Examination of Medical Residents' Working Hours

Literature Review and International Comparison

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Abstract

Background

Over the years, the State of Israel has taken a number of initiatives to improve the working conditions of medical residents: their shifts were shortened (from 36 hours to 26); a limit was set of 71.5 working hours per week; a two-hour rest break per shift was stipulated; and the maximum number of shifts per month was limited to six. However, residents report that the specified regulations are not always implemented, that the established regulations are still very demanding, and that their working conditions are difficult. In addition, a third of the residents report working 71.5 hours or more in an average week.

Objectives

The objectives of this study were (1) to review the evidence regarding the maximum work hours of medical residents and their impact on the quality of care and the quality of work life for the trainees; (2) to present up-to-date data on the regulations and work hours in practice of residents in OECD countries; and (3) to identify successful models of relevance to Israel.

Methods

(1) Literature review to identify models of work and their effects on quality of care. (2) Distribution of a questionnaire among experts from 14 different countries for a cross-country comparison of regulations and actual working hours: the United States, Canada, Israel, Spain, the Netherlands, Hungary, Ireland, England, Estonia, Slovenia, Germany, the Czech Republic, Latvia, and Finland.

Findings

Long hours of work and lack of sleep are liable to adversely affect the clinical acumen of medical residents, the quality of patient care they provide, and their own quality of life. The literature review showed five ways that are employed to improve the working conditions and performance of residents: setting a limit on the number of weekly working hours; establishing guaranteed rest breaks; stipulating night float (overnight) shifts in place of consecutive overnight and day shifts; limiting overnight shift frequency; and limiting shift duration.

A summary of findings – Maximum working hours of medical residents, under the law, 2020

Country	Maximum continuous shift duration (hours)	Alternative contract – opt-out from max. continuous shift duration	Maximum weekly working hours (WWH)	Reference period for averaging WWH (months)	WWH allowed limit Excess	Option to sign an alternative contract – opt-out from max. WWH
USA	28		80	1		88
Canada (Ontario)	26		80			
Israel	26		71.5	12		
Spain	24		48	6		
The Netherlands	24		48	4	60	
Hungary	16	32	48	6	60	
Ireland	24		48	6		
England	13		48	6		56
Estonia	24		48	4		
Slovenia	16	32	48	6		
Germany	24		42	12	80	48
Czech Republic	16	24	40	12	48	56
Latvia	24		40			56
Finland	24		38.25	4	85	48

Empirical studies show that in most cases, when the above-mentioned models were used to ease the burden of long duty hours, improvement was found in one or more of the areas examined (e.g., a reduction in the number of medical errors or an improvement in the quality of life of residents). However, alongside the desired effects, undesirable effects were also reported, such as reduced continuity of patient care and an adverse effect on residency education and training. Of the five ways reviewed in the literature, most of the countries studied decided to tackle the issue by setting a limit on the weekly working hours.

We found two approaches to limiting weekly working hours: (1) The U.S. and Canada set a limit of 80 hours; (2) European countries abide by the EWTD (European Working Time Directive) that sets a limit of 48 weekly working hours (including overnight shifts), averaged over a multi-week period. Some countries find it difficult to

comply with this limit, and certain mechanisms have been introduced for exceeding the weekly working hours limit, e.g., using alternative contracts.

Policy recommendations

To improve the work conditions of the residents in Israel and based on the experience of most of the countries studied, we recommend reducing the limit on weekly working hours (the most commonly applied way of improving residents' work conditions out of the five ways identified in the review). This is the most flexible policy, which allows for the management of working hours in each clinical field taking into account the unique needs of each ward and hospital. The European approach sets a limit of 48 weekly hours; and this may be used as an aspirational goal, while the Ministry of Health (MOH) could periodically set a limit which is appropriate for Israel at that point in time. In light of the international experience, the reduction in maximum work hours should be implemented gradually, in conjunction with the addition of other health professionals (such as physician assistants) who could share the workload with the residents.

We also recommend that an effective enforcement mechanism be established to ensure the implementation of the limit on weekly working hours and to establish a procedure for handling cases of consistent noncompliance with the regulations.

Executive Summary

Background

Medical residents in Israel work excessively long hours. While they most often work from 7:00 or 8:00 to 15:00 or 16:00, they also frequently work consecutive day and overnight shifts of 26 hours, including shifts over weekends and holidays. This amount of work is far more than the standard in any other job sector in the country.

Over the years, the working conditions of medical residents have been repeatedly on the agenda in Israel. Several government initiatives were introduced to improve the working conditions of medical residents: the once common 36-hour shifts were shortened to 26-hour shifts; a limit was set of 71.5 working hours per week; a two-hour rest break per shift was stipulated; and the maximum number of shifts per month was limited to six. However, medical residents report that the specified regulations are not always implemented. Thus, for instance, in a survey conducted by the Israeli Medical Association (IMA) in 2020 among medical residents, 63% of the residents reported that notwithstanding the requirement for rest breaks during shifts, they can hardly, if ever, take a nap (never – 9%; seldom – 54%); 24% of the residents reported working more than six overnight shifts per month (17% reported working seven overnight shifts per month; 7% reported working eight to ten overnight shifts per month); and 31% reported working 71.5 hours or more in any typical week at the hospital.

