New legislative regulations, problems, and future perspectives, with a particular emphasis on surgical education

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ABSTRACT

Major changes in the residency-training systems are currently under way worldwide. New laws regulating the maximum number of work-hours per week are already enforced in the USA and are soon to be enforced in the European Union (EU); they apply to residents in training, as well as to practising specialists in the USA. These changes are expected to influence training imparted to resident doctors, quality of care given to hospitalised patients and functioning of hospitals, in general. The implications of the new regulations are likely to be magnified by the gradual decrease in the number of young people willing to take up Medicine as a career and even more so by the decrease in the number of medical graduates who choose to take up Surgery as their specialty. This communication describes the new situation that has developed (especially in general surgery) with the recent regulations and intends to suggest possible solution to the important problems that are likely to arise.

KEY WORDS: Residency, Restriction of work-hours, Surgical Education, Work safety.

Resident doctors and postgraduate students of surgery strongly believe, almost to the point of conviction, that hard work done during residency alone would guarantee the acquisition of knowledge and skills required for autonomous career as a surgeon. They believe that long unrestricted hours of work allow them to participate in and learn about various phases of care of surgical patients and this is a small price to pay for acquiring the requisite knowledge, experience and skills for becoming a successful surgeon. The learners are facing certain novel problems. Development of various sub-specialties like urology, cardio-thoracic surgery, gastro-intestinal surgery, paediatric surgery and cardiovascular surgery has improved patient care with specialists focussing on areas of specialization. However, this has made it difficult for a post-graduate student of surgery to have reasonable exposure to these sub-specialties during his limited training. Secondly, widespread acceptance of multi-disciplinary approach for caring for patients admitted to general hospital interferes with education of these graduates.

Would Surgical Residents Become Extinct?

Western countries are experiencing a constant and progressive decrease in the number of students enrolling in medical schools. Over the last 6 years, the number of candidates enrolling in the Medical Schools in the USA has declined by 25% (from 44000 to 34000). In addition, a significant number of medical graduates do not practice medicine after graduation. They take up other professional activities or choose to be busy with family-related activities. The latter is especially true of female graduates. In England the percentage of graduates not taking up medical careers at five years after graduation amounts to an impressive 30%. In addition, surgery seems to be holding lesser attraction for the graduates as a future career as compared to four years back. This is evident especially in France, where the number of doctors selecting surgery has declined by over 25% over the past 4 years. The reduction in the number of doctors in the surgical departments has dented the capacities of many of these departments to provide high quality standards of patient care. In France, this is sought to be surmounted by using doctors who have graduated from the Africa or Middle East even though these doctors have not been products of the French educational system. The situation has reached much serious proportions in Germany. Here academic institutions with long tradition of training, education and research are increasingly finding it difficult to provide adequate care in surgical wards. Only Sweden seems to be bucking this general trend noted in the USA and Europe, where shortage of resident doctors has become the norm. In Sweden, the number of surgeons has increased by 3 to 4 times since 1970, mainly as a result of reduction in the number of work-hours. For each hour of “on call”, the doctor in Sweden receives 1 to 3 hours off from duty time. Swedish surgeons after working for an average of about 40 weeks in a year get 4 to 5 weeks’ leave annually allowing them to meet familial obligations (e.g. illnesses of children etc and for honing their skills and improving their
knowledge through attending congresses and seminars.\textsuperscript{9}

There are several reasons behind the phenomena of lower enrolment in medical schools, considerable proportion of qualified doctors opting not to pursue career as healthcare providers and progressive decrease in the number of graduates aiming to be specialists (especially in surgery) described above. An important reason is the existence of other professions allowing more comfortable life, without the need for a lengthy and stressful education and without the engagements, the stress, and the responsibilities associated with the practice of medicine (particularly surgery). It should, however, be conceded that in a study carried out in Pakistan stress was not perceived to be an important influencing factor for those who decided to select surgical specialties.\textsuperscript{10} Difficulty in and uncertainty about finding a senior position for working in a reputed hospital after acquiring the necessary title or degree is another important reason for individuals to shun from becoming doctors and surgeons.

Another remarkable change is the progressive increase in the percentage of women, both amongst medical students as well as amongst the residents in a variety of specialties, including general surgery. In most European countries, the percentage of women among the students of medicine is above 60%.\textsuperscript{1} The figure is much higher in selected European countries such as Spain, Poland and Italy (80 – 85% among students), and Russia (90%)\textsuperscript{1,2} The increase of the percentage of women is also observed among surgeons; in England the percentage of women surgeons has increased by around 47% during the last 3 years. The percentage of women residents in surgery corresponds to about 16%, while in the rank of chief resident doctors the corresponding figure is approximately 23%.\textsuperscript{1} In most cultures, women have considerable responsibilities on the home-front and women accord a much higher priority to familial matters than do men. It is possible that new guidelines, which have shortened the working hours for doctors and surgeons, may have resulted in attracting more women to the field of surgery.

