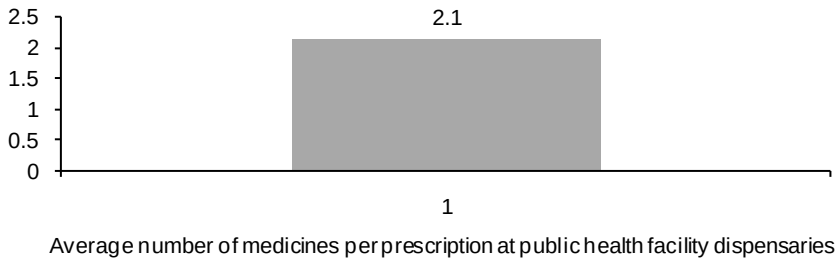

Figure 7. Average number of medicines per prescription at public health facility dispensaries

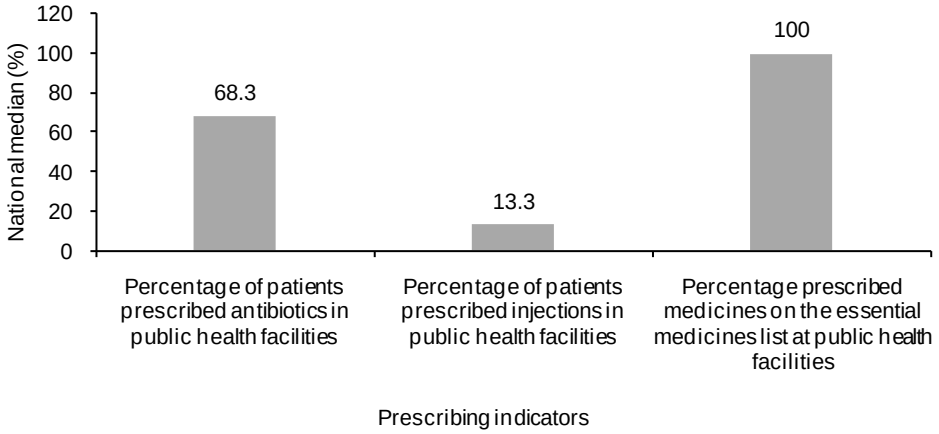

Figure 8. Percentage prescribing indicator in public health facilities

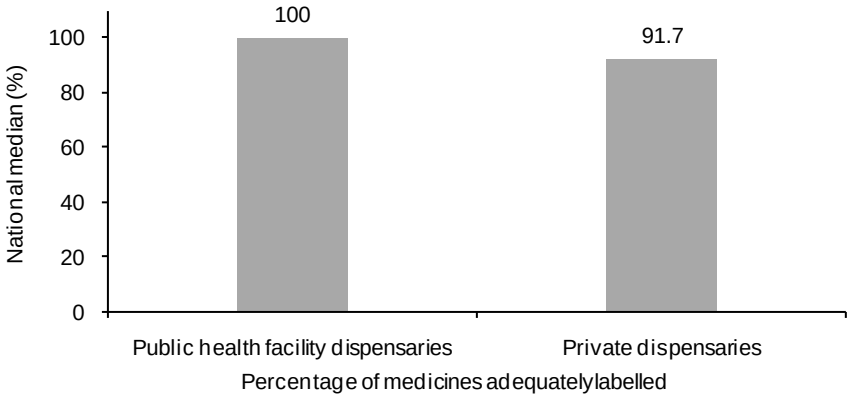

Figure 9. Medicines adequately labelled at public health facilities and private dispensaries