The Ministry of Health (MOH) is considering ways to promote changes in the duty hours regulations for residency training. The issue has been raised for discussion on several occasions, including ahead of the negotiations on the new collective wage agreement with the IMA. The previous agreement was signed in 2011, following a long strike by the physicians, and set to be in force for eight years. However, at the time of writing (October 2021), the opening date for the negotiations had been postponed due to delays in the establishment of the government and the ongoing COVID-19 pandemic.

In parallel, the pandemic put the work hours of medical residents at the center of public policy discourse and led to a large protest of residents demanding a shortening of overnight shifts. In the wake of these protests, the IMA convened a committee of experts to examine the work schedules of physicians and the nature of the overnight shifts in hospitals. The committee proposed several novel models with shortened duration of overnight shifts.

Ahead of the anticipated negotiations, the MOH asked the Myers-JDC-Brookdale Institute to conduct an international review of models of duty hours regulations for residency training, with the focus on the number of working

hours, along with a related review of the known effects of these models on the training of medical residents, on their quality of life, and on patient safety and clinical outcomes.

Objectives

The objectives of this study were (1) to review the evidence regarding the maximum work hours of medical residents and their impact on the quality of care and the quality of work life for the residents; (2) to present up-to-date data on the regulations and work hours in practice of residents in OECD countries; and (3) to identify successful models of relevance to Israel.

Method

To achieve these goals, two research tools were used:

1. **Literature review:** To examine the impacts of the different types of duty hours for residency on the quality of care, training, and quality of life of residents, a literature review was conducted, based on systematic reviews and up-to-date articles. Using the Google Scholar search engine and the PubMed database, the study team searched for relevant articles by keywords (e.g., residents work hours, physicians, fatigue, night shifts, night float). To gain deeper insights, other articles referenced in the search result articles were also reviewed. The study team additionally searched for policy statements of organizations concerned with health policy development.
2. **Survey of country experts:** Given the gap occasionally found between the models described in scholarly articles and the implementation in practice of the specified procedures, and with the aim of expanding the review to include other relevant countries not covered in the literature, we conducted a survey among experts from a large number of countries that compared the legal limits on trainee duty hours and their implementation in practice in those countries. A questionnaire was drawn up based on the international literature review findings and including questions of special interest to the MOH. The questionnaire was shared with a network of international health policy researchers associated with the European Observatory on Health Systems and Policies, an intergovernmental European organization promoting evidence-based health policy development. The organization maintains close contacts with policy makers and experts from more than 30 countries, and works in partnership with research centers, governments, and international organizations, analyzing health systems and health policy trends. The questionnaire was designed to examine the working conditions of medical residents, with the focus on medical residents working hours in specific OECD countries.

We sampled 14 countries, most of them similar to Israel in terms of the health system inputs and available resources, including public resources. The criteria for selection were the rate of physicians per 1000 people, population size, expenditure on health as part of the GDP, and the relative share of public funding in the general expenditure on health (the data, drawn from the OECD database, are up to date for 2019). Experts from the following countries agreed to collaborate and filled the questionnaire: Spain, the Netherlands, Hungary, Ireland, England, Estonia, Slovenia, Czech Republic, Latvia, and Finland. We added the USA because most of the literature describes this country, and Canada and Germany due to their experience in reducing residents' working hours, and Israel, to compare the findings. Thus, in total, data were collected regarding 14 countries.

Findings

The literature review

Long hours of intensive work are liable to adversely affect the clinical acumen of medical residents and the quality of patient care they provide. While it is difficult to empirically prove a direct effect on clinical outcomes, it was found that working under extreme fatigue adversely affects the cognitive and clinical performance of physicians and increases the probability of medical errors. Empirical studies show that extended shift duration of over 16 hours and, consequently, lack of sleep, have adverse effects on the quality of life of residents and on patient safety. In view of the accumulated evidence, many of the OECD countries, including Israel, have taken measures to limit the number of weekly working hours for medical residents and restrict shift duration, and specified requirements for adequate rest time between shifts. The five approaches to reducing duty hours without adversely affecting training programs and hospital functioning reviewed in the literature are listed below.

1. **Setting a limit on the number of weekly working hours** – In 2003, a procedure setting a limit of 80 weekly working hours for medical residents was established in the USA. A similar procedure is in place in Canada. The European Union specified a limit of 48 weekly working hours, including overnight shifts.
2. **Night float (overnight) shifts** – During a specified period, limited to a maximum of several nights a month, residents work successive overnight shifts only. This model was tried in the USA and Canada, and a somewhat modified version of the model is currently implemented in the UK.
3. **Limiting shift frequency** – Reducing shift frequency, e.g., from once every two days to once every four days (that is, limiting shift frequency to seven shifts per month).
4. **Limiting shift duration** – limiting shift duration to 24 or 16 hours.

5. **Guaranteed rest breaks** – This approach was adopted with the objective of reducing continuous duty hours without sleep. To this end, for each night shift, a certain number of hours are set aside for rest only; during those rest hours, the trainee must hand over the responsibility for departmental patient care to another staff member. This model was tried in several countries, including the USA and Israel.