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\textbf{New Regulations Regarding the Work-hours of the Residents}
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Residents in general surgery were those that dedicated more time to their specialty.\textsuperscript{13,14} In America, till recently, residents worked about 95 hours per week on an average.\textsuperscript{15} However, about 20 years ago certain questions emerged regarding the performance and the work-safety of doctors who were occupied for a long time and continuously in the hospital and hence were deprived of sleep. These reflections surfaced brutally in 1984 after the death of an 18-year-old patient (named Libby Zion) in a central hospital in New York.\textsuperscript{12} The question that began to emanate with that particular instance was whether the residents were able to function well under hard labour conditions, whether their readiness for reaction was diminished and whether their critical thought process was disturbed as a result of the mental and bodily lassitude resulting in a high probability of medical errors. This question has been a major concern in many studies.\textsuperscript{13-15} As a result, the state of New York established a limited number of work-hours for residents per week since 1987 (law 405.5). Nowadays, in the USA and according to the ACCME (Accreditation Council on Graduate Medical Education) the restriction of 80 work-hours per week for residents is in effect since July 1, 2003. There are also in effect some concrete regulations regarding the duration of each shift as well as the duration of obligatory resting periods for the residents. The violation of these regulations may result in sanctions against the hospital and the hospital could face a decrease in the number of residents posted for a defined time period. In the USA, the new regulation of 80 work-hours per week is currently in effect for the residents only, but many believe that these regulations will be applied in the future for the surgeons as well. It is of interest that the malpractice lawyers in America have begun to formulate questions like “How many hours per week are you working?” Similar regulations regarding the work-hours per week are also in effect in Australia; for the residents in Australia, a maximum of 13-14 work-hours per day is permitted. After this time period, a period of rest is imposed until the next cycle of work begins.\textsuperscript{16} Hospitals violating these new regulations are threatened with serious sanctions.

Recently certain attempts have been made to improve the residents’ conditions of living in some European countries. For example, in England in 1991 a regulation was introduced regarding the education of residents and restricting the work time period per week to approximately 70 work-hours.\textsuperscript{17} Nevertheless, these regulations were not applied uniformly by the hospitals of this country, even though the sanctions were serious enough.\textsuperscript{18}

In 1993 the European Union published a directive (93/104/EC/23-11-1993) that regulated the work-time in the EU countries.\textsuperscript{19} Ensuring safety and safeguarding health of resident doctors and improving their quality of life and conditions at workplace were the main motives behind promulgating the directive. In 2000 the European Parliament published a new directive (Directive 2000/34/EC) that included the residents.\textsuperscript{20} The principal points of this directive are as given below:

1. By 1\textsuperscript{st} August 2004, the total weekly time of work will be decreased to 58 hours. This regulation will be in effect up to August 2007.
2. From August 2007, this time will be progressively decreased to 56 hours.
3. From August 2009, the medium weekly time of work (including the on-call service) for the residents will be decreased to 48 hours. This planning will allow the necessary adaptations of the European countries; the period of adaptation can be extended up to 2012.
4. The minimal duration of continuous rest per 24 hours should be 11 hours (effective, August 1, 2004)
5. Break at least 20 min when the duration of work exceeds 6 hours (effective, August 1, 2004)
6. The minimal period out of work per week should be 24 hours (or at least 48 hours per 14 days) (effective, August 1, 2004)
7. The maximum duration of night work should be 8 hours
In these regulations, “work” means the obligatory presence of the worker in the working place, to provide his/her services. The time spent during the on-call service is considered as “work-time” if the doctor should be present in the hospital for the resolution of problems related to his/her service. 19-20

Medical Education And Medical Services Under The New Regulations: Movement In The Right Direction?

It is hard for the surgeons of previous generation to understand these restrictions on time for practising their craft. Extended periods of hard work (even > 80 hours/week) have not deprived the joy that surgeons feel on a job done well by the practice of surgery. 21 This attitude is based on the acceptance of the fact that doctors are in a continuous war with the enemy i.e. disease, a war that lasts 24 hours of a day, 7 days of a week, 365 days a year. 22 Contrary to this opinion, many residents currently consider the new regulations good, since they have more time to be with their family, and to cultivate other interests, thereby improving their quality of life. In the USA, a particularly positive altitude to these new regulations has been recorded among residents of some specialties like anesthesiology. 2 Even a significant percentage of residents in general surgery have positively reacted to the new regulations as one day per week is given off for these residents. Considering their responsibilities at home, it is not surprising to note that women residents also welcomed the new regulation. Nevertheless, the restriction of work-hours per week is likely to create some problems in medical education. The obligatory absence of the residents following an on-call service will result in the loss of continuity in the care of patients. The residents stand to lose opportunities of learning that educational activities like case presentation sessions and in-service discussions provide. 22-24 These changes can create a lack of responsibility in the resident doctors involved in the care of the patient and may result in the phenomena of transfer or denial of responsibility in the case of complication or poor outcome. The American College of Surgeons notes “... the absence of familiarization with the problems of patient and not the lassitude is the main cause of errors in the exercise of medicine.” 25

To estimate the impact of the new regulations on surgical education it is useful to examine the experience acquired in Sweden during the last 30 years. In Sweden the 40 work-hours week has been in vogue for a long time. The results of surgery in Sweden have consistently improved during the last 30 years and they are among the best worldwide. Nevertheless, the limited weekly work-hours has its impact on the education of residents in Sweden, where the number of cases that the residents treat is relatively small. Indeed, in Sweden, neither new surgeons nor residents reach the limit of 200 interventions or 400 work-hours in the operating rooms per year. 25,26 After the acquisition of the title of specialty, an additional period of 6 to 8 years as junior specialists is required, during which the new surgeons will acquire the experience necessary to become autonomous as professionals. In England, the young surgeons do not always have the required experience to function autonomously, and therefore their supervision from more experienced surgeons is needed.

The restriction of the number of weekly work-hours is expected to create significant problems for many hospitals. Hospitals will have to reorganize the work schedules and re-do the distribution of work in several of its departments. Departments that do not require the presence of doctors round the clock would find it easier to implement changes than others. Surgical departments would especially find it difficult to implement changes to be in tune with the new directives. Greater number of free hours would mean that surgical resident doctors would be spending lesser time in operation theatres, too; resulting in reduction in training in operative work. 3 The inclusion of the specialized surgeons in the new regulations of the EU will of course worsen the already significant problem of lack of residents, especially in surgery. The pressure due to the lack of sufficient number of residents is transferred to the remaining medical personnel, making educational activities and clinical research suffer. 8 The problem of lack of residents in surgery is expected to be particularly intense in small hospitals serving population under 250000 (these hospitals in England represent about 50% of the total number of hospitals). 3 The quality of education provided in these hospitals will suffer because of paucity of manpower. The prospect of malfunction of these hospitals and of underemployment of their workers has been used as an argument for suspending their operation or for incorporating smaller units with larger hospital centers. 9

The solutions offered to offset these problems could be along these lines. More medical personnel (especially resident doctors) may have to be recruited on a priority basis. Of course, the work of each one – under the new labour conditions – will be diminished. The extension of duration of the postgraduate course may be another possible solution. In the Scandinavian countries, where the limited weekly work-time is in effect for more than two decades, an extended period of time (up to 10–12 years) is required for a resident to complete the programme of residency in general surgery and to acquire the title of a surgeon. 3 For most western countries, this solution is rather inapplicable. Indeed, many questions should be answered such as: who will accept to pay for this extended time of residency programmes (instead of the five-year period)? Which resident will accept such a long period of residency at the expense of their professional life as specialists? A more acceptable solution could be establishment of various subspecialties: This will allow for each surgeon to have a satisfactory number of cases in his subspecialty, thereby acquiring the required experience in his / her field of interest. This solution has been applied in Sweden and has improved the results of surgery in the various surgical subspecialties. 25

In day-to-day practice, non-medical personnel could carry out the non-clinical work, thereby saving human potential. This is important, since roughly 1/3 of the time that residents spend...
is used in work of bureaucratic or administrative nature. To save the time of the residents, direct application of modern technology like computerisation of hospitals and electronic transmission of radiological pictures and results of laboratory examinations have been proposed. These changes, to a certain extent, will ameliorate the bad working conditions of doctors in the hospital. The application of new models of work for example, on-call services in shifts, graduated schedule of work, etc will also facilitate better functioning of the hospitals under the new regulations. In Germany, two models of on-call service have been tested (alternating in two shifts of 12 hours or alternating in three shifts of 8 hours each). The model of 12 hours is the preferred one by the majority of residents. Obviously, this solution will require more personnel (mainly residents), and this is a problem, given the already decreased interest of residents in general surgery. The cessation of operation of smaller hospitals may also be required to save resources and human potential. Clearly, the new regulations regarding the restriction of work hours per week is a major health care policy change that has required academic sub-specialty departments to make significant alterations in their administrative structure. Further study is necessary to determine how these changes affect both quality of training and patient care in the short and long term.27-29

References