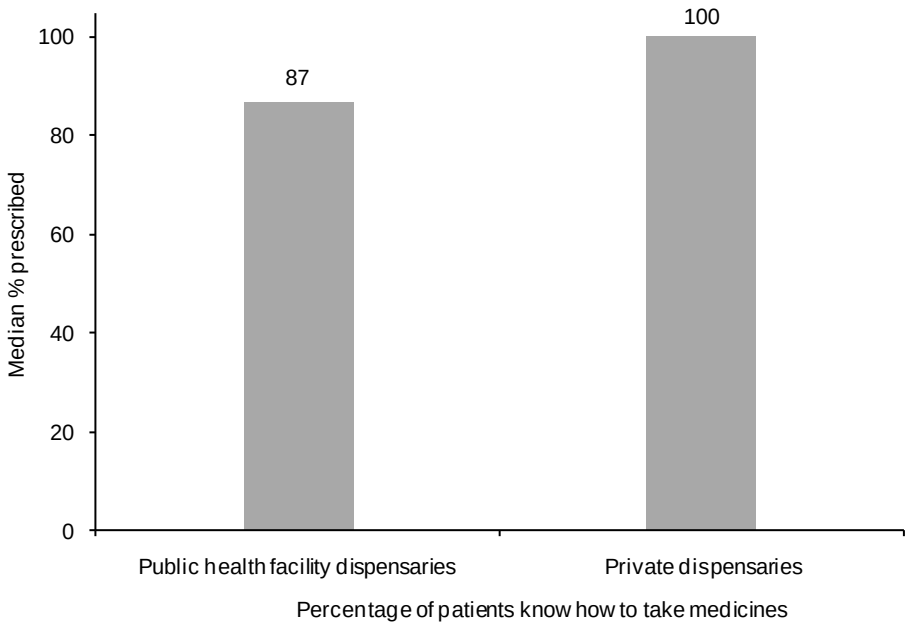

Figure 10. Percentage of patients that know how to take medicines at public health facility and private dispensaries

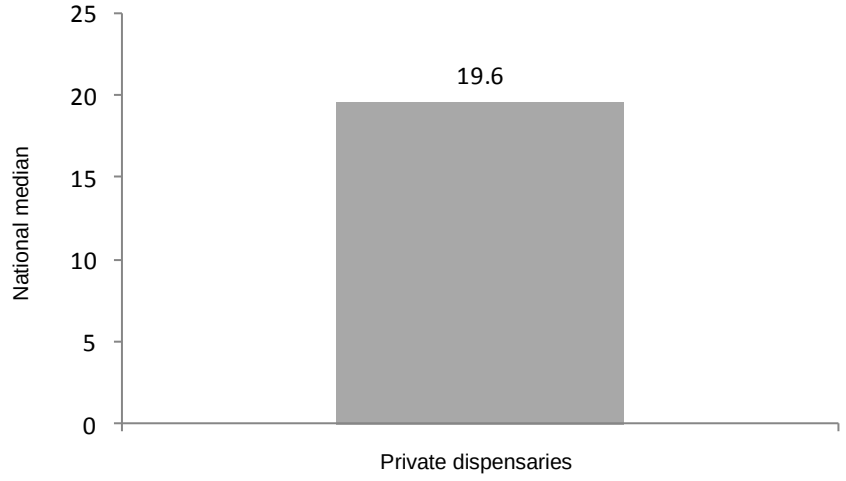

Figure 11. Prescription medicines bought without prescription at private dispensaries