Reducing the number of medical residents working hours, whether by setting a limit on the number of weekly working hours, reducing shift frequency, or limiting shift duration may impact the outcome indicators of patient care (medical errors, mortality rates, etc.). Support for reduction in the number of medical residents working hours is indicated in many of the studies reviewed. Various other studies show that reduction in the number of medical residents working hours has no real effect on the indicators examined. Only a few studies show: (1) an adverse clinical effect, that is, an adverse effect on the continuity of patient care; (2) an adverse effect on residency education and training, since the reduction of cases handled by the residents following the reduction in their working hours limits the clinical experience they gain in the course of their residency (as specifically evidenced in surgery residency training); (3) a decreased sense of readiness for more senior roles. Some of the studies reviewed, including two large-scale randomized controlled trials (RCTs), found no difference in the quality and safety of patient care due to reduced shift duration.

The international comparison

The international comparison involving 14 countries shows that only one country, England, implements a model of short shifts of up to 13 hours. Restrictions in number of extended duration shifts per week is in place in all other countries reviewed. Israel is no exception in terms of overnight shift duration. In fact, **in most countries reviewed, medical residents work shifts of 24 to 26 hours**. The exceptions are Hungary and Slovenia, where the limit for overnight shift duration is 16 hours, although in both countries, residents may be assigned, with their consent, to longer shifts of 32 hours.

A limit on the total number of weekly working hours, including overnight shifts, is in place in all the countries reviewed. We found two approaches to limiting weekly working hours: (1) the USA and Canada which set a limit of 80 hours; and both countries allow the highest monthly overnight shift frequency. (2) The European countries follow the *European Working Time Directive* (*EWTD* that limits the number of weekly working hours to an average of 48 hours. The Directive limits the maximum number calculated over a reference period that varies from country to country. For instance, in Spain, the average is calculated over a reference period of six months while in Estonia, the average is calculated over four months. Thus, certain deviations from the regulations may

be allowed. For instance, in the Netherlands, residents may work up to 60 hours per week, provided the average number of working hours per week does not exceed 55 when calculated over a reference period of one month, or 48, when calculated over four months. However, in some countries, where they find it difficult to comply with this limit, certain mechanisms have been introduced for exceeding the weekly working hours limit. Israel, with a limit of 71.5 hours, is closer to the first approach.

A requirement for long rest breaks during shifts (rather than short breaks of up to 30 minutes) **is in place only in** Israel. However, there isn't an effective enforcement mechanism to ensure implementation of the breaks. In fact, breaks are not strictly enforced in most of the countries reviewed. The countries that stand out are the UK and Ireland, where a complaint filing procedure regarding violations of duty hours regulations is in place.

A summary of findings – Maximum working hours of medical residents, under the law, 2020

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Ireland	24		48	6		
England	13		48	6		56
Estonia	24		48	4		
Slovenia	16	32	48	6		
Germany	24		42	12	80	48
Czech Republic	16	24	40	12	48	56
Latvia	24		40			56
Finland	24		38.25	4	85	48

Policy recommendations

The following steps are recommended:

- To improve the work conditions of the residents, based on the experience of most of the countries studied and as the most commonly applied way out of the five ways identified in the review, we recommend **reducing the maximum number of the residents' weekly working hours allowed by the law**. This is the most flexible policy, that allows for the management of working hours in each clinical field taking into account the unique needs of each ward and hospital. The European approach sets a limit of 48 weekly hours; and this may be used as an aspirational goal, while the MOH could periodically set a limit which is appropriate for Israel at that point in time. In light of the international experience, the reduction in maximum work hours should be implemented gradually.
- The recommended reduction of working hours should be **decided and implemented by the MOH together with other entities involved in policy shaping**, such as the Ministry of Finance, the IMA, the Medical Residents Organization of Israel (MIRSHAM), and hospital directors general.

  The reduction in the maximum number of the residents' weekly working hours is a necessary step, albeit difficult to implement, and should thus be **implemented gradually**, in stages spread over several years (similar to the dental health reform in Israel, where dental services for children and the elderly were added to the health basket).**Three parameters** should be taken into account at each stage of the reform: (1) the residency training should be supervised all along the process **to prevent adverse effects on the educational outcomes**; (2) **suitable mechanisms should be established to ensure the orderly transfer of patient care when switching shifts and thus, the continuity of care**; (3) in order to ensure successful implementation of any work hour regulations, **it will be necessary to add medical residents and other health professional positions** e.g., physician assistants, phlebotomy technicians, specialist nurses, and assistant nurses, who will work alongside the residents to enable the clinical staff to share the work load together.
- Clear-cut procedures should be established, including, a requirement for **the trainee's approval of, and consent to any deviation from the regulations**. To ensure the actual implementation of the recommended procedures, **an effective enforcement mechanism should be established** (e.g., periodically monitoring compliance with the duty hours regulations) and **a procedure supervisory board should be appointed and empowered to enforce** the stipulated duty hours regulations, for instance by disciplinary reprimand or fines, in the case of noncompliance.