

Systematic Reviews and Meta-Analysis: Webinar Notes

How to Start and Publish a Systematic Review

Speaker: Marwan

1. Webinar Overview

This webinar focused on systematic reviews and meta-analysis, hosted by FOSIS and Ihsaan Medics with Habib and Marwan. It attracted over 115 signups, following previous webinars that had drawn around 150 to 200 attendees. Marwan is an FY1 doctor who graduated first in a cohort of 537 at Manchester in 2025, is completing MSc research, and is an incoming fully funded PhD student. Marwan shared his journey from a third-year medical student with no research experience to becoming a published author with over 10 publications, emphasizing how systematic reviews can provide a significant advantage for medical students seeking to enter competitive specialty training programs. He outlined the 10-step process for conducting systematic reviews, including topic validation using PICO criteria, search strategy development, data extraction, risk of bias assessment, and meta-analysis techniques using either R software or Cochrane's RevMan. The webinar covered practical aspects like using Prospero for protocol registration, managing search results, and writing the discussion section, with Marwan emphasizing the importance of approaching supervisors after completing initial drafts to establish a collaborative relationship.

2. Why Systematic Reviews Matter

Systematic reviews were presented as one of the strongest and most accessible forms of research for medical students. Marwan highlighted that 52% of FY2 doctors in 2025 did not secure specialty training posts, making publishable academic work increasingly important.

A systematic review can usually be completed autonomously from home, on a validated topic, and at a flexible pace. It is also highly publishable, can generate national conference presentations, and develops critical appraisal skills useful for academic clinical fellowship interviews.

3. Marwan's Research Journey

Marwan described initially spending nine months on a case report that was rejected and never published. He later became involved in a case series after a consultant's fellow substantially rewrote the work. The turning point came when a CT2 doctor advised him to take charge of his own projects. His first systematic review then led to more than ten publications across multiple journals, with five accepted at the time of the webinar.

4. Finding and Validating a Topic

A valid topic must answer a question that people genuinely want answered, must not have been done too recently unless enough new literature exists to justify a re-review, and must have enough studies to support meaningful analysis. As a rough guide, Marwan suggested around eight studies with approximately fifteen participants each, giving a total sample size of roughly 100 to 150 participants. If no related articles exist, the topic is unlikely to be valid. He also noted that he uses self-built AI agents to pre-screen topics, although these tools were not shared publicly.

5. Formulating the Research Question

The PICO framework was recommended for structuring the research question. Population refers to who is being studied, intervention refers to the treatment or exposure, comparator refers to placebo or another intervention where relevant, and outcomes refer to the measures being assessed, such as return-to-sport time, pain, or strength. Marwan also explained that single-arm meta-analysis is valid, as it pools one outcome across all included studies without requiring a comparator. The protocol should be registered on PROSPERO before data extraction, ideally as late as is reasonably allowable because the protocol may evolve during planning.

6. Search Strategy and Screening

A good search strategy should usually identify around 800 to 2,500 records, while more than 3,000 records may suggest that the search is too broad. Marwan recommended using MeSH terms and free-text terms together, because MeSH terms alone may miss recently indexed papers. Searches should be run across several databases, including PubMed, Ovid, CINAHL, Web of Science, and Cochrane Central, with references managed through tools such as EndNote, Zotero, Covidence, or Mendeley. Screening should divide papers into definite include, unsure, and definite exclude categories, with exclusion numbers documented at each stage for the PRISMA flow chart. Boolean logic should be used carefully: OR broadens terms within a block, while AND links different blocks together.

7. Meta-Analysis and Risk of Bias

In meta-analysis, forest plots display each study's confidence interval and use a diamond to represent the pooled summary estimate. Heterogeneity is commonly assessed using I^2 , with values below 40 percent suggesting that the studies are broadly comparable and values above 75 percent suggesting substantial differences between studies. Software options include R, which is free and flexible but requires coding, and Cochrane RevMan, which costs around £130 per year and is mainly suited to double-arm randomised controlled trial formats. Risk of bias tools, such as RoB 2 for randomised trials, assess issues including blinding, randomisation, confounding, sample size, and funding. Marwan emphasised that the discussion section is often the hardest part, because it must show real understanding of the findings in the context of existing literature.

Marwan mentioned using R software for meta-analyses and offered to provide templates and assistance to those interested.

8. Approaching Supervisors and Getting Published

Marwan advised students to write the full manuscript before approaching a supervisor. This changes the dynamic by allowing the student to remain first author while offering the supervisor a straightforward co-authorship opportunity. A suggested email should briefly introduce the student, institution, and topic, then explain that the manuscript is complete and ask whether the supervisor would review it and be listed as supervising author.

He also advised avoiding Cureus, as some specialties, including general surgery, explicitly score Cureus publications as zero. Submitting to conferences before journal publication is acceptable, but students should request that the abstract is not published if they intend to submit the work to a journal later.

9. Specialty Relevance and Portfolio Strategy

Publication requirements vary by specialty. For ophthalmology ST1 entry, there is no specialty-specific publication requirement, and the same was noted for orthopaedics and ENT. However, ST4 entry and some post-IMT specialties may require publications to be relevant to that specialty. This means students should think strategically about where a systematic review fits within their longer-term career plans, while still prioritising projects that are realistic, publishable, and well supervised.

10. Ihsaan Medics Pilot Programme and Next Steps

The webinar also introduced an Ihsaan Medics systematic review pilot programme, designed for a small cohort with a longer curriculum and mixed levels of research experience. The aim is to identify the main gaps in support and build out the kind of guidance medical students actually need. A Google Form was shared for signups, and the WhatsApp community was highlighted as a place where weekly research opportunities are shared.

PathwayMD Platform Launch Presentation

Marwan presented a new platform called PathwayMD that consolidates application requirements across different medical specialties into a single website, explaining how publication and presentation points work for various specialties like ophthalmology and orthopaedics. Marwan discussed how his Pathway MD mentorship is a four-week accelerator that provides validated topics, an AI mistake-checker, and paired student projects designed to give each participant one first-author and one second-author paper.

Key Takeaway

A successful systematic review depends on choosing a validated topic, building a clear PICO question, running a structured search, documenting screening carefully, and writing a strong discussion that interprets the findings in context. The main advantage for students is that the project can be owned independently, making it one of the most realistic routes to publication, presentations, and meaningful portfolio development.