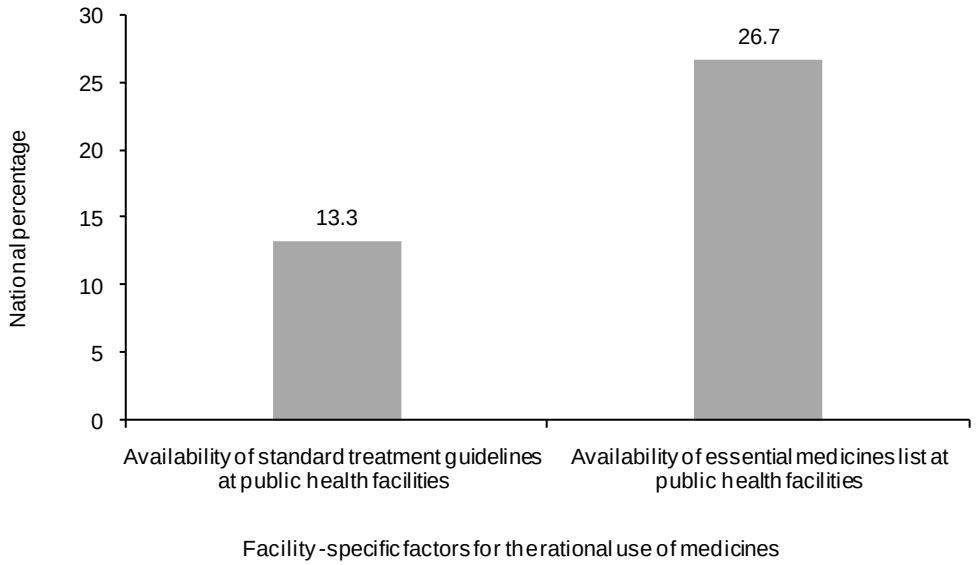

Figure 12. Facility-specific factors for the rational use of medicines

Table 12. Adherence of prescribers to recommended treatment guidelines

Indicator	Information source	Median	National average	Standard deviation
Non-bacterial diarrhoea in children under age 5	Total number of cases	10	9	2.2
	Percentage of oral rehydration salt (ORS)	90	78.1	27.7
	Percentage of antibiotics	35	40.6	35.3
	Percentage of antidiarrhoeal and/or antispasmodic	40	42.6	33.5
Mild/moderate pneumonia in children under 5	Total number of cases	10	9.2	1.8
	Percentage of receiving any one first-line antibiotic	100	96.8	10
	Percentage of receiving more than one antibiotic	5	16.7	21.1
Non-pneumonia acute respiratory infection in patients of any age	Total number of cases	10	5.7	4.9
	Percentage of antibiotics	100	60.6	47.9

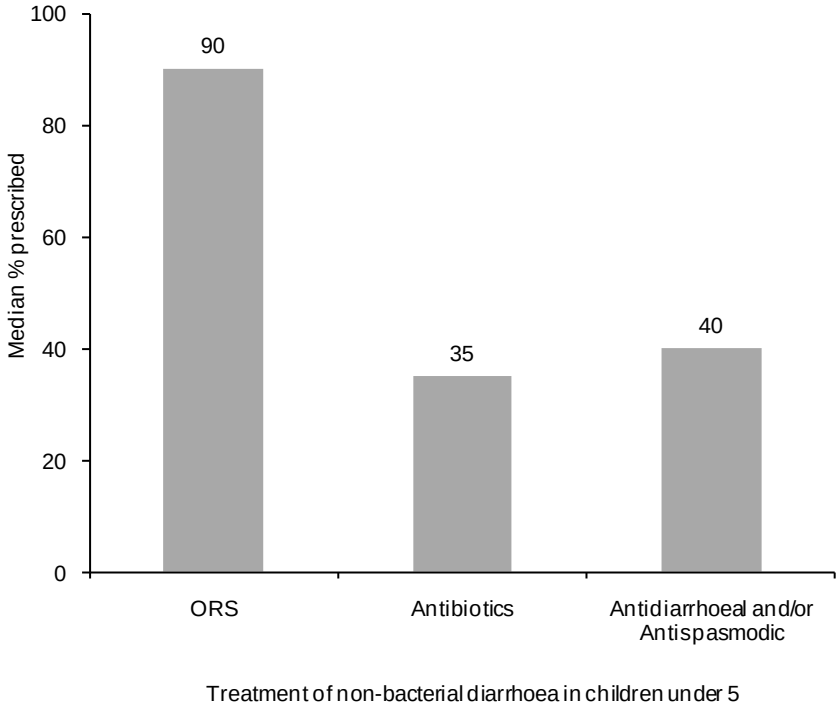

Figure 13. Adherence of prescribers to recommended treatment guidelines in the treatment of non-bacterial diarrhoea in children under 5

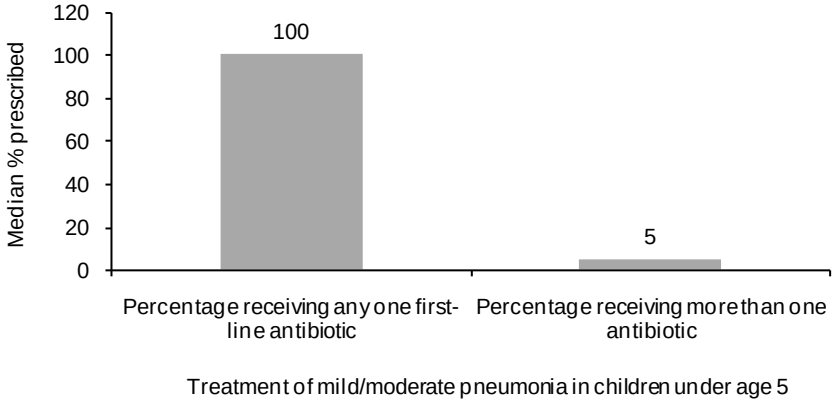

Figure 14. Adherence of prescribers to recommended treatment guidelines in treatment of non-bacterial diarrhoea in children under five

