

Doing a systematic review: a users' guide for foundation doctors

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Research is increasingly important for junior doctors and systematic reviews (SRs) are a great place to start. Carrying out an SR can help a doctor demonstrate commitment to a specialty, develop research skills and get results quickly. This article aims to provide some guidance on where to start and how to get the most from your project.

Introduction

Research is a great way to pursue your interests in a specialty and not only will it develop clinical knowledge, it also helps develop research skills and is both enjoyable and rewarding. It can be difficult for junior doctors with little experience to know where to start so this article aims to provide some useful tips and tricks to help.

Junior doctors can often feel a pressure to be involved in research, those with an interest in ophthalmology especially so. In increasingly competitive specialties, such as ophthalmology, trainees are required to make themselves stand out among other applicants. This is no easy task and research is a great way to go some way towards achieving it. By publishing in peer-reviewed journals, trainees can demonstrate research literacy, commitment and various other skills that can contribute to a strong application [1].

As well as helping trainees build a stronger application for specialty training, developing research skills is an important part of a career in medicine. Evidence-based medicine is founded on peer-

reviewed research, and it is vital for doctors to understand research methodology in order to be able to effectively incorporate research into their practice.

What is a systematic review?

A high-quality SR is considered the most reliable form of evidence to inform clinical practice. By using a 'systematic' method to appraise and summarise the available research relating to a specific research question, SRs aim to minimise bias in order to deduce the most up-to-date and accurate conclusions that can influence clinical care. Commonly, a meta-analysis will be carried out which is a method of statistical analysis that combines the data from various studies to draw more precise conclusions, while accounting for differences between the study methodologies and data sets [2].

Why systematic reviews?

There are countless types of study and this article by no means disregards others. However, an SR is an excellent way for trainees to achieve their aims of 1) publishing quickly to obtain application points, and 2) developing important research skills and demonstrating research literacy.

SRs are considered 'secondary' research, meaning they use existing data from primary research. This is a key strength of SRs for junior doctors as SRs can often be completed and published quicker than primary studies. For example, an ethics committee review is generally not required for SRs, whereas for primary studies such as RCTs, the ethics application can take months to be developed and approved [3].

As for any research, methodology is vitally important and fortunately various guides and protocols exist for ensuring your review is carried out according to up-to-date guidance. Useful resources can be found on the British Medical Journal, Cochrane or Preferred Reporting Items for SRs and Meta-Analyses (PRISMA) websites [3-5]. Different research questions will require subtly different methodologies, so it is important to make sure you choose the right one.

Rather than explaining in detail the methodology for SRs, this article aims to provide helpful tips and tricks to junior doctors aiming to get involved in research and achieve results.

Where do I start?

Many trainees are interested in research but finding a project can be a difficult first hurdle. The first thing to establish is what field of research interests you the most. Finding a topic that you are passionate about not only makes the whole process more enjoyable and rewarding, but also means you are more likely to see the project through until publication.

If you have an interest in a certain field, it is worth familiarising yourself with new and exciting research within it and thinking about novel ideas that could add to it. However, coming up with a project idea alone is difficult, and a more feasible way to find a good project is to approach a senior trainee or consultant who can act as your supervisor. A supervisor can guide you through the process, involve members of their own research team and will likely have several projects already in mind when you approach them. Additionally, they will have experience of the research process and will maximise your chance of publication [6].

When thinking about a supervisor, it is worth considering whether their interests match yours by looking into their publications and research output. A literature search is the starting point of any project, so by showing initiative and completing a search of current research in a field that interests you, you will already be off to a good start.

Project planning and methodology

Now that you have a project in mind, the next stage is to formulate a research question. The research question guides your methodology. It is helpful to make the question as specific as possible, as this will help you narrow down your literature search. Tools such as the population, intervention, comparator, outcome (PICO)

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framework can be helpful in creating the question [7].

When carrying out a systematic review, the aim is to summarise the findings of all studies that are relevant to a specific research question. So, it is important to develop a search strategy that will capture all relevant studies on the relevant databases. This is where having a specific research question is useful. Having used your search strategy, the next step is to work out which studies will be included in the review using your inclusion and exclusion criteria, and then to appraise and analyse the data.

How to get the most from your project

Firstly, complete it. Even with the best intentions, it is not uncommon for junior doctors' projects to be left unfinished due to various factors such as clinical commitments and lack of time. There are a few simple things you can do to maximise your chance of finishing your project and publishing quickly.

Involving colleagues in the project is beneficial for everyone. The literature search, screening and statistical analysis phases can often require many hours of work. By involving colleagues in the process, it not only speeds up the process, but it also contributes to the reliability of the research as you can each be an 'independent reviewer'. Additionally, other trainees will be keen to help as they can be listed as co-authors on the final publication.

Setting clear targets for various parts of the project and thinking realistically about how much time you have and when you want to publish by. For example, setting a target for the team to finish data extraction or to finish each section of the write up.

It is important to use the resources available to you. Most hospitals and universities will have a bank of resources available. Additionally, there are many courses available to junior doctors to help them develop research skills. These can range from simple online tutorials to qualifications such as a PGCert or MRes.

Publication

For every project the ultimate goal is publication in a peer-reviewed journal. A good way to maximise your chance of publication is to have an idea of the journal you will submit to in your mind from the outset. When deciding on a project and conducting your literature search you will get a feel for the journals that publish papers in your field of interest. Read these journals and look at their submission guidelines and you will know what they are looking for.

Additionally, be realistic when submitting to a journal. Higher impact journals such as the BM, NEJM, Lancet are extremely difficult to publish in. Instead, peer-reviewed specialty journals are a great place to start. Journals will allocate reviewers to your article who will decide as to whether they think your article should be published. If accepted, it is highly likely that the journal will ask for 'revisions', which are suggestions from the reviewers about how your project could be improved. This is a great opportunity for objective feedback on your project and helps you to make it as good as it can be. If your project is rejected do not be disheartened. Often the journal will provide feedback as to why, which you can amend and then re-submit either to the same journal or elsewhere. In fact, nine out of ten studies rejected from the New England Journal of Medicine are eventually published elsewhere [8].

Presentation at regional, national and international conferences is another way to maximise the yield from your project. Often royal societies such as the Royal College of Ophthalmologists will run annual conferences or alternatively you can look for international conferences further afield. These conferences are an excellent opportunity to disseminate your research and to network with other doctors with similar interests.

A last word

SRs are a great way for junior doctors to get involved in research and build important skills such as critical appraisal, statistical analysis, and scientific writing. Research is enjoyable and rewarding and can help specialty applicants build a strong CV. Hopefully this quick guide has offered some useful tips to help junior doctors achieve their aims.

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