Views On News

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Views on The Crisis

The Impact of the Crisis on the Health Sector

Introduction

While the whole world shares the broad outlines of the economic and social repercussions of the Coronavirus (COVID-19), which are unprecedented in its recent history, the implications thereof for each country are linked to the nature of each country's economic system, its ability to withstand the entailed repercussions and the speed of its recovery.

In light of the need to study the sectoral implications of these repercussions in order to address the crisis properly, the Egyptian Center for Economic Studies (ECES), in its initiative, is producing a set of daily reports entitled "Views on Crisis". The reports aim to analyze the implications of the coronavirus crisis for Egypt in relation to a number of vital production and service sectors and to key macroeconomic variables. This ECES initiative comes from the belief that the current critical conditions require directing state's efforts towards achieving two main goals: providing a decent life for Egyptians during the crisis and in the recovery phase, preserving the existing investments- especially domestic investments- and helping to overcome the crisis and prepare for a rapid launch with the gradual decline of the crisis and recovery of the global economy.

The methodology used in these reports is based on an analysis of the supply and demand shocks associated with the crisis cycle in its various stages. Given the lack of detailed data on the sectoral impact of the crisis, the sectoral analysis is based on logical assumptions related to the nature of each sector and the degree of sector vulnerability to previous sever crises that were certainly less severe than the current crisis and different in nature. However, it is a starting point for the urgently required scientific diligence at this stage.

Egypt's covid-19 outbreak is 'not insignificant' but remains under control, and we still have several options for how to handle the situation."

John Jabbour

World Health Organization (WHO)

Representative in Egypt

1. Brief description about the subject of the report

The current report examines the impact of the crisis on the health sector in Egypt, which is undoubtedly the most important sector directly countering the crisis. The preparedness of this sector prior to the crisis will certainly be reflected in its ability to control the virus and contain the crisis.

In addition to its importance, the right to health care is one of the constitutional rights set in the Egyptian constitution of 2014, which dictates a percentage of public expenditure on the health sector that is not less than 3 percent of GNP. This sector is also a major pillar for achieving the national and international strategic goals of sustainable development.

In this context, the description begins with some basic indicators that reflect the health sector in Egypt compared to many countries in the world, followed by more details on the structure of hospitals in Egypt and some indicators on Egypt's health sector.

First: The state of the health sector in Egypt compared to selected countries

This section deals with spending on health between public and private sectors and individuals as well as indicators that reflect the various components of the system in terms of human resources and basic care units.

1- Health spending between the government and the private sector[1] and direct payments to individuals

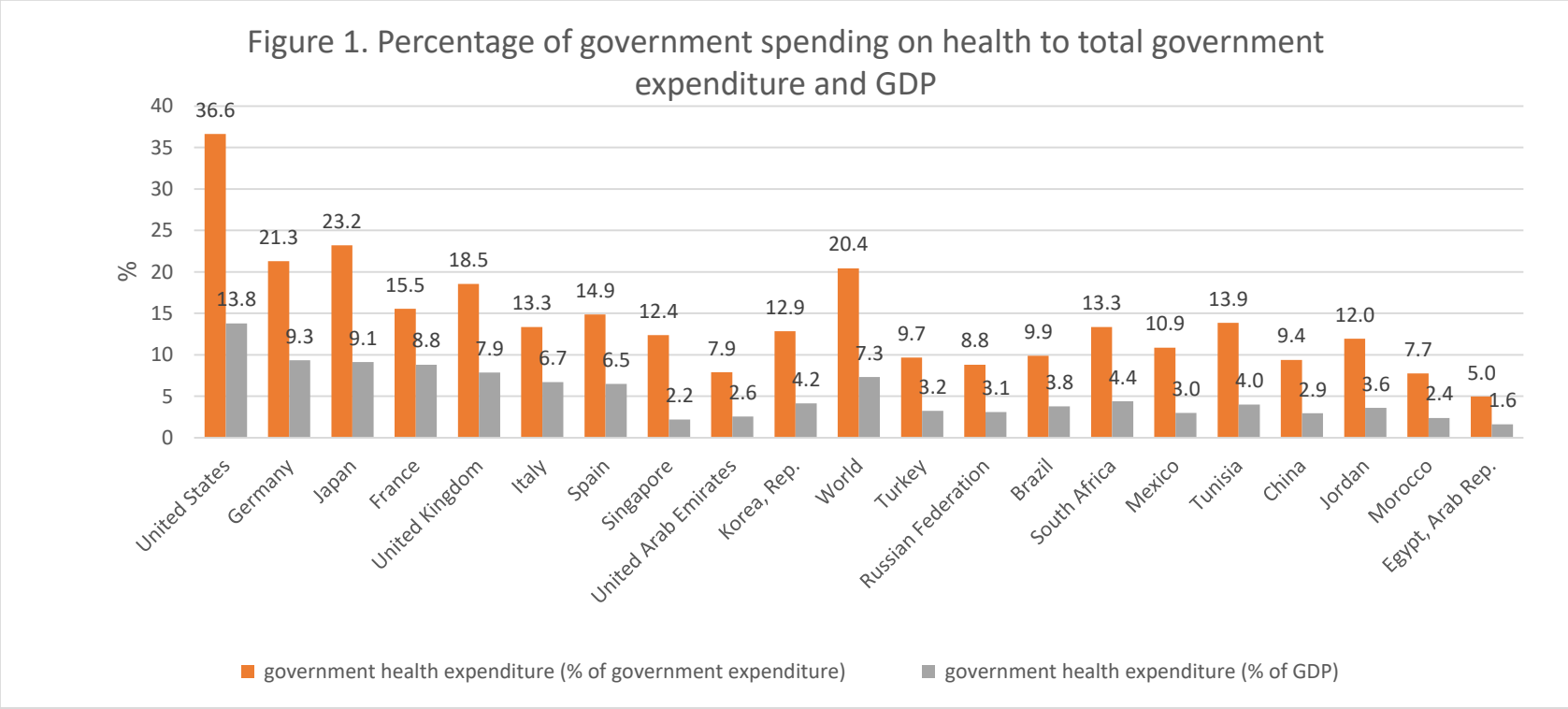
1-1 Government spending

Globally, Government expenditure on health accounts for 7 percent of GDP and 20 percent of total government spending.

While in Egypt spending on health does not exceed 2 percent of GDP and 5 percent of total government expenditure, thus a quarter of global rates and less than countries whose development level is close to that of Egypt (Figure 1). Average per capita

[1] Includes funds that companies and non-profit organizations direct to cover health insurance costs for workers or individuals in the form of prepaid contracts or funds paid directly to healthcare providers.

government expenditure on health in Egypt is one-fifth (1/5) of the global average, reaching $176 in Egypt compared to $904 globally.