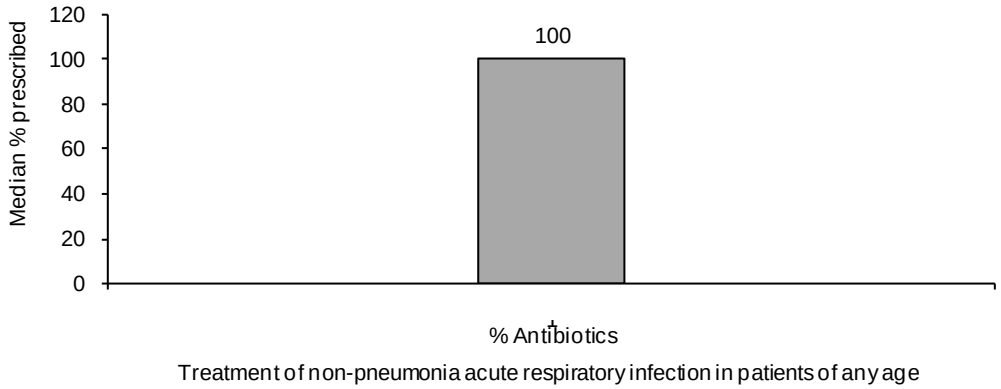

Figure 15. Adherence of prescribers to recommended treatment guidelines in treatment of Non-bacterial diarrhoea in children under five

4.5 Additional information

Table 13 shows that a pharmacist was found to be present in 3.3% and 96.7% of public dispensaries and private pharmacies, respectively, suggesting that the law concerning this issue is followed in most facilities; given that the law does not require a pharmacist in pharmacies of general health centres. Pharmacy aides and pharmacists were the most frequent dispensers found in the public sector and private sector, respectively. Untrained staff were not found in the public or private sector. Table 14 shows that the most frequent prescriber found in the public health care facilities was the physician. Also, the most senior prescribers found were physicians, 7% of who participated in the rational use of medicines training in the previous year.

Table 13. Dispenser profile and compliance with the law

Professional dispensing during the visit	Public sector (%)	Private sector (%)
Pharmacist	3.3	96.7
Nurse	3.3	0
Pharmacy aide/health assistant	90	3.3
Untrained staff	0	0
Facilities that comply with the law (presence of a pharmacist)	16.7	96.7

Table 14. Prescriber profile in the public sector

Percentage of facilities where	Doctor (%)	Nurse (%)	Trained health worker/health aide (%)
The professional was present during the visit	100	0	0
The most senior professional was present	100	0	0
The most senior professional attended rational use of medicines-related training within the previous year	7	0	0

5. Conclusions and recommendations

5.1 Positive aspects and areas for improvement

Table 15 highlights positive aspects of the pharmaceutical assessment identified by the survey and also areas which could be improved.

Table 15. Positive aspects and areas for improvement identified

Indicator	Positive aspects developing from survey	Areas for improvement apparent from survey
Access to medicines		
Availability of key medicines	The availability of key medicines reached 96.3% in private medicine outlets, and 81.1% in warehouses supplying the public sector	The availability of key medicines reached 57.7% in the public health facility, which needs some improvement
Stock-out duration	Stock-out duration was 24.2 days/year in the warehouses	Stock-out duration was 100 days/year in the public health facility
Percentage of prescribed medicines actually dispensed	92% of prescribed medicines were dispensed or administered to patients at public health facility dispensaries	
Percentage of adequate stock records	Percentage of adequate stock records was 87.6% in warehouse	Percentage of adequate stock records was 63% in public health facility dispensaries, which needs some improvement
Affordability		
Prices of key medicines	About a third of prices are close to the international drug price indicator guide. The prices of insulin and ceftriaxone are lower than the guide	The remaining products (18 products) are between 2–6 times more than the drug price indicator guide
Quality of medicines		
Percentage of medicines expired	Expired medicines were not found	
Adequacy of storage	Adequacy of storage conditions percentages range between 70% and 82% in the storerooms and dispensaries	Adequacy of storage conditions percentage was 50% in less than 25% of warehouses which needs improvement
Rational medicine use		
Average number of medicines per prescription	The average number of medicines per prescription was 2.1, which may be considered adequate	
Percentage of patients prescribed antibiotics in public health facilities		The percentage of antibiotics prescribed was 63.9%
Percentage of patients prescribed injections in public health facilities		The percentage of injections prescribed was 21.9%
Percentage of prescribed medicines on the essential medicines list at public health facilities	A median percentage of 100% was found for medicines prescribed according to the national essential medicines list	
Percentage of medicines adequately labelled at public health facility dispensaries	The percentage of medicines adequately labelled was 93% at public health facility dispensaries	

