

Defining “good quality” training in post-graduate medical education: A systematic review of the literature

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ABSTRACT

Background

The current model of post-graduate medical training dates back to the days of Sir William Osler. Since then, several studies have been conducted to improve the quality of such training. The aim of the current review is to navigate the published literature in an attempt to understand the post-graduate training scene, and find a definition of what “good quality training” entails.

Methods

Three bibliographical databases (MEDLINE®, EMBASE® and Google Scholar™) were searched for journal articles. For each database, a combination of the following keywords was used: “intern”, “house officer”, “house surgeon”, “registrar”, “resident” or “junior doctor”, AND “quality”, “training” or “working hour”.

Results

A total of 621 publication titles were identified and screened, of which nine were included in the current review. The major themes of the identified publications are: deficits of current junior doctor training models, and studies evaluating the quality of specific programmes.

Discussion

Several articles by junior doctors and medical educators have highlighted the potential waste in junior doctors’ times on administrative tasks instead of educational opportunities. If these are culled, it may be conceivable for junior doctors to utilise their time more effectively, and ultimately improving their work satisfaction. Flexible work schedules appear feasible (with appropriate infra-structures in place), and a competency-based approach to learning may lead to shorter training times for those who are both capable and working full-time.

INTRODUCTION

Background

The current model of post-graduate medical training dates back to the days of Sir William Osler who modernised the way medicine is practised. He also introduced the concept of a “medical residency” in the early 20th Century. It is based on an apprenticeship model, and as the name implies, junior doctors were expected to spend the majority of their time in hospital, almost to a point of *monasticism* (Rodman, 2019). However, despite the vast changes in socio-cultural norms, and increased complexity of health systems, the model of post-graduate training of doctors has witnessed a dearth of change and innovation. The dissonance between the post-graduate training model as it stands, and the current pace and expected lifestyle of the 21st Century doctors has led to increasing dissatisfaction among junior doctors (Commission on the Resident Medical Officer Workforce, 2009), and calls for a change among medical educators (Landau, 2007).

Several facets of post-graduate medical training of junior doctors (e.g., duty hours) have been studied and published within the literature. A major aim of these studies is to improve the “quality” of such training, although a clear, operational definition of what “quality” entails remains lacking. Therefore, the aim of the current review is to navigate the published literature in an attempt to understand the post-graduate training scene, and find a definition of what “good quality training” entails.

METHODS

Eligibility criteria

Studies on the quality of junior doctor training were included in the present review. The exclusion criteria were non-English publications, and studies on non-medical health professionals (e.g., allied health internships).

Information sources

Three bibliographical databases (MEDLINE®, EMBASE® and Google Scholar™) were searched for journal articles. Bibliographies of the included articles were also searched for additional references. The next phase of the literature search involved searching for relevant content in medical student journals. These are periodicals in which intern projects and experiences may occasionally be published. However, their content is not reliably indexed in searchable databases (Alamri, 2016). The websites of most of the existing medical student journals (as identified in our previous review; Alamri, 2016) were searched using the same criteria and strategy used for bibliographical databases. Finally, official electronic documents were sought from the websites of governmental and non-governmental bodies (namely, the Medical Council of New Zealand, the Medical Board of Australia, Health Education England, Irish Health Service Executive, and National Institutes of Health). These resources, in particular, were believed to provide valuable information on training schemes, rationale for the current structure, and any anticipated changes.

Search and study selection

For each database, a combination of the following keywords was used: “intern”, “house officer”, “house surgeon”, “registrar”, “resident” or “junior doctor”, AND “quality”, “training” or “working hour”. The search was conducted in early June 2020. Results of this search that met the inclusion criteria were screened (as described below).

Data collection and processing

The identified articles were grouped into themes. For each article, the methodological approach (and subsequent implemented methods) was noted. The articles were also critically appraised for methodological soundness (both at the study-level, and the outcome-level).

Summary measures and biases

Descriptive statistics were used to describe the quantitative data (e.g., the number of junior doctors per training programme). Analysis of the combined data sources (i.e., a

meta-analysis) was not attempted as this is outside the scope of the current project. The literature review is presented in accordance with the PRISMA guidelines (Moher et al., 2009).

RESULTS

Characteristics of the included studies

A total of 621 publication titles were identified and screened, of which 147 were assessed for eligibility by evaluating the abstracts. Of those, 21 publications were read in full-text, which led to the exclusion of 12. Therefore, the present literature review included 9 publications. The major themes of the identified publications are: deficits of current junior doctor training models, and studies evaluating the quality of specific programmes. See Figure 1 for an outline of the search strategy.