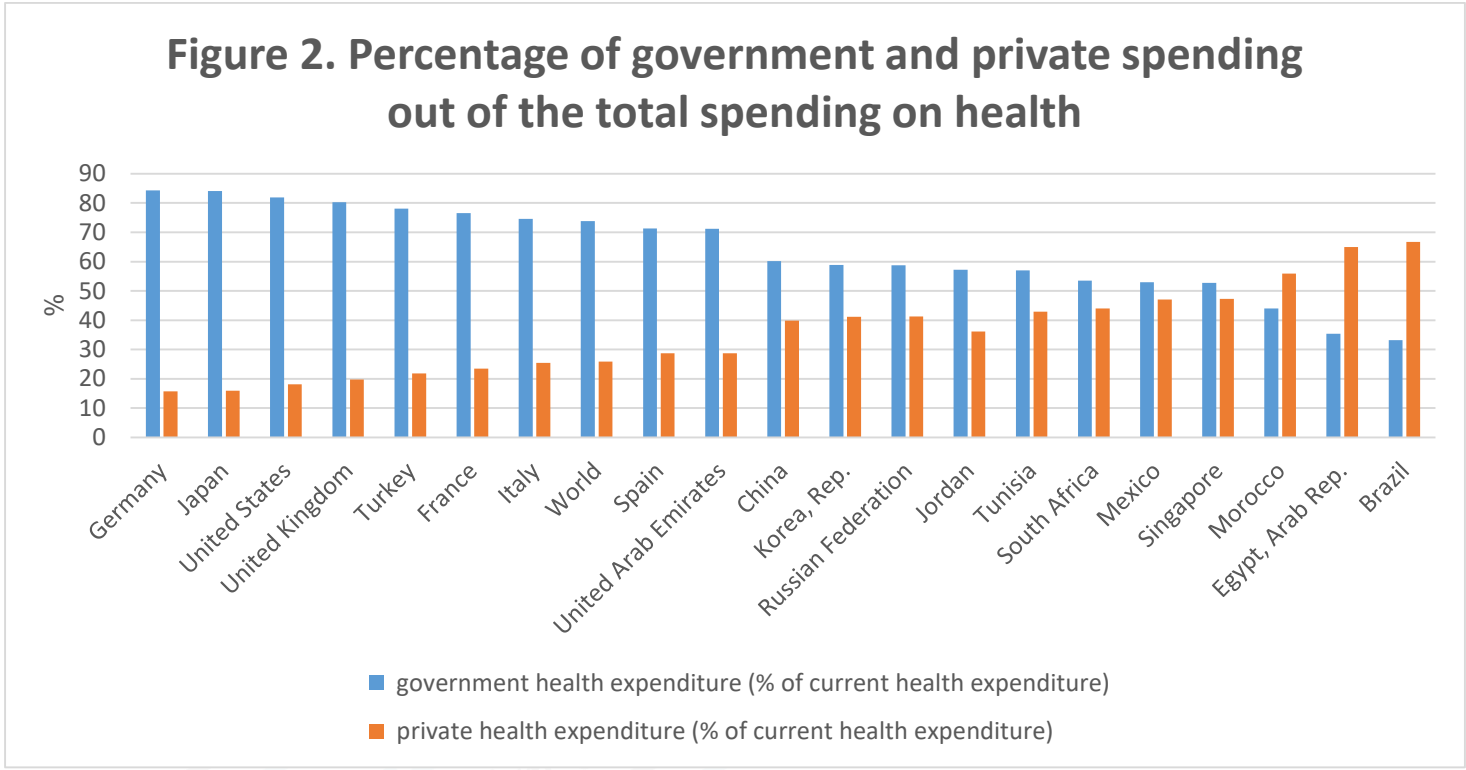


Source: World Health Organization, Global Health Observatory (GHO), 2016 (latest data).

1-2 Government versus private expenditure

Globally, Figure 2 shows the expenditure on health is distributed as follows: 74 percent government and 26 percent private sector, while in Egypt financing health

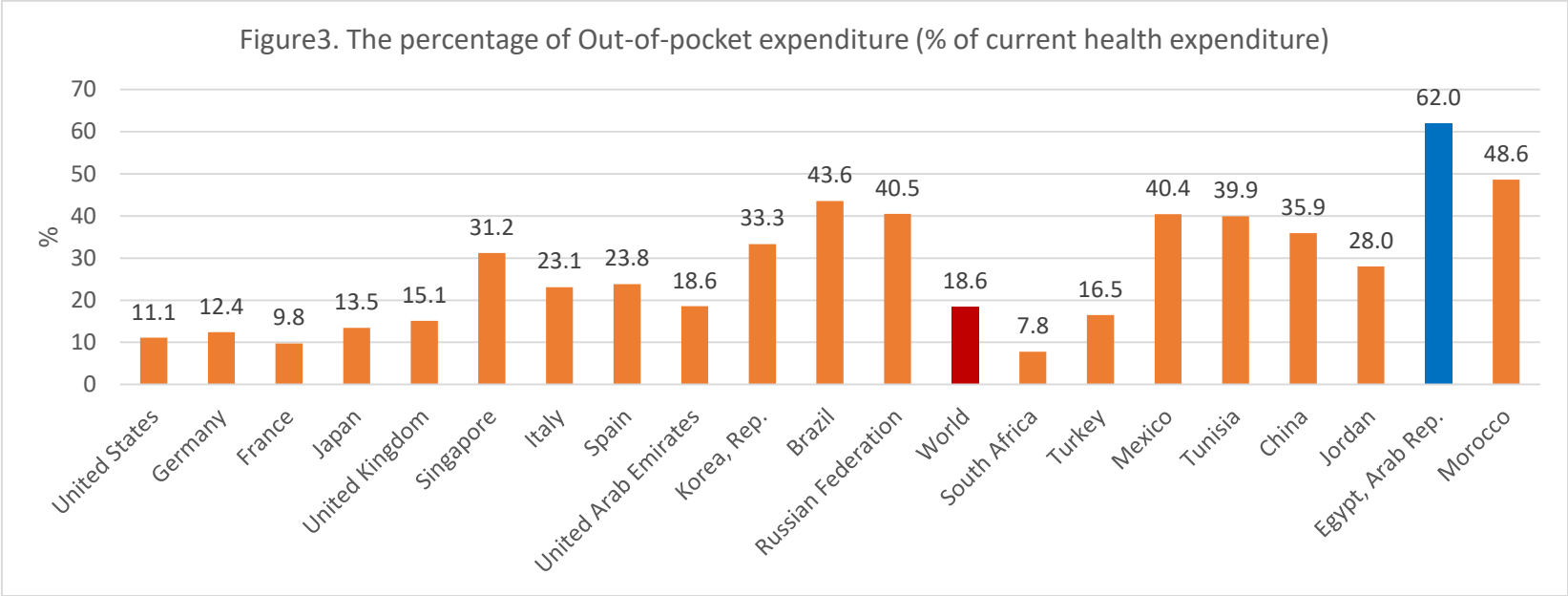
expenditure runs counter to that, where government expenditure is 35 percent and private 65 percent.



Source: World Health Organization, Global Health Observatory (GHO), 2016.

1-2 Direct payments (out of pocket spending):

Globally, percentage of direct payments borne by individuals does not exceed 19 percent of total spending on health, while the individual in Egypt bears direct payments of 62 percent, that is, more than three times the global average.



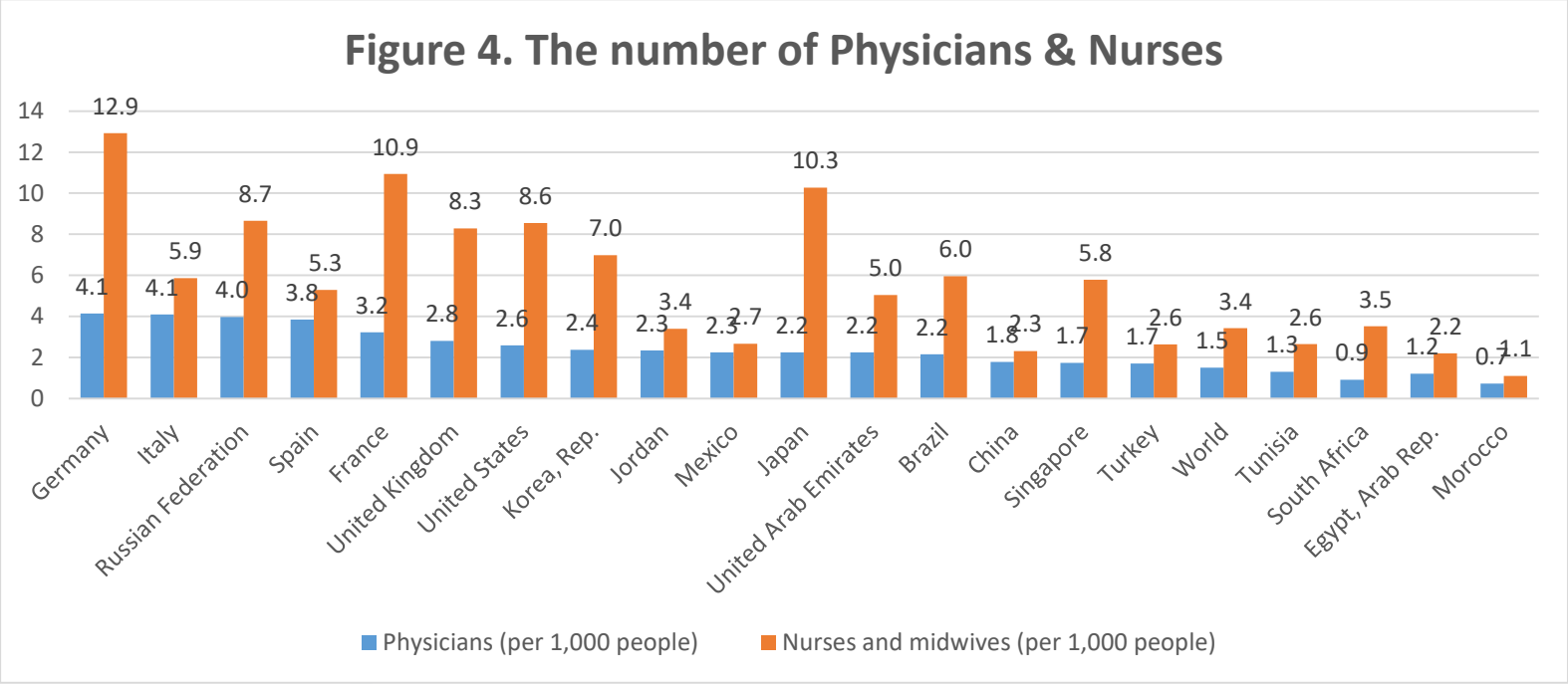
Source: World Health Organization, Global Health Observatory (GHO), 2016 (latest data).

With further study of the situation of Egypt according to 2018 domestic data, it is clear that the situation did not improve according to the data of the World Health Organization for 2016, as we will refer later in the description of the system in Egypt.

2-1- Health Service Providers

As shown in Figure 4, globally the average number of doctors was 1.5 doctors / thousand population and 3.4 nurses / thousand population. While in Egypt, the rate was 1.2 doctors / thousand population and 2.2 nurses / thousand population in 2018.