Indicator	Positive aspects developing from survey	Areas for improvement apparent from survey
Private dispensaries	The percentage of medicines adequately labelled was 80.6% at private health facility dispensaries	
Percentage of patients who know how to take medicines at public health facility dispensaries	A high percentage of people who know how to take their medicines (87%)	
Private dispensaries	A high percentage of people who know how to take their medicines (100%)	
Prescription medicines bought without prescription		24.6% of medicines bought without a prescription
Availability of standard treatment guidelines and essential medicines list, including ONF and the Integrated Management of Childhood Health		The essential medicines list and the standard treatment guidelines were found in 26.7% and 13.3% of the public health care facilities, respectively
Prescribing according to standard treatment guidelines		
Non-bacterial diarrhoea in children under 5	The percentage of oral rehydration salt prescribed was 78.1%	The percentage of antibiotics prescribed was 40.6%
Mild/moderate pneumonia in children under 5		The percentage prescribed more than one antibiotic was 16.7%
Non-pneumonia acute respiratory infections in patients of any age		The percentage of antibiotics prescribed was 60.6%

5.2 Summary of recommendations

Access to medicines	Develop and implement interventions so as to increase the availability of medicines in health facilities. Conduct operational research to assess factors that cause specific problems and constraints to best practices. Provide training to managers within the procurement and distribution chain. The training should focus on forecasting, procurement, storage and distribution to prevent stock-outs. The Ministry of Health, the Syrian Arab Republic Health Service, consumer associations together with the general public should lobby for reduction in prices of essential medicines. Advocacy should aim at reducing tariffs and taxes on all essential medicines both in the public and private sectors. Strengthen the national health insurance scheme to improve (financial) access to medicines.
Quality of medicines	Identify storage deficiencies and design interventions for implementation to address these poor or inadequate storage conditions in public health facilities. The Ministry of Health should strengthen the mechanisms for the inspection of pharmacies and warehouses in the public sector.
Rational medicine use	Identify, develop and continue implementing interventions to further decrease the number of patients receiving antibiotics. Identify, develop and continue implementing interventions to further decrease the number of patients receiving injections. Public/consumer education should target the social and cultural aspects of medicine use particularly in relation to the consequences of inappropriate and unnecessary use of injections and antibiotics; education on compliance with treatment should be emphasized. Investigate reasons for current clinical management of the tracer conditions (e.g. establish causes/reasons contributing to irrational medicine use overall). Try to attain 100% oral rehydration salts use in all facilities by educational intervention. Design interventions to reduce the number of facilities prescribing antibiotics and or antispasmodics in childhood diarrhoea. Investigate why certain facilities are treating all non-pneumonia acute respiratory infections with antibiotics. Organize a focus group or face-to-face discussion with key health workers involved. Rational medicine use concepts should be part of the training curricula of all health professionals and part of ongoing in-service training so as to reinforce the concepts to ensure sustained change. The use of the popular media ought to be continued and strengthened to promote patient rights. Institutionalize drug and therapeutic committees (DTC) in all health facilities to improve the correct efficient and cost-effective management of medicines and also to ensure effective monitoring of the indicators at the facility level. DTC members should be adequately trained and empowered to carry out their duties.

The study *Pharmaceutical situation assessment – Level II: health facilities survey* was conducted in June 2009 by the Ministry of Health of the Syrian Arab Republic to assess the effectiveness of the pharmaceutical sector in terms of ease of access to medicines and the quality of existing medicines in public health facilities, private pharmacies and in warehouses supplying the public sector. It also assessed the proper usage of medicines. The main goal of the study was to document the degree of success in achieving national strategic pharmaceutical objectives. The results of the study will support the Ministry of Health in policy analysis and the design of appropriate interventions to develop and improve the performance of the pharmaceutical sector in order to provide safe and effective medication for each of its citizens.

For further information:
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