Health Policy 120 (2016) 920–927

Contents lists available at ScienceDirect

Health Policy

journal homepage: www.elsevier.com/locate/healthpol

Physician density planning in a public healthcare system: Complexities, threats and opportunities—The case of the Israeli healthcare system

Ronni Gamzu[a], Nir Kaidar[a,*], Arnon Afek[a,b], Tuvia Horev[c]

[a] Israel Ministry of Health, Israel
[b] Sackler Faculty of Medicine, Tel Aviv University, Israel
[c] Department of Health Systems Management, Guilford Glazer Faculty of Business and Management, Ben-Gurion University of the Negev, Beersheva, Israel

ARTICLE INFO

Article history:
Received 26 August 2015
Received in revised form 1 July 2016
Accepted 2 July 2016

Keywords:
Workforce issues
Physicians
Human resources

ABSTRACT

Human-resource planning in healthcare is one of the most significant challenges that healthcare systems worldwide face. Among all healthcare professions, the planning of physician supply is the most complex of all due to physicians' lengthy training and many specialties.

Forecasts showing a disturbing downward trend in the ratio of physicians to population in Israel prompted the Israeli Government in 2010 to establish a committee mandated to predict demand for physicians and recommend steps to adjust supply to it.

The committee analyzed numerous variables that affect physician supply and demand and recommended measures that in greater part were implemented.

The article discusses the methodology of the committee, its recommendations, and their implementation such as a 52% increase in the number of first-year medical students between 2010 and 2012. Its analysis of the current situation shows that the implementation of the recommendations successfully stemmed the decrease in physician density and attained the committee's other long-term objectives: physician density of 2.9 per 1000 of population and an increase (32.5%) in the number of physicians who began training in targeted specialties.

1. Introduction

Physician density – the ratio of physicians per population – is an important indicator of access to and quality and efficiency of healthcare services in any country [1]. The literature, however, does not point to a specific density as a gold standard; it merely benchmarks countries for comparison [2]. Planning and aiming for a "correct" physician density is challenged by the nearly impossible task of predicting population and system needs as well as physician supply and productivity by at least fifteen years, the span of time that it takes to "deliver" a specialist physician [3].

Under competitive economic conditions, the free-market mechanism corrects surpluses or shortages of labor in the long term by re-equilibrating quantities and prices. Although the healthcare system does not operate under conditions of perfect competition, economic conditions do

* Corresponding author.
E-mail addresses: rgamzu@gmail.com (R. Gamzu), Nir.kaidar@moh.gov.il (N. Kaidar), Arnon.afek@moh.health.gov.il (A. Afek), thorev@som.bgu.ac.il (T. Horev).

http://dx.doi.org/10.1016/j.healthpol.2016.07.002
0168-8510/

have some effect on healthcare labor [4]. In healthcare, however, the use of concepts such as "surplus" and "shortage" of labor does not mirror the economic meaning of these terms. The definitions of surpluses or shortages of medical personnel relate to population's needs (demand), which is then translated into the need for caregivers as against the human resources available (supply). In this sense, one who speaks of a surplus means that the system "needs less" and those who relate to a shortage of medical personnel express the concept of "needing more."

Many factors may influence the planning of tomorrow's cadres of physicians and nurses; moreover, they sometimes act in clashing ways. An OECD publication [2] presents forecasting models that various countries use to predict their medical labor-force needs. Its authors argue that three parameters affect current and future supply of healthcare labor: "inflows," including graduates of medical and nursing schools, immigration of foreign-trained health professionals, and reentry of temporarily absent workers; "outflows," comprising people who move from the healthcare sector to other sectors or exit the workforce altogether, healthcare professionals who emigrate, and those who retire; and the extent of activity among the existing "stock" of healthcare workers (including working hours), which reflects, inter alia, the ability to maximize retention and minimize attrition.

On the demand side, it is argued that the requisite density should consider demography, morbidity, healthcare-service utilization, healthcare-service delivery models, GDP and health-expenditure growth, and other possible determinants of healthcare labor demand, e.g., changes in the breadth and depth of health-insurance coverage and other aspects of healthcare financing arrangements.

The aforementioned OECD study reinforced the underlying premises of a forecast of need for medical and nursing labor, produced three years earlier by an expert committee appointed by the Director General of the Israel Ministry of Health (MOH). The report included, among other things, a detailed forecasting model [5].

Constructing a forecasting model should be the first step in producing such a prediction. The next step is benchmarking, in which the goal is specified and the concepts of "shortage" and "surplus" are defined in view of the data and the characteristics, norms, and values of the specific healthcare system. Indeed, the efforts of the Israeli committee included the adoption of a benchmark.

Over the following four years, basing itself on the committee's work and estimations [5], MOH adopted a proactive policy of building up medical-school capacity and enrollment, promoting the acceptance of foreign-licensed Israelis, and incentivizing physicians to train in specific specialties.

This article gives a brief overview of the rationale behind the forecasting model adopted in Israel, describes how the benchmarks were set, presents the policies that MOH adopted and implemented, analyzes the results of these interventions, and discusses future challenges. Part 1 of the article relates to the physician population at large; Part 2 focuses on the segment of this population that practices specialties.

Table 1
Variable considered in the estimation process.

Factor	Component	Variable name
Supply	Existing stock	Licensed physicians
		Practicing physician above retirement age
		Not practicing under 65 years' old
		Emigration/physician who stay aboard
	Inflow	Annual new licenses – Israel institutions
		Annual new licenses – institutions abroad
	Outflow	Deaths
		Annual retirements
		Migration
		Dropping out
		Population aging
		Morbidity
Demand	Qualitative approach	Population size
		Population aging
		Morbidity
		Medical technology
		Economic growth

2. Methodology

The methodology of the study is divided into three main categories. The first section reviews the parameters that were considered before the forecasting model in Israel was determined. The second section reviews the six underlying premises by which future trends were examined. The third part analyzes the setting of benchmarks for intervention.

The calculations were based on MOH's registry of physicians and expert opinions. In specific matters, the results were validated against data from the national labor-force survey produced by the Israel Central Bureau of Statistics (ICBS). Death and emigration data are based on the registry kept by the Ministry of Internal Affairs. Population size and forecasting are predicated on ICBS data (medium scenario).

Table 1 presents variables used in each of the supply-side parameters (stock, inflow, and outflow). Variables related to demand-side developments are approached in a qualitative manner.

Given that the law in Israel does not require re-registration, the stock is calculated on the basis of licensed physician up to 65 years of age, less those who spent at least two years abroad and those who did not practice medicine at that time (UCBS survey). Licensed physicians above age 65 who are still practicing clinically are added to the result.

2.1. Parameters considered before determining the forecasting model in Israel

When it went to work in 2010, the Israeli committee weighed the impact of many variables, which may be grouped into the following three dimensions: supply, demand, and national healthcare structure and policies. On the supply side, the committee examined the current pace of medical licensing (of domestic and foreign graduates), the pace of physicians' aging and their age upon retirement, the growing share of women among medical practitioners at large and in specific specialties, the extent of "dropping out" (ceasing to practice clinical medicine), and physicians' productivity and output, including drivers of higher productivity such as those related to GDP growth,