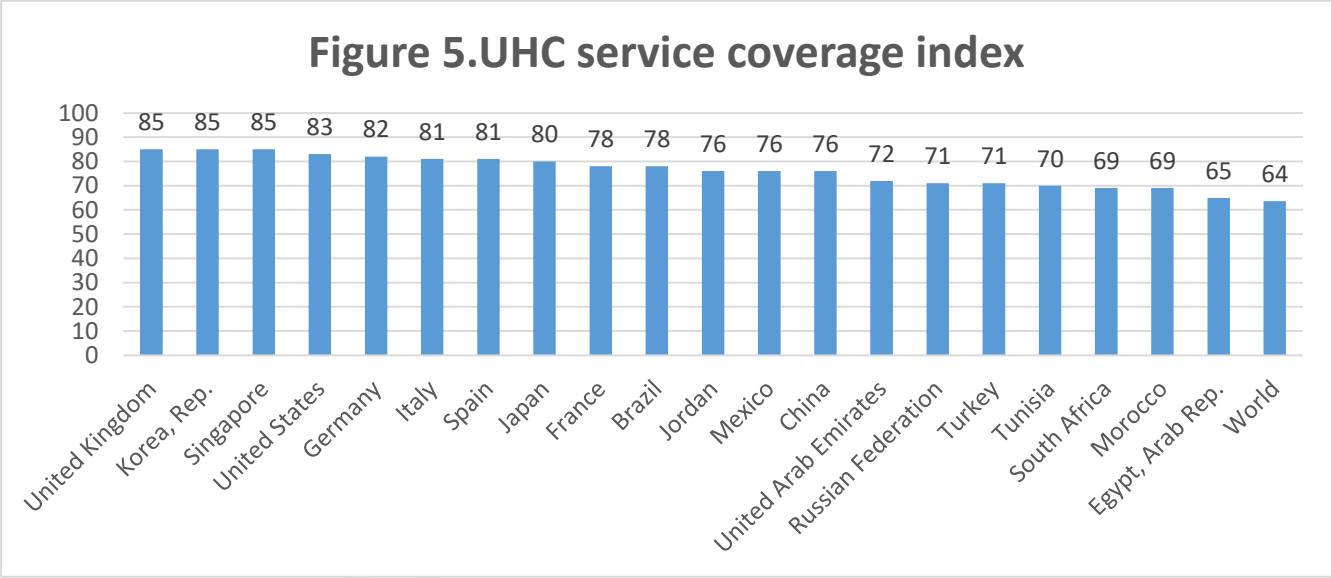
This indicates that the health sector in Egypt suffers from inadequate human resources.



Source: World Health Organization, Global Health Observatory (GHO), 2016 (latest data).

3-3- The degree of coverage of basic health services

It is important to point out here the vital role of these units being the first line of defense in facing any crisis. The index measures the prevalence of primary care units and maternity and childhood centers, takes a value from 0 - 100 (full coverage), depends on the number of units and does not address the extent of their readiness and/or the quality of their services.



Source: World Health Organization, Global Health Observatory (GHO), 2016 (latest data).

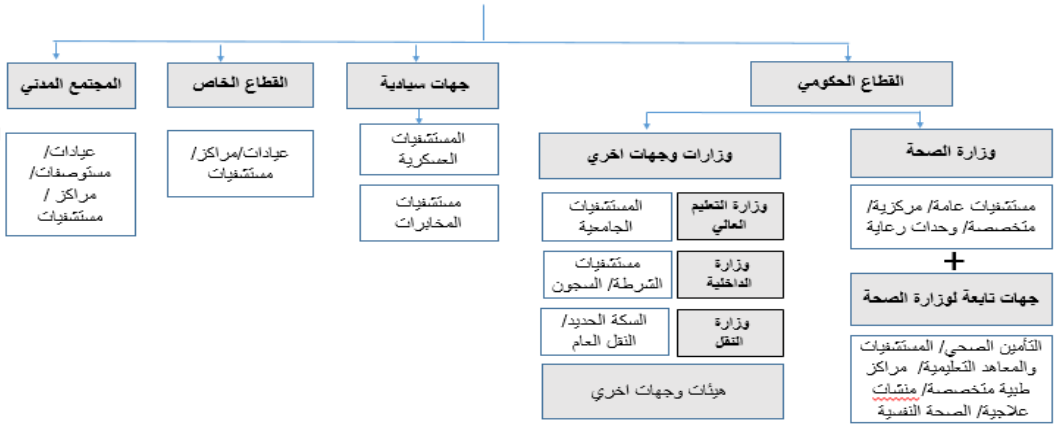
This means that although Egypt is almost equal numerically to the global average, it is not equal in quality. The number is also lower than in many countries with comparator development levels .

Second: Description of the health sector in Egypt

1- The current structure

Health services in Egypt involve a variety of actors, whether from the government, private sector or civil society, as shown in Figure 6. Consequently, health services are managed, organized, financed and provided at different quality levels and under different legislative frameworks as well.

شكل 6: الاطار المؤسسي للمستشفيات في مصر



Source: Prepared by the researcher based on the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

- In Egypt, there are about 56 hospitals and medical centers affiliated to the Armed Forces and one hospital affiliated to the intelligence service.[2]
- The contribution of NGOs is estimated at 30 percent of total health services provided in Egypt, including the Red Crescent.[3]
- In view of the absence of complete data on all service providers, the focus will be on government and private sector hospitals only.

The following table shows the distribution of hospitals in Egypt for the year 2018 between the government and private sector:

Table 1. Distribution of hospitals in Egypt for the year 2018 to government and private sectors

Sector	Number	% of the total	% of total beds	Hospitals	Number	% of total government	% of total beds
Government	**691**	**38%**	**96%**	Total Ministry of Health	**400**	**58%**	**40%**
				Public hospitals	58	8%	11%
				Central hospitals	197	29%	18%
				Specialized hospitals	140	20%	18%

[2] Armed Forces Medical Services Department.
[3] General Federation of NGOs.

				Total entities affiliated with the Ministry of Health	**145**	**21%**	**26%**
				Psychological health	19	3%	6%
				Health insurance	40	6%	8%
				Hospitals / educational institutes	23	3%	6%
				Specialized centers	55	8%	6%
				Therapeutic institutions	8	1%	1%
				Total ministries and other bodies	**146**	**21%**	**34%**
				University hospitals	89	13%	29%
				Police hospitals	26	4%	1%
				Railways hospitals	3	0.4%	0.5%
				Other authorities	28	4%	3%
Private	**1107**	**62%**	**4%**				
Total				**1798 hospital with a capacity of 131 thousand beds** An average of 138 beds / hospital for government An average of 32 beds / hospital for the private sector			

Source: Prepared by the researcher based on the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

We do not have precise indicators that reflect the level of quality of service. However, there is a set of facts, some of which can be deduced from the indicators mentioned in the table, and some of which are agreed by a large group of experts in the sector, namely:

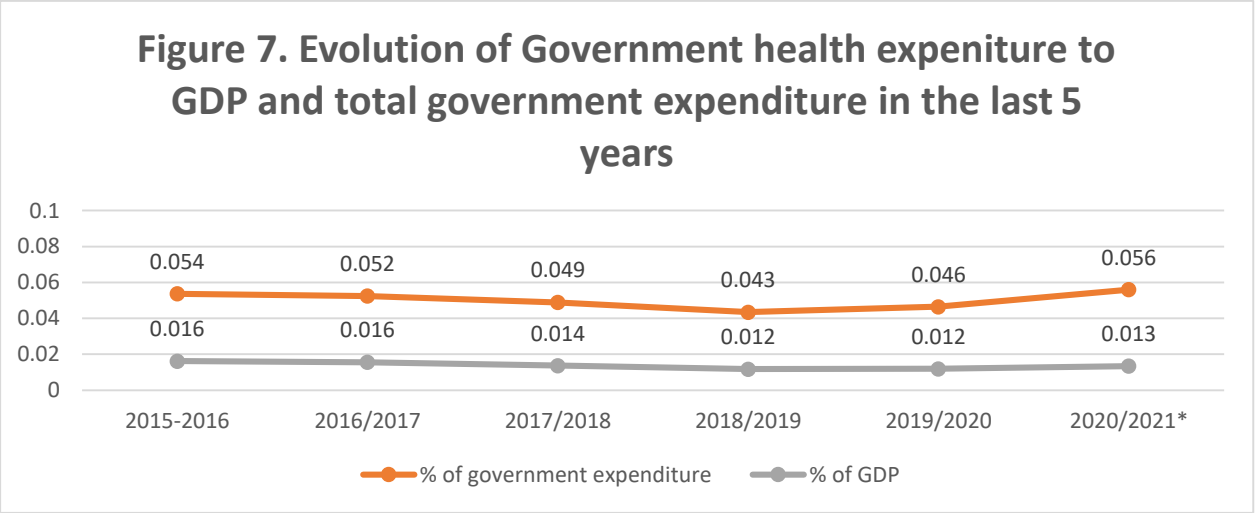
- Hospitals of the Ministry of Health and their affiliates represent 80 percent of the number of hospitals and 66 percent of the beds, indicating that the extent of their financial and human resource readiness is key for judging the health system as a whole.
- With regard to the number of beds for each hospital, the average number of beds for each government hospital exceeds four times the private sector, which reflects the higher government capacity.
- In spite of the limited number of university hospitals, their bed capacity is twice their number, which means that they accommodate large numbers of patients.
- Government hospitals vary in terms of capacity, equipment, and human resource efficiency. The closer we approach capitals and major centers, the better the level is compared to the outskirts and remote locations.
- Over 70 percent of operations that require high skills are performed in university hospitals.
- There is much pressure on educational institutes (the National Oncology Institute, the heart ...) due to their limited number nationwide—there is only one heart institute and one oncology institute.
- Specialized hospitals (47 febrile hospitals, 34 chest hospitals, ...) also suffer from severe pressure due to their limited number, and there are only two febrile hospitals in Cairo.

- The private sector includes a diverse group of clinics, centers, and hospitals, a small percentage of which are of high quality and the majority with a lower quality in addition to the disparity in prices of services.

2- Health spending between the government and the private sector and direct payments to individuals

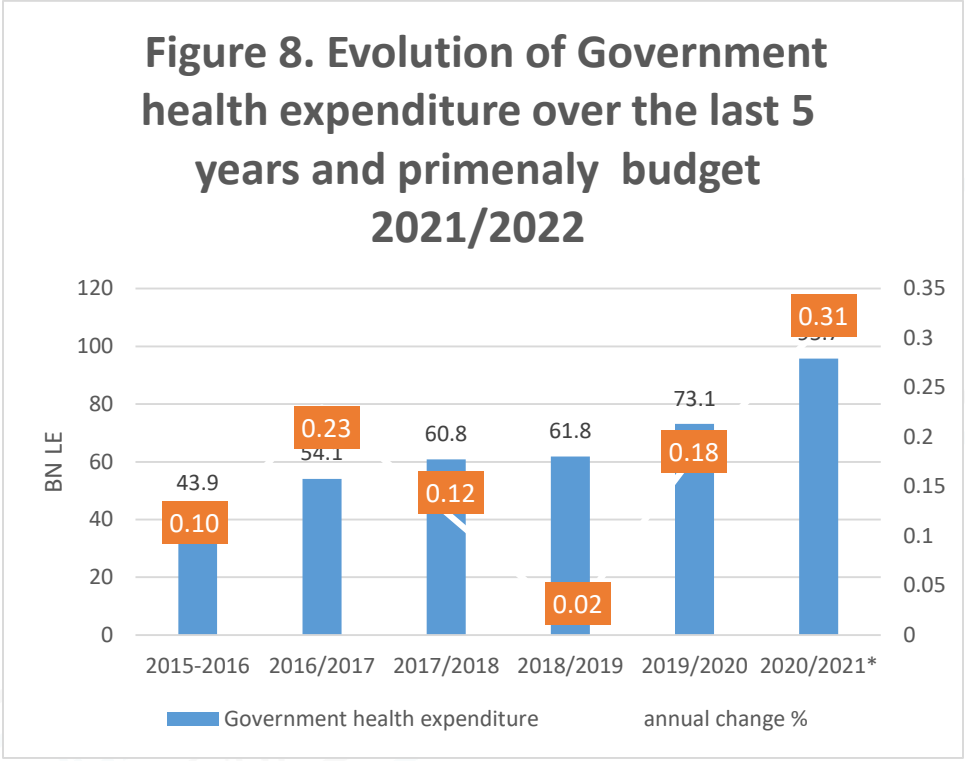
- **At the level of government expenditure**

1. The percentage of total government allocations for health expenditure decreased from 1.6 percent of GDP for 2015/2016 and 2016/2017 to 1.2 percent in 2018/2019 and 2019/2020. Therefore, we have not yet reached the required constitutional entitlement.



Source: Prepared by the researcher based on the data of the Ministry of Finance.

2. A steady decline in real spending on health, as the rate of change in annual spending on health is much lower than the rate of inflation, as shown by tracking health spending over the past five years as follows.



* Targeted

Source: Prepared by the researcher based on data of the Ministry of Finance.

- At the level of individual spending

- According to results of the income and expenditure survey of the Central Agency for Public Mobilization and Statistics 2017/2018, spending on health at the family level comes in the third place, where spending on food and drink accounts for about 37.1 percent of total spending, followed by housing and its requirements at 18 percent, then spending on health services at about 9.9 percent.
- The average annual household spending on health care and services reached EGP 5095 in 2017/2018 compared to EGP 3680 in 2014/2015, an increase of 38 percent.
- The per capita share of total spending on health declined from EGP 800.6 in 2015 to EGP 700.7 in 2017/2018, even though the percentage of spending on health stabilized at approximately 10 percent in both years of total spending. The average annual real per capita share of family spending decreased from EGP 8.6 thousand in 2015 to EGP 7.7 thousand in 2017/2018 at constant 2015 prices, with a decrease of 10 percent.
- Health spending is distributed as follows: 55.5 percent for medical products and devices, 28.6 percent for outpatient services, 15.9 percent for hospital services. Hence the importance of governance of the pharmaceutical system to ensure its efficacy and pricing, and to enable citizens from different groups to obtain medicine.
- Expenditure rates on health services varied between the governorates, with Kafr El Sheikh, Damietta, and Beheira having the highest spending ratios (ranging

between 11-12 percent), while border governorates and Luxor having the lowest spending ratio (6-7 percent).

- Expenditure on health services is related to the standard of living, where the lowest category (the lowest spending decile) spends 8.1 percent of its income on health services with an average per capita share of EGP 386.7 compared to spending by the high category (the highest spending decile) of 10.9 percent of its income on health services with an average per capita share of EGP 3484 during the year 2017/2018.
- This means that a lower standard of living is linked to a decrease in access to appropriate health services, and that health expenditures may drive citizens to poverty.
- Hence the importance of the state providing basic health care services to all citizens with appropriate quality and free of charge so that everyone, including the lower classes, can access these services, especially in the case of Egypt where the poverty rate exceeds 30 percent of the population according to the latest statistics of the Central Agency for Public Mobilization and Statistics.

3- Indicators for providing health services

1- Evolution of the number of government and private hospitals over the past 10 years

Government investment in the hospital sector has declined despite increased demand due to population increase. According to Table 2, the number of hospitals in Egypt reached about 1798 government and private hospitals in 2018 compared to 1599 in 2009, an increase of 12 percent, mostly due to the increase in the number of private sector hospitals. It is noted that the number of beds for the government hospital decreased over the period compared to its increase in the private sector, which indicates the weak costs of replacement and renewal.

The foregoing shows weak sector's share of total implemented investments from 2.7 percent in 2016/2017 to 1.9 percent in 2017/2018 according to data of the Ministry of Planning, Follow-up and Administrative Reform.

Table 2. Evolution of the number of government and private hospitals, the number of beds, and visitors during the period 2009-2018

	Number of Hospitals		No. of Beds/hospital		No. of visitors/hospital	
	Gov.	Private	Gov.	Private	Gov.	Private
2009	658	941	157	23	92389	1383
2010	660	927	150	28	86487	1656
2011	643	926	153	28	89220	682

2012	646	920	150	28	78130	1829
2013	657	937	150	28	95021	2520
2014	659	941	148	26	99481	2684
2015	660	1002	141	31	112970	4161
2016	662	1017	142	32	122262	3444
2017	676	1094	142	33	128838	3469
2018	691	1107	138	32	135598	3103

Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

- Nevertheless, government hospitals are still the backbone of medical service provision in Egypt. The demand on health services in the government hospital is estimated to be four times that on the private sector. One government hospital serves 135,000 patients annually compared to 3.4 thousand for the private in 2018. This can be due to the limited number of beds in the private sector and its high costs. This is in addition to the number of people who resort to civil society services.

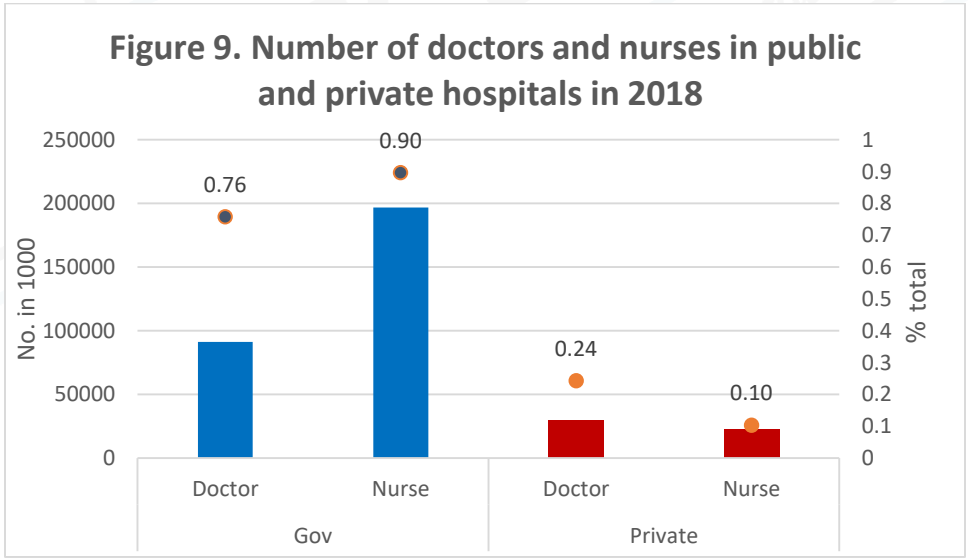
2- Health service providers

The analysis covers the number of service providers and their distribution between the government and private sector as well as some features of the work environment.

Number of health service providers and their sectoral distribution:

The number of doctors reached 120 thousand, with 219 thousand members of the nursing staff in total government and private sector

The government sector accounts for the largest share of the total number of doctors and nursing staff as shown in the following figure:



Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

Although wages accounted for an average of 53 percent of total spending on the health sector during the past five years, the increase in the number of workers in the sector and the high rate of inflation mean a decline in real employee wages.

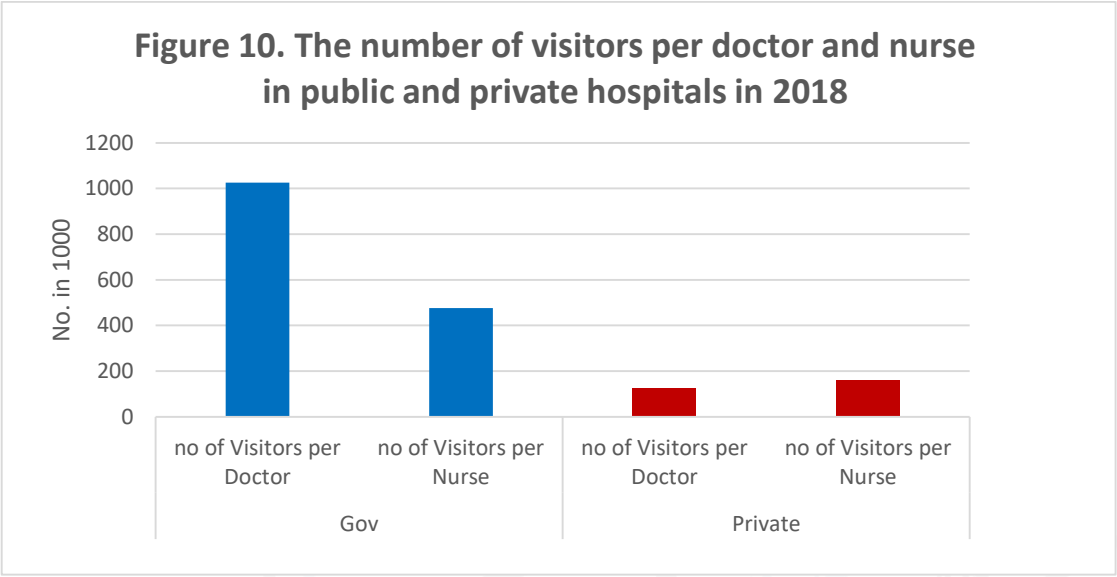
The number of nurses to doctors in the government sector is 2.15 nurses / doctor compared to the private sector 0.7 nurses/doctor).

The vast majority of nursing staff are graduates of nursing high school, not nursing college. Consequently, the dearth in high skills associated with graduates of nursing colleges.

3- Features of the work environment for health service providers

The vast majority of service providers operate in an unfavorable working environment, especially the government sector, as follows:

- Increased pressure on service providers as a result of increased demand for health services, especially in the government sector, as evidenced by tracking the number of visitors to each doctor and member of the nursing staff.



Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

- The work environment is not favorable due to limited modern equipment, medicines, infection prevention supplies and all other requirements, as well as weak allocations for continuing education and training.
- Deteriorating financial conditions of medical professionals, especially in the government sector, as a result of low salaries, weak infection allowances, absence of a risk fund that insures their injury or death during work, and not including service providers to the Fund for Martyrs and Injuries of Military Operations established by Law No. 16 of 2018.

- This deterioration in the work environment and poor learning opportunities contributed to the increase of doctors' resignations from the government sector. Statistics confirm that there is a steady increase in the number of doctors who resigned. The number of resignations reached about 1044 resignations in 2016, while in 2018 it reached 2,600 with an increase rate of 27 percent. In 2019, it reached 3507, an increase of 35 percent over 2018. Although these percentages are high, they are less than the actual figure of the phenomenon of doctors dropping out, as it does not include leave without pay or the phenomenon of fake attendance (i.e., attendance on paper only), which if added the figures, they would be significant.

4- Subscribers to health insurance

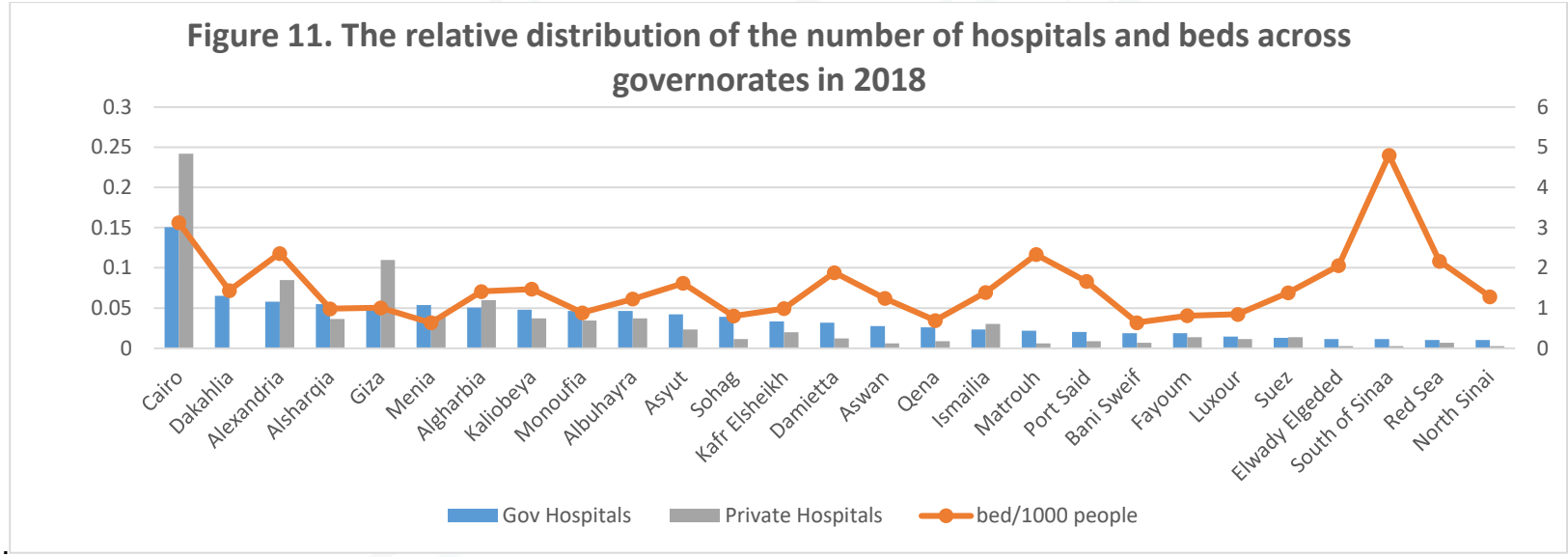
Among the indicators of availability: The number of insured persons in 2018 reached about 55.6 million citizens, half of whom are school students and nearly a quarter of them are currently in the workforce (12 million). This means that only about half of the employed (22.5 million in 2018) are covered by health insurance. A universal health coverage program was launched in Port Said as a pilot phase.

5- Availability indicators according to geographical distribution

- **Number of public and private hospitals:**

Cairo, Giza, and Alexandria account for the largest share of government and private hospitals, and the number clearly decreases in poorer governorates, as Figure 11 shows.

By calculating the number of beds per 1000 population, as a better indicator to judge the availability of medical services versus the number of hospitals, given the difference between the capabilities and potentials of each hospital, the index shows that while in the governorates of Minya, Qena and Sohag it was less than one, in South Sinai, it reached 4.8 beds per thousand population.

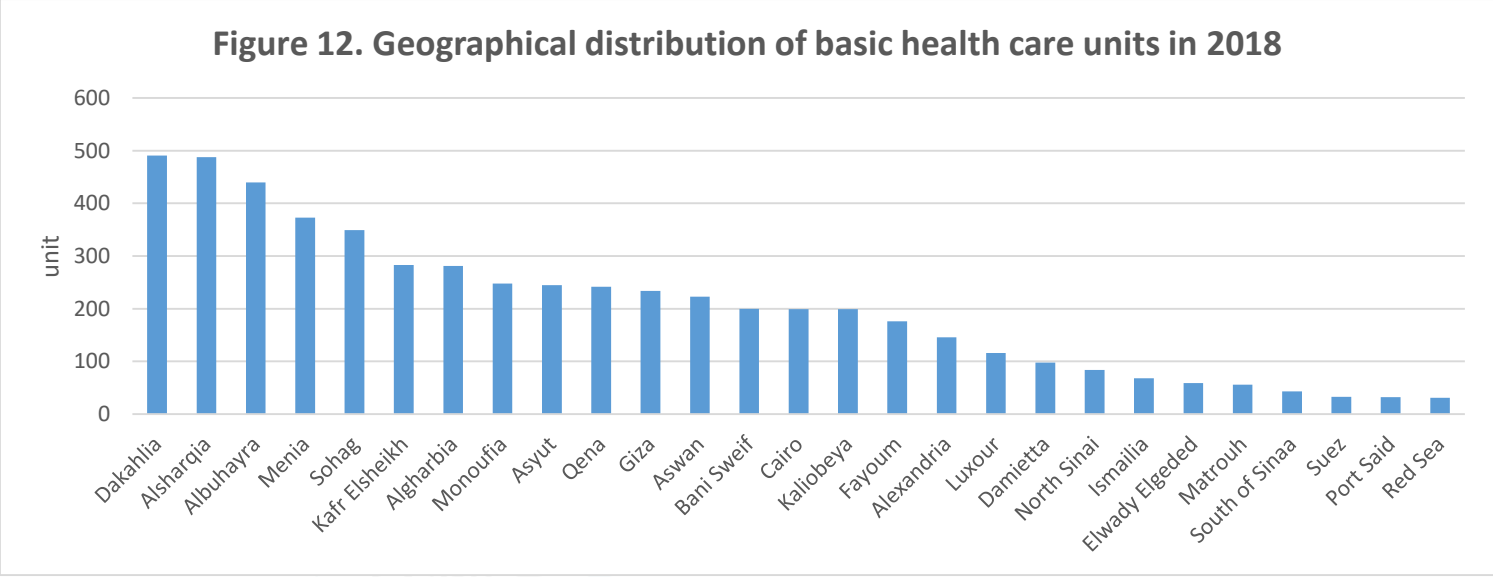


Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

- **Number of primary care units:**

  The number of basic health care units[4] reached 5437 units in 2018 compared to 4839 units in 2008, an increase of only 12 percent within ten years only.

  Primary care units mainly target rural areas, so the governorates of lower and upper Egypt accounted for the largest share of these units, as opposed to urban and border governorates.

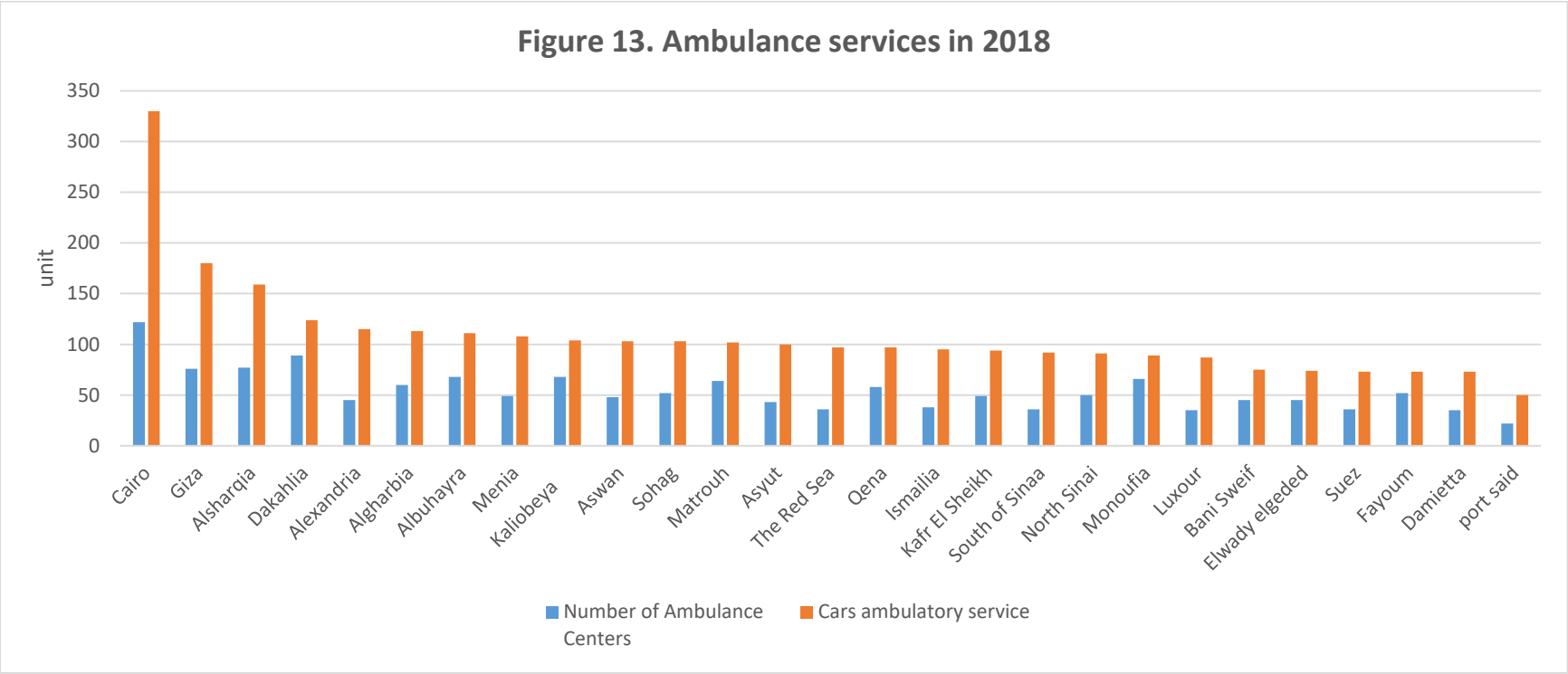


Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

- Ambulance services:

[4] Health offices include maternal and child care centers, universal clinics and neighborhood clinics, health and family medical centers, and primary care units in the countryside.

The number of ambulance centers nationwide reached about 1464 equipped with about 2912 vehicles distributed in various governorates of the republic commensurate with the distribution of the population.



Source: Prepared by the researcher based on CAPMAS data, the Annual Bulletin of Health Services Statistics for the year 2018, November 2019 issue.

The above indicators discussed confirm that this vital sector has suffered many imbalances before the current crisis.

Third: Demand and supply shocks in the context of the crisis cycle

- The World Health Organization considers the current Coronavirus crisis (COVID 19) the worst health crisis the world has ever experienced. As of the time of writing this report, about 69,000 people have died and 1.137 million people have been infected in 206 countries and territories around the world.
- The crisis put the health sector in all countries of the world in a fierce war to confront the virus and deal with infections, relying on its current capacity and human capabilities.

- Country efforts focused on two main goals to be achieved in parallel: the first goal focuses on slowing the spread of the virus, while the second is to increase the health systems' readiness to face an aggravated crisis.
- According to the various analyzes, the success of countries and their ability to achieve the previous two goals are clearly linked on the ground to four factors:
  1. Managing the crisis properly, quickly and decisively
  2. The ability of health systems, mainly primary and intensive care, to provide required services
  3. The extent of advancement of the communications and information technology sector in all stages of disease evolution: outreach, locating hotbeds, tracking of contacts, and electronic system for isolating patients remotely. The role of this sector was discussed in detail in a dedicated report issued by ECES.[5]

[5] http://www.eces.org.eg/cms/NewsUploads/Pdf/2020_4_9-2_51_42%D8%A7%D9%84%D8%A7%D8%AA%D8%B5%D8%A7%D9%84%D8%A7%D8%AA%20Amended-FINAL%208-4-2020.pdf.

4. Varied population structure and the number of age groups most vulnerable to infection.

The plan to deal with the crisis in Egypt:

- The Egyptian government adopted a phased plan to deal with the crisis that included 3 stages: 1 - the first stage: before announcing the emergence of any infections in Egypt, 2 - the second stage: a limited emergence of infections in Egypt, and 3 - the third stage: increasing number of infections.
- Measures during the first stage were limited to conducting tests on the returnees from the affected places abroad and increasing awareness campaigns about prevention and sound community practices. The intensity of the measures rose with the increase in the number of infections during the second stage, which included suspending schools and universities, closing mosques and churches, reducing the number of employees, suspending flights, closing restaurants, clubs and malls, disinfecting government places and main streets, and introducing a partial curfew).
    - According to the data of the Ministry of Health and Population, Egypt entered the third stage (exceeding one thousand cases) and the total number of infections reached 2065 on 12 April 2020, including about 126 new cases and 15 deaths.[6]

[6] Despite the decrease in the number of new cases on April 12 to 126 compared to 145 cases in the previous day, it cannot be counted as a continuous pattern of decline because a similar decline occurred a few days before followed by an increase, although we certainly wish this rate to decline continuously.

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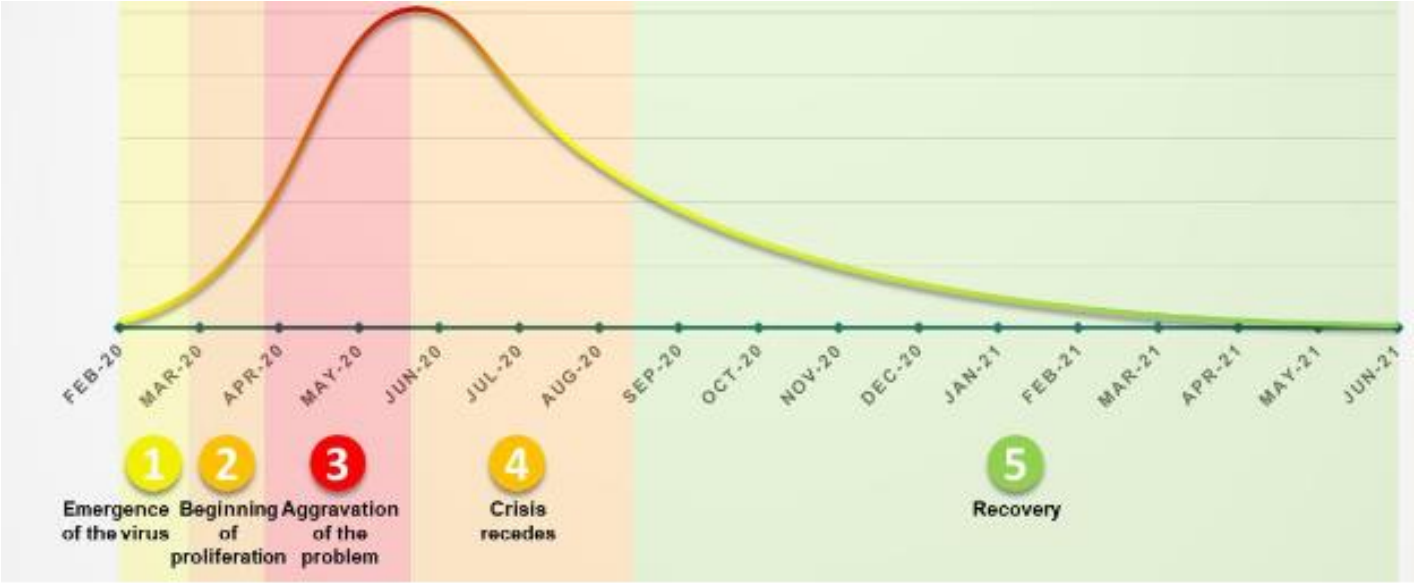
- The rate of new infections doubled, according to the latest data available for the first week of April, to reach 120 percent. The number of new infections in the first week of April reached 706, compared to 320 in the last week of March.
- The Ministry announced the allocation of about 12 equipped hospitals for isolation distributed over 12 governorates (Cairo, Qalyubia, Giza, Alexandria, Matrouh, Kafr El-Sheikh, Dakahlia, Ismailia, Minya, Gharbia, Luxor and Aswan).[7] 27 university hospitals are being prepared for isolation. This is in addition to allocating febrile hospitals (47 hospitals) and chest hospital (35 hospitals) to examine and transfer suspected cases.
    - Equipping college towns as medical areas, if necessary, to isolate minor cases in stages with a total capacity of 19825 beds: the first stage 33 buildings, the second 16 buildings and the third 8 buildings.

The danger of this stage is that all scenarios are open according to the strictness of government measures and society's commitment, and thus the ability to control and reduce infections and death rates.

The following is an analysis of the degree of readiness of the sector according to demand expectations during stages of the crisis cycle, which is summarized in the following figure:

[7] Hospital details are available in the Ministry of Health and Population report, on the current situation of the Coronavirus, April 8, 2020.



Source: Prepared by the Egyptian Center for Economic Studies.

Stages of Corona pandemic development

- **The first stage: Emergence of the virus**
  The crisis began and aggravated in China only. The rest of the world, including Arab and European countries, were not yet affected by the crisis.

- **The second stage: Beginning of proliferation**
  The spread of the virus globally. Arab countries began to be affected at the end of February and hence initiated precautionary measures to prevent the spread of the virus. European countries are greatly affected.

- **The third stage: Aggravation of the problem**
  The situation in the world has worsened, tougher measures in the Arab countries, especially in Saudi Arabia and the European countries, a major worsening of the crisis in Italy, beginning of the virus's receding in China, and the beginning of its spread in the US.

- **Fourth stage: Crisis recedes**
  The beginning of recovery from the virus globally, starting from China, which is expected to be followed by European countries, and finally, Arab countries and the US.

- **Fifth stage: Recovery**
  Gradual recovery for all countries, including Arab countries, although the latter's recovery is expected to be delayed due to being strongly impacted by the global economy and its weak impact on it.

The analysis of different scenarios is based on a set of concepts and assumptions as follows:

1. Demand shock: The high demand for health services as a result of the crisis. The demand comes from a variety of groups, namely foreigners, returnees from abroad, and citizens.

2. Supply shock: The ability of the health system with all its physical and human components.
3. Health service providers: This includes doctors, pharmacists, nursing agencies and all administrative, technical and support staff.

As for the assumptions adopted by the analysis, they are as follows:

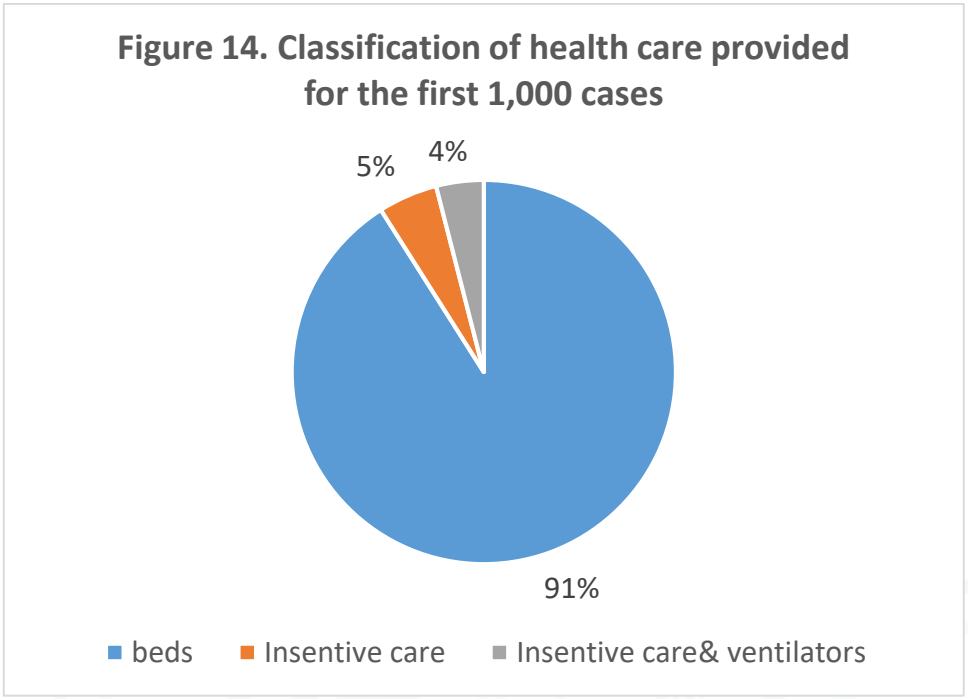
1. Estimating the expected demand for health services as a result of the crisis:

To estimate the number of new infections:

- Reference week: The number of new infections is estimated in light of latest data about development of the rate of new weekly infections in the first week of April, which reached 120 percent (704 new cases in the fourth week compared to 302 new cases in the last quarter of March).
- The analysis adopts different scenarios according to the degree of pessimism and optimism, with a similar average rate of increase from one week to the next during the next five weeks, but with a rate difference between various scenarios. The aim of this fix is to allow a margin up or down according to the development of the situation.

To estimate the demand for health services:

The report uses the Ministry of Health classification on the nature of health needs for the first 1,000 cases, as shown in Figure 14.



Source: Ministry of Health and Population report, the current situation of the Coronavirus, April 8, 2020.

2. Supply capacity: The report depends on what the Ministry of Health announced in terms of preparations for the crisis, as follows:

	Beds	Intensive care beds	ventilators
Ministry hospitals	**2241**	**407**	**346**
University hospitals	**2056**	**297**	**266**
College towns	**19825**	**0**	**0**
Total	**24122**	**704**	**612**

Source: Ministry of Health and Population report, the current situation of the Coronavirus, April 8, 202; and what was announced at the joint press conference of the Ministries of Health and Higher Education on April 10, 2020

3. **The future scenarios related to the sector's ability to cope with the crisis relate to the degree of government handling of the following elements:**
   - Precautionary measures by the state and strict adherence to social distancing
   - Protection of service providers, and hence lower number of their infections
   - Conducting tests and isolating suspects
   - Dealing with densely populated and disorganized areas through social distancing to prevent spreading
   - The extent of uniformity of measures of all health facilities nationwide
   - Degree of civil society engagement with the government

- The extent to which bureaucratic procedures are streamlined to expand the range of non-traditional initiatives to face the crisis, including the initiative for the local manufacture of medical clothing and respirators

The following table presents possible scenarios affecting the sector according to the above-mentioned crisis cycle and in light of assumptions made:

Stage	Demand and/or supply shock	Analysis	Impact on the Health Sector
1- Emergence of the virus (December 2019 to January 2020)	There is no shock on both sides of supply and demand in Egypt	The crisis is confined to China and has not spread to countries around the world, including Egypt. Therefore, no effect on demand and supply of health care.	The demand on health care was concentrated in a limited category, which is Egyptian returnees from Wuhan, China, and they were quarantined in Marsa Matrouh. Thus, the crisis did not have any repercussions for the health sector. The state adopted precautionary measures by registering and monitoring arrivals from the countries in which infections appeared, raising the readiness of all quarantine departments and providing hospitals with the necessary equipment.
2-The beginning of proliferation (February through mid-March 2020)	- Limited demand shock - No supply shock	- The crisis reached European and Arab countries and precautionary measures to alleviate it in February, but Egypt is still far - As of the first of March, the virus appeared in Egypt through a foreigner and then infected 33 in a Luxor cruise ship.	Increasing demand for central laboratory services to conduct tests, especially for Egyptians who work in the Gulf states. Increased demand for testing and treatment services as a result of infection. More support to supply by preparing places for isolation and increasing financial incentives for service providers. Supply capacity managed to cover this demand.

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<td>- A slight increase in the number of the infections until it reached 126 cases on March 15, mostly foreigners, Egyptians returning from abroad, and Egyptians in contact.
- Awareness and prevention campaigns
- No infections have been reported to health service providers at this point.</td>
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<td>3- Aggravation of the problem (From mid-March to mid-May 2020)</td>
<td>- Greater shock in demand with diversified demand
- Attempts to support supply</td>
<td>This stage involves 3 scenarios according to the degree of pessimism or optimism, as follows:

Optimistic scenario: Success in reducing the rate of weekly</td>
<td>Estimating new infections and their health services *
According to the optimistic scenario
<table>
<tr><th></th><th>New infections</th><th>Beds required</th><th>Intensive care required</th><th>Intensive care and ventilators required</th></tr>
<tr><td>The second week of April</td><td>919</td><td>836</td><td>46</td><td>37</td></tr>
<tr><td>The third week of April</td><td>1196</td><td>1088</td><td>60</td><td>48</td></tr>
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increase to quarter the rate of increase in the reference week, as shown in assumptions.

Medium scenario: Success in reducing the weekly increase rate to half the average increase in the reference week.

Pessimistic scenario: Weekly increase rate remains the same as in the reference week.

There is also another scenario, which is that the number of new infections per week is constant, and it is unreasonable possibility because it does not correspond with the development

The fourth week of April	1557	1417	78	62
The first week of May	2026	1844	101	81
The second week of May	2637	2400	132	105
Total	8335	7585	417	333
Available		24122	704	612
Available - needs		**16537**	**287**	**279**

* According to the Ministry of Health's classification of the needs of the first 1,000 cases

Estimating new infections and their health services*

According to the medium scenario

	New infections	Beds required	Intensive care required	Intensive care and ventilators required
The second week of April	1132	1030	57	45
The third week of April	1814	1651	91	73
The fourth week of April	2909	2647	145	116
The first week of May	4663	4243	233	187
The second week of May	7476	6803	374	299

		of the virus around the world. In this case, there will be no additional need.	

Total	17994	16374	900	720
Available		24122	704	612
Available - needs		**7748**	**-196**	**-108**

* According to the Ministry of Health's classification of the needs of the first 1,000 cases

**Estimating new infections and their health services *
According to the pessimistic scenario**

	New infections	Beds required	Intensive care required	Intensive care and ventilators required
The second week of April	1558	1417	78	62
The third week of April	3436	3127	172	137
The fourth week of April	7582	6899	379	303
The first week of May	16727	15222	836	669
The second week of May	36904	33583	1845	1476
Total	66207	60249	3310	2648
Available		24122	704	612
Available - needs		**-36127**	**-2606**	**-2036**

* According to the Ministry of Health's classification of the needs of the first 1,000 cases

The fourth and fifth stages from mid-May to September 2020	- Continued demand shock and further supply strengthening	Continued provision of health services to infected people, with a gradual decrease in the number of new infections.	The impact on the health sector is linked to the scenarios of the stage preceding it, and a gradual recovery takes place until the crisis ends.

Fourth: Interventions required to mitigate the effects of the crisis

Despite the serious efforts made by the government to deal with the crisis, it appears from the data that the rate of new infections doubled in the first week of April compared to the last week of March. The scenarios demonstrated how dangerous this rate is and the insufficient capacity available to face it, and more gravely the increase in the rate of new infections (catastrophic scenario). Therefore, the following interventions are required:

1- At the level of precautionary measures:

- Tightening the precautionary measures and not to be lenient in ensuring abidance. In this regard, the change of the curfew to 8 o'clock can be revisited, as it may signal that the situation has become reassuring.
- Additional enhancements to all health services at all levels, in preparation for worst-case scenarios.

2- At the level of crisis management

- Include civil society and parliament to the crisis management committees to mobilize, unify and follow up on efforts nationwide.
- Including representatives of the physicians' and pharmacists' union in the specialized technical committee for crisis management, being main partners in facing it
- Circulate the protocols of the health plan in the face of the crisis, to ensure the unity of measures for all health facilities nationwide, regardless of their administrative affiliation, and not to leave room for individual actions. Among the most important of these protocols, for example:

- Dealing with suspect infection until test results are obtained
- Dealing with facilities that report infections among health service providers
- Dealing with service providers in facilities where infections occur
- Dealing with health service providers and contacts
- infection protection measures for health service providers
- Managing matters related to necessary supplies of disinfectants, devices and supplies and ensuring their continued flow
- Disposal of waste, especially non-dangerous waste, because they carry infection
- Mechanism for communicating with all parties (isolation / testing places / ...)
- The mechanism of information exchange regarding any developments

- A sound, scientific gathering of health information of the infected and the deceased to allow analysis of data to enable prediction of any new crises
- Atypical participation of the media in facing the crisis through:
    - Providing realistic solutions based on societal participation in the challenges facing the state in confronting the virus, for example, implementing social distancing in densely populated areas
    - Shedding light on the models and initiatives that help in facing the crisis, especially from civil society
    - Continuing awareness and announcing inspection and testing locations and any developments related to the health service

3- Enhancing the role of health service providers in facing the crisis

- The human factor at its various levels is the most important factor in the medical system, so its protection is a priority so that supply capacity is not decreased
- The state recently presented several incentives to improve the conditions of doctors, but there is still a need for more financial and moral support, and this requires:
    - Providing the utmost protection to service providers in all health facilities nationwide

- Increasing the infection allowance for doctors from EGP 19 pounds to 1000 pounds, which was decided by the court but the government appealed against it citing lack of jurisdiction
- Adding deceased health service providers to the Honoring Fund for Martyrs and Injured in Wars issued by Law No. 16 of 2018
- Immediately activate the Medical Professionals Risk Fund, provided that its management is independent of the Ministry of Health and its financial controls are announced, including providing exceptional financial support to any deceased health service provider as a result of contracting the virus.

Fifth: Institutional weaknesses revealed by the crisis

- Weak governance of the health system, which was clearly demonstrated in the diversity of management, regulation, financing and the level of quality of services provided by various actors who follow different administrative bodies and are governed by various legislations, which requires:
    - A clear separation of tasks: Ministry of Health plays four roles simultaneously: the planning role (through its presidency of the Supreme Council of Health), the financing role, the executive role, and the oversight role.
- A unified long-term vision of universal health coverage that is defined by experts and civil society and does not change with change of governments

- A unified legislative framework that covers the system with all its parties, including service providers and employees, and the pricing and quality mechanism for services
- An independent accreditation and quality agency that establishes unified quality assurance controls that are binding on government, private and private health facilities
- A mechanism for identifying current and future needs and qualitative and geographical gaps in manpower in the medical profession and linking educational services to these needs.
- A complete review of the wage structure of workers in the sector so that they are commensurate with the size of the risks to which workers in the sector are exposed and provide them with a decent life. This requires consultation with the Medical Syndicate to determine the optimal form for this.
- Increasing training allocations and constantly raising the efficiency of human resources.
- Clear and objective mechanisms for periodic review, evaluation and follow-up that are submitted to Parliament and the Prime Minister.

- **Modest government spending on health compared to increasing needs and global standards: This requires an increase in the health budget commensurate with that stated in the constitution as a minimum.**

- **The weak efficiency and preparedness of primary care units throughout the country, especially that they are the first line of defense to confront any crisis**

- **The absence of an integrated, updated and available database on the sector that allows data analysis in all areas**

- **Weak opportunities availed for the sector to benefit from modern technologies (including BIG Data) in analyzing data to serve the formulation of sound health policies, which is one of the pillars upon which East Asian countries relied in facing the Coronavirus crisis.**