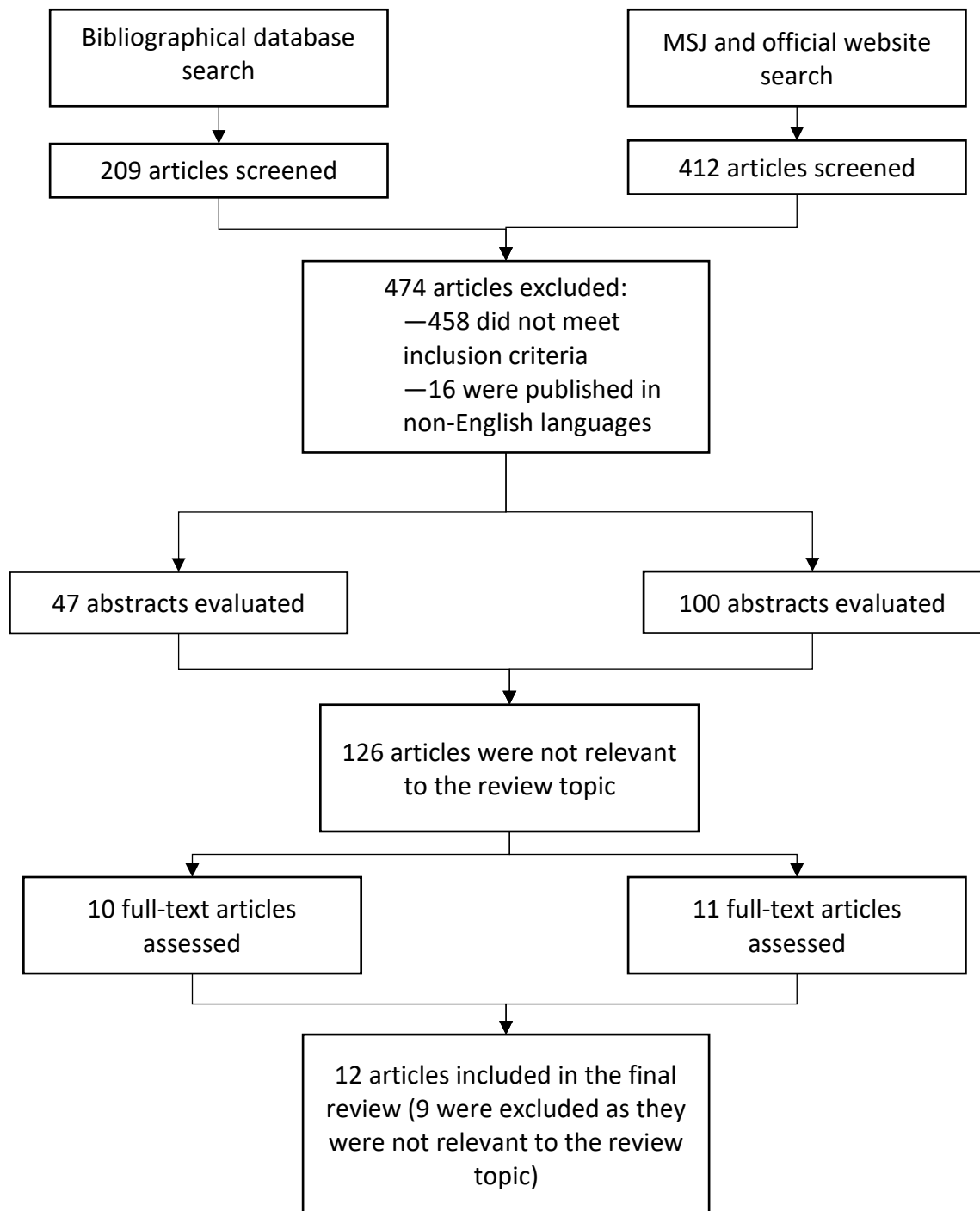


Figure 1. Search strategy of the included studies. MSJ = medical student journal.

Results of individual studies

1. Articles highlighting deficits in current training models

Gleason *et al* (2007) provided their opinion (as junior doctors) on the structure of post-graduate medical training in Australia at the time of their publication. Their view was

that junior doctors were mainly burdened by service delivery and administrative tasks, with little focus on structured and formalised education. One of the main focuses of the Australian Curriculum Framework (proposed in 2006) was improving the learning environment of Australian junior doctors, over and above simply using them as service delivery units. This, at least in part, has been undertaken to address the needs of 21st Century health environments (Landau, 2007). For example, Dent and his colleagues (2006) found that around 60% of Australian interns (i.e., junior doctors typically in the first two years after graduation) did not feel prepared to choose a career pathway. This, coupled with the plethora of administrative tasks that junior doctors are required to do (sometimes even interfering with what little structured learning they receive) has led some medical educators to call the current medical internship model a “lost opportunity” (Lake & Landau, 2007).

Hoff and colleagues (2018) have, on the other hand, highlighted the benefits of “flexible” training in the Netherlands. Junior doctors in the Netherlands, in addition to maximum 60-hour-week common to all European countries, enjoy a flexible training schedule. Instead of a “minimum number of hours”, junior doctors are assessed based upon their competencies—with a provision of shortening (or extending) the training period as needed by the individual junior doctor. Likewise, they are allowed to work in part-time capacity (minimum 0.5 full-time–equivalent) without fear of potentially jeopardising their training or other obscure administrative repercussions.

Although the abovementioned accounts may be regarded as only providing “soft outcomes” (i.e., there remains a lack of empirical data on, for example, the effects on patient safety), they do provide useful information on the feasibility of implementing new changes to the way junior doctors have been training. Long-term “hard outcomes” are required in order to establish an evidence-base in this area. Otherwise, opponents to such “leniency” often cite the fact that “patients do not obey the clock”, and that junior doctors must seize opportune learning experiences even if they happen late in the day or shift (Kimpton & Hole, 2019). Others have pointed out the flawed methodologies in studies that correlate longer work hours/fatigue with worse clinical performance and/or patient outcomes (Friedman, 2019). Such cited flaws include the subjectivity of measuring fatigue in these studies, and the failure to control for confounders (e.g., use of stimulants by junior doctors).

2. Studies evaluating specific training programmes

Guffey and colleagues (2015) investigated the important factors determining the quality of dermatology training in the United States (US). Unlike previous studies which relied on ‘academic metrics’ (e.g., the amount of research funding received per residency programme) to rank dermatology residency programmes, these authors sought the opinions of then-current dermatology residents. The single most important factor was good quality of clinical training. What entailed a “good quality of clinical training” was left to the respondent’s interpretation. Intriguingly, the “happiness of current residents” was almost equally seen as either one of the most important (12.2% of responses) or least important (16.3% of responses) factors in determining the quality of dermatology training. Among the least important factors as suggested by residents were “the camaraderie” among residents, and the quality of research

training provided by the residency programme. It must be noted, however, that the study only included 49 responses—a very low response rate considering that there are 117 dermatology training programmes in the US, with 407 1st-year dermatology residency positions offered in 2014 alone (Washington University School of Medicine in St. Louis, 2020). In addition, the ambiguity and subjectivity of the definition of “quality of clinical training” undermine the usefulness and external validity of this criterion as a quantifiable measure of good quality training for junior doctors.

Another study aimed to identify factors that correlated with high quality training among otorhinolaryngology final-year residents and programme directors in the US (Bhatti, Ahmed & Choi, 2015). From the responses to the surveys, several factors emerged, including: approachability and willingness of the supervising surgeon to teach, a high volume and variety of cases, and the provision of constructive and on-going feedback. Residents, significantly more so than programme directors, indicated that balancing clinical duties with learning opportunities was an important indicator. Akin to the study by Guffey *et al* (2015), this was a single-specialty survey study with a mediocre response rate (28%) from the senior otorhinolaryngology residents invited.

Finally, Buka *et al* (2019) evaluated the quality of an internal medicine rotation in a hospital in the United Kingdom after its structure was changed in liaison with junior doctors. The change included a busier 5-6-week block within a less busy 4-month rotation. The authors found a large proportion of participants (78–83%) to have enjoyed the change, and found it more conducive to their learning. There was no significant difference in the number of patients seen per junior doctor pre- and post-roster change. The authors also reported a “mean work-life balance score” without alluding to its meaning, or what the score had been prior to implementation of the changes. As is the case in the other two studies above, this was a limited cohort (18 participants only) from a single institution.

DISCUSSION

Summary of the evidence

Several articles by junior doctors and medical educators have highlighted the potential waste in junior doctors’ times on administrative tasks instead of educational opportunities. If these are culled, it may be conceivable for junior doctors to utilise their time more effectively learning from patients, performing procedures, engaging meaningfully with interested mentors vis-à-vis feedback and future career prospects, and ultimately improving their work satisfaction. Flexible work schedules appear feasible (with appropriate infra-structures in place), and a competency-based approach to learning may lead to shorter training times for those who are both capable and working full-time.

Studies on individual training programmes bring into focus the added value when the voices of junior doctors are heard. As the main stakeholders, junior doctors are capable of proposing work changes to maximise their learning without jeopardising their psychological wellbeing or service delivery. However, several challenges exist,

including the lack of an evidence-based to inform decision making, and the opposition of some medical educators and senior doctors to changing the *status quo*.

Limitations

Several limitations ought to be acknowledged; these are categorised into three levels: limitations pertaining to the articles comprising this review, limitations related to study outcomes, and overall limitations at the review-level. Each of the articles included in this review was summarised and critiqued (including limitations) in the previous sections. As a whole, the data provided in the included studies come from small samples. Thus, the generalisability of much published research on this issue is problematic. Furthermore, a few articles contained no empirical data, and were mere iterations of personal opinions and anecdotal experiences. Whilst still useful, these accounts are limited by their inherent biases and smaller scopes.

Most of the reported outcomes (e.g., opinions and attitudes of junior doctors from singular specialties) can be considered “soft outcomes”. “Hard outcomes” including the effects of new training models on the quality of doctors (e.g., error rates among surgeons) and patient safety outcomes remain non-existent.

CONCLUSIONS

The calls to modernise post-graduating medical training to a ‘post-Osler’ model fitting for the 21st Century are well-founded. Including junior doctors as key stakeholders in these changes is paramount. Defining what constitutes “good quality” training is likely to be the very first step needed. However, the evidence-base to help operationalise a working definition of good quality training remains lacking. This is likely to be, at least in part, due to the complexity of establishing a causal relationship between junior doctor working conditions, and effects on patients’ (as well as doctors’) health and safety.

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