

RCPCH Podcasts

Building Capacity 3: Critical appraisal and publishing

Transcript

Nick Brown

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[Music starts]

Leila Ellis

Welcome to the third episode of our Trainee Research Network podcast series, Building Capacity: Past, Present, and Future. Across this series, we're exploring how trainees can become involved in research, the different pathways through which they can contribute, and the skills needed to understand and produce clinically meaningful evidence.

Today, we're focusing on critical appraisal and publishing. We will look behind the publication process, how we decide whether research is trustworthy and clinically useful, how we turn a completed project into a clear manuscript, what happens after submission and how research integrity and artificial intelligence are changing scientific publishing. Our guest has already developed several valuable resources on writing, reviewing, and publishing research, which we'll signpost to at the end of the episode.

I'm Leila Ellis from the RCPCH Trainee Research Network, and I'm joined by Dr. Nick Brown, editor in chief of Archives of Disease in Childhood, docent at Uppsala University, and a paediatrician and clinical epidemiologist with extensive experience in international child health research methodology and academic publishing, Nick, thank you very much for joining us.

[Music starts]

Nick Brown

My pleasure, Leila. Thank you so much for inviting me.

Leila Ellis

So, Nick, you are well versed in reