Palestinian Economic Policy Research Institute (MAS)

Palestinian Health Sector Assessment: Macro-Analytical Study

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EXECUTIVE SUMMARY

- This study provides a macro-level assessment of the Palestinian health sector, in order to recommend interventions that reduce the financial burden of medical referrals to hospitals/health centers not operated by the Palestinian Ministry of Health (MoH), as well as enhancing the localization of medical services. The scope of the study covers several pillars, most importantly: analyzing the distribution of healthcare expenditures during the past years; analyzing the structure of medical referrals in terms of type of disease and cost of referral; and analyzing revenues from health sector activities, with a special focus on health insurance. It also provides a gap analysis in order to assess the capacity of the health sector to provide sufficient health services, as well as the capacity of the Palestinian pharmaceuticals' sector to meet local demand.
- In 2018, total actual expenditures on medical referrals amounted to NIS 945 million, covering 110,000 referrals (56% male, 44% female). At a regional level, the percentage of referrals from the Gaza Strip reached 28% of total referrals and 32.3% of total referral costs. In terms of cost allocation by service providers, West Bank hospitals obtained the largest share (35%), followed by Palestinian hospitals in East Jerusalem (32%), then Israeli hospitals (28%). Hospitals in the Gaza Strip had a low share of 5% of the total.
- In 2018, the total number of medical referrals outside MoH hospitals/health centers was 109,818, benefiting about 55,670 patients (approximately two referrals per patient). As for the distribution of referrals by destination, data for 2018 indicates that Palestinian hospitals in Jerusalem received the largest share, followed by hospitals in the rest of the West Bank. Both accounted for about 75% of the total number of referrals, while Israeli hospitals received 17% of referrals.
- In terms of the distribution of referrals by type of disease, cancer ranks first, followed (with a large difference) by heart diseases and kidney/urinary tract diseases respectively. Israeli hospitals account for a large share of referrals for blood diseases, general surgery, tumors and nuclear medicine. Most referrals to East Jerusalem hospitals concern tumors, ophthalmology, pediatrics, general surgery, gynecology and orthopedics. On the other hand, hospitals in other parts of the West Bank received the largest share of referrals for cardiovascular and urinary tract diseases, medical scanning services, medical tests and rehabilitation.
- A capacity assessment of the Palestinian health sector - covering both governmental and non-governmental facilities - indicates that health infrastructure is insufficient, the main factor explaining the relatively large number of referrals to Israeli hospitals. Specifically, the Palestinian health sector lacks human resources, with a small number of beds available for the treatment of diseases typically referred to Israeli hospitals.
- The study shows that the Palestinian pharmaceutical sector's ability to meet local demand is limited to the production of generic drugs. Therefore, the Palestinian health sector will remain dependent, at least in the short and medium terms, on importing medications prescribed for the treatment of diseases commonly referred outside MoH hospitals.
- The study compares the main health indicators in Palestine with other countries, in order to evaluate the quality of local health services. Palestine has made remarkable progress over the past two decades in increasing life expectancy and reducing death rates. However, compared with other countries, Palestine performs poorly in health expenditure, mainly with respect to the government's share of total health expenditures. However, the findings signal to the high quality of reproductive health services in Palestine. Yet, the health system

still lags behind in terms of containing non-communicable diseases, such as heart diseases, cancer and diabetes; the primary causes of death in Palestine.

- The study discusses financial challenges facing the Palestinian government in providing health services, notably in the financial coverage of medical referrals. It shows that the Ministry's allocated budget remained at the same level during the past years - it did not increase with population growth, or with the need to develop quality healthcare services provided by the Ministry, especially primary healthcare. The study indicates that low revenues from governmental health insurance is a major factor in increasing the financial burden of medical referrals. Economic challenges (especially in the Gaza Strip), expansion of the informal sector, and inadequate health insurance management by MoH are the main causes for low health insurance revenues.
- In light of the above (and many other) challenges facing the sector, the study concludes that implementing an inclusive and comprehensive health insurance system in Palestine is difficult to achieve, in both the short and medium terms. On the other hand, there are interventions that can improve the government's health insurance revenues. In the short term, the most important ones are not to be complacent in the application of procedures relating to the validity period of insurance policies as stated in their instructions; and to increase the value of health insurance contributions - whether for health services or the purchase of medicines - in a manner that does not burden subscribers. For the medium term, the study recommends enhancing health insurance revenues by increasing tax revenues. This may be done through raising taxes, on a limited basis, for a selection of consumer goods, fighting tax evasion and expanding the tax-base.
- The study endeavors to explore financial burdens associated with medical referrals that will be incurred during the coming 10 years. Predictions show that the number of referrals is expected to increase - in the absence of government intervention - from about 125,000 to 403,000 referrals. Costs will range from NIS 1,075 million to NIS 3,468 million. On the other hand, if active government interventions are implemented, it is expected that the number of referrals will increase from 121,000 to 279,000, with costs ranging from NIS 1,054 million to NIS 2,651 million over the same period.
- Through an in-depth analysis of the cost of referrals and an assessment of the Palestinian health sector, the study concludes with a number of interventions for enhancing the localization of medical services and reducing referrals abroad, whether to Israeli hospitals or those in neighboring countries. The study stresses that addressing these challenges depends on making reforms to the referral system, and addressing the shortage in medicines sent to the Gaza Strip. The study also recommends expanding primary and secondary health services provided by MoH hospitals, as well as expanding tertiary health services in the private and public sectors, at the expense of referrals to Israeli hospitals or those in neighboring countries.
- The study concludes that it is difficult to permanently stop all referrals outside the Palestinian health sector, at least in the medium term. The localization of medical services for donation-based marrow transplantation, heart transplantation and multi-organ transplantation require the provision of technologies and the accumulation of expertise over several years. In all cases, expanding the localization of medical services requires guarantees from MoH that it will work with the Palestinian private and civil-society sectors, in a manner that enhances the feasibility of investments in tertiary health services, as well as remedying the shortage of expertise and infrastructure for medical specialties related to diseases with the highest referral rates.

Objectives of the Study

Total expenditures on medical referrals outside the Palestinian governmental health system exceeded NIS 1 billion, equivalent to about 53% of the Palestinian Ministry of Health's (MoH) budget. Undoubtedly, medical referrals overburden the budget of the Palestinian government and taxpayers. This study aims to provide a macro-level assessment of the Palestinian healthcare system, aiming to recommend interventions for minimizing such a financial burden and localizing health services. The scope of the study covers the following pillars:

- Analysis of the Palestinian healthcare sector's total expenditure indicators. .
- Analyzing the number, distribution and cost of medical referrals, with special focus on oncological diseases.
- Providing an assessment of the MoH's budget, as it relates to the financial burden of medical referrals.
- Evaluating the Palestinian health sector in terms of infrastructure, physical and human capacities, as well as methods for developing the sector to increase localization of health services.
- Assessing the ability of the Palestinian pharmaceuticals' manufacturing sector to meet local demand.
- Assessing the condition of healthcare services in Palestine.
- Forecasting health care expenditures over the next ten years.
- Setting priorities for the localization of health services.

In order to achieve its objectives, the study draws on secondary data from different resources, including national health accounts' data issued by the Palestinian Central Bureau of Statistics (PCBS), referrals' expenditure and the MoH's budget (from MoH) and data on healthcare sector indicators available from the World Health Organization (WHO) and from existing literature. In addition, the study utilizes preliminary data that the research team collected by surveying the main hospitals in the West Bank and the Gaza Strip, and through conducting personal interviews with representatives of the MoH.

Note that the analysis does not cover medical referral data (numbers or costs) beyond 2018, due to problems of data availability. Therefore, the study does not address the consequences of the government's decision of March 2019 to shift medical referrals from Israeli hospitals to those in Jordan and neighboring countries. However, this development does not affect the relevance and importance of the study's analysis and conclusions, as the main objective is to recommend policies to reduce the underlying burden of referrals regardless of their destination.

1. Expenditure on the Health Sector in Palestine

This section reviews expenditures related to the Palestinian health sector; and associated changes that have taken place over the past years. Focus is placed on a number of expenditure indicators, namely:
1) Expenditure by type of healthcare (primary and secondary/tertiary healthcare).
2) Expenditure by providers.
3) Expenditure by medical referrals.

The source of these indicators - covering 2000 to 2017 (latest published data) – is national health accounts' (NHA) data issued by PCBS. NHA is prepared using the Standardized Health Accounts System (SHA 2001) issued by the Organization for Economic Co-operation and Development (OECD), WHO, and the Statistical Office of the European Union (EUROSTAT). NHA provides data on financial flows pertaining to the consumption of healthcare goods and their services over a specified period of time. They also provide data on sources, uses, and channels for each financial source pertaining to the health sector.[1]

It should be noted that the methodology for the preparation of sub-health accounts was amended in 2015 – it used to be prepared using n the "Health Accounts System 2000" issued by OECD. It is resultantly difficult to compare changes in all sub-accounts before and after the amendment of 2015. However, comparisons can be made at the level of overall health accounts such as total health expenditure, primary care expenditure, and expenditure by funding agents (sources of funding). Therefore, changes to these indicators will be presented and discussed throughout the entire period, while the discussion on sub-accounts will be limited to 2016 and 2017.[2] Moreover, the data does not include private health accounts' data for that part of the Jerusalem Governorate that is under Israeli occupation.

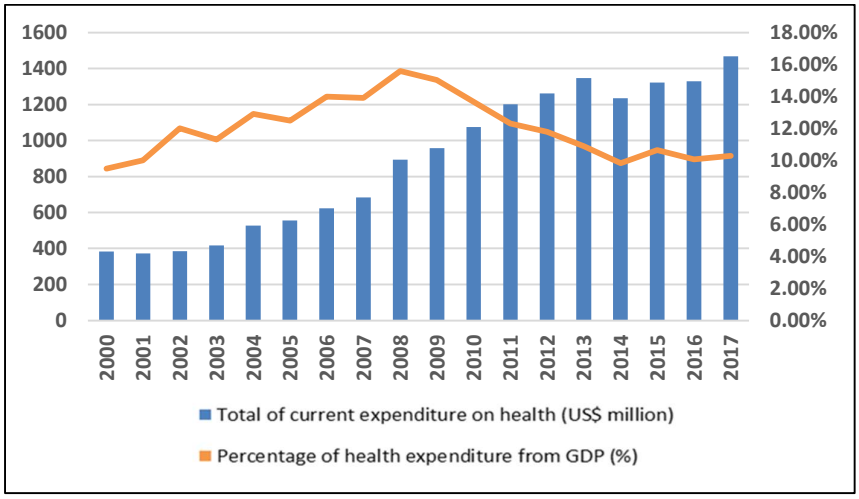
1-1 Expenditure by Health Accounts

Health accounts are divided into current expenditures, capital expenditures (relating to gross capital formation), and other expenditures related to spending on health. Total expenditure on the health sector was $1,500.5 million in 2017, with current expenditures accounting for the largest portion ($1,466.7 million), compared to $26.5 million for gross capital formation and $7.3 million for other expenditures. This expenditure distribution applies not only to 2017, but also extends to previous years. Therefore, the discussion below will focus on current expenditures.

Health accounts' data indicates that current expenditures, measured at current prices, increased linearly over the period 2000-2017. Since 2000, they have risen from $384.4 million to more than $1,400 million in 2017 (see Figure 1-1). However, this rise did not keep pace with the expansion of the Palestinian economy. To demonstrate this, the change in the ratio of current expenditure to GDP has been tracked. Figure 1.1 indicates that the value of this index rose from about 9.5% in 2000 to 15.6% in 2008. However, it dropped again in subsequent years to reach 10.3% in 2017.

[1] http://www.pcbs.gov.ps/Downloads/book2428.pdf
[2] Indicators for 2015 have been excluded due to reservations concerning the accuracy of published data.

Figure 1.1: Total Current Expenditure on the Health Sector (US$ million) in Palestine (2000-2017)



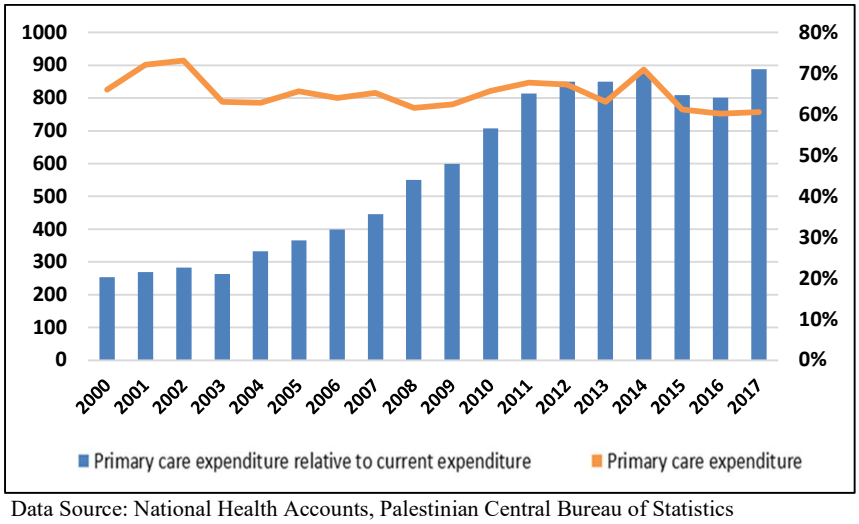
Data Source: National Health Accounts, Palestinian Central Bureau of Statistics

1-2 Current Expenditure by Select Sub-Account Indicators

1-2-1 Distribution of Current Expenditure by Type of Healthcare

Current expenditure can be divided by type of healthcare into primary healthcare expenditure, secondary healthcare expenditure and tertiary healthcare expenditure.[3]

Figure 1-2: Total Expenditure on Primary Healthcare (US$ million) and its Ratio to Current Expenditure in Palestine (2000-2017)



Data Source: National Health Accounts, Palestinian Central Bureau of Statistics

[3] According to the methodology used by PCBS, primary healthcare comprises first-contact and continuing, comprehensive healthcare, including basic or initial diagnosis and treatment, health supervision, management of chronic conditions and preventive health services. The provision of primary care does not necessarily require highly-sophisticated equipment or specialized resources. Secondary healthcare, on the other hand, includes providing specialized healthcare as referred by primary healthcare providers or in emergency cases. Meanwhile, tertiary healthcare covers specialized consultative care, usually on referral from primary/secondary healthcare personnel. Such care is provided by specialists working in a center that has personnel and facilities for special examinations and treatment. http://www.pcbs.gov.ps/Downloads/book2428.pdf.

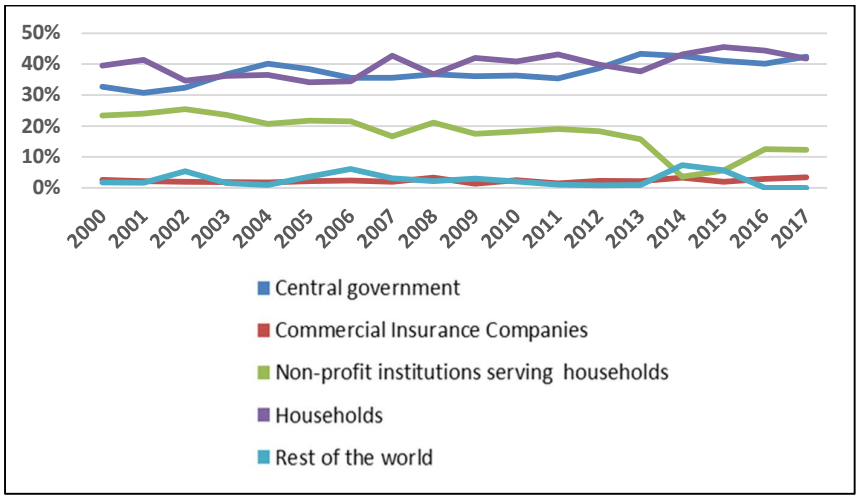
Figure 1-2 shows that primary healthcare expenditure amounted to $888.333 million in 2017, equivalent to about 60% of total current expenditure, with the remainder allocated to secondary and tertiary care. In previous years, primary healthcare expenditure, measured at current prices, increased from US$253.805 million in 2000, steadily accelerating in the period before 2011. The data also shows that the percentage of healthcare expenditure fluctuated between 60% and 70% until 2014, while maintaining a relatively stable level of 60% over the past three years.

1-2-2 Distribution of Expenditure by Financing Agents (Financing Resources)

Figure 1-3 illustrates the distribution of financing sources in the health sector. These are divided into government, households, commercial insurance companies, non-profit institutions serving households, and the rest of the world. Results show that government and households represent - in close proportion - the main source of financing: their combined value accounts for more than 80% of the total financing of health expenditure.

Non-profit institutions rank third at around 12%, while the share of the commercial insurance sector does not exceed 4%. The rest of the financing comes from external sources (rest of the world). The data also shows that this distribution has not changed significantly over previous years, except for financing from non-profit institutions. Their share continues to decline from the level of 25% in 2002.

Figure 1-3: Relative Distribution of Current Expenditure on Health in Palestine By Financing Agent (2000-2017)



Data Source: National Health Accounts, Palestinian Central Bureau of Statistics

Government funding is secured from three main sources: remittances from domestic revenues, remittances from external (foreign) sources, and social insurance contributions. Remittances from government revenues are the most important sources of funding, accounting for two-thirds of total funding in 2016, rising to more than 70% in 2017, primarily at the expense of external sources (see Table 1-1).

Table 1-1: Types of Revenues that Finance Government Expenditure in Palestine (2016, 2017)

Type of Financing	2016	2017
Remittances from government revenues	66%	72%
Remittances distributed by the government from external sources	27%	18%
Social insurance contributions	7%	10%
Total	100%	100%

Data Source: Ministry of Health

1-2-3 Distribution of Current Expenditure by Providers

Table 1-2 documents the distribution of current expenditure on the health sector by providers. These are divided into: hospitals; providers of primary healthcare; primary healthcare centers; support service providers; providers of medical goods; providers of preventive medicine services; administrative/financial service providers to the health system; other economic sectors; and the rest of the world. The Table documents the sub-classifications of each of these providers. The data shows that expenditure by hospitals is the largest portion reaching 36%, followed by medical goods' providers (26%), primary healthcare providers (13%) and primary healthcare centers (13%).[4]

Table 1-2: Distribution of Current Expenditure by Service Provider in Palestine (2016, 2017)

Year	2016	2017	2016 (%)	2017 (%)
Hospitals	460,474	526,413	35%	36%
General hospitals	323,186	335,517	24%	23%
- General government hospitals	216,720	252,747	16%	17%
- General hospitals belonging to the non-profit sector	60,813	42,693	5%	3%
- General hospitals belonging to the private sector	41,719	36,581	3%	2%
- General hospitals with unspecified sector	3,934	3,496	0%	0%
Psychiatric health hospitals	9,472	10,254	1%	1%
Specialized hospitals	120,916	173,823	9%	12%
Unclassified hospitals	6,901	6,820	1%	0%
Long-term healthcare facilities for residents	1,559	1,109	0%	0%
Primary healthcare providers	162,215	191,796	12%	13%
Medical practices *	108,895	135,240	8%	9%
Dental clinics	50,779	52,543	4%	4%
Practitioners of other healthcare services	2,541	4,014	0%	0%
Primary healthcare centers	203,439	194,664	15%	13%
Support service providers **	48,573	53,388	4%	4%
Retail and other medical goods' providers	281,751	306,867	21%	21%
Preventive medicine service providers	6,656	6,924	1%	0%

[3] Note the difference between primary healthcare expenditure and primary healthcare centers. The latter constitute various components, including medical goods' providers and others.

Year	2016	2017	2016 (%)	2017 (%)
Administrative/financial service providers to the health system	36,676	37,420	3%	3%
Other economic sectors	16,417	40,439	1%	3%
Rest of the world	112,299	107,682	8%	7%
Total (in $1,000)	1,330,058	1,466.702	1,330,058	1,466,702

* Medical practices include clinics for general practitioners and specialist physicians' clinics (except dental practices). Practitioners hold doctoral degrees in medicine (according to the international standard classification of professions ISCO -08 code 2210). This group also includes the practice of traditional, complementary and alternative medicines, based on a suitable medical culture.

** This category includes organizations that provide support services to outpatient clinics, supervised by professionals in the field of health, and not covered by hospital treatment, nursing care facilities, ambulatory caregivers, or caregivers to others. It also includes providers of patient transportation, rescue and emergency, medical and diagnostic laboratory, and dental laboratory.

As for the distribution of expenditure by type of hospital, the data indicates that general (unspecialized) hospitals account for 64% of total hospital expenditures. The rest is distributed to private hospitals, with a large margin earmarked for psychiatric health hospitals. Among all hospitals, government hospitals have the largest percentage of expenditure (75%), followed by non-profit hospitals and private-sector hospitals respectively.

Table 1-3 shows the distribution of expenditure by financing agents and major healthcare providers for 2016 and 2017. Data for 2017 shows that most government expenditure (two-thirds) is concentrated in hospitals, followed by primary healthcare centers. Families allocate most of their expenditures on purchasing medical goods, followed by expenditure on primary healthcare service providers. As for systems and programs of non-compulsory expenditure on healthcare (including commercial insurance companies and non-profit institutions that serve households), most of it is concentrated on hospitals, followed by expenditure on primary healthcare centers. Data also indicates that the distribution of these shares has not changed significantly compared to 2016, especially with regard to government and household expenditures.

Table 1-3: Distribution of Expenditure by Financing Agents and Major Healthcare Providers (2016, 2017)

Financing Agents	Hospitals	Primary healthcare providers	Primary healthcare centers	Retail and other medical goods' providers	Total	Other	Total Expenditure
2017							
Government systems and programs, and compulsory contribution systems to finance healthcare (central government)	64%	-	20%	-	16%	100%	621,232.4
Non-compulsory health-care expenditure systems and programs	41	13%	27%	8%	11%	100%	180,833.6
Household expenditure	9%	25%	3%	47%	16%	100%	613,984.1
Rest of the world	9%	27%	5%	-	59%	100%	50,651.4
2016							
Government systems and programs, and compulsory contribution systems to finance healthcare (central government)	60%		22%	-	18%	100%	533,479.9
Non-compulsory health-care expenditure systems and programs	48%	7%	31%	6%	9%	100%	168,999.5
Household expenditure	10%	24%	3%	46%	17%	100%	592,001.3
Rest of the world	-	18%	51%	-	30%	100%	35,577.2

Data Source: National Health Accounts, Palestinian Central Bureau of Statistics

1-3 Medical Referrals Outside Hospitals and Government Healthcare Centers

This section discusses the distribution of expenditure on medical referrals outside governmental hospitals and medical centers; and how it has changed over the past years. This section also details the distribution of referrals by destination, type of treatment, gender and age group. The data is sourced from financial statements derived from medical referral invoices obtained from the MoH. It should be noted that this financial data (cost of referrals) is different to that documented in the annual reports of MoH, which reflect costs according to price-lists for medical services that are typically agreed with service providers. These prices do not reflect the actual costs of medical and support services received by referred patients, as these patients may receive health services outside the scope of the services stated in their medical referrals. The data shows significant differences between actual costs and costs documented in the Ministry's reports. For example, actual costs in 2016 amounted to approximately NIS 876 million, while documented costs in MoH reports amounted to NIS 440,482,859.

1-3-1 Costs of Medical Referrals

The data shows that actual expenditure on medical referrals was NIS 944,669,180 in 2018. The costs of referrals to hospitals makes up 71% of the total cost of referrals. At the regional level, the share of referrals from the Gaza Strip reached 28%, constituting 32% of the cost of referrals. The remainder is from the West Bank. The data in Table 1-4 shows that, over the past few years, expenditure on medical referrals rose from about NIS 579 million in 2013 to NIS 800 million in 2014; it then dropped in 2015 but picked up again afterwards. The MoH's budget, as mentioned above, has stabilized at NIS 1.7 billion.

Table 1-4: Expenditure on Medical Referrals (NIS) and its Portion of Government Expenditure and Total Expenditure on the Health Sector (2013-2018)

	2015	2016	2017	2018
Total actual expenditure	725,960,840	835,434,816	875,736,972	944,669.180
Percentage of MoH's budget	42%	49%	51%	56%

Data Source: MoH and Health Accounts, and Palestinian Central Bureau of Statistics.

Table 1-5 shows the percentage distribution of the costs of referrals by destination, up to 2017. The data shows that non-governmental hospitals in the West Bank claimed the largest share of costs, followed by Palestinian hospitals in East Jerusalem, and Israeli hospitals. Meanwhile, hospitals in the Gaza Strip have a low share, not exceeding 5% of the total cost of referrals. Notably, the cost-share for hospitals in the West Bank has gradually increased over previous years by more than 10 percentage points, from 27% in 2013 to 38% in 2017, but then fell slightly (by about 3 percentage points in 2018). This increase has come at the expense of Israeli hospitals: their cost-share decreased by 13%, from 41% to 28%.

Table 1-5: The Relative Distribution of the Cost of Referrals by Destination (2013-2018)

Destination	2013	2014	2015	2016	2017	2018
Gaza Strip	1.35%	1.18%	1.85%	2.13%	2.63%	4.29%
West Bank, except East Jerusalem	27.03%	28.66%	34.36%	36.55%	38.23%	35.04%
East Jerusalem	30.19%	26.60%	30.79%	34.13%	32.86%	31.68%
Israeli hospitals	41.43%	43.56%	33.00%	27.19%	26.27%	28.37%
Others (Egypt, Turkey and Jordan)	0.00%	0.00%	0.00%	0.00%	0.01%	4.90%
Relative total	100%	100%	100%	100%	100%	100%
Total expenditure on referrals	579,296,700	800,045,223	725,960,840	835,434,816	875,736,972	959,969,173

Data Source: Ministry of Health

1-3-2 Number of Medical Referrals

In 2018, the total number of medical referrals outside MoH hospitals and health centers was 109,818 referrals benefiting about 55,670 patients, at a rate of approximately two referrals for each patient (see Table 1-6 which also documents the available number of referred patients and the average number of referrals since 2015). Of the total number of referrals, 56% are males and the rest females. Referrals are distributed by the type of service, from medical consultations (32%) to overnight stays in hospitals (68%).

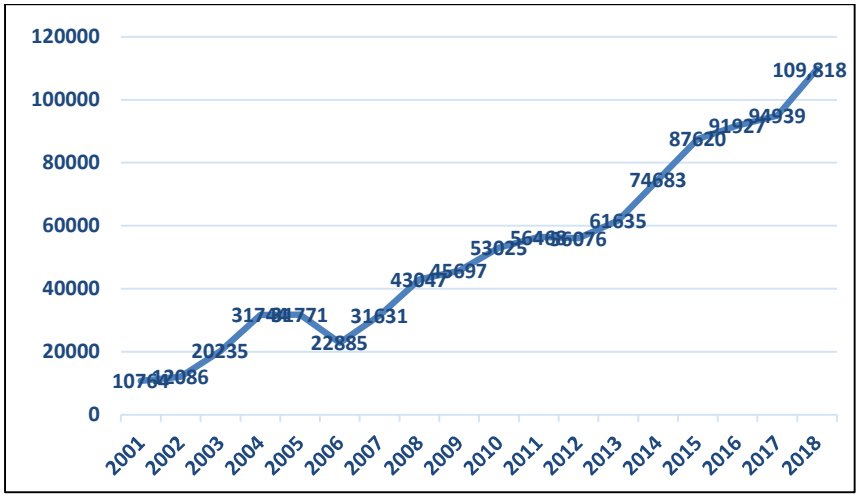
Data issued by MoH allows for the tracking of changes in the number of medical referrals from 2001 to 2018. Figure 1-4 shows an approximate linear rise over this period, except for a drop in 2006. The number of referrals has doubled by more than ten times, with an annual growth rate of about 12%. This rise is attributed to several factors, the most important of which is annual population growth of about 3%, combined with a failure to expand infrastructure at government hospitals, in terms of human resources, medical equipment and medicines; coupled with the inadequate management of the referral process (see below for further discussion).

Table 1-6: Number of Referrals, Referred Patients and Average Number of Referrals in Palestine per Patient (2015-2018)

Year	Number of Referrals	Number of Patients	Average Number of Referrals per Patient
2015	87,616	43,773	2
2016	91,962	46,751	1.9
2017	94,961	51,994	1.8
2018	109,818	55,670	1.9

Data Source: Ministry of Health

Figure 1-4: Number of Medical Referrals in Palestine (2001-2018)



Data Source: Ministry of Health

As for the percentage distribution of the number of referrals by destination in 2018 (see Table 1-7), the data shows that Palestinian hospitals in Jerusalem received the largest share, followed by hospitals in the rest of the West Bank. Together, they make up about 75% of the total number of referrals. As for Israeli hospitals, they received 17% of referrals. However, the costs of referrals to Israeli hospitals exceeded this percentage, as mentioned above, to reach 26% of total referral costs. This may be attributed to the higher costs of treatment relative to other destinations; or that referred cases (whole or partial) required treatment methods that are only available at these facilities and characterized by high costs. Table 10.1 also documents the relative distribution of the number of referrals during 2016 and 2017. However, the data does not reflect a significant difference, except for the increase in the share of referrals to hospitals in the West Bank in 2017.

Table 1-7: Percentage Distribution of the Number of Referrals by Destination (2016-2018)

	2016	2017	2018
East Jerusalem	43.72%	38.35%	39.39%
West Bank, excluding East Jerusalem	36.69%	39.54%	35.44%
Israel	14.32%	17.13%	16.71%
Gaza Strip	3.29%	3.56%	6.34%
Jordan	0.04%	0.03%	0.03%
Egypt	1.94%	1.39%	2.10%
Relative total	100.00%	100.00%	100.00%
Total referrals	91,294	94,961	109,818

Data Source: The Ministry of Health

Table 1-8 documents the percentage distribution of referrals by receiving hospital. The latest available data (up to 2017), shows that Augusta Victoria Hospital (Al-Mutlaa), Al Maqased Charity Hospital and Al Najah National Hospital have received the highest percentage of total referrals. On the other hand, Hadassah Hospital and Tel Hashomer Hospital had received the highest rates of referrals relative to other Israeli hospitals. When comparing all destination

hospitals, Augusta Victoria Hospital ranks first, followed by Al-Najah National University Hospital, and then Hadassah Hospital.

Table 1-8: Numbers of Referrals by Major Palestinian/Israeli Hospital (2017)

Non-MoH Palestinian hospitals (private and non-profit)	Share %	Israeli hospitals	Share %
Augusta Victoria (Al Mutlaa) – Jerusalem	24%	Hadassa – Ein Karem	59%
Al Maqased – Jerusalem	19%	Tel Hashomer	20%
Al Najah National – Nablus	16%	Asota – Ashdod	6%
Al Ahli – Hebron	6%	Ichilov Medical Center- Sourasky	6%
St John of Eye Hospital- Jerusalem	5%	Rambam Haifa	4%
Arab Center for Cardiac Surgery and Hematology	3%	Shaare Zedek Medical Center	3%
Al Mizan – Hebron	3%	Others	1%
Bethlehem Arab Society for Rehabilitation	3%		
Others	23%		
Total number of referrals to these hospitals	73,958	Total number of referrals to those hospitals	16,269

Data Source: Ministry of Health

The analysis of the number of medical referrals in 2018 by type of disease, documented in Table 1-9, shows that cancer ranks first, followed (by a large margin) with heart diseases and kidney/urinary tract diseases respectively. Table 1-9 also compares the change in the number of referrals with those of 2017. The data shows a decline in the number of referrals for heart diseases, while referrals of other diseases increased at a varying pace.

Table 1-9: Distribution of Referrals by the Ten Most Referred Diseases

Disease	2017	2018
Tumors (oncology)	20,666	25,834
Cardiovascular (Heart diseases)	15,057	14,252
Kidney and urinary tract diseases	7,905	9,739
Hematology (blood diseases)	4,861	7,360
General surgery	4,994	7,031
Pediatrics (childhood diseases)	5,665	6,790
Eye diseases	6,751	6,371
Orthopedic surgery (bones)	2,196	4,145
Neurology and neurosurgery	2,669	3,434

Data Source: Ministry of Health

Table 1-10 documents the frequency distribution of the number of referrals by most prominent diseases, medical services, and the destination of referrals. Data shows that Israeli hospitals claimed a large share of referrals for blood diseases, general surgery, cancer and nuclear medicine. As for hospitals in East Jerusalem, the commonest referred diseases include eyes, cancer and pediatrics. They also receive the most cases of general surgery, gynecology and orthopedics. On the other hand, hospitals in the West Bank receive the largest number of cardiovascular and urinary tract diseases, medical scanning services, medical tests and

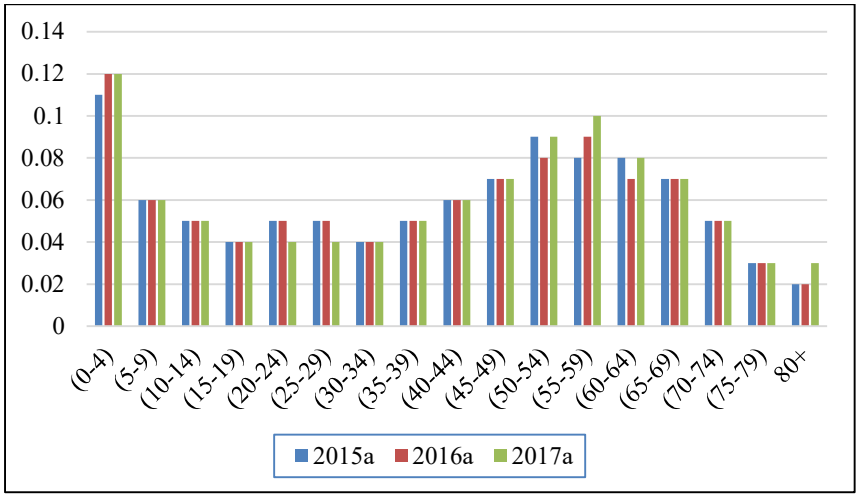
rehabilitation. Finally, Figure 5.1 documents the number of referrals by the age of patients during 2017 and 2018. The data show that the distribution is not symmetric: the majority of referrals are for newborns and infants, with an additional increase for those aged 45-69 years.

Table 1-10: Distribution of Medical Referrals by Type of Diseases and Destination (2017)

Disease/Destination	West Bank	East Jerusalem	Israel	Gaza	Egypt	Jordan	Turkey	Grand Total
Tumors/cancer, blood diseases, and lymphatic system	4043	14495	6814	3	166	6		20,666
Heart diseases	10,583	1,666	891	1,782	130	5	-	15,057
Kidney and urinary tract diseases	4,559	2,706	383	163	87	7		7,905
Eye disease	2,464	3,299	515	359	113	1		6,751
Pediatric diseases (childhood)	2,102	2,517	929	86	31	-	-	5,665
Gastroenterology - General Surgery	1,201	2,497	1,058	81	151	5	1	4,994
Medical scanning	2,565	1,558	172	532	4			4,831
Nuclear Medicine	844	2	2,377		114			3,337
Endoscopy	2,803	502	12	11	2			3,330
Laboratory tests	1,728	794	566		4			3,092
Neurological diseases, brain, and neurosurgery	578	1,220	694	6	168	3	S	2,669
Rehabilitation and technical assistance	1,537	525	20	213	19			2,314
Gynecology and obstetrics	583	1,617	24	1	11	1		2,237
Orthopedic diseases	599	1,170	239	15	171	2		2,196
Intensive care	821	127	43	49	3	1		1,044
Pharmaceuticals	38	33	869		1			941
Ear, nose and throat diseases	126	399	226	73	63			887
Pathology	206	466	68		14			754
Thoracic surgery	102	545	76	2	9	2		736
Endocrinology (glands)	9	179	62	2	5			257
Plastic surgery	12	41	92	1	8			154
Maxillofacial Surgery	19	45	76		9			149
Skin diseases and skin tissue operations	4	12	58	1	7			82
Organ transplant	17		5		26		4	52
Grand Total	37,543	36,415	16,269	3,380	1,316	33	5	94,961

Data Source: Ministry of Health

Figure 1-5: Distribution of Medical Referrals by Age Group (2017)



Data Source: Ministry of Health

2. Number and Characteristics of Cancer Patients in the West Bank and Cancer Treatment Costs

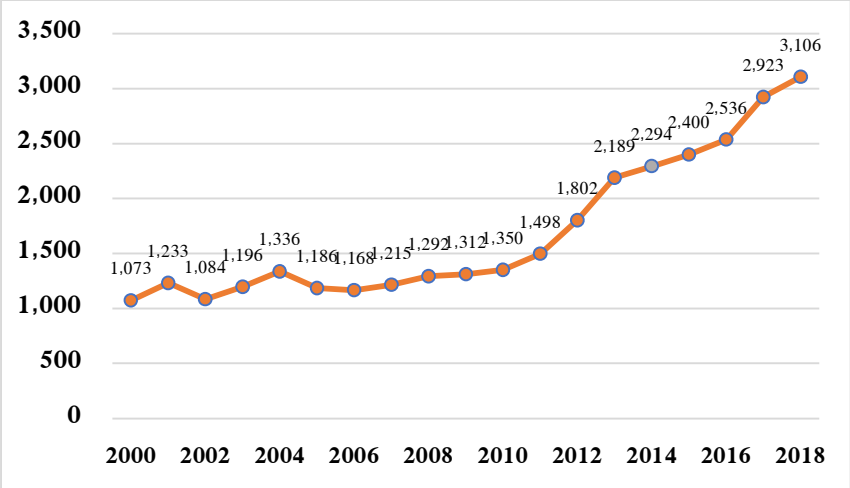
2-1 Numbers and Characteristics of Cancer Patients in the West Bank

This section details the reported number of cancer cases and their distribution by type of disease, age and governorate. This data has been obtained from the MoH, covering the West Bank only, as divisions prevented the Ministry from obtaining such data on the Gaza Strip. It should be noted that the accuracy of the data collected on cancer patients has improved significantly over the last two years. Therefore, caution must be exercised in interpreting changes during previous years, especially before 2010.

2-1-1 Number of Cancer Cases and their Geographical Distribution

The number of cancer cases reported in the West Bank in 2018 was 3,106 (equivalent to about 105 cases per 100,000 population). This represents an increase of 183 cases compared to 2017. The number of cancer cases witnessed a steady increase between 2000 and 2018, at a rate of about 6.5% per year. This rate is more than double the annual rate of population growth. Resultantly, the number of cancer cases was nearly three times higher than 2000 (see figure 2-1).[5]

Figure 2-1: Number of Reported Cancer Cases in the West Bank (2000-2018)

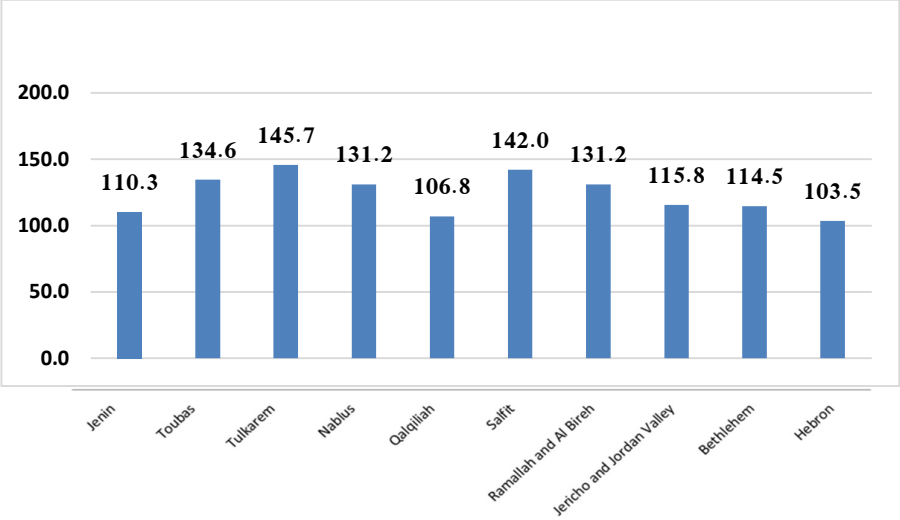


Data Source: Ministry of Health

At the level of governorates, Tulkarem recorded the highest cancer incidence rate in 2018, reaching 146 cases per 100,000 population; followed by Salfit with a rate of 142 cases and Tubas with a rate of about 135 cases (see Figure 2-2). In the city of Jerusalem, documented cases include residents who do not hold a blue identity card, most of whom live in communities and villages surrounding the city. The number of cancer cases reported in these areas is 122 cases.

[5] The number of cancer patiens reported in this study is an update of the data published in the MoH's annual report.

Figure 2-2: Distribution of Reported Cancer Cases by West Bank Governorate Based on Incidence Rate per 100,000 Population (2018)



Data Source: Ministry of Health

Table 2-1: Number and Rate of Cancer Incidence By Gender (2018)

	Females		Males	
	Incidence rate	Number of cases	Incidence rate	Number of Cases
Jenin	108.7	172	111.7	183
Tubas	133.6	41	133.9	43
Tulkarem	156.4	147	133.7	130
Nablus	127.4	254	129.9	266
Qalqiliah	107.1	59	110.6	64
Salfit	132.5	50	152.9	60
Ramallah and Al Bireh	142.4	237	120.7	205
Jericho and Jordan Valley	126.9	33	99.3	26
Jerusalem	26.8	56	29.5	66
Bethlehem	114.4	126	112.9	129
Hebron	108.4	392	97.5	367

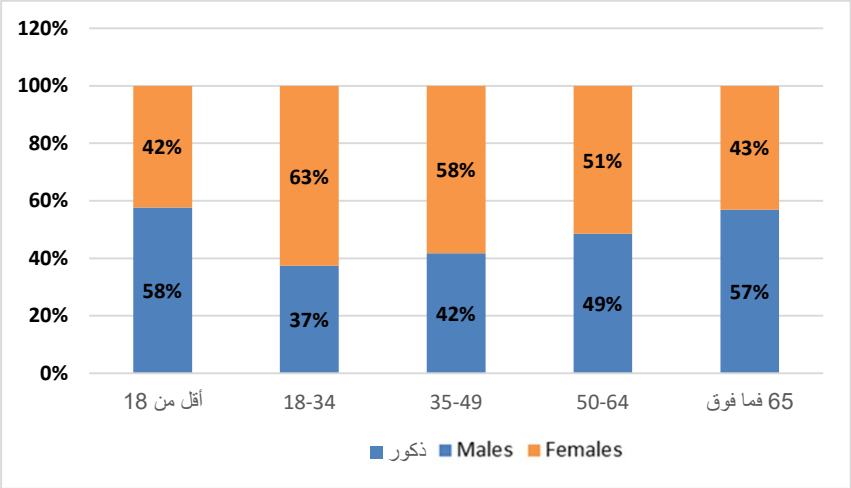
Data Source: Ministry of Health

Data for 2018 also indicates that there are no significant differences between the number of male and female cancer patients. The number of reported cases for males was 1,539 compared with 1,567 for females. At the level of governorates, Salfit recorded the highest incidence rate among males reaching 153 cases per 100,000 males. As for females, Tulkarem Governorate recorded the highest rate, reaching 156 cases per 100,000 females (see Table 2-1).

The number of cancer cases varies between males and females across different age groups. We note that the percentage of males with cancer, in the under 18 age group, is higher than that of females. This is in contrast to the 18-49 age group. As for the elderly (65 years and above), the percentage of males with cancer is higher than that of females (see Figure 2-3). In the same

context, Table 2-2 documents the percentage distribution of cancer cases by age group and gender. The data shows some differences between males and females. The incidence of cancer for males increases dramatically after the age of 50, as the incidence percentage for this age group covers about 70% of total male cases (the female percentage for the same age group is about 60%).

Figure 2-3: Percentage Distribution of Reported Cancer Cases by Age Group and Gender in the West Bank (2018)



Data Source: Ministry of Health

Table 2-2: Percentage Distribution of Reported Cancer Cases by Age Group and Gender in the West Bank (2018)

Age Group	Male	Female
Less than 18	6.4%	4.6%
18-34	6.6%	10.8%
35-49	16.8%	23.1%
50-64	31.5%	32.8%
65 and above	38.7%	28.7%
Total	100%	100%

Data Source: Ministry of Health

2-1-2 Cancer Incidences by Type of Cancer and Gender

The distribution of reported cancer cases between males and females varies by type of cancer. Bronchitis and lung cancers are the most common cancers for males, with a rate of approximately 14 cancer cases per 100 000 males, accounting for 13.5% of total, male-patient cases. Colon cancer is in second place with a marginal difference, followed by bladder cancer. In females, breast cancer is at the top of the list with 30 cases per 100,000 females, accounting for 28% of total, female-patient cases. Colon cancer is in second place much further behind, with an average of 11 cancer cases per 100,000 females. Tables 2-3 and 2-4 show the relative distribution of the type of cancer by males and females respectively.

Table 2-3: Distribution of Reported Cancers for Males in the West Bank Based on Incidence Rate per 100,000 Males (2018)

Infected organ	Incidence rate per 100,000 males *	%	Infected organ	Incidence rate per 100,000 males *	%
Windpipes and lungs	13.7	13.5%	Nasal pharynx	0.7	0.6%
Colon	13.6	13.3%	Malignant tumors (without location)	0.7	0.6%
Bladder	8.6	8.4%	Small intestine	0.5	0.5%
Leukemia	7.8	7.6%	Pigment cells	0.5	0.5%
Prostate	6.5	6.4%	Breast	0.5	0.5%
Skin	5.6	5.5%	Mesothelioma	0.4	0.4%
Lymph nodes	5.2	5.1%	Esophagus	0.3	0.3%
Brain and nervous system	5.0	4.9%	Thymus gland, adrenal gland, other endocrine glands	0.3	0.3%
Other blood disorders	4.7	4.6%	Anus	0.3	0.3%
Stomach	3.1	3.0%	Nose and sinuses	0.3	0.3%
Pancreas	3.0	2.9%	Heart	0.2	0.2%
Lymphoma Hodgkin	2.7	2.6%	Eye	0.2	0.2%
Throat	2.5	2.5%	Other	0.1	0.1%
Kidney and urinary tract	2.4	2.3%			
Multiple myeloma	2.1	2.1%			
Liver	1.9	1.8%			
Testicle	1.7	1.7%			
Thyroid	1.7	1.7%			
Bone	1.7	1.6%			
Lip and oral cavity	1.6	1.6%			
Gallbladder	1.2	1.2%			
Soft and connective tissues	1.2	1.0%			

Data Source: Ministry of Health

Table 2-4: Distribution of Reported Cancers for Females in the West Bank Based on Incidence Rate per 100,000 Females (2018)

Infected organ	Incidence rate per 100,000 females *	%	Infected organ	Incidence rate per 100,000 females *	%
Breast	29.9	27.6%	Small intestine	0.8	0.8%
Colon	10.6	9.8%	Lip and oral cavity	0.8	0.7%
Thyroid gland	8.4	7.7%	Cervix	0.6	0.6%
Uterus	6.5	6.0%	Thymus gland, adrenal gland, Other endocrine glands	0.5	0.4%
Leukemia	6.3	5.8%	Pigment cells	0.4	0.4%
Lymph nodes	4.6	4.2%	Nasal pharynx	0.3	0.3%
Skin	4.1	3.8%	Heart	0.3	0.3%
Brain and nervous system	4.1	3.8%	Larynx (throat)	0.2	0.2%
Other blood disorders	4.1	3.8%	Esophagus	0.2	0.2%
Ovary	3.4	3.1%	Eye	0.2	0.2%
Windpipes and lung	2.9	2.7%	Vulva	0.2	0.2%
Stomach	2.9	2.7%	Digestive organs	0.1	0.1%
Lymphoma Hodgkin	2.8	2.6%	Mesothelioma	0.1	0.1%
Kidney and urinary tract	2.6	2.4%	Nose and sinuses	0.1	0.1%
Pancreas	1.9	1.8%	Peritoneum NA	0.1	0.1%
Multiple myeloma	1.6	1.5%	Vagina	0.1	0.1%
Liver	1.6	1.5%	Fallopian tube	0.1	0.1%
Bladder	1.2	1.1%			
Bone	1.0	1.0%			
Gallbladder	1.0	0.9%			
Soft and connective tissues	0.9	0.8%			
Malignant tumors (without location)	0.9	0.8%			

Data Source: Ministry of Health

Finally, Table 2-5 documents the distribution of cancer cases in 2018 by type of disease and age groups. Data shows that the proportion of females with breast cancer increases after the age of 35. Similarly, the proportion of females with uterine and skin cancer increases after the age of 50 and 65, respectively. The rate of those with colon cancer, bronchial and lung cancer increases in both sexes after the age of 50.

Table 2-5: Percentage Distribution of Reported Cancer Cases by Diagnosis, Age Group and Gender in the West Bank (2018)

Infected Organ	Less than 18 years		18-34 years		35-49 years		50-64 years		65 years and above		Total
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	100%
Breast	0.0%	0.0%	0.0%	7.7%	0.5%	35.2%	1.1%	35.5%	0.0%	20.0%	100%
Colon	0.3%	0.3%	0.6%	2.2%	10.0%	6.4%	22.3%	16.4%	24.0%	17.5%	100%
Windpipes and lung	0.8%	0.0%	1.6%	0.4%	7.6%	2.0%	28.9%	3.6%	44.2%	10.8%	100%
Leukemia	12.5%	11.5%	6.7%	4.3%	11.5%	7.2%	13.9%	11.1%	11.5%	9.6%	100%
Bladder	0.0%	0.0%	0.7%	1.4%	9.5%	0.7%	31.1%	4.1%	46.6%	6.1%	100%
Thyroid gland	0.0%	0.0%	5.4%	27.9%	8.2%	36.7%	2.7%	14.3%	1.4%	3.4%	100%
Skin	0.7%	0.7%	2.1%	0.7%	13.1%	2.8%	16.6%	13.1%	26.2%	24.1%	100%
Lymph nodes	2.1%	0.0%	4.9%	7.6%	14.6%	7.6%	19.4%	13.9%	13.2%	16.7%	100%
Brain and nervous system	14.1%	6.7%	4.4%	7.4%	17.0%	10.4%	9.6%	12.6%	10.4%	7.4%	100%
Other blood disorders	6.2%	3.8%	10.0%	3.8%	10.0%	11.5%	10.8%	10.8%	17.7%	15.4%	100%
Prostate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	23.5%	0.0%	76.5%	0.0%	100%
Uterus	0.0%	0.0%	0.0%	3.2%	0.0%	7.4%	0.0%	52.1%	0.0%	37.2%	100%

Data Source: Ministry of Health

2-2 Costs of Cancer Treatment

This section illustrates costs related to cancer treatment for 2017, comparing them by region where medical services are provided (2018 data is not available at this level of analysis). The analysis here is limited to comparing total treatment costs for cases referred outside MoH hospitals. The reason is due to the absence of treatment costs' data in government hospitals, as a result of the method used to record such costs. Costs are not calculated by type of disease or its treatment protocols.

It should be noted that cost data used in this analysis reflects the estimated cost per referral, as estimated by the Referrals Section at the MoH. As indicated above, in many cases, these costs do not reflect what is actually spent on different medical services that are provided; compared to what is stated in the referral document. The available data also does not allow for comparing cost rates by type of disease, due to the absence of necessary data on the details of treatment per single referral, which forms the basis of cost calculation. On this basis, the cost analysis reflects the differences identified in the medical services price-list by destination hospital: Israeli hospitals inside the Green Line, Palestinian hospitals in East Jerusalem, and remaining hospitals in the West Bank. The analysis excludes referrals to Jordan, as they are few in number and data on them is absent.

Table 2-6: Distribution of Blood Cancer Referrals and Scanning Tests by Destination Hospital (2017)

Cancer Treatment		Bone Marrow Transplant		PET Scan	
Hospital	**Number of referrals**	**Hospital**	**Number of referrals**	**Hospital**	**Number of referrals**
Augusta Victoria (Al Mutlaa) – Jerusalem	56.40%	Tel Hashomer	34.64%	Assuta	52.90%
Hadassah- Ein Karem	16.87%	Hadassah Ein Karem	29.41%	Hadassah- Ein Karem	43.64%
Al Najah National-Nablus	15.66%	Al Najah National-Nablus	27.45%	Tel Hashomer	1.01%
Tel Hashomer	6.58%	Ichilov Medical Center-Sourasky	2.61%	Shaare Zedek Medical Center- Jerusalem	0.69%
Ichilov Medical Center-Sourasky	1.66%	Rambam Haifa	1.96%	Ichilov Medical Center- Sourasky	0.27%
Rambam Haifa	1.41%	Augusta Victoria (Al Mutlaa) – Jerusalem	1.31%	Others	1.49%
Al Maqased – Jerusalem	0.32%	Others	2.62%		
Others	1.1%				
Total	25,527		153		1,879

Data Source: Ministry of Health

Before addressing the analysis of costs, data on cancer referrals is presented. Table 2-6 documents the relative distribution of blood cancer treatment and bone marrow transplant referrals by destination hospitals. The results show that more than half of tumors' treatment referrals (including chemotherapy, radiotherapy and surgical intervention) are directed towards the Mutlaa Hospital, followed by Hadassah Hospital (with a large difference) and Al Najah National University Hospital. Referrals to these 3 hospitals account for 90% of all referrals in this category.

On the other hand, the majority of bone marrow transplant referrals are directed to Israeli hospitals, with Tel Hashomer Hospital being the most prominent. Al Najah National Hospital is the only Palestinian hospital providing this type of medical service, but it is limited to certain types of bone marrow transplants (see further discussion below). Table 6.2 also documents referrals for PET scanning tests, where data shows that almost all of them are directed to Israeli hospitals. Assuta Hospital receives more than half of all referrals for this category, followed by Hadassah Hospital. These 2 hospitals combined receive about 96% of total PET scanning cases.

Table 2-7 provides data documenting the costs (total costs and cost rates) associated with two types of cancer treatment: chemotherapy and radiotherapy. Chemotherapy is available at all hospitals documented in this analysis, yet radiotherapy is limited to Israeli hospitals and Palestinian hospitals in East Jerusalem. Data indicates that the total cost of chemotherapy reached about NIS 31 million. The data also indicates that the average cost of chemotherapy per referral was highest at Israeli hospitals, at about NIS 10,500, compared to about half that amount at East Jerusalem or West Bank hospitals. The same result applies to radiotherapy, where the average cost at Israeli hospitals reaches NIS 17,000, approximately 2.8 times the average cost at East Jerusalem hospitals. On the whole, the total costs of radiotherapy were NIS 11.6 million.

Table 2-7: Cost of Chemotherapy and Radiotherapy for Cancer Treatment by Destination Area

	West Bank Hospitals			Israeli Hospitals			East Jerusalem Hospital			Grand total of costs
	Referrals number	Total Costs	Cost rate	Referrals number	Total Costs	Cost rate	Referrals number	Total Costs	Cost rate	
Chemotherapy	1,936	11,010,800	5,687	48	507,240	10567.5	3,326	19,369,102	5824	30,887,142
Radiation				20	338,151	16907.55	1,903	11,278,503	5927	11,616,654

Data Source: Ministry of Health

The cost of performing bone marrow transplants is the most expensive. In spite of the few numbers of referrals (153 referrals during 2017), their total costs were about NIS 30 million, which is roughly the same as the total cost of cancer chemotherapy.

The cost of PET SCAN (tumor tests) was around NIS 6 million, at a rate of NIS 3,239 for each referral (see Table 2-8). The data shows that the average cost of one autologous transplant operation in Israeli hospitals is NIS 177,000 compared with NIS 120,000 at an-Najah National University Hospital (the only Palestinian hospital that provides this service). On the other hand, one allogenic transplant operation, available only in Israeli hospitals, costs around NIS 280,000.

Table 2-8: Total Costs and Cost Rate of Referrals for Bone Marrow Transplant and PET Scans (2017)

	Total costs	Cost rate per referral
Bone marrow transplant	27,967,650	182,795.1
PET scan	6,085,673	3,239

Data Source: Ministry of Health

3. Assessing the Capabilities of the Palestinian Health Sector: Infrastructure

This section assesses the availability of infrastructure within the Palestinian health sector, in terms of human resources (HR) and the equipment required to provide appropriate health services. In order to achieve this, the "Health Facilities Survey" was designed to collect data on the number of hospitals, the number of beds, medical sections, radiology services, and ancillary medical services such as blood banks and laboratories. The survey form also allows for the collection, preparation and distribution of data on human resources at hospitals. The results are useful in identifying gaps and shortages associated with expanding and localizing health services.

All 83 governmental, non-profit and private hospitals in the West Bank and the Gaza Strip were targeted. These hospitals are distributed as follows: 29 hospitals affiliated with the private sector (17 in the West Bank, 12 in the Gaza Strip); 30 government hospitals (14 in the West Bank, 16 in the Gaza Strip); 20 private hospitals (17 in the West Bank, 3 in the Gaza Strip). The data was collected by a team of field researchers, through the distribution of forms to all 83 hospitals in the West Bank and Gaza Strip, of which 79 hospitals responded representing a response rate of 95% (92% in the West Bank, 100% in the Gaza Strip).[6] The form was filled out by a competent official at different units in each hospital (HR data originates from HR units). Data on the number of beds was sourced from managers or administrative staff. In the case of small hospitals, the form was filled-out by the Medical Director.

3-1 Number of Beds by Hospital Type and Geography

The total number of hospital beds in the sample was 7,758, with 4,574 beds in the West Bank and 3,184 beds in the Gaza Strip. Concerning the number of beds per 100,000 population, the ratio in the West Bank was 158.8 beds compared to 168.2 beds in the Gaza Strip. Bethlehem Governorate recorded the highest value for this ratio, at a rate of 291.2 beds, followed by Nablus Governorate at a rate of 243 beds. However, the Salfit and Qalqiliah Governorates had the lowest number of beds in the West Bank, at the rates of 78.2 and 77.4 beds per 100,000 populations. In the Gaza Strip, Gaza Governorate recorded the highest value of this ratio at 233.2 beds, while Al Wusta Governorate recorded the lowest value at 101.8 beds per 100,000 populations (see Table 3-1 below).

Table 3-1: Number of Hospitals and Beds per 100,000 Population by Governorate (2018)

Governorate	Population	Hospitals	Beds	Beds/100,000
Palestine	4,781,248	79	7,758	162.3
West Bank	2,881,957	48	4,574	158.7
Jenin	314,866	4	375	119.1
Tubas and northern Jordan Valley	60,927	1	71	116.5
Tulkarem	186,760	2	205	109.8
Nablus	388,321	8	942	242.6
Qalqiliah	112,400	1	87	77.4

[6] Four hospitals in the West Bank were not included in the sample, namely: UNRWA Hospital (Qalqiliah), Red Crescent for Maternity (Jerusalem), SurgiCare (Ramallah), Nasser Hospital for General Surgery, Gynecology and Obstetrics (Hebron).

Governorate	Population	Hospitals	Beds	Beds/100,000
Salfit	75,444	1	59	78.2
Ramallah and Al Bireh	328,861	9	761	231.4
Jericho and Jordan Valley	50,002	1	75	150.0
Jerusalem	435,753	6	641	147.1
Bethlehem	217,400	8	633	291.2
Hebron	711,223	7	725	101.9
Gaza Strip	1,899,291	31	3,184	167.6
North Gaza	368,978	4	446	120.9
Gaza	652,597	18	1,516	232.3
Al Wusta Governorate	273,200	2	278	101.8
Khan Yunis	370,638	3	462	124.6
Rafah	233,878	4	482	206.1

Data source: Survey Questionnaire

3-2 Number of Beds at Palestinian Hospitals

3-2-1 Number of Beds by Hospital Sub-Departments

Tables 3-2 to 6.3 show the number of beds in hospitals in the West Bank and the Gaza Strip by type of hospital (non-profit, government, and private), and their classification by main and subsection. At the overall level, internal and surgical sections together accounted for about 42% of total beds at Palestinian hospitals, followed by obstetrics and gynecology sections with 14%. Government hospitals accounted for the largest proportion of beds in these sections: at 69% of internal beds and 55% of surgical beds. As indicated in the tables, the number of beds at government hospitals in the Gaza Strip accounts for 72% of total hospital beds in the Strip, as well as 82% of total internal beds and 62% of total surgical beds. The high contribution of government hospitals to overnight beds in the Gaza Strip is accompanied by a low contribution of non-profit and private hospitals in particular. Private hospitals in the Gaza Strip account for about 6% of total beds, most of them in internal and surgical sections.

The situation is different in the West Bank. Non-profit hospitals in the West Bank provide a total of 1,496 beds (33% of total beds in the West Bank); compared to 2,174 beds at government hospitals (48% of total beds in the West Bank). The contribution of non-profit hospitals is significant in surgical sections, gynecological and obstetric sections, pediatrics sections, as well as physiotherapy and rehabilitation. On the other hand, the share of private hospital beds in the West Bank is low, contributing about 20% of total beds. However, their contribution is still relatively higher than that of private hospitals in the Gaza Strip. Table 2.3 shows the number of beds in internal medicine departments, and their classification by region and type of hospital.

Table 3-2: Number of Beds at Hospital Departments by Region and Type of Hospital Operator (2018)

	Palestine				West Bank				Gaza Strip			
	Non-profit	Government	Private	Total	Non-profit	Government	Private	Total	Non-profit	Government	Private	Total
Internal medicine	75	157	43	275	52	112	43	207	23	45	0	68
Internal diseases	109	389	55	553	97	132	55	284	12	257	0	269
Thoracic diseases	4	0	2	6	0	0	2	2	4	0	0	4
Cardiac diseases	34	65	34	133	20	21	34	75	14	44	0	58
Kidney diseases	4	30	2	36	0	1	2	3	4	29	0	33
Catheter Unit	28	21	27	76	10	8	3	21	18	13	24	55
Neurology	3	0	0	3	1	0	0	1	2	0	0	2
Tumors/cancer	14	81	19	114	14	22	0	36	0	59	19	78
Gastrointestinal diseases	9	0	1	10	0	0	1	1	9	0	0	9
Psychiatric diseases	0	188	0	188	0	140	0	140	0	48	0	48
Others: Internal Intensive care	6	0	0	6	6			6				0
Internal pediatric	0	62	0	62				0		62		62
Internal surgery	0	20	0	20		20		20				0
Total	286	1013	183	1482	200	456	140	796	86	557	43	686

Data source: Survey Questionnaire

It can be concluded from Table 3-2 that there exists a disparity between the West Bank and the Gaza Strip in the number of beds that is not commensurate with the fact that the population in the West Bank is much higher than in the Gaza Strip, necessarily requiring more beds for the former. For example, there were 3 nephrology beds in the West Bank compared to 33 beds in the Gaza Strip, while the number of tumor beds in the West Bank was 36 compared to 78 beds in the Gaza Strip. The same applies to the number of beds in the catheter, cardiology and gastroenterology sections. This may indicate gaps in the number of beds in many internal specialties in the West Bank, as outlined in Table 2.3

Table 3-3 shows the number of beds in sub-surgery departments by region and type of ownership, where the percentage of beds in general surgery departments was about 23% of total surgical beds, followed by orthopedics at 13%. On the other hand, the number of beds decreases in other surgical specialties such as maxillofacial surgery, pediatric cardiac surgery, microscopic surgery and laparoscopic surgery. The number of beds allocated across many surgical departments in the West Bank is lower than the Gaza Strip, especially in the pediatric, vascular and endoscopic surgery departments. It should be noted that 36% of surgical beds in Palestine are not classified by sub-surgical department.

Table 3-3: Number of Beds in Surgery Sections at Hospitals by Region and Type of Operator (2018)

	Palestine				West Bank				Gaza Strip			
	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total
Surgery Sections	211	344	104	659	77	111	104	292	134	233	0	367
General surgery	180	216	15	411	122	135	5	262	58	81	10	149
Pediatric surgery	23	52	3	78	11	9	3	23	12	43	0	55
Cardiothoracic surgery	30	47	6	83	28	28	6	62	2	19	0	21
Pediatric heart surgery	2	8	0	10	2	8	0	10	0	0	0	0
Vascular surgery	17	8	9	34	11	0	0	11	6	8	9	23
Neurosurgery	9	22	1	32	7	8	1	16	2	14	0	16
Maxillofacial surgery	4	0	1	5	2	0	1	3	2	0	0	2
Urinary tract	11	30	12	53	3	30	2	35	8	0	10	18
Bones	52	168	12	232	33	103	2	138	19	65	10	94
Ear, nose, and throat	31	45	1	77	9	29	1	39	22	16	0	38
Eyes	52	38	2	92	42	2	2	46	10	36	0	46
Laparoscopic surgery	7	10	1	18	1	4	1	6	6	6	0	12
Microsurgery	3	0	1	4	1	0	1	2	2	0	0	2
Others	13	8	0	21	13	8		21				0
Total	645	996	168	1809	362	475	129	966	283	521	39	843

Data source: Survey Questionnaire

In contrast, the number of beds drops in other surgical specialties such as maxillofacial surgery (5 beds in total of which 3 are in the West Bank), pediatric heart surgery, microsurgery and endoscopy. As with internal medicine departments, the number of beds is low in numerous surgical sections in the West Bank compared to the Gaza Strip, particularly in pediatric surgery, vascular surgery and endoscopic surgery.

Table 3-4 below shows the number of beds in special care and intensive care sections. Infant incubators are allocated the largest number of beds in Palestine, followed by intensive neonatal care, mostly in the West Bank. Results show that the number of beds allocated to mid-intensive care and burns is low. Also, the number of beds allocated for long-term healthcare is low at 25 beds, most of these at non-profit hospitals in the West Bank. The last section of Table 4.3 shows that there are about 304 beds allocated for physiotherapy and rehabilitation, 57.5% of which are in the West Bank. Physiotherapy beds are distributed between non-profit and governmental hospitals.

Table 3-4: Number of Hospitals Beds at Intensive Care Units, Special Care Units, Physiotherapy Units and Functional Therapy Units by Region and Type of Operator (2018)

Special Care and intensive Care Units	Palestine				West Bank				Gaza Strip			
	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total
Special Care Sections	5	189	0	194	0	40	0	40	5	149	0	154
General Intensive Care Unit ICU	45	100	42	187	34	65	38	137	11	35	4	50
Intensive Care Middle Unit IMU	9	21	10	40	0	21	10	31	9	0	0	9
Intensive Cardiac Care Unit ICCU	9	28	35	72	0	20	27	47	9	8	8	25
Pediatric Intensive Care Unit PICU	54	35	0	89	46	8	0	54	8	27	0	35
Neonatal intensive care unit NICU	66	70	98	234	60	34	98	192	6	36	0	42
Incubators NICU	69	177	37	283	69	83	37	189	0	94	0	94
Burns	0	29	0	29	0	21	0	21	0	8	0	8
Long-term health care	23	0	2	25	23	0	2	25	0	0	0	0
Isolation room	20	26	14	60	13	1	14	28	7	25	0	32
Physiotherapy and functional therapy												
Physiotherapy and rehabilitation	188	101	15	304	120	43	12	175	68	58	3	129
Functional therapy	0	4	0	4	0	4	0	4	0	0	0	0

Data source: Survey Questionnaire

Table 3-5 documents the number of beds at gynecology and pediatric sections by region. It shows that the contribution of government hospitals in these sections accounts for about 55% of total beds in Palestine. This percentage is higher in the Gaza Strip (76%) compared to the West Bank (46%), where the contribution of non-profit hospitals is higher than that of government when compared to the Gaza Strip.

Table 3-5: Number of Hospital Beds at Gynecology and Pediatrics Sections by Region and Type of Operator (2018)

Gynecology and pediatrics sections	Palestine				West Bank				Gaza Strip			
	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total
Pediatrics section	167	254	43	464	167	212	43	422	0	42	0	42
Gynecology and obstetrics sections	91	20	28	139	53	0	22	75	38	20	6	64
Gynecology and obstetrics diseases	143	422	97	662	100	173	97	370	43	249	0	292
Obstetrics beds	84	157	45	286	57	106	45	208	27	51	0	78

Data source: Survey Questionnaire

The last part of the analysis of hospital beds focuses on beds for daily treatment (for cases that do not need admission), as detailed in Table 3-6 below. Emergency and accident beds constitute the largest portion of the total number of beds in this category (44%), followed by dialysis beds (29%). Chemotherapy beds constitute 10% of total beds for daily treatment. The Table shows that there is a low number of beds for lithotripsy and catheters.

Table 3-6: Number of Hospitals Beds at Daily Treatment by Region and Type of Operator (2018)

	Palestine				West Bank				Gaza Strip			
	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total	Non-profit	Govern-ment	Private	Total
Unclassified daily treatment beds	21	6	16	43	21	0	0	21	0	6	16	22
Chemotherapy	15	96	10	121	15	59	0	74	0	37	10	47
Radiotherapy (lithotripsy)	3	6	2	11	1	1	0	2	2	5	2	9
Dialysis	54	291	2	347	50	173	2	225	4	118	0	122
Lithotripsy	1	1	1	3	0	1	1	2	1	0	0	1
Thalassemia	0	79	0	79	0	37	0	37	0	42	0	42
Emergency and accidents	117	341	65	523	70	120	55	245	47	221	10	278
(hematology)	18	28	3	49	18	11	0	29	0	17	3	20

Data source: Survey Questionnaire.

3-2-2 Number of Beds by Most Prominent Diseases Referred Outside Governmental Hospitals

The discussion in this section sheds light on the number of beds at hospital sections that cover specialties related to the top ten diseases in terms of spending in Palestine. The aim is to identify gaps in the Palestinian health system concerning these diseases, leading to the need for referral.

Heart diseases; urinary tract surgery and kidney diseases; and ophthalmology are among the most common diseases referred to local, non-MoH hospitals. When looking at the number of beds in sections related to these diseases at government hospitals (Table 3-7), it becomes clear that their number is noticeably low in relation to total beds in Palestine. For example, there are

112 heart beds at government hospitals in Palestine, 38 beds in the eye sections and 60 beds for kidney and urinary tract diseases. Combined, these beds account for about 5% of total beds in government hospitals in Palestine. The percentage of referrals for diseases related to these sections accounted for 23% of total referrals outside government hospitals.

On the other hand, oncology/cancer, hematology, neurology, neurosurgery and brain surgery are among the main diseases that are largely referred outside Palestine (especially to Israeli hospitals). Table 3-8 highlights the low number of beds at sections dealing with these diseases at Palestinian hospitals (both West Bank and Gaza Strip). The total number of oncology beds (internal) at local hospitals was 114 (out of which 81 are in government hospitals), while the number of chemotherapy beds was 121 (out of which 96 are in government hospitals). The total number of oncology beds (internal) accounts for 1.47% of total hospital beds in Palestine. The number of beds for hematology was 49 (out of which 28 beds were in government hospitals), accounting for 0.63% of total beds at local hospitals. There were 35 neurology and neurosurgery beds (22 of them in government hospitals), accounting for 0.5% of the total beds at local hospitals. It can be inferred that the rise in the purchase of health services related to these diseases is accompanied by a low number of allocated beds at local hospitals in general, and government hospitals in particular.

Table 3-7: Number of Beds at Government Hospitals Classified by the Top Ten Diseases in Terms of Purchasing Services Outside MoH Hospitals (2018)

Disease		Percentage of total referrals (%)	Number of beds in government hospitals			Percentage of beds of the total number of beds in government hospitals		
			Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors (Oncology)	Tumors (internal)	23.5	81	22	59	1.80%	1.01%	2.54%
	Chemotherapy		96	59	37	2.13%	2.71%	1.59%
Kidney and urinary tract diseases	Kidney diseases (internal)	8.9	30	1	29	0.67%	0.05%	1.25%
	Urinary tract surgery		30	30	0	0.67%	1.38%	0.00%
	Dialysis		291	173	118	6.47%	7.96%	5.07%
Cardiac diseases	Cardiac diseases (internal)	8.6	65	21	44	1.44%	0.97%	1.89%
	Cardiothoracic Surgery		47	28	19	1.04%	1.29%	0.82%
Blood diseases (Hematology)	Blood diseases	6.7	28	11	17	0.62%	0.51%	0.73%
	Thalassemia		79	37	42	1.76%	1.70%	1.81%
General surgery		6.4	216	135	81	4.80%	6.21%	3.48%
Pediatrics	Pediatric diseases	6.2	254	212	42	5.64%	9.75%	1.81%
	Pediatric cardiac surgery		8	8	0	0.18%	0.37%	0.00%
	Pediatric surgery		52	9	43	1.16%	0.41%	1.85%
Eye diseases		5.8	38	2	36	0.84%	0.09%	1.55%
Catheters		4.4	21	8	13	0.47%	0.37%	0.56%
Orthopedics Surgery		3.8	168	103	65	3.73%	4.74%	2.79%
Neurology and neurosurgery	Neurology diseases (internal)	3.1	0	0	0	0.00%	0.00%	0.00%
	Neurosurgery		22	8	14	0.49%	0.37%	0.60%
	Total	77.4	1526	867	659	33.91%	39.88%	28.33%
Total Beds in government hospitals						4500	2174	2326

Data source: Survey Questionnaire, Ministry of Health

Table 3-8: Number of Beds at Palestinian Hospitals Classified by the Top 10 Diseases in Terms of Purchasing Services outside MoH Hospitals (2018)

Disease		Number of beds			Percentage of beds of the total number of beds in local Palestinian hospitals		
		Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors (Oncology)	Tumors (internal)	114	36	78	1.47%	0.79%	2.45%
	Chemotherapy	121	74	47	1.56%	1.62%	1.48%
Kidney and urinary tract diseases	Kidney diseases (internal)	36	3	33	0.46%	0.07%	1.04%
	Urinary tract surgery	53	35	18	0.68%	0.77%	0.57%
	Dialysis	347	225	122	4.47%	4.92%	3.83%
Cardiac diseases	Cardiac diseases (internal)	133	75	58	1.71%	1.64%	1.82%
	Cardiothoracic Surgery	83	62	21	1.07%	1.36%	0.66%
Blood diseases (Hematology)	Blood diseases	49	29	20	0.63%	0.63%	0.63%
	Thalassemia	79	37	42	1.02%	0.81%	1.32%
General surgery		411	262	149	5.30%	5.73%	4.68%
Pediatrics	Pediatric diseases	464	422	42	5.98%	9.23%	1.32%
	Pediatric cardiac surgery	10	10	0	0.13%	0.22%	0.00%
	Pediatric surgery	78	23	55	1.01%	0.50%	1.73%
Eye diseases		92	46	46	1.19%	1.01%	1.44%
Catheters		76	21	55	0.98%	0.46%	1.73%
Orthopedics Surgery		232	138	94	2.99%	3.02%	2.95%
Neurology and neurosurgery	Neurology diseases (internal)	3	1	2	0.04%	0.02%	0.06%
	Neurosurgery	32	16	16	0.41%	0.35%	0.50%
	Total	2413	1515	898	31.10%	33.12%	28.20%
		Total of beds in local hospitals			7758	4574	3184

Data source: Survey Questionnaire

In addition to analyzing the distribution of beds, this report discusses the distribution of hospitals by sections that are related to the top ten referred diseases, in terms of purchasing. Table 3-9 shows that 8 Palestinian hospitals have specialized oncology sections and about 13 hospitals have sections specializing in hematology. For government hospitals, there are only 4 hospitals with eye sections and 10 hospitals with cardiology sections. See the distribution of sections at government hospitals in Table 3-10.

Table 3-9: Number of Palestinian Hospitals with Sections Related to Top Ten Diseases in Terms of Purchasing Services outside MoH Hospitals (2018)

Disease		Number of hospitals with specialized sections			Percentage of total hospitals		
		Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors (Oncology)	Tumors (internal)	8	5	3	10.13%	10.42%	9.68%
	Chemotherapy	11	8	3	13.92%	16.67%	9.68%
Kidney and urinary tract diseases	Kidney diseases (internal)	15	9	6	18.99%	18.75%	19.35%
	Urinary tract surgery	41	29	12	51.90%	60.42%	38.71%
	Dialysis	21	15	6	26.58%	31.25%	19.35%
Cardiac diseases	Cardiac diseases (internal)	23	15	8	29.11%	31.25%	25.81%
	Cardiothoracic Surgery	15	10	5	18.99%	20.83%	16.13%
Blood diseases (Hematology)	Blood diseases	13	11	2	16.46%	22.92%	6.45%
	Thalassemia	9	6	3	11.39%	12.50%	9.68%
General surgery		51	32	19	64.56%	66.67%	61.29%
Pediatrics	Pediatric diseases	22	20	2	27.85%	41.67%	6.45%
	Pediatric cardiac surgery	4	3	1	5.06%	6.25%	3.23%
	Pediatric surgery	29	20	9	36.71%	41.67%	29.03%
Eye diseases		17	9	8	21.52%	18.75%	25.81%
Catheters		20	12	8	25.32%	25.00%	25.81%
Orthopedics Surgery		44	29	15	55.70%	60.42%	48.39%
Neurology and neurosurgery	Neurology diseases (internal)	11	7	4	13.92%	14.58%	12.90%
	Neurosurgery	24	16	8	30.38%	33.33%	25.81%
				Total of hospitals	79	48	31

Data source: Survey Questionnaire.

Table 3-10: Number of Public Hospitals with Sections related to the Top 10 Diseases in terms of Purchasing Services outside MoH Hospitals (2018)

Disease		Number of hospitals with specialized divisions			Rate out of total of hospitals		
		Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors	Tumors (abdomen)	4	2	2	13.33%	14.29%	12.50%
	Chemical treatment	6	4	2	20.00%	28.57%	12.50%
Kidney and urology diseases	Kidney diseases	6	2	4	20.00%	14.29%	25.00%
	Urology	16	11	5	53.33%	78.57%	31.25%
	Dialysis	15	10	5	50.00%	71.43%	31.25%
Heart Diseases	Heart diseases	7	2	5	23.33%	14.29%	31.25%
	Heart & chest surgery	3	1	2	10.00%	7.14%	12.50%
Blood diseases	Blood diseases	5	4	1	16.67%	28.57%	6.25%

Disease		Number of hospitals with specialized divisions			Rate out of total of hospitals		
		Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
	Thalassemia	9	6	3	30.00%	42.86%	18.75%
General Surgery		18	10	8	60.00%	71.43%	50.00%
Children Diseases	Children diseases	10	8	2	33.33%	57.14%	12.50%
	Children heart surgery	1	1	0	3.33%	7.14%	0.00%
	Children surgery	7	3	4	23.33%	21.43%	25.00%
Eyes diseases		4	2	2	13.33%	14.29%	12.50%
Cardiac catheterization		3	1	2	10.00%	7.14%	12.50%
Orthopedic Surgery		18	11	7	60.00%	78.57%	43.75%
Neurosurgery	Neurological diseases	5	2	3	16.67%	14.29%	18.75%
	Neurosurgery	7	3	4	23.33%	21.43%	25.00%
Total of hospitals					30	14	16

Data Source: Survey Questionnaire.

3-3 Human Resources

This section aims to analyze human resources (HR) in the health sector in Palestine, according to medical specializations. The results of the analysis will help to assess the sufficiency of specializations, especially for diseases that are most-referred for treatment outside Palestinian hospitals. The first part of the analysis includes the distribution of these medical resources based on data gathered between 2014 and 2016 and published by the Palestinian National Institute of Public Health. The data includes information about the health cadre in the public sector; the majority (more than 90%) of military health personnel; UNRWA health centers; and non-governmental hospitals. The second part includes a description of human resources based on primary data gathered using the survey questionnaire.

3-3-1 Human Resources according to Data from the Palestinian National Institute of Public Health

The report issued by the Palestinian National Institute of Public Health indicates that the number of employees in the Palestinian health sector is 36,809. More than half of them (56%) work in the West Bank. Table 3-11 shows the distribution of personnel according to key professions, indicating that the ratio of doctors to the total number of employees in this sector is 14% (equivalent to 21% if excluding administrative staff). The nurses' ratio is 23%, as opposed to 3% for midwives and 17% for workers in allied health professions. Pharmacists make up 7%, while the remaining personnel are administrative staff.

WHO has devised reccomendations on the adequacy of HR numbers in the health sector in Palestine: WHO suggests that the minimum number of doctors shall be one doctor per one-thousand citizens; and the minimum number of nurses and midwives shall be 3 nurses/midwives per one-thousand citizens. The ratio of doctors in Palestine is 1.1 per one-thousand citizens; while the number of nurses and midwives 1.95 per one-thousand citizens. Analysis at the national level hides differences between the West Bank and Gaza Strip. The data show lower ratios in the West Bank, such that the number of doctors per one-thousand citizens in the West Bank is 0.98 compared to 1.3 in the Gaza Strip. Also, the number of nurses and midwives is 1.98 in the West Bank versus 2.03 in Gaza Strip. Thus, it is recommended that

there be an increase in the number of doctors in the West Bank specifically; and an increase in the number of nurses and midwives country-wide.

Table 3-11: Distribution of Personnel in the Palestinian Health Sector (2016)

Health sector personnel	Number	West Bank %	Gaza Strip %
Doctors	5,297	53%	47%
Nurses	8,286	58%	42%
Midwives	1,024	62%	38%
Dentists	1,1,547	72%	28%
Pharmacists	2,263	60%	40%
Other (allied) health professions	6,131	55%	45%
Administrative staff	12,061	52%	48%
Total	36,809	56%	44%

Data Source: Palestinian National Institute for Public Health

To demonstrate the abundance or lack of medical specialties, we compare the number of doctors per 100,000 citizens in Palestine with other countries. In order to ensure proper comparison, we limit comparisons to countries sharing the same goal as Palestine - to achieve "Universal Health Coverage". The selected countries are Greece, Italy and Turkey. Table 3-12 indicates that - in comparison to these countries - the number of doctors in Palestine across all specialties is lower for all listed medical professions, except for gastroenterology, cancer and orthopedics, in which the number of doctors per 100,000 citizens is slightly higher than Turkey. The documented shortage of medical specialties negatively impacts the ability to treat many life-threatening diseases locally, leading to an increase in referrals for treatment at hospitals outside the Palestinian healthcare sector.

Table 3-12: Number of Doctors in Different Specialties per 100,000 Citizens in Palestine, Greece, Italy and Turkey (2016) [7]

Medical Specialty	Greece	Italy	Turkey	Palestine
Children	38	29	9	6.0
Blood diseases	6	6	0.5	0.5
Gynecology and Obstetrics	32	20	9	8.0
Psychiatry	23	17	5	0.3
Abdomen	26	41	16	3.0
Heart disease	35	22	5	2.9
Gastrointestinal diseases	9	6	1	1.3
Respiratory system diseases	17	6	3	0.8
Cancer	3	7	0.6	0.7
Nerves	10	11	4	1.4
General surgery	29	17	8	5.4
Eyes	23	12	5	2.7
Vascular surgery	3	3		1.0

[7] Note that the specialties referred to in Table 12.3 cover comparisons with other countries: Greece, Italy and Turkey.

Medical Specialty	Greece	Italy	Turkey	Palestine
Urologist	17	13	5	3.0
Nose, ear, and throat	15	8	5	3.7
Orthopedic	27	15	5	5.4
Chest surgery	4	2	3	0.4
Neurosurgery	4	1	3	1.5
Plastic surgery	4	5	2	0.7
Extensive care & Anesthesia	21	22	8	7.1
Pathology	32	3	3	0.4
Radiology	31	4	8	2.9
Dermatology	13	8	3	1.0
Emergency	3	9	3	0.4
Dermatology	13	8	3	2

Data Source: Survey Questionnaire.

3-3-2 Doctors at Palestinian Hospitals

The total number of doctors working in Palestinian hospitals in 2018 was 5,536, of which 52.3% work in public hospitals. Most (97%) are full-time doctors at public hospitals; while 30% work at civil-society (non-profit) hospitals and the rest work in private hospitals. Unlike public hospitals, the number of doctors working in non-profit and private hospitals is high, particularly those working by partial/percentage contracts, when compared to public hospitals (see Annexes, Tables 1-3).

At a regional level, results indicate that the distribution of doctors across the two regions is similar. The number of doctors working on a full-time basis is about 78% of the total number of doctors in the West Bank, and 74% in the Gaza Strip. This rate drops significantly in private hospitals in the Gaza Strip (see Annexes, Tables 1-3).

Table 3-13 displays the numbers of doctors according to the most popular medical specialties, covering 66% of the total number of medical staff. The data shows that resident doctors have the highest rate at 26%. Next are gynecologists and obstetricians (7%), then pediatricians (6%) and anesthetists (5%). The list also includes the specialties of ENT (ear, nose and throat), bones, and general surgery. Resident doctors in process of specialization (first, second and fourth years) are 11% of the total number of doctors. This classification does not differ in relation to regions (West Bank or Gaza Strip). [8]

When reviewing the number of doctors at public hospitals who practice medical specialties that are typically referred to external hospitals, we find that their number is low in relation to the total number of doctors, as stated in tables 3-14 and 3-15. As for medical staff treating these diseases at public hospitals, results show that their number is low, in relation to the total number of doctors at public hospitals. For example, the number of cardiologists in public hospitals in Palestine is 52, with 54 ophthalmologists and 85 kidney/urologists. Combined, they represent 6.8% of the total number of doctors at public hospitals. Table 3-14 shows that the total number of doctors with these specialties in the Gaza Strip is double that of the West Bank. This indicates that there is a shortage in medical staff at public hospitals in the West Bank, with respect to these specialties.

[8] It is important to note that medical staff numbers obtained in the survey do not reflect total numbers, as many staff work at more than one hospital, causing double-counting.

Table 3-13: The Most Common Medical Specialties in terms of the Number of Doctors at Local Hospitals (2018)

Specialty	Number of doctors	Percentage of total
Resident doctor	1350	25.30%
Gynecologist & obstetrician	382	7.16%
Pediatrician	287	5.38%
Anesthetist	273	5.12%
Orthopedist	260	4.87%
Surgeon General	257	4.82%
Resident doctor (4th year)	209	3.92%
Resident doctor (1st year)	194	3.64%
Resident doctor (2nd year)	177	3.32%
Ear, nose, throat specialist	175	3.28%
Total	3564	66.79%

Data Source: Survey Questionnaire.

Table 3-15 shows a decrease in the number of doctors working at local hospitals (governmental and non-governmental) who specialize in diseases with the most referrals to non-Palestinian hospitals (both governmental and non-governmental). The number of oncologists in Palestine has reached 34, while the number of hematologists is 23, and the number of neurologists and neurosurgeons is 140. These constitute 4% of the total number of doctors at local hospitals.[9] On the other hand, the number of doctors specializing in other diseases is higher: such as pediatricians (7% of the total), general surgery (5%) and orthopedic surgery (5%). The high referral rate for these diseases may be due to the low number of doctors with subspecialties in these areas. For example, the majority of doctors with subspecialties in pediatricians (children's rheumatism, blood and genetic diseases) are in the West Bank.

Table 3-14`: Number of Doctors at Public Hospitals by Top 10 Diseases in terms of Purchasing Services outside MoH Hospitals (2018)

Disease	Number of doctors			Percentage of doctors from total of public doctors		
	Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors	12	7	5	0.43%	0.68%	0.28%
Kidney and urinary	85	37	48	3.04%	3.60%	2.72%
Heart Diseases	52	18	34	1.86%	1.75%	1.93%
Blood diseases	10	6	4	0.36%	0.58%	0.23%
General Surgery	124	48	76	4.44%	4.67%	4.31%
Children diseases	204	63	141	7.30%	6.13%	7.99%
Eyes diseases	54	6	48	1.93%	0.58%	2.72%
Cardiac catheterization	8	6	2	0.29%	0.58%	0.11%
Orthopedic Surgery	127	44	83	4.55%	4.28%	4.70%
Neurosurgery	60	25	35	2.15%	2.43%	1.98%
Total	736	260	476	26.35%	25.29%	26.97%

Data Source: Survey Questionnaire

[9] It is important to note that the number of doctors according to specialties is inflated in the data provided by the National Institute for Public Health, as many doctor work in more than one hospital.

Table 3-15: Number of Doctors at Local Hospitals by Top 10 Diseases in terms of Purchasing Services outside MoH Hospitals (2018)

Disease	Number of doctors			Percentage of doctors from total of public doctors		
	Palestine	West Bank	Gaza Strip	Palestine	West Bank	Gaza Strip
Tumors	34	24	10	0.64%	0.86%	0.39%
Kidney and urinary	194	110	84	3.64%	3.96%	3.29%
Heart Diseases	138	68	70	2.59%	2.45%	2.74%
Blood diseases	23	16	7	0.43%	0.58%	0.27%
General Surgery	257	133	124	4.82%	4.79%	4.85%
Children diseases	382	191	191	7.16%	6.87%	7.47%
Eyes diseases	127	51	76	2.38%	1.84%	2.97%
Cardiac catheterization	34	26	8	0.64%	0.94%	0.31%
Orthopedic Surgery	260	139	121	4.87%	5.00%	4.73%
Neurosurgery	140	79	61	2.62%	2.84%	2.39%
Total	1589	837	752	29.78%	30.12%	29.41%
Total of public doctors				5336	2779	2557

Data Source: Survey Questionnaire

3-3-3 Nursing Staff at Palestinian Hospitals

Tables 3-16 to 3-18 document the total number of nurses working at Palestinian hospitals, West Bank hospitals, and Gaza Strip hospitals respectively. Results show that the nurses with a diploma certificate (two years), bachelor's degree or above are 84% of the total number in Palestine; and most are full-time workers. Around 63% of nursing staff work at West Bank hospitals. Table 3-18 indicates that West Bank hospitals account for 62% of nurses with a bachelor's degrees; 65% of nurses with a diploma certificate (two years); and 40% of nurses with a diploma of three years. About 97% of nursing assistants work at West Bank hospitals.

Table 3-16: Number of Nursing Staff at Private, Non-Profit and Public Hospitals in Palestine (2018)

Nursing Staff	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	Part time	Rate	Full time	Part time	Rate
Bachelor of nursing & above	1250	124	8	2417	17	31	569	70	65
Diploma of nursing (3 years)	64	20	0	92	0	0	46	3	0
Diploma of nursing (2 years)	414	40	2	1199	2	10	446	13	89
Nurse Assistant	84	0	0	46	0	0	40	0	0
Midwife (Bachelor)	153	19	1	290	12	6	59	7	9
Midwife – Diploma (3 years)	11	0	0	17	0	0	9	4	0
Midwife – Diploma (2 years)	52	7	2	122	0	0	92	2	7
Midwife	1	0	0	0	0	0	1	0	0
Other				0	3	0	0	0	0
Total	2029	210	13	4183	34	47	1262	99	170

Data Source: Survey Questionnaire

Table 3-17: Number of Nursing Staff at Private, Non-Profit and Public Hospitals in West Bank (2018)

Nursing Staff	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	P2Wart time	Rate	Full time	Part time	Rate
Bachelor of nursing & above	1134	21	3	982	11	5	552	35	65
Diploma of nursing (3 years)	28	0	0	14	0	0	46	3	0
Diploma of nursing (2 years)	374	0	1	511	0	0	443	13	89
Nurse Assistant	80	0	0	46	0	0	40	0	0
Midwife (Bachelor)	137	3	1	155	12	6	59	2`1	9
Midwife – Diploma (3 years)	2	0	0	10	0	0	9	4	0
Midwife – Diploma (2 years)	43	0	2	19	0	0	92	2	7
Midwife	1	0	0	0	0	0	1	0	0
Other					3				
Total	1799	24	7	1737	26	11	1242	59	170

Data Source: Survey Questionnaire

Table 18.3: Number of Nursing Staff at Private, Non-Profit and Public Hospitals in Gaza Strip (2018)

Nursing Staff	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	Part time	Rate	Full time	Part time	Rate
Bachelor of nursing & above	116	103	5	1435	6	26	17	35	0
Diploma of nursing (3 years)	36	20	0	78	0	0	0	0	0
Diploma of nursing (2 years)	40	40	1	688	2	10	3	0	0
Nurse Assistant	4	0	0	0	0	0	0	0	0
Midwife (Bachelor)	16	16	0	135	0	0	0	5	0
Midwife – Diploma (3 years)	9	0	0	7	0	0	0	0	0
Midwife – Diploma (2 years)	9	7	0	103	0	0	0	0	0
Midwife	0	0	0	0	0	0	0	0	0
Other									
Total	230	186	6	2446	8	36	20	40	0

Data Source: Survey Questionnaire

3-3-4 Assistant Medical Services

Tables 3-19 to 3-21 illustrate assistant medical services employees at hospitals. Lab technicians are 28% of the total, x-ray technicians 17%, anesthesia technicians 13% and pharmacists 13%. They are the main suppliers of assistant medical services to local hospitals. Table 3-20 shows the distribution of nurses by their specializations in West Bank and Gaza Strip hospitals: 95% of the total number of nutrition counselors work at West Bank hospitals (the majority at private hospitals), as do 78% of psychological counselors and 93% of audiologists (with a bachelor's degree). However, 68% of x-ray technician assistants (with bachelor's degree) work at Gaza Strip hospitals (the majority in public hospitals). Similarly, 67% of optometrists (with bachelor's degree) and physiotherapists (with diploma) work at hospitals in the Gaza Strip (public and private).

Table 3-19: Number of Assistant Medical Service-Providers at Private, Non-Profit and Public Hospitals in Palestine (2018)

Assistant Medical Services	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	Part time	Rate	Full time	Part time	Rate
Lab technician (Bachelor & above)	168	30	2	487	11	4	90	7	0
Lab technician assistant (diploma)	13	1	0	65	0	0	12	0	0
Pharmacist	76	11	2	208	5	6	47	4	0
Pharmacist assistant	24	0	0	78	1	0	6	0	0
Anesthesia assistant	54	15	5	232	6	0	40	13	2
Physiotherapist (Bachelor)	52	12	3	76	0	1	15	5	0
Physiotherapy technician (diploma)	9	0	0	44	0	0	0	1	0
Rehabilitation specialist (Bachelor)	4	0	0	0	0	0	1	0	0
Rehabilitation technician (diploma)	1	0	0	0	0	0	0	0	0
Audiologist (Bachelor)	11	1	1	1	0	0	1	0	0
Audiology technician (diploma)	7	2	0	4	0	0	0	0	0
Ophthalmologist (Bachelor)	10	2	1	28	0	0	3	1	0
optical technician (diploma)	2	0	0	0	0	0	1	0	0
Ray technician (Bachelor)	86	24	4	305	8	3	52	13	2
Ray technician assistant (diploma)	8	2	0	79	0	0	2	1	0
Planning technician (ECG, EMG, EEG)	15	3	0	8	1	0	2	1	1
Dental technician	2	2	0	0	0	0	0	1	0
Psychologist	26	0	1	5	0	0	0	0	0
Nutrition guide	17	3	2	6	0	0	10	0	0
Other	75	11	0	73	1	2	6	3	0
Total	660	119	21	1699	33	16	288	50	5

Data Source: Survey Questionnaire

Table 3-20: Number of Assistant Medical Service-Providers at Private, Non-Profit and Public Hospitals in the West Bank (2018)

Assistant Medical Services	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	Part time	Rate	Full time	Part time	Rate
Lab technician (Bachelor & above)	130	5	0	230	3	4	88	2	0
Lab technician assistant (diploma)	7	0	0	19	0	0	12	0	0
Pharmacist	55	2	0	69	1	0	45	1	0
Pharmacist assistant	9	0	0	32	1	0	6	0	0
Anesthesia assistant	40	0	2	102	1	0	36	9	2
Physiotherapist (Bachelor)	47	3	2	29	0	1	15	3	0
Physiotherapy technician (diploma)	8	0	0	9	0	0	0	1	0
Rehabilitation specialist (Bachelor)	3	0	0	0	0	0	1	0	0
Rehabilitation technician (diploma)	1	0	0	0	0	0	0	0	0
Audiologist (Bachelor)	11	1	1	0	0	0	1	0	0
Audiology technician (diploma)	7	0	0	0	0	0	0	0	0
Ophthalmologist (Bachelor)	7	0	1	3	0	0	3	1	0
optical technician (diploma)	2	0	0	0	0	0	1	0	0
Ray technician (Bachelor)	73	3	2	142	0	2	52	1	2
Ray technician assistant (diploma)	6	0	0	21	0	0	2	0	0
Planning technician (ECG, EMG, EEG)	13	1	0	2	1	0	2	0	1
Dental technician	1	0	0	0	0	0	0	0	0
Psychologist	20	0	1	4	0	0	0	0	0
Nutrition guide	16	3	1	6	0	0	10	0	0
Other	75	9	0	10	0	2	6	0	0
Total	531	27	10	678	7	9	280	18	5

Data Source: Survey Questionnaire

Table 3-21: Number of Assistant Medical Service-Providers at Private, Non-Profit and Public Hospitals in the Gaza Strip (2018)

Assistant Medical Services	Non-Profit			Public			Private		
	Full time	Part time	Rate	Full time	Part time	Rate	Full time	Part time	Rate
Lab technician (Bachelor & above)	38	25	2	257	8	0	2	5	0
Lab technician assistant (diploma)	6	1	0	46	0	0	0	0	0
Pharmacist	21	9	2	139	4	6	2	3	0
Pharmacist assistant	15	0	0	46	0	0	0	0	0
Anesthesia assistant	14	15	3	130	5	0	4	4	0
Physiotherapist (Bachelor)	5	9	1	47	0	0	0	2	0
Physiotherapy technician (diploma)	1	0	0	35	0	0	0	0	0
Rehabilitation specialist (Bachelor)	1	0	0	0	0	0	0	0	0
Rehabilitation technician (diploma)	0	0	0	0	0	0	0	0	0
Audiologist (Bachelor)	0	0	0	1	0	0	0	0	0
Audiology technician (diploma)	0	2	0	4	0	0	0	0	0
Ophthalmologist (Bachelor)	3	2	0	25	0	0	0	0	0
optical technician (diploma)	0	0	0	0	0	0	0	0	0
Ray technician (Bachelor)	13	21	2	163	8	1	0	12	0
Ray technician assistant (diploma)	2	2	0	58	0	0	0	1	0
Planning technician (ECG, EMG, EEG)	2	2	0	6	0	0	0	1	0
Dental technician	1	2	0	0	0	0	0	1	0
Psychologist	6	0	0	1	0	0	0	0	0
Nutrition guide	1	0	1	0	0	0	0	0	0
Other	0	2	0	63	1	0	0	3	0
Total	129	92	11	1021	26	7	8	32	0

Data Source: Survey Questionnaire

3-3-5 X-Ray Services

Table 3-22 shows the number of local hospitals with different types of X-ray services. This table also shows that 89% of hospitals in Palestine have X-ray devices (88% in West Bank vs. 94% in Gaza Strip). 87% of these hospitals have ultrasound devices (81% of West Bank hospitals, 97% of Gaza Strip hospitals). Less than half of all hospitals (49%) have CT SCAN devices, while the number of hospitals with MRI devices is significantly less, at about 19% (15 hospitals in Palestine, mostly in the West Bank). 14 hospitals in Palestine have more developed radiology services such as interventional radiology, used to treat many diseases without the need for surgery.

There are a few hospitals that possess other radiology services such as PET/CT SCAN, a nuclear medicine technique that combines CT SCAN and PET to discover dangerous diseases such as heart/brain diseases and cancer. Only three hospitals possess this technique (all private hospitals in the West Bank). Three hospitals (two public hospitals in the West Bank and a private hospital in Gaza) possess the fluoroscopy technique used to discover gastrointestinal cancer. There are five hospitals (four in Gaza) that have a mammogram device for discovering breast cancer.

3-3-6 Assistant Medical Services

Table 3-22 shows that most (large- and medium-sized) hospitals have a medical lab, a pharmacy, a drugstore and a sterilization room. Half of all hospitals have blood banks (52% of hospitals in West Bank and Gaza Strip. These are typically small blood banks that depend on a central blood bank, or blood banks at big hospitals. The table also indicates that there is a low number of hospitals with certain specialized labs: genetic labs (only 5 hospitals), EEG (only 16 hospitals) and urination examination labs (only 4 hospitals).

Table 3-22: Number of Hospitals by Type of Radiology Service and Assistant Medical Services (2018)

Service	Palestine			West Bank			Gaza Strip		
	Non-Profit	Public	Private	Non-Profit	Public	Private	Non-Profit	Public	Private
Radiology Services									
X-Ray	26	28	17	15	13	14	11	15	3
Ultrasound	24	25	20	12	10	17	12	15	3
CT Scan	12	16	11	7	8	9	5	8	2
MRI	4	7	4	3	3	4	1	4	0
Interaction Ray	7	2	5	3	1	4	4	1	1
PET CT SCAN	2	0	1	2		1			
mobile x-ray	1	0	0	1					
Fluoroscopy	1	2	0		2		1		
MAMO GRAM	2	1	2			1	2	1	1
PANORAMA	2	0	1				2		1
OCT/FFA/VF/CCT	1	0	0				1		
MCUG/I.V.U/H.S.G	0	1	0		1				
Assistant Medical Services									
Blood bank	12	21	8	7	11	7	5	10	1
Medical Lab	26	28	18	15	14	16	11	14	2
Genetic lab	3	0	2	3	0	1	0	0	1
Brain and Nerve Lab	4	7	5	2	3	4	2	4	1
Urinary Lab	2	1	1	1	0	1	1	1	0
Pharmacy	28	29	18	16	14	16	12	15	2
Drugs store	22	26	15	12	12	13	10	14	2
Sterilization room	27	21	17	15	10	15	12	11	2
Psychometrics lab	0	1	0					1	

Data Source: Study Questionnaire

3-4 The Palestinian Pharmaceutical Sector's Ability to Meet Local Demand

This section assesses the ability of the Palestinian pharmaceuticals' sector to meet local demand for medicines. In order to achieve this, data on this sector and its market share is compared to the share of imported medicines, from Israel and other countries. This section examines the ability of the pharmaceuticals sector to provide medicines to the MoH. It also looks as

challenges facing this sector, associated with Israeli Occupation measures and the Paris Economic Protocol.

In terms of market size, total sales in the pharmaceuticals' sector in Palestine reached $160 million in 2018. Locally-produced medicines accounted for 53% of total sales; the rest from foreign/Israeli companies. This share has grown from 44% in 2013. The sector consists of six companies: Birzeit Pharmaceuticals Co., Dar Alshifa Co., Al Quds Pharmaceuticals Co., Beit Jala Pharmaceuticals Co., Al Quds Pharmaceuticals Co. and Sama Pharmaceuticals Co.

Birzeit Pharmaceuticals Co. and Al Quds Pharmaceuticals Co. are the main producers - they produce two-thirds of the market share of the local sector (see table 3-23). In terms of the share of items sold in the Palestinian market, local companies produced around 896 items in 2017, out of a total of 2,399 items registered as approved medicines with the MoH. As for medicines sold to the non-public (private) sector, the share of local companies is about 60%, followed by foreign (non-Israeli) companies (25%) and Israeli companies (15%). [10]

Table 3-23: Market Share Distribution according to Local Pharmaceutical Companies

Value of locally-produced medicines	Birzeit Co.	Al Quds Co.	Dar Alshefa Co.	Beit Jala Co.	Sama Co.	Total
$84,000,000	33%	31%	19%	11%	6%	100%

Data source: Abu Rjaileh, Muhannad (2019). *Developing Competitiveness and Increasing the Share of National Products: The Pharmaceuticals Industry*. (Ramallah: MAS).

The public sector's share of total sales of medicines in the Palestinian market is one-third. 38% of medicines purchased by the public sector are produced by local, Palestinian pharmaceutical companies. The rest is provided by foreign and Israeli companies. However, in terms of the volume of sales, Palestinian companies account for about 60% of sold units.[11] This difference is caused by the fact that local companies focus on the production of generic drugs that are not restricted by patents, typically with a low cost of production. These medicines, according to MoH registration records, cover gastrointestinal diseases, heart diseases, neurological diseases, muscle ailments, urinary diseases, respiratory diseases, as well as drugs for infection control, nutrition, nose, ear and throat, eyes, skin, endocrine and hormonal systems.

Local companies also have some production of biological drugs such as insulin and vaccines, as well as cancer drugs with high efficiency/potency solutions, intravenous drugs and drugs used in organ transplants. The production of these drugs is expensive requiring highly developed technology, which is an expensive investment (tens/hundreds of million US dollars) that exceeds the Palestinian industry's capabilities. Therefore, there is a need to look for external markets, in addition to the local markets. Local companies focus on developing generic drugs in a way that increases their efficiency and decreases their production costs. Competition between the local companies that produce similar drugs is usually high.

The pharmaceuticals' sector faces several obstacles as a result of restrictions by the Israeli Occupation or associated with the Paris Economic Protocol.[12] This agreement was conceived in order to create a unified customs code for the Palestinian and Israeli markets. This agreement

[10] Abu Rjaileh, Muhannad (2019). Developing Competitiveness and Increasing the Share of National Products: The Pharmaceuticals Industry. (Ramallah: MAS).

[11] Interview with CEO of the Palestinian Pharmaceuticals Industry Federation.

[12] The discussion of Israeli restrictions relies on a study issued in 2012 by the Israeli B'Tselem Center called "Captive Economy: the Pharmaceuticals Industry and the Israeli Occupation."

also governs the movement of goods between the two markets, including drugs. This agreement stipulates that drugs imported to the Palestinian market must meet Israeli qualification criteria to enter, and have to be registered with the Israeli Ministry of Health. The result is a lack of commercial connections with Arab markets; and the decreased importation of low-price drugs from China, India and Eastern Europe. Israeli authorities impose further restrictions on Palestinian pharmaceutical companies, requiring them to obtain an import license for each shipment of drugs, as well as preventing the import of materials of dual-use (that may be used for military purposes). There are also logistic obstacles such as seizure of imported shipments under security pretenses and then imposing this cost on the Palestinian importer. These restrictions are not applied to Israeli companies.

The unified customs cover has also led to an increase in the price of imported drugs. International pharmaceutical companies typically apply price discrimination policies, where countries are divided into price zones according to economic/social data in addition to information on the spread of diseases. High prices are usually imposed on rich countries, in comparison with poor countries. Israel is classified as a high-price country. Therefore, the customs cover puts the Palestinian market within the same price zone as Israel, despite a huge difference in income levels between them. Thus, the inflated price of imported drugs is inconsistent with economic reality.

In conclusion, the ability of the pharmaceuticals' sector to meet local demand for drugs is limited in scope to generic drugs. Imported generic drugs could boost competitiveness by improving quality and reducing price. However, for the short and medium term, MoH and the Palestinian market will continue to depend on imports to meet demand for drugs associated with diseases that are commonly referred to external hospitals, as their production requires huge investments that are difficult to make given current political instability.

Within the context of promoting the pharmaceutical sector's competitiveness and expanding its share, it is recommended that the Palestinian government restricts the entry of Israeli drugs to the Palestinian market, as a matter of reciprocity. Israel's policy of preventing the entry of Palestinian drugs to hospitals in East Jerusalem undermines fair competition with Israeli medicines that are sold on the Palestinian market. In this context, it is proposed that the Palestinian government impose non-tariff barriers so as to allow Palestinian companies to expand in the local market.

4. Health Sector Indicators in Palestine and Comparative Countries

This chapter sheds light on important health indicators in Palestine, providing an assessment of health conditions in Palestine through comparison with other countries' indicators. This includes indicators for life expectancy and death rates; as well as a number of indicators for health spending and healthcare coverage. It also includes important reproductive health indicators and dangers, looking at causes for such problems as the weight/height of children under age five.

Comparative countries were selected based on a number of standards, such as the availability of data, geographic location and the similarity of economic/institutional environments. These countries include Jordan, MENA, and low/middle-income countries (the group to which Palestine belongs).[13] Comparison is also made with OECD countries, representing countries with advanced healthcare.

4-1 Health Status: Life Expectancy and Death Rate

According to 2017 statistics, the population in Palestine reached 4.78 million people. Females are 49% of total (ratio of 103.6 males to every 100 females).[14] Almost 60.3% of the population lives in the West Bank, and the rest in the Gaza Strip. Statistics indicate that the majority of Palestinian society are young people: the 0-14 years age group forms 39% of the Palestinian population. Meanwhile, elders of age 65 years or more constitute only 3.2% of the population.

Table 4-1 shows many health indicators that are related to life expectancy and death rates in Palestine and comparable countries. Life expectancy is estimated at 73.65 years,[15] a similar rate to MENA countries (73.73) and a bit less than Jordan (74.48). It is also slightly higher than the global life expectancy average (72.23), although it is significantly lower (by about 6.65 years) than the OECD average. It is higher than the average for low/middle-income countries by 5.66 years.

Table 4-1: Life Expectancy Indicators (2017)

Country/indicators	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Life expectancy at birth (in years)	74.48	67.99	73.73	80.3	73.65	72.23

Data source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

4-2 Health Status: Spread of Disease and Deaths

Although it faces unstable political and economic circumstances, Palestine managed to make remarkable progress in the field of preventative healthcare. Necessary vaccines against contagious diseases such as measles and the DPT vaccine cover up to 100% of children. Palestine is considered one of the least countries that are exposed to the spread of contagious or deadly diseases such as cholera, malaria, tuberculosis and AIDS between its inhabitants.

[13] For low/middle-income countries, average national income per person ranges from USD 996-3,895, according to World Bank definitions for 2018-19.

[14] Source: Palestinian Central Bureau of Statistics (2018). Statistics of Population and Buildings in 2017: Summary of Final Statistical Results. Ramallah, Palestine.

[15] Average life expectancy indicates the number of years a newborn baby is expected to live, if the pattern of mortality continues at the same level for the rest of his/her life.

Table 4-2 shows the rate of reported contagious diseases to every 100,000 people in Palestine, according to the MoH's reports for 2018. [16] [17]

Table 4-2: Rates of Contagious Diseases in Palestine per 100,000 People (2018)

Contagious Diseases	Rate per 100,000 people
Infant paralysis and flaccid paralysis (AFP)	2.4
Measles	0
Pulmonary tuberculosis	0.93
Tetanus	0
Viral hepatitis A	15.7
Viral hepatitis B	0.68

Source: Annual Health Report 2018, Ministry of Health.

Concerning death rates, we can see from Table 4-3 that the death rate of infants/children less than 5 years reached 20.9 per 1,000 births in 2017. This is higher than the rate for Jordan, and markedly higher than the OECD average, although it is still less than the averages for both MENA countries and low/middle-income countries. Chronic respiratory diseases - especially pulmonary tuberculosis, diarrhea and infections - are the main causes of death for children under the age of five globally. Protection from these diseases and treatment can be secured only through an efficient healthcare system with services available for nutrition, water supply and infrastructural installations.

Table 4-3: Death Rates for 2017

Country/Indicator	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Death rate (per 1,000 births)	14.6	36.8	19.3	5.7	17.9	29.4
Death rate for < 5 years old (per 1,000 births)	17	48.5	23.1	6.68	20.9	39.1
Death caused by NCD (cardiovascular diseases, cancer, diabetes or respiratory diseases for people aged 30-70 years (%)	19.2%	23.21%	18.88%	12.43%	21%	18.77%

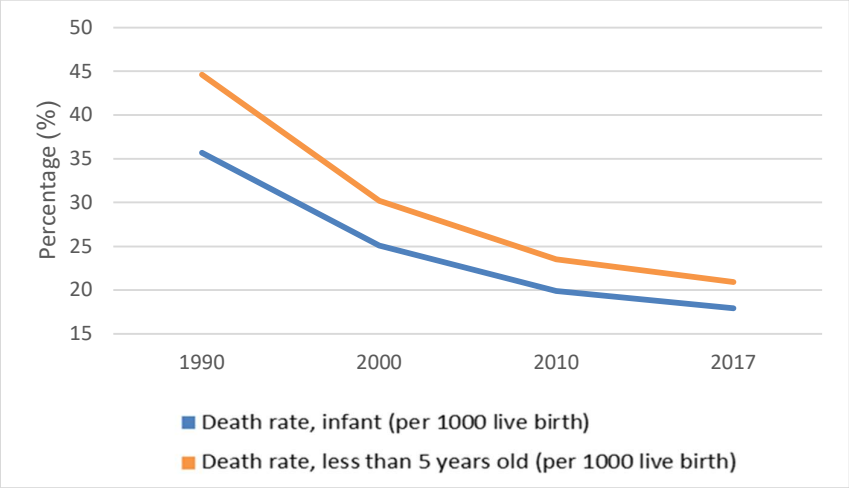
Source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

The data also shows that although there is an increase in the death rate when compared to Jordan and OECD countries, Palestine has made progress in decreasing this rate over the past years. Figure 4-1 shows the remarkable decrease in the death rate for infants and children under the age of 5 years, over the period 1990-2017. The two indicators stood at 35.1 per 1,000 births (infants) and 39 per 1,000 births (children) in 1990. This subsequent decrease was (partly) caused by full vaccination coverage. Palestine has succeeded in accomplishing the second part of the third Sustainable Development Goal of 2030, which is to decrease the death rate of newborn babies to less than 12 per 1,000 live births, and to decrease the death rate of children under 5 years old to 25 per 1,000 live births.

[16] Source: World Health Organization (2016). Palestine Health Profile 2015. World Health Organization Regional Office for Eastern Mediterranean.

[17] Source: Ministry of Health (2019). Health Annual Report. Palestine 2018. General Directorate of Health Policies and Planning, Palestinian Health Information Center (PHIC).

Figure 4-1: Death Rate of Infants/Children under 5 Years in Palestine (1990-2017)



Source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org/

Table 4-4 show the top diseases that cause death in Palestine. As 21% of Palestinian adults are expected to pass away before the age of 70. This percentage is very high when compared to OECD countries (12.4%) and with Middle Eastern countries (18.8%) and the world countries (18.7%).

Palestine's success in health care field seems to be increasing in controlling or preventing contagious diseases but it is still very limited in terms of preventing noncontagious diseases (chronic diseases) This spread is maybe due to unhealthy lifestyles such as high sugar diets, processed food ,smoking ,and minimum physical activity. In 2018, there were four main diseases, which caused 67.4% of deaths in Palestine. These diseases included heart diseases ranking first place and cancer in the second place (especially breast cancer and colon cancer), then we have brain strokes, and diabetes (see Table 4-4). The large number of deaths caused by these diseases require quick interventions to improve the lifestyle of the population and guide them into healthy life styles. [18]

Table 4-4: Death Rate of Non-Contagious (Chronic) Diseases in Palestine (2018)

Type of Chronic Disease	Death Rate in 2018 (%)
Heart diseases	31.5%
Cancer	15.4%
Strokes	13%
Diabetes	7.5%

Source: Health Annual Report, Palestine 2018. Ministry of Health.

4-3 Reproductive Health

Reproductive health refers to the health of a mother and her baby, during pregnancy and after birth. A number of indicators were designed to measure the quality of reproductive health. The

[18] Source: Ministry of Health (2019). Health Annual Report, Palestine 2018. General Directorate of Health Policies and Planning, Palestinian Health Information Center (PHIC).

indicators include the death rates of mothers and newborn babies; measurements of the prevalence of anemia for women of childbearing age (which can later adversely affect reproduction); and the spread of birth control for family planning.

Table 4-5 shows that, in 2015, the death rate of mothers in Palestine reached almost 15.7 deaths per 100,000 live births. This number is higher than the OECD average, but less than Jordan and Middle Eastern countries. It is also much lower than the rate in low/middle-income countries and across the world overall. There are many causes for the death of mothers, typified by critical health issues during pregnancy, during delivery, and maternal death within 42 days of giving birth. It is worth mentioning that the death rate for mothers in Palestine has decreased over the past few years, from 24% in 2013. This may be due to the further development of primary healthcare, helping to reduce maternal death rates through early diagnosis and timely medical support.

In 2016, women aged 15-49 years had received healthcare before birth at least once, administered by doctors or nurses/midwives.[19] The reason why this care is so inclusive is that reproductive health services are free; and health services for mothers/babies are offered through MoH primary healthcare centers. Table 4-5 also shows a decrease in the number of babies born with less than average weight in Palestine, reaching 5.7% of total births.[20] It is considered minimal when compared to other regions, especially advanced countries (8.06%) and Jordan (13%).

The percentage of women of childbearing age (between 15-49 years old) in Palestine who use birth control reached 78.5% in Palestine. This percentage is similar to other countries (see Table 4-5). Birth control enhances the health status of both mother and child, through stopping dangerous maternal deaths and enhancing the health and survival chances of newborns. Family planning helps to protect the mother's body from rapid, successive births, while providing supplements that are necessary for survival and growth. In addition, birth control (for family planning) leads to a balance between working populations (mothers) and supported children, increasing the child's chances of obtaining health, mental and financial care, for the sustainable development of society.[21]

The last indicator in Table 5-4 shows the percentage of women between 15-49 years who have a level of hemoglobin that is less than 120g/l for non-pregnant and breastfeeding women; and less than 110g/l for pregnant women. This percentage indicates that anemia is more common among women of childbearing age. Table 5-4 shows that this reached 29.4% in 2016 in Palestine, lower than Jordan (35%), MENA (34%) and low/middle-income countries (43%), but higher than the OECD average (17%). It is possible that in Palestine, when compared to other countries, this percentage is due to regular follow-up with/by pregnant women during their pregnancies, while delivering appropriate treatment for free at governmental healthcare centers.

[19] Source: World Health Organization, 2016. Palestine Health Profile 2015. World Health Organization Regional Office for Eastern Mediterranean.

[20] The percentage of live births who are under the weight of 2,500 grams out of total live births.

[21] Source: Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J (2006). Family planning: the unfinished agenda. Lancet, Nov 18 2006; 368 (9549), p. 1810-27.

Table 5-4: Reproductive Health Indicators in Palestine and Comparative Countries

Country/Indicator	Year	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Maternal death rate (per 100,000 live people)	2015	58.00	260.00	81.00	14.00	15.70	216.00
Death rate for newborns (per 1,000 live people)	2017	10.10	23.90	12.70	3.70	11.30	18.00
Use of birth control (% of women aged 15-49 years)	Jordan (2014), Palestine (2016), all others (2010)	83.8%	52.09%	57.84%	70.52%	78.5%	62.61%
Live births under the weight of 2,500 grams (% of total live births)	Jordan and Palestine (2016), all others (2010)	13.0%		13.06%	8.06%	5.70%	10.60%
Anemia for women of childbearing age (% of women aged 15-49 years)	2016	34.70%	43.10%	34.23%	17.39%	29.40%	32.80%

Source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

4-4 Healthcare Services: Coverage

This section presents two indicators that measure the coverage of health services in Palestine. Table 4-6 shows that all live births in Palestine are conducted under the supervision of skilled health personnel at health centers (doctors and midwives). This percentage is similar to the average in OECD countries (98.7%) and Jordan (99.6%). Meanwhile, it is higher than the MENA average (86%), the global average (80%) and low/middle-income countries (74.4%).

The number of inpatient beds for every 1,000 of the population is another indicator of health services' coverage. In Palestine, this ratio is one-third of the OECD average, and one-half the global average. The ratio is similar to MENA countries and higher than the average for low/middle-income countries.

Table 4-6: Coverage of Health Services in Palestine and Comparative Countries

Country/Indicator	Year	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Births under the supervision of skilled healthcare employees (% of total)	Palestine (2014), Jordan (2016), all others (2010)	99.60%	74.40%	85.99%	98.67%	100%	80.11%
Hospital inpatient beds (per 1,000 people)	Palestine (2016), all others (2011)	1.80	0.99	1.36	3.78	1.30	2.70

Source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

4-5 Factors influencing Future Health Risks

Table 4-7 shows a group of indicators that predict future health risks that threaten the lives of children. These indicators include the prevalence of overweight, stunting and underweight issues among children under five years. Table 4-7 shows that 5.3% of children in Palestine are overweight.[22] This percentage is comparable to that of Jordan and the global average, but it is lower than the MENA average, as well as Lebanon, Egypt and Libya.[23] Overweight problems

[22] The percentage of births conceived under the supervision of skilled health workers relative to the total number of live births over a time period.

[23] Source: World Health Organization. Regional Health Observatory Data Repository. Last accessed 11 July 2019.

in children are mainly caused by unhealthy diets that are rich with hydrogenated fats, sugars and processed foods. Concerning stunting prevalence and underweight issues, the rate in Palestine is lower than that of all comparable regions, especially in low/middle-income countries.

Table 4-7: Prevalence of Overweight, Underweight and Stunting Issues in Palestine and Comparative Countries (2016)

Country/Indicator	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Overweight compared to height (% of children under 5 years)[24]	4.4%	3.80%	10.80%		5.3%	5.60%
Stunting compared to age (% of children under 5 years)[25]	7.7%	32.20%	15.40%		7.4%	22.70%
Underweight compared to age (% of children under 5 years)[26]	2.4%	21.60%	5.40%		1.2%	13.80%

Data source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

4-6 Comparison of Health Expenditure in Palestine with Other Countries

This section assesses the performance of the Palestinian health sector in terms of health expenditure, which is generally related to healthcare coverage and quality. Table 4-8 shows several indicators of spending on the health sector for 2016, where the share of government health expenditure reached about 11% of total government expenditure in Palestine. This represents half of what is spent across OECD countries and the rest of the world. However, it is close to the ratio in Jordan, and it is double the percentage for low/middle-income countries.

The eighth article of the third goal of Sustainable Development Agenda 2030 stipulates the importance of universal health coverage for the entire population, including the provision of effective and quality healthcare services that protects against financial risks; and ensures that people do not experience financial problems when paying for health services. Health coverage can be measured through household expenditure (out-of-pocket), referring directly to households' expenditure on health services that they receive. Table 4-8 shows that household expenditure in Palestine constitutes more than one-third of total health expenditures. Except for low/middle-income countries, this percentage is higher than other countries, especially the OECD countries.

Table 4-8: Health Expenditure Indicators Compared to Other Countries (2016)

Country/Indicator	Jordan	Low & middle income countries	MENA	OECD	Palestine	World
Local government health expenditures (% of government expenditure)	11.96%	5.50%	-	24.52%	11.0%	21.01%
Household (out of pocket) expenditure (% of government expenditure)	27.98%	56.19%	30.08%	13.87%	37.7%	18.56%

Source: World Bank Open Data. Last accessed 14 July 2019. https://data.worldbank.org

[24] Weight to height is higher than +2 based on the WHO standards curve for children aged 0-59 months.
[25] Height to age is lower than +2 based on the WHO standards curve for children aged 0-59 months.
[26] Weight to age is lower than +2 based on the WHO standards curve for children aged 0-59 months.

It is clear from the health indicators shown above that Palestine has made remarkable progress over the past two decades in increasing the life expectancy of its population and reducing death rates. Palestine outperforms many comparative countries in high life expectancy and low death rates, especially when compared with low/middle-income countries (although it is still far behind when compared to OECD).

On the other hand, the ranking of Palestine has fallen in comparison with other countries in terms of some health expenditure indicators, such as the proportion of government health expenditure out of total government expenditure. This may indicate that the health sector is not given a priority over other sectors in obtaining adequate financial resources for its development and for the inclusiveness of its services, particularly in reaching the lowest-income households in Palestine with necessary healthcare services.

The results also demonstrate the high quality of reproductive health in Palestine relative to other countries. This can be seen by low maternal and newborn mortality rates, as well as by a low birth rate for underweight babies. They also show the common use of birth control and family planning in Palestine in a way that is comparable to developed countries. This reduces the burden of successive child deliveries, and the negative effects of this on the health of mothers and children. The review of health indicators in Palestine shows remarkable progress in terms of health services' coverage and its impact on decreasing death rates and increasing life expectancy for individuals. On the other hand, it is still lagging behind in reducing non-communicable diseases, such as heart diseases, cancer and diabetes, which cause the death of a large number of citizens.

5. Financial Impact Evaluation of the Health Sector focusing on Healthcare Expenditures and Financial Resource Challenges

5-1 Expenditure on Health Sector: MoH's Budget

The budget of the MoH for 2018 was about NIS 77.1 billion, which adds up to about 11% of the Palestinian Authority's budget. Salaries received the largest share at 48%; followed by medical referrals (obtaining treatment outside hospitals and medical centers run by the Ministry of Health) at 25%; medicines and consumables at 18%; and the rest distributed to other capital and operating expenses. As noted in the section on health sector expenditure, actual expenditure on medical referrals is more than double this proportion. The difference is most likely financed by direct deduction from clearing revenues, especially when it comes to referrals to Israeli hospitals or accumulated as part of arrears to the MoH for Palestinian hospitals.

Table 5-1 shows that, since 2015, total expenditure in previous budgets remained stable at the level of NIS 1.7 billion, despite an increased need to spend during those years (see further discussion below). The data also shows that the distribution of expenditure on budget items has not changed drastically, with salaries and wages maintaining the largest share.

As for revenues, the data in Table 5-1 shows wide differences compared to expenditures. Revenues amounted to about NIS 218 million, or 12% of total expenditure in 2018. Revenue levels made good progress compared to previous years, increasing from 5% of total expenditure in 2015. Primary healthcare revenues accounted for half of total revenues in 2018 - the largest share - followed by health insurance, government hospitals and administrative centers. When compared to previous years, revenues from primary healthcare and administrative services increased at the expense of health insurance and hospital revenues.

Arrears from previous years amounted to about NIS 840 million, mainly distributed across medical referrals, medicines and medical supplies, which altogether account for 91% of total arrears. The remainder is for capital and operating expenses. It is interesting to note that the amount of arrears has increased significantly from NIS 543 million in 2015: 2017 marked a turning point, as the amount of arrears increased to reach NIS 956 million.

Table 5-1: MoH Budget Items (2015-18)

	2015	2016	2017	2018
Expenses	1,745,621,000	1,711,900,000	1,726,773,000	1,767,295,225
Salaries	47 %	50 %	51 %	48 %
Treatment abroad (referrals)	34.20 %	27 %	25 %	25 %
Medicines and other medical products	15 %	16 %	18 %	18 %
Other financial and operative expenses	3.80 %	7 %	6 %	9 %
Revenues	94,260,282	121,316,838	144,790,729	218,624,185
Primary healthcare	45.20 %	46.20 %	41.50 %	50.30 %
Health insurance	29.70 %	27.60 %	33 %	26.60 %
Government hospitals	23.40 %	24.10 %	23.30 %	16.50 %
Administrative centers	1.70 %	2.10 %	1.90 %	6.60 %
Back payments	542,786,939	604,700,216	955,955,095	839,538,906
Referrals	44.70 %	55 %	54 %	56 %
Medicines and other medical products	46 %	41 %	45.50 %	40 %
Other financial and operative revenues	9.20 %	4 %	6 %	5 %

Source: General Budget Law, Ministry of Finance and Planning.

From the table above, the most important conclusion is that the MoH's budget has not been adapted to social changes such as population growth; the need to further develop the health sector without intervening in health services provided by MoH, especially primary care; and other goals of the National Health Strategy for 2017-22 that MoH has adopted in order to improve the coverage/quality of health services to citizens. To illustrate this conclusion, Table 5.2 outlines expenses on the operational and developmental needs of MoH, comparing these with expected financial ceilings in budgets for the same periods, as documented in the strategy. The data indicates a gap between total actual needs and special budgets allocated to them. This annual gap is expected to increase from about $347 million to $493 million in 2022, reaching $2.6 billion dollars during this period. Data also indicates that actual requirements are concentrated in operating expenditures, which account for 96% of total actual needs. Operating expenses are usually covered by direct government spending, while according to the national strategy document, capital expenditures are covered by financiers and development partners.

Table 5-2: Actual MoH Budget Needs and Allocations in USD 1,000 (2017-22)

Year	Actual operational needs	Actual capital needs	Total actual needs	Special budget (expected)	Financing gap
2017	2,013,071	173,994	2,187,065	1,839,753	347,312
2018	2,188,743	91,953	2,280,696	1,892,601	388,095
2019	2,306,512	85,181	2,391,693	1,977,559	414,134
2020	2,575,161	77,280	2,652,441	2,175,336	477,105
2021	2,671,582	75,180	2,746,762	2,256,549	490,213
2022	2,755,200	68,580	2,823,780	2,331,233	492,547
Total	14,510,269	572,168	15,082,437	12,473,031	2,609,406

Source: National Health Strategy 2017-2022

Financing gaps and arrears are both related to the decrease in MoH's revenues, bearing in mind the amount of expenditure and the high cost of medical referrals. The causes of cost increases will be discussed in Chapter 7. This section focuses on the challenges associated with lower revenues at MoH, and most importantly, lower health insurance revenues.

Government health insurance covers about 50% of individuals in the West Bank and 78% in the Gaza Strip, according to population census data issued by PCBS (see Table 5-3 that documents the distribution of health-insured individuals by place of work). Free government insurance practically cover all residents of the Gaza Strip since 2007, as the PA's President decided to exempt all residents of the Gaza Strip (42% of the Palestinian population) from government expenses [27] after Hamas' military takeover. This makes it even harder for the PA to finance health services. According to the report of the State Audit and Administrative Control Bureau,[28] Gaza's share of total expenditure on referrals reached about 23% in 2014.

The report of the State Audit and Administrative Control Bureau also indicates that there are a number of legal problems concerning insurance systems and conditions for benefiting from it, which contribute to reducing health insurance revenues. On top of these problems is the waiting period to benefit from insurance. For example, the State Audit and Administrative Control Bureau's report indicates that 80% of some insurance categories, including collective

[27] A presidential decree (issued 26 June 2007) states that all residents of southern counties are fully exempt from service costs offered by ministries, assemblies and institutions of the PA, starting at that date and including first-time services.

[28] See the second quarterly report on the administration and organizing of health insurance in Palestine, issued October 2016.

subscription, trade unions, zakat and PLO veterens benefit from insurance services as of Day 1 of the waiting period, although it is specified that such benefits should not be extended until Day 60, without consideration for an emergencies. This high rate indicates that government insurance is being exploited to benefit from expensive medical services, such as surgery and medical referrals. According to the report, revenues from this insurance category do not exceed 30% of their referral costs.

Table 5-3: Relative Distribution of Insurers according to Place of Work

Place of Work	Public sector (government)	UNRWA	Private sector	Public & UNRWA	Public & private	UNRWA & private	Israel	Other	Total	Number of insured
Palestine	40.21%	18.96%	2.18%	36.29%	0.28%	0.86%	0.83%	0.39%	100%	3,458,227
West Bank	55.25%	20.69%	4.1%	15.80%	0.51%	1.21%	1.71%	0.66%	100%	1,669,830
Gaza	26.17%	17.35%	0.33%	55.42%	0.06%	0.53%	0.00%	0.15%	100%	1,788,397

Source: Palestinian Central Bureau of Statistics.

MoH's revenue shortages and the decline in the share of insurance in total revenues led to in-depth discussions over the past few years on how to address this dilemma. Despite many initiatives and efforts, the situation has not improved. Reasons are many: the most important is the Israeli occupation and its grip over the Palestinian economy that is restraining its growth. Another reason may be the ineffectiveness of the measures taken by the government, especially the MoH, in increasing revenues. Other reasons include weak technical/human capacities in managing the sector efficiently; the nature of the Palestinian economy and irregular expansion of the sector; and tax evasion. We will discuss some of these issues later.

In order to identify plausible proposals to enhance insurance revenues, we will discuss some concepts on which health insurance is to be established. The functions of health insurance systems[29] can be divided as follows:

1. Generate income to spend on healthcare costs, which is usually derived from direct and indirect tax revenues, and direct deductions from insurers and household expenditure.
2. Manage health insurance revenues, which are methods to collect financial resources and transfer them to relevant authorities (Ministry of Health and healthcare service-providers).
3. Purchase medical services and manage health procurement procedures and policies with suppliers.

The principle of health insurance is to cover expenses associated with health services through prepayment; the accumulation of insurance deductions (contributions); and the diversification of risk by spreading insurance portfolios across different population groups. Insurance systems can generally be divided into mandatory and optional systems. Mandatory systems are supervised and managed by the public sector and financed through indirect tax revenues (without a specific tax for insurance) as in Canada, Sweden and the UK. It can also be financed by compulsory health insurance deductions as in Germany, France and Thailand, or through the private sector as in the Netherlands. In contrast, voluntary insurance schemes are usually managed by the private sector, where enterprises insure their employees as part of their employment package.

[29] Theoretical framing of health insurance is based on a study made by USAID in 2014: Technical Brief on Rapid Assessment of Health Services Capacity in the West Bank.

The social health insurance system is considered to be one of the most popular insurance systems, commonly adopted in many developing countries, including Palestine. Its main features are:

1. It is enforced by the government.
2. Funding depends on tax deductions from salaries, and mandatory deductions from citizens who are not employed in the government sector.
3. It covers specific medical services.
4. It separates the powers of buyers and providers of health services.

The effectiveness and success of this system in financing health services – while enhancing inclusiveness - depends on the availability of a number of economic and social conditions: most importantly, a strong and sustainable economy to increase employment (decrease unemployment) and improve the incomes of individuals. This helps to ensure that a larger number of beneficiaries are able to pay for insurance, either through tax deductions from salaries or through insurance contributions.

The effectiveness of this system also depends on the extent to which the informal sector is expanding. The more the share of this sector increases, the less the ability of government to exercise control over tax evasion. This limits the government's ability to raise funds to cover the costs of health services provided through insurance. It also limits its ability to broaden the base of insurers who are committed to paying their contributions. The implementation of the social health system requires the availability of the necessary expertise and capacities to manage it, the most important of which is the management of policies on purchasing health services and controlling revenues; as well as the commitment of the insured to pay their dues through optimal insurance deductions (which enable it to cover the costs of healthcare without constituting a burden on subscribers). Health services provided through health insurance should be of high quality in order to motivate citizens to enroll in them, and commit them to paying insurance dues. This is in addition to community solidarity - and consensus on the significance and feasibility of the health insurance system - which may include the financing of health services provided to the less fortunate (the poor and the unemployed) at the expense of others.

Below, we will analyze the challenges facing the implementation of a health insurance system in Palestine.

Economic Growth Challenges: The growth of Palestinian GDP in 2015 (at constant prices between 1999 and 2018) amounted to about 4%. On a regional level, the growth rate in the West Bank reached 5% while in the Gaza Strip it reached 2%. The GDP growth rate is greater than the population growth rate in the West Bank, while it is less than the population growth rate in the Gaza strip. Real per capita GDP in the West Bank reached $188.4 compared to $431.1 in Gaza Strip. This indicator grew annually at a rate of 2% in the West Bank and decreased by 1% in Gaza Strip. Economic recession in the Gaza Strip is reflected in unemployment indicators and wages. According to PCBS's 2018 Labor Survey, the unemployment rate in Gaza reached 42% in 2018, compared to 17% in the West Bank. The average wage was NIS 61 per day in the Gaza Strip and NIS 100 per day in the West Bank (excluding workers in Israel). The wage gap expands even more when comparing wages in the private sector, reaching NIS 25 per day in Gaza Strip and NIS 90 in the West Bank. Economic recession in Gaza Strip is caused by Palestinian political divisions; the Israeli blockade since 2015; and rapid, successive wars over the past few years.

Apart from the impact of the Presidential Decree exempting the people of Gaza from paying government fees, including health insurance fees (even if it is reversed), it can be concluded that economic recession in Gaza, combined with the high level of unemployment and the low level of wages weaken the possibility of implementing a sustainable health insurance system, capable of financing treatment expenses, in the Gaza Strip. What makes things worse is Palestinian divisions and the fact that the Palestinian government's role in the health sector in Gaza is weak. All this will inevitably increase the consumption of financial resources to cover the expenses incurred by governmental health insurance, especially with regard to the costs of medical referrals.

Undoubtedly, the economic situation in the West Bank is better. However, the structure of the economy poses a challenge to the implementation of a sustainable health insurance system, in light of the spread of the informal sector. According to PCBS labor survey data, the number of workers in the informal sector reached about 32% in the West Bank.[30] The size of the informal sector in the West Bank evidences the spread of full tax evasion; as these enterprises are not registered at tax departments. Partial tax evasion is also widespread and evident in most enterprises in the formal sector (non-disclosure of full tax dues).[31] It also indicates the government's weak ability to enforce laws and assume control. These challenges definitely have a negative impact on the government's ability to maximize tax revenues and insurance contributions required to finance medical services provided by health insurance. The government's weak enforcement of laws also limits its ability to expand the health insurance base (subscribers committed to paying their contributions) once health insurance is linked to tax deductions from employees' salaries.

Securing the Required Capabilities to Manage Health Insurance: The MoH suffers from inadequate health insurance management. This conclusion can be inferred from the 2016 report issued by the State Audit and Administration Bureau on the management and administration of health insurance in Palestine. There are several shortcomings, the most important of which is the low percentage of revenues (as mentioned above). Others include a weak ability to adjust and control insurance data, the number of issued insurance cards, and the existence of a conflict in the implementation of health insurance regulations between the systems issued by the Council of Ministers Resolution No. (5/56/09/M.W/A.T) for 2006 - which remain unimplemented - and the Council of Ministers' Resolution No. 113 of 2004 - which is still valid.

Quality of Health Services: The 2018 report of the Council of Ministers[32] on the quality of governmental health services states that there are a number of challenges hindering the improvement of the quality of health services and citizens' satisfaction with the government health sector. These challenges include:

- Lack of medical and administrative staff (see Chapter 3).
- Poor hygiene in some hospitals and primary healthcare centers.
- Poor waste disposal capacities.
- Old buildings that are difficult to develop/renovate.

[30] Workers in the formal section reached about 35%.
[31] Fallah, Belal (2014). The Pros and Cons of Formalizing Informal MSES in the Palestinian Economy. ERF Working paper No. 893.
[32] http://www.palestinecabinet.gov.ps/WebSite/Upload/Documents/StudyAndReports/MOH_SERVICES_2017.pdf

There is no doubt that the recurrence of medical errors in government and non-governmental hospitals has affected citizens' satisfaction with the quality of medical services. Despite efforts to address this issue, no improvements have been made.

Health Insurance and Community Solidarity: Community solidarity is one of the most important features of Palestinian society, representing its most important tool in dealing with economic challenges affecting less-fortunate citizens and those caused by Israeli occupation. The key issue that remains is the extent to which citizens trust the health insurance system that is in place; and its ability to provide quality medical services that are managed transparently and fairly and reflect the needs of the people. The importance of this issue is highlighted by the large demonstrations that occurred in protest to the proposed National Insurance Law, which was eventually suspended by a Presidential Decree.

Conclusions and Recommendations

After observing these challenges, it can be concluded that there are difficulties in implementing/updating the health insurance system in Palestine, in both the short- and medium-terms. MoH's National Health Strategy 2017-2022 states that "coverage of universal healthcare services" is one of its objectives. There are plausible Interventions that can be adopted to improve governmental health insurance revenues, as suggested below.

For the short-term:

- Do not deviate from the application of procedures relating to the period of validity of insurance (6 months). Achieving this will broaden the health insurance base and increase revenues. MoH should undertake a comprehensive awareness campaign to explain to citizens the importance of this decision.
- Increase the value of health insurance contributions, whether for health services, or for the purchase of medicines, in a manner that does not constitute a burden on subscribers.

For the medium-term:

- Enhance health insurance revenues by increasing tax revenues, through raising taxes (on a limited basis) on consumer goods. This requires a study to identify targeted goods and types of tax in accordance with the Paris Economic Protocol. An optimal level of tax increase needs to be reached, which balances the enhancement of tax revenues while minimizing the economic effects of this increase. There is no doubt that this proposal may face public refusal, but allocating the tax increase to the financing of healthcare costs may help to secure public approval. It should be noted that increasing taxes on consumer goods is a better method to imposing income taxes or increasing tax deductions from salaries. This is due to the fair distribution of the tax burden, and the increased number of workers in the informal sector.
- Expanding the tax base horizontally and fighting tax evasion, especially in the specialized professions' sector, where licensing does not require registration with tax departments. This sector includes medical professions and lawyers in particular. We also suggest expanding the tax base by extending the adoption of presumptive income tax to include the largest tax-evading sectors. See Falah (2014)[33] which explains interventions needed to address the issue of tax evasion in Palestine.

[33] Fallah, B (2014). The Pros and Cons of Formalizing Informal MSEs in the Palestinian Economy. ERF working paper No. 1119.

6. Forecasting Health Sector Expenditure

This chapter provides estimated forecasts for a number of health expenditure indicators for the next ten years, including expenditure on medical referrals, current expenditure, the financing of health expenditure according to its sub-categories (governmental, insurance companies, non-profit institutions, households), and healthcare spending. It also provides estimates for expenditures on primary and secondary/tertiary healthcare, as well as expenditures on medicines and medical products.

Researchers often use a number of prediction models, such as the microsimulation model or the cohort-based model. However, these models can only be used if detailed, micro-data is available on individual spending on healthcare services by demographic characteristic (age, gender, health condition). Macro models are also commonly used, such as the ARIMA model, which requires a long, chronological series covering approximately 40 chronological points (one year in our case). Unfortunately, such data is not available in our case.

As an alternative to these methodologies, this study depends on historical data for population growth and the increase in the number of medical referrals. This methodology proposes that the change in the level of health sector expenditure is related to the population number of and its annual growth rate. There is no doubt that health sector expenditure is linked to other important indicators, such as GDP, which reflects the level of income and its correlation with the level of spending. Unlike population data, there is no forecast GDP data available for years after 2019 (generally, forecasts cover the current year and the coming year). GDP value is also difficult to predict due to the political and economic instability that the Palestinian economy faces. Below, we provide an outline of the methodology used and our forecasts.

6-1 Forecasting Expenditure on Medical Referrals

The methodology used to forecast spending on medical referrals depends on the use of data on referrals' costs and their annual growth between 2010 and 2018, assuming that future changes in the numbers of referrals will depend on their current and historical levels. For example, if the number of referrals took an upward trajectory in previous years, it is expected to continue at the same level for the following years. This methodology gives more value to the data of the current and past years, and it reflects more precisely what can happen in the future. In this context, the weighted average which depends on each observation is used. Table 6-1 below specifies the weights used in this study.

Table 6-1: Allocation of Weights used in Forecasting

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Relative weight	0.0018	0.0036	0.00612	0.0125	0.025	0.05	0.1	0.3	0.5

The determination of the values of these weights does not follow a methodology determined by the research literature, but was determined by the research team. Various other weights can be used that may increase or decrease the impact of the current year. Thus, the results of the forecast depend on the weights used. The impact of this issue will be discussed below. The results of the forecast also depend on the change in the historical values of the variable (the number of referrals in this case). The less the fluctuation in these values, the less the variance

resulting from the different weights. Fortunately, the data shows a slight fluctuation (increase and decrease) in the number of referrals during the previous years.

In order to forecast the costs of referrals, their number must be predicted first. The number of referrals per year will be forecasted using the following equation:

$$1+0.1087 \times (\text{the annual number of referrals}).....(1)$$

The number 1087.0 represents the weighted growth rate of the number of referrals and is the sum of the relative weight of each year, by the relative growth in numbers for those years between 2010 and 2018. According to this equation, the number of referrals for 2019 can be estimated by timing the first value of the equation according to the number of referrals in 2018. In order to predict the number of referrals for 2020, the equation was adjusted by adding the number of predicted referrals for 2019. Resultantly, the same pattern can be repeated to allow for forecasts until 2028.

To estimate referral costs, the average cost per referral for 2018 was calculated at NIS 8.602. Historical data has not been used to calculate this rate – only 2018 data, which is the closest to the following years. Also, the data does not allow this methodology to take into account any future increases in the price of medical services for referrals, which may result from inflation or technological changes. The data in Table 2.6 shows that the number of referrals will increase from about 122,000 referrals in 2019 (estimated cost of NIS 1.047 billion) to about 308,000 referrals in 2028 (estimated cost of NIS 2.652 billion).

Table 6-2: Medical Referrals and Expected Costs 2019-2028

Year	Number of medical referrals	Transfer costs in NIS
2018	109,818	944,669,180
2019	121,761	1,047,405,684
2020	135,003	1,161,315,188
2021	149,685	1,287,612,801
2022	165,964	1,427,645,778
2023	184,013	1,582,907,894
2024	204,026	1,755,055,378
2025	226,214	1,945,924,581
2026	250,816	2,157,551,564
2027	278,093	2,392,193,816
2028	308,337	2,652,354,341

There is no doubt that the results of this analysis, as mentioned earlier, depend on the weights used. That is why it is necessary to perform this analysis again using various weights, in order to examine the change in the number of referrals and their costs. In this context, we have applied ten different scenarios of weights (see Table 6-3), half of which gives a greater impact (high weights) to the number of referrals in 2018 (see columns 1 to 5), and the other half which gives less impact (low weights) to the number of referrals in 2018 (see columns 6 to 10). These weights can be explained as follows: high weights are an indicator of an increase in the number of referrals, in a pattern similar to the growth pattern for 2018, and without any government

intervention to reduce the number of referrals. Low weights give greater impact to previous years, when the number of referrals was lower than 2018.

Weights can be considered an indicator of government intervention, which as mentioned above, aims to increase and expand the efficiency of medical services in order to reduce the growth in referrals' numbers. The impact of government interventions increases with the relatively low weight of 2018. It is worth noting that this action reduces the number of referrals. This practice does not take into account scenarios that show significant government intervention leading to a decline in the number of referrals.

Table 6-3: Forecasts for Numbers and Costs of Referrals Using Different Weights

Year	Weight Scenarios									
	1	2	3	4	5	6	7	8	9	10
2010	0.00306	0.00051	0.00078	0.00156	0.00011	0.00117	0.00027	0.00313	0.00156	0.00004
2011	0.00612	0.00103	0.00156	0.00313	0.00034	0.00234	0.00082	0.00625	0.00313	0.00018
2012	0.0125	0.00306	0.00313	0.00625	0.00103	0.00469	0.00247	0.0125	0.00625	0.0007
2013	0.025	0.00612	0.00625	0.0125	0.00309	0.00938	0.00741	0.025	0.0125	0.00281
2014	0.05	0.012	0.0125	0.025	0.00926	0.01875	0.02222	0.05	0.025	0.01125
2015	0.15	0.025	0.025	0.05	0.02778	0.0375	0.06667	0.1	0.05	0.045
2016	0.2	0.05	0.05	0.1	0.08333	0.075	0.2	0.125	0.1	0.18
2017	0.25	0.2	0.1	0.2	0.25	0.15	0.3	0.25	0.2	0.35
2018	0.3	0.7	0.8	0.6	0.6	0.7	0.4	0.4	0.3	0.4
Forecast Number of Referrals										
2019	121337	123690	125073	123117	122275	124095	120736	121704	117954	120083
2020	134063	139315	142447	138028	136145	140229	132739	134876	126693	131308
2021	148125	156913	162235	154743	151588	158460	145935	149473	136080	143581
2022	163661	176735	184772	173483	168783	179061	160444	165651	146162	157003
2023	180827	199060	210439	194493	187928	202340	176395	183579	156990	171678
2024	199793	224206	239672	218047	209245	228647	193931	203448	168621	187726
2025	220749	252528	272965	244454	232980	258373	213211	225467	181114	205273
2026	243903	284427	310884	274058	259408	291963	234408	249870	194533	224460
2027	269485	320356	354070	307248	288833	329921	257712	276913	208945	245442
2028	297751	360824	403255	344457	321596	372814	283333	306884	224426	268384
Forecast Cost of Referrals (NIS 1 Million)										
2019	1043.74	1063.98	1075.88	1059.06	1051.81	1067.47	1038.57	1046.9	1014.64	1032.96
2020	1153.21	1198.39	1225.33	1187.31	1171.12	1206.25	1141.82	1160.2	1089.82	1129.51
2021	1274.17	1349.77	1395.55	1331.1	1303.96	1363.07	1255.34	1285.77	1170.56	1235.09
2022	1407.81	1520.27	1589.41	1492.3	1451.87	1540.28	1380.14	1424.93	1257.28	1350.54
2023	1555.47	1712.32	1810.2	1673.03	1616.56	1740.53	1517.35	1579.15	1350.43	1476.78
2024	1718.62	1928.62	2061.66	1875.64	1799.93	1966.82	1668.2	1750.06	1450.48	1614.82
2025	1898.89	2172.24	2348.05	2102.79	2004.1	2222.52	1834.04	1939.47	1557.95	1765.76
2026	2098.05	2446.64	2674.22	2357.45	2231.43	2511.47	2016.38	2149.38	1673.37	1930.81
2027	2318.11	2755.71	3045.71	2642.94	2484.54	2837.98	2216.84	2382.01	1797.35	2111.29
2028	2561.25	3103.81	3468.8	2963.02	2766.37	3206.94	2437.23	2639.81	1930.51	2308.64

Based on these assumptions, this analysis compares the number of expected referrals between a government intervention scenario and a non-intervention scenario. The results in Table 6-3

show that the number of referrals within the forecasted period will increase in the absence of government intervention (see column 3) from about 125,000 to 403,000. Cost of referrals ranges from NIS 1,075 million (2019) to NIS 3,468 million (2028). On the other hand, the presence of active government intervention (see column 1) will increase the number of referrals from about 121,000 to 279,000, at a cost ranging from NIS 1,054 million to NIS 2,651 million for the same period. The remaining results shown in Table 6-3 express forecasts across different levels of government intervention.

6-2 Forecasting Total Health Expenditure Indicators

6-2-1 Current Expenditure

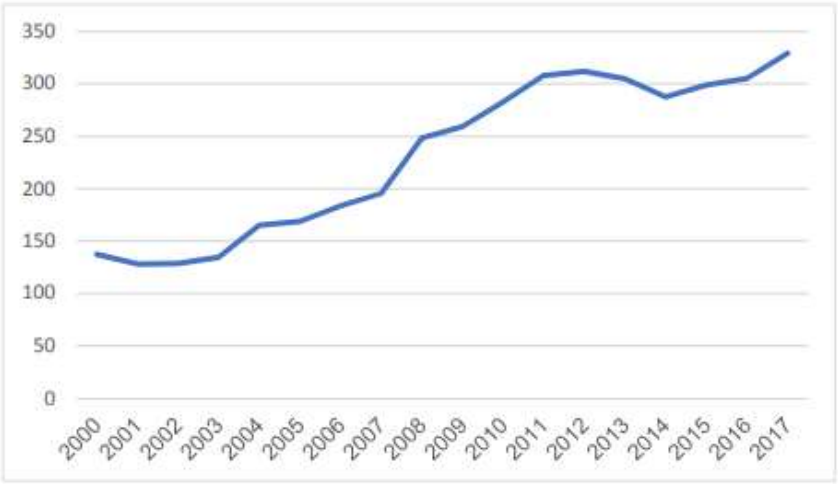
The methodology used for predicting current expenditure is based on two variables: per capita current expenditure and population growth. The data shows that the value of the first variable has remained, on average, relatively stable at about $300 per capita since 2010 (see Figure 6-1). Stability for all these years indicates that it will remain the same for the coming years. Based on this, current expenditure can be calculated through the following equation:

Arithmetic mean for expected individual share × expected annual population.... (2)

Population prediction data was obtained from PCBS until 2021. Population forecasts for the following years (until 2028) was derived by using the same rate for change for population growth in 2021, or 0.03% population growth per year. Table 6-4 shows expected population growth and current health expenditures, from 2018 to 2028. It should be noted that stability per capita of current expenditure significantly reduces the impact of using different weights. [34]

Therefore, the same weight is used as in equation (1). The forecasts show that annual current expenditure will increase from $1,516 million to $1,912 million during this period.

Figure 6-1: Per Capita Current Expenditure (2000-17)



Source: National Health Accounts, Palestinian Central Bureau of Statistics.

[34] PSBC has not released data on the dimensions of health costs indicators.

6-2-2 Current Expenditure According to Source of Funding

As outlined in Chapter 1, the sources for current spending are divided into central government, commercial insurance companies, non-profit organizations that provide aid to families, and the rest of the world. These indicators are predicted by deriving them directly from current account predictions. This was done through the following equation:

The estimated mean of the source of funding for the current expenditure × The predicted value of current spending .....(2)

Using the same weights as in equation (1), the annual prediction of funding sources is documented in Table 6-4. Forecasts show that government spending will rise from $627 million in 2018 to about $795 million in 2028. Expenditure by families will rise from $648 million to $822 million during the same period. Expenditures by non-profit organizations (from $175 million to $221 million) and insurance companies (from $46 million to $58 million) will also rise during the same period.

With the same methodology, expenditure on primary and secondary/tertiary healthcare is forecasted using the following equation:

The estimated mean of the share of current expenditure by type of healthcare × the predicted value of current spending ..... (3)

Forecasts documented in Table 5.6 indicate that primary healthcare spending will increase from $926 million to $1,173 million over 2018-2028. In return, secondary/tertiary healthcare spending will increase from $590 to $748 million.

Table 6-4: Current Expenditure Forecasts According to Source of Funding (USD 1 Million)

Year	Population	Current Expenditure	Households	Non-profit organizations serving households	Commercial insurance companies	Central government	Rest of the world
2018	4,817	1,516	648	175	46	627	20
2019	4,939	1,555	665	179	47	643	21
2020	5,062	1,593	681	184	48	659	21
2021	5,187	1,633	698	188	50	676	21
2022	5,314	1,673	715	193	51	692	22
2023	5,442	1,713	733	197	52	709	22
2024	5,572	1,754	750	202	53	726	23
2025	5,703	1,795	768	207	54	743	23
2026	5,835	1,837	785	212	56	760	24
2027	5,968	1,879	803	216	57	777	26
2028	6,103	1,921	822	221	58	795	25

Source: Research Team Calculations

Table 6-5: Current Expenditure Forecasts by Type of Healthcare (USD 1 Million)

Year	Primary care	Secondary/tertiary care
2018	926	590
2019	950	605
2020	973	620
2021	997	636
2022	1,022	651
2023	1,046	667
2024	1,071	683
2025	1,096	699
2026	1,122	715
2027	1,147	732
2028	1,173	748

7. Priorities for the Localization of Medical Services

This chapter aims to identify priorities for localizing medical services and linking them to the burden of disease and the availability of resources/skills. This section outlines challenges caused by the increasing number of referrals; and ways to reduce them.

7-1 Burden of Disease

The concept of Burden of Disease was used in the 1990s by researchers from Harvard University, the World Bank and the World Health Organization (WHO) to describe death and individual health loss due to diseases, injuries, or risks that impact health.[35] The burden of disease can be measured through two indicators:

1. The number of years that a person loses as a result of premature death due to illness.
2. The number of years a person with a disability caused by illness survives.

Table 7-1: Burden of Disease in Palestine and its Distribution according to Chronic Diseases

Gaza Strip			West Bank		
Rank	**Disease**	**Burden of disease (per 1,000 people) %**	**Rank**	**Disease**	**Burden of disease (per 1,000 people) %**
1	High blood pressure	19.4 (34.0)	1	Heart disease	21.1 (35.2)
2	Heart disease	18.6 (32.6)	2	High blood pressure	20.4 (34.0)
3	Cancer (lung and breast)	7.7 (13.5)	3	respiratory system diseases	7.3 (12.2)
4	respiratory system diseases	7.2 (12.6)	4	Cancer (lung and breast	6.32 (10.5)
5	Chronic kidney failure	2.2 (4.0)	5	Diabetes	2.73 (4.5)
6	Diabetes	1.9 (3.3)	6	Chronic kidney failure	2.14 (3.6)
Total	57.0 (100)		Total		60.0 (100)

Source: Mosleh M., Aljeeseh, Y., and Dalal, K., (2016). *Burden of Chronic Diseases in the Palestinian Healthcare Sector Using Disability -Adjusted Life Years (DALY)*. Palestine: Diversity and Equality in Health Care.

In a study by Mosleh et al. (2016), [36] the number of years lost due to selected chronic diseases was estimated at 60 years per 1,000 years of age in the West Bank and 57 per 1,000 years in the Gaza Strip. Ischemic heart disease (atherosclerosis) and high blood pressure rated the highest in causing the loss of life-years for men and women, followed by cancer (lung cancer in males and breast cancer in females), and then respiratory diseases with a slight difference in classification between Gaza and the West Bank (see Table 7-1).

The study relies on historical data from 2010 in order to derive these statistics, which is most recent data available. The results of the study are consistent with the latest published statistics on the most deadly diseases in Palestine issued by the MoH (see Table 7-2). As indicated in the first section of the study, it also overlaps with most diseases referred for treatment outside MoH hospitals.

[35] https://www.who.int/foodsafety/foodborne_disease/Q%26A.pdf

[36] Mosleh M., Aljeeseh, Y., and Dalal, K., (2016). Burden of Chronic Diseases in the Palestinian Healthcare Sector Using Disability - Adjusted Life Years (DALY). Palestine: Diversity and Equality in Health Care.

Table 7-2: Top Diseases that Caused Death in Palestine (2018)

Cardiovascular diseases	**31.50%**
Cancer	15.40%
Strokes	13%
Perinatal mortality	10%
Diabetes	7.50%
Accidents	4%
Respiratory diseases	3.70%
Congenital malformation	3.50%
Chronic renal failure	3.90%
Digestive system diseases	2.70%

Data Source: Annual Health Report 2018, Ministry of Health.

It is important to point out that the data documented above shows a significant decrease in the number of newborn, maternal, traumatic and infectious diseases. However, non-communicable diseases have increased. Diseases related to poor health and adult mortality (such as heart disease, strokes and chronic diseases) have increased and are now the most important cause of death during 2007-17. By contrast, the ranking of childhood illnesses, such as lower respiratory tract infections, diarrhea and premature birth complications, declined.

This shift in the nature of death-causing diseases overlaps with the types of diseases that are most-commonly referred for treatment outside MoH hospitals. This makes it imperative for policymakers, especially at MoH, to direct policies which reduces the burden of disease in Palestine, especially in light of the scarcity of financial resources. In this context, we recommend the localization of medical services; the expansion of secondary healthcare provided in public hospitals and the expansion of tertiary services in private hospitals because of its importance in minimizing the risks related to over-reliance on referrals, especially to Israeli hospitals or those in neighboring countries (see discussion below).

Closures and movement restrictions imposed by the Israeli occupation on Palestinian patients and their families, especially in the Gaza Strip, make it difficult for them to obtain treatment in Israeli even Palestinian hospitals in East Jerusalem. This makes the need to localize health services more pressing, primarily by expanding the scope of secondary and tertiary healthcare services in public or non-governmental hospitals. This is vital in alleviating the burden of disease and the increase in referral costs. As mentioned above, referral costs drain the MoH's budget. Thus, the burden of costs is another justification for expanding secondary and tertiary healthcare.

It should be pointed out that the localization of medical services is conditioned on addressing a number of challenges, the most important of which are discussed below.

7-2 Lack of Expertise in; and Infrastructure for; Medical Specialties

The shortage of expertise lies in two issues. The first is the shortage in the number of medical staff, whether doctors or assistant staff (nurses, laboratory technicians and pathologists.) The second is related to the lack of appropriate qualifications. The lack of specialization is in diseases that are most-referred to non-MoH hospitals, especially to Israeli hospitals and hospitals in neighboring countries. The diseases include, as mentioned above, tumors, blood

diseases, neurological surgery, pediatric cardiology, pediatric urology, pediatric surgery, histology, in addition to most sub-medical specialties. The lack of specialists in oncology, neurosurgery and kidney diseases is the main cause of referrals external to the government health system.

The challenge of a lack of expertise is compounded by the lack/scarcity of infrastructure and equipment; or the lack of its availability when it is needed, due to technical failures or a lack of operational raw materials. In some cases, the problem is the non-availablity of trained medical operators to operate medical equipment, which is the same as not having the equipment in the first place.

The combined lack of expertise, infrastructure and equipment is one of the most important reasons why medical referrals increase, especially for PET, MRI and CT scans; and for accessing intensive neonatal care devices in addition to some diagnostic/laboratory tests. Therefore, MoH should pay particular attention to providing these devices adequately, and providing qualified doctors and medical staff. The main dilemma in bringing doctors to MoH hospitals lies in the nature of the incentive system offered by MoH (salaries and bonuses), which is not competitive compared to packages offered by private hospitals. We will address this issue again when talking about policies required to localize medical services.

7-3 High Occupancy Rate of Inpatient Beds at Government Hospitals

The high occupancy rate of inpatient beds in hospitals limits their ability to take in more patients and provide suitable health services to them. According to MoH's Annual Report for 2018, occupancy rates for inpatient bed reached 101.5% in the West Bank and 95% in the Gaza Strip. At Al Alia State Hospital (which provides health services to the largest governorate according to population numbers) occupancy rates reached 142.1%. This high level of occupancy weakens the ability of government hospitals to treat additional/critical cases that they could otherwise normally treat, increasing the waiting period for medical services. This is especially true with regard to some types of surgery, MRI scans and computed tomography. Hospitals are forced to transfer these cases to non-governmental hospitals. Therefore, expanding the capacity of governmental hospitals is necessary to control the number of medical referrals to non-governmental ones.

7-4 Lack of Important Medicines and Medical Supplies

The shortage of essential medicines and medical supplies at public-sector hospitals plays a role in increasing the number of medical referrals. In previous years, MoH's warehouses suffered from chronic shortages of medicines. However, this problem was mostly solved in the West Bank, where the coverage of essential medicines reached 98% in 2018. In contrast, coverage in the Gaza Strip reached 50%, due to Palestinian divisions and the continuing Israeli siege.

7-5 Poor Coordination and Communication in the Management of Medical Referrals

The efficiency and effectiveness of communications between different sources of referrals (starting from the referring government hospital, then regional transfer committees, then the purchase unit providing the service to the end-user) and the validation, accuracy and completeness of information play an important role in controlling referrals. However, practices identified through staff interviews and the review of files at the Services Purchase Unit indicate that some information concerning submitted referral requests is inaccurate or missing. Efforts

are therefore needed to improve the quality and accuracy of mechanisms that provide data and information.

7-6 Effect of Workload on Workforce Efficiency

MoH is the main employer in the Palestinian health sector. It employs 14,430 employees, including doctors, specialists across various medical fields, dentists, pharmacists, nurses, midwives and medical assistants. MoH accounts for 56% of total sector employment in the West Bank and 44% in the Gaza Strip. However, the distribution of specialists, diagnostic and treatment devices across MoH hospitals is ineffective. Some of these hospitals (the central ones) have specialists who work busy schedules with long waiting lists. In other hospitals, there are specialists with less-busy workloads. Additionally, the ineffective use of some equipment (such as a cardiac catheterization laboratory at the Palestine Medical Complex or CT scanners or MRI systems) leads to referrals to non-MoH facilities. Therefore, specialists need to be redistributed across hospitals of in a way that helps create a balance in the workloads of medical personnel.

7-7 Lack of Compliance with Instructions on Medical Referrals

The poor implementation of instructions for medical referrals is manifested in several ways:

- Poor implementation of the rules and procedures for medical referrals, related to referral procedures, the destination of referral, and coverage ceiling. Therefore, implementation should be enforced and periodic review of the content of procedures and referral documents performed for specific diseases, in order to arrive at more transparent and fairer rules.
- Poor financial and medical control, due to the large number of files (cases) that need to be evaluated and regularly reviewed; as well as requiring financial and medical control. The lack of a special unit and trained HR to manage this process contributes to an inability to realize valuable savings and control costs.

When reviewing the nature of the cases that need to be referred, we recommend reviewing the package of services provided through the health insurance system and building a national consensus on current and future needs; the availability of financing; and the cost effectiveness of treatment.

7-8 The Scope of Localizing Medical Referrals

The analysis of expenditure in the first part of this study shows that medical referrals greatly overburden the budget of the Ministry of Health. Referrals accounted for more than half of the budget in 2018. The question that remains is how to reduce the cost of referrals; and concurrently increase the extent to which medical services are localized. The answer depends mainly on factors that initially led to the increase in the number of referrals, as detailed above. This includes:

- Insufficient capacity at government hospitals.
- Lack of expertise, infrastructure and medical specialties.
- Lack of medicines and basic/specialized medical supplies.
- Poor coordination and communication in managing medical referrals.
- The detrimental impact of workloads on the efficiency of the workforce.
- Poor implementation of instructions governing medical referrals.

By examining this list, it can be concluded that addressing these challenges requires making reforms to the referrals' system, while addressing the shortage in medicines sent to the Gaza Strip. We would like to point out that it is difficult to accurately estimate the possible decline in the number of referrals when conducting these interventions, but they will be significantly different.

Capacity-related challenges and the lack of expertise/technique can be addressed on two levels. The first concerns the expansion of primary and secondary healthcare services provided by MoH hospitals, as well as the expansion of support services for them. The second relates to the expansion of tertiary health services, which relate to top diseases that require referrals, such as tumors, heart disease and kidney/urinary diseases. It is possible to expand these services at government hospitals; however, this remains limited due to challenges in engaging specialized personnel (as mentioned above) given MoH's weak incentives' system compared to the private/non-profit sectors. Therefore, expanding investment in infrastructure may not be beneficial given the scarcity of medical specialties. We believe that the best policy to be used, while taking into consideration the challenges facing MoH, lies in expanding primary and secondary services at government hospitals while directing the expansion of tertiary health services towards Palestinian private and non-profit sectors, at the expense of referrals to Israeli hospitals and hospitals in neighboring countries.

The question that remains is: can all referrals outside the Palestinian health sector be permanently stopped? The answer depends on the extent of the expansion of tertiary health services. The Palestinian health sector has definitely made progress in expanding its services, as the data indicates. It can be expanded to include most medical referrals that were made outside the Palestinian health sector. However, MoH must provide guarantees that future referrals will be directed towards the private sector, in a way that ensures the feasibility of increasing investment in tertiary health services. In turn, the goal of localizing all medical referrals will remain, at least at the intermediate level. These referrals include donation-based marrow transplantation, heart transplantation and multi-organ transplantation. These types of transplantations requires the provision of technologies and the accumulation of expertise over several years.

Annexes

Tables of Annex

Table 1: Number of doctors at Non-Profit, Governmental and Private Hospitals in Palestine (2018)

Medical body	Non-profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
General resident physician	208	35	3	889	29	6	147	33	0
First year resident physician	24	0	0	148	1	0	20	1	0
Second year resident physician	26	0	0	130	0	0	21	0	0
Fourth year resident physician	32	7	0	155	0	0	15	0	0
Diagnostic radiologist	22	15	16	51	1	4	17	8	4
Cardiac Surgery Specialist	6	2	3	7	0	1	10	4	1
Thoracic Surgery Specialist	4	0	1	4	0	1	3	1	3
Dermatologist and Venereal diseases specialist	3	4	14	11	0	0	2	5	11
Gynecologist and obstetrician	44	68	29	158	1	4	37	11	30
Internal specialist	14	9	15	69	0	0	25	4	9
Cardiac specialist	15	8	20	47	2	3	15	20	7
Oncologist	9	4	2	9	1	2	3	1	3
Hematologist	5	1	1	7	1	2	0	2	4
Thoracic specialist	3	2	9	12	0	1	4	5	3
Gastroenterologist	8	7	7	20	0	2	7	2	8
Nephrologist	10	3	7	14	1	2	5	3	5
Pediatrician	44	17	17	167	0	1	24	12	5
General surgery specialist	31	10	32	121	0	3	25	16	19
Vascular surgery specialist	5	7	3	17	0	2	5	5	2
Urologist	14	9	22	67	0	0	8	15	8
Maxillofacial surgery specialist	2	2	11	16	0	1	2	8	5
Burns and plastic surgery specialist	2	3	7	13	0	1	0	6	3
Neurologist	6	3	17	29	0	0	2	6	5
Neurosurgeon and brain specialist	9	5	8	27	0	4	9	4	6
Pediatric Surgery Specialist	9	11	16	24	1	2	3	7	4
Ear, nose and throat specialist	13	13	37	72	0	1	10	17	12
Psychiatrist	2	1	3	5	1	0	0	2	1
Ophthalmologist	29	12	17	54	0	0	4	9	2

Medical body	Non-profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
Orthopedic specialist	30	13	27	127	0	0	20	24	19
Endocrinologist	5	3	7	21	0	1	2	6	1
Histologist	6	0	2	6	0	1	2	1	1
Forensic	0	0	0	0	0	0	0	0	0
Anesthesiologist	54	41	24	95	1	3	33	17	5
IC specialist	9	6	8	30	0	2	7	0	4
Dentist	10	13	13	3	0	0	2	0	4
Others	149	6	0	77	0	1	3	2	0
Total	862	340	398	2702	40	51	492	257	194

Table 2: Number of doctors at Non-Profit, Governmental and Private Hospitals in the West Bank (2018)

Medical body	Non-profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
General resident physician	151	6	0	273	0	6	147	24	0
First year resident physician	24	0	0	71	0	0	20	1	0
Second year resident physician	21	0	0	85	0	0	21	0	0
Fourth year resident physician	29	0	0	85	0	0	15	0	0
Diagnostic radiologist	18	11	0	36	1	4	17	7	1
Cardiac Surgery Specialist	6	1	0	5	0	1	10	2	1
Thoracic Surgery Specialist	3	0	0	0	0	1	3	1	1
Dermatologist and Venereal diseases specialist	2	1	1	0	0	0	2	5	9
Gynecologist and obstetrician	33	17	5	45	1	4	37	11	26
Internal specialist	12	4	4	31	0	0	25	4	8
Cardiac specialist	11	7	2	13	2	3	15	8	6
Oncologist	9	4	0	4	1	2	3	0	1
Hematologist	5	1	0	3	1	2	0	2	2
Thoracic specialist	3	1	0	1	0	1	4	2	2
Gastroenterologist	8	3	1	2	0	2	7	2	5
Nephrologist	9	1	2	5	1	2	5	3	4
Pediatrician	41	13	2	48	0	1	24	11	3
General surgery specialist	18	3	10	45	0	3	25	13	16
Vascular surgery specialist	4	2	0	3	0	2	5	4	0
Urologist	12	5	4	28	0	0	8	14	6
Maxillofacial surgery specialist	2	2	3	4	0	1	2	8	4
Burns and plastic surgery specialist	2	1	2	2	0	1	0	5	2
Neurologist	5	2	7	10	0	0	2	6	3
Neurosurgeon and brain specialist	8	2	3	11	0	4	9	3	4
Pediatric Surgery Specialist	7	2	4	10	1	2	3	6	3
Ear, nose and throat specialist	9	10	7	25	0	1	10	15	9
Psychiatrist	2	1	1	2	1	0	0	2	0
Ophthalmic Surgery Specialist	23	3	4	6	0	0	4	9	2
Orthopedic specialist	22	8	8	44	0	0	20	21	16

Medical body	Non-profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
Endocrinologist	3	3	3	0	0	1	2	4	0
Histologist	6	0	0	4	0	1	2	1	1
Forensic	0	0	0	0	0	0	0	0	0
Anesthesiologist	42	10	4	38	1	3	33	215	1
IC specialist	6	0	0	1	0	2	7	0	0
Dentist	2	0	0	0	0	0	2	0	0
Others	149	4	0	27	0	1	3	2	0
Total	707	128	77	967	10	51	492	211	136

Table 3: Number of doctors at Non-Profit, Governmental and Private Hospitals in the Gaza Strip (2018)

Medical body	Non-Profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
General resident physician	57	29	3	616	29	0	0	9	0
First year resident physician	0	0	0	77	1	0	0	0	0
Second year resident physician	5	0	0	45	0	0	0	0	0
Fourth year resident physician	3	7	0	70	0	0	0	0	0
Diagnostic radiologist	4	4	16	15	0	0	0	1	3
Cardiac Surgery Specialist	0	1	3	2	0	0	0	2	0
Thoracic Surgery Specialist	1	0	1	4	0	0	0	0	2
Dermatologist and Venereal diseases specialist	1	3	13	11	0	0	0	0	2
Gynecologist and obstetrician	11	51	24	113	0	0	0	0	4
Internal specialist	2	5	11	38	0	0	0	0	1
Cardiac specialist	4	1	18	34	0	0	0	12	1
Oncologist	0	0	2	5	0	0	0	1	2
Hematologist	0	0	1	4	0	0	0	0	2
Thoracic specialist	0	1	9	11	0	0	0	3	1
Gastroenterologist	0	4	6	18	0	0	0	0	3
Nephrologist	1	2	5	9	0	0	0	0	1
Pediatrician	3	4	15	119	0	0	0	1	2
General surgery specialist	13	7	22	76	0	0	0	3	3
Vascular surgery specialist	1	5	3	14	0	0	0	1	2
Urologist	2	4	18	39	0	0	0	1	2
Maxillofacial surgery specialist	0	0	8	12	0	0	0	0	1
Burns and plastic surgery specialist	0	2	5	11	0	0	0	1	1
Neurologist	1	1	10	19	0	0	0	0	2
Neurosurgeon and brain specialist	1	3	5	16	0	0	0	1	2
Pediatric Surgery Specialist	2	9	12	14	0	0	0	1	1
Ear, nose and throat specialist	4	3	30	47	0	0	0	2	3
Psychiatrist	0	0	2	3	0	0	0	0	1
Ophthalmic Surgery Specialist	6	9	13	48	0	0	0	0	0
Orthopedic specialist	8	5	19	83	0	0	0	3	3

Medical body	Non-Profit			Government			Private		
	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract	Full-time Contract	Part-time Contract	Per Cent Contract
Endocrinologist	2	0	4	21	0	0	0	2	1
Pathologist, histologist	0	0	2	2	0	0	0	0	0
Forensic	0	0	0	0	0	0	0	0	0
Anesthesiologist	12	31	20	57	0	0	0	2	4
IC specialist	3	6	8	29	0	0	0	0	4
Dentist	8	13	13	3	0	0	0	0	4
Others	0	2	0	50	0	0	0	0	0
Total	155	212	321	1735	30	0	0	46	58

Questionnaire

First section: general information

Name of hospital:	Hospital postal code:	
	Fax:	Number of inpatient beds:
Email:	Name:	Date:

Please fill in the data available for 2018

The second section: Department's data and provided general services in the hospital

Department	Availability (yes/ no)	Number of inpatient beds if the answer is yes	Occupancy rate***	Shortages if any	Future plans (if it exists) To increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there are no approved plans do not answer
Inpatient beds					
Internist department					
Inner diseases					
Chest diseases					
Heart diseases					
Kidney diseases					
Catheter department					
Neurological diseases					
Tumor/ cancer					
Gastrointestinal diseases					
Other departments					
psychological diseases					

**** Occupancy rate: the average relation between the number of inpatient beds and illness days and how to calculate them=

$$\frac{\text{Days of accommodation}}{\text{Inpatient beds total * days of the year}} \times 100$$

Department	**Availability (yes/ no)**	**Number of inpatient beds if the answer is yes**	**Occupancy rate**	**Shortages if any**	**Future plans if it exist) to increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there's no approved plans do not answer**
Inpatient beds					
Gynecology departments					
Gynecology diseases					
Birth- birth inpatient beds					

Department	Availability (yes/ no)	Number of inpatient beds if the answer is yes	Occupancy rate	Shortages if any	Future plans (if it exists) To increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there is no approved plans do not answer
Inpatient beds					
Surgery departments					
General surgery					
Pediatric surgery					
Chest and cardiac surgery					
Pediatric heart surgery					
Vascular surgery					
Neurosurgery					
Oral and maxillofacial surgery					
Urinary tract					
Orthopedic surgery					
ENT					
Eye surgery					
Endoscopic surgery					
Microscopic surgery					
Other surgery departments					
Operating rooms					

Department	Availability (yes/ no)	Number of inpatient beds if the answer is yes	Occupancy rate	Shortages if any	Future plans if it exist) to increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there's no approved plans do not answer
Inpatient beds					
Babies' departments					
Special care departments					
intensive care unit ICU					
intensive Medium care unit ICU					
intensive cardio care unit ICCU					
Pediatric intensive cardio care unit PICU					
newborn intensive cardio care unit NICU					
Incubators NIC					
Burns					
Inpatient beds					
Long term health care					
Quarantine					

Department	Availability (yes/ no)	Number of inpatient beds if the answer is yes	Occupancy rate	Shortages if any	Future plans if it exists) to increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there is no approved plans do not answer
Daycare Inpatient beds					
Chemotherapy					
Radiation(lithotomy)					
Dialysis					
Lithectomy					
Thalassemia					
Catheters					
Emergencies and accidents					
Blood diseases					

Medical assistance services	Availability (yes/ no)	Number of inpatient beds if the answer is yes	Occupancy rate	Shortages if any	Future plans if it exists) to increase the number of inpatient beds: What is the expected number and the year of development: For example: the number of beds for internal diseases 10 and expected implementation is in 2020. If there's no approved plans do not answer
Physiotherapy and rehabilitation					
functional Therapy					

X- Rays	Available	unavailable	If it is not available, is it considered a shortage? (Yes / No) if the answer is No it mean that the service is not within the specialization	Future plans approved for development to add departments or expand them (if any) and the expected year: For example: adding another X-Ray system in the year 2020. If there's no approved plans do not answer
X-Ray				
Ultra sound				
CT scan				
MRI				
Interventional Radiology				
other				

Assistant services department	available	unavailable	If it is not available, is it considered a shortage? (Yes / No) if the answer is No it mean that the service is not within the specialization	Plans approved for development to add departments or expand them (if any) and the expected year: For example: The laboratory is expected to expand in the year 2020. If there's no approved plans do not answer
blood bank				
medical laboratory				
Genetics and Genetics Laboratory				
EEG Laboratory				
Urination study laboratory				
pharmacy				
Drug warehouse				
Sterilization room				

Third: Human resources data

First	Article	Number of full time	Number: part-time		Shortages (number)	Shortages (number)	Approved plans if any to increase human resources: what is the number and the year of employment: for example number of heart doctors that are expected to be employed for 2 years in 2020. if there are no approved plans do not answer
	Medical staff		Part-time contract	Percentage contract	Full time	Part-time	
1.	General resident physician						
2.	first year resident physician						
3.	second year resident physician						
4.	Fourth year resident physician						
5.	Specialists:						
6.	Diagnostic radiologist						
7.	cardiac surgery specialist						
8.	Chest surgery specialist						
9.	Dermatologist and Venereology specialist						
10.	Obstetrician and Gynecologist						
11.	internist						
12.	Cardiology specialist						
13.	Oncologist						
14.	Hematologist						
15.	Chest specialist						
16.	Gastroenterologist						
17.	Kidney disease specialist						
18.	Pediatrician						

First	Article	Number of full time	Number: part-time		Shortages (number)	Shortages (number)	Approved plans if any to increase human resources: what is the number and the year of employment: for example number of heart doctors that are expected to be employed for 2 years in 2020. if there are no approved plans do not answer
	Medical staff		Part-time contract	Percentage contract	Full time	Part-time	
19.	General Surgery specialist						
20.	Vascular surgery specialist						
21.	Urologist						
22.	Oral and Maxillofacial Surgery specialist						
23.	cosmetologist						
24.	Neurologist						
25.	Neurosurgery specialist						
26.	Pediatric surgery specialist						
27.	Ear, nose and throat specialist						
28.	Psychiatrist						
29.	ophthalmologist						
30.	Orthopedic specialist						
31.	Endocrinologist						
32.	Pathologist						
33.	Forensic medicine						
34.	Anesthesiologist						
35.	Intensive Care Professional						
36.	Dentist						
37.	Other (specify)						

Second	article	Number of full time	Number: part time		Shortages (number)	Shortages (number)	Approved plans if any to increase human resources: what is the number and the year of employment: For example, number of nurses that are expected to be employed for 2 years in 2020. if there are no approved plans do not answer
	Nurse staff		Part time contract	Percentage contract	Full time	Part time	
1.	BA in Nursing						
2.	Nursing diploma (3 years)						
3.	Medium nursing diploma (two years)						
4.	Nurse assistant						
5.	BA midwife						
6.	Midwife diploma (3 years)						
7.	Midwife diploma (two years)						
8.	Midwife						

Third	article	Number of full time	Number: part-time		Shortages (number)	Shortages (number)	Approved future plans if any to increase human resources: what is the number and the year of employment: for example number of Pharmacists that are expected to be employed for 2 years in 2020. if there are no approved plans do not answer
	Assistant medical services		Part-time contract	Percentage contract	Full time	Part-time	
1.	Laboratory technician (Bachelor and more)						
2.	Lab Technician Assistant (diploma)						
3.	Pharmacist						
4.	Pharmacist assistant						
5.	Anesthesia technician						
6.	Physiatrist (Bachelor)						
7.	Physiatrist (Diploma)						
8.	Training specialists (Bachelor)						
9.	rehabilitation specialist (diploma)						
10.	10. Audiology and Pronunciation specialist (BA)						
11.	Audiology and Pronunciation specialist (diploma)						
12.	Optometrist (Bachelor)						
13.	Optics Technician (diploma)						
14.	Radiology Technician (Bachelor)						
15.	Radiology Technician Assistant (diploma)						
16.	Technical planning (ECG, EMG, EEG).						
17.	Dental technician						
18.	psychological counselor						
19.	Dietician						
20.	Other (specify)						

Four: Statistical data

Item	2018	item	2018
Total of hospital entries		Number of natural births	
Total number of hospital discharge		Number of C-sections	
Sickness days (accommodation days)		Number of major surgeries	
Inpatient beds occupancy (%)		Number of minor surgeries	
Rate of patient's stay (days)			
Total visits for external clinics		Number of work injuries	
Total visits for emergency room		The number of dialysis patients	
Blood disease and tumor cases		The number of dialysis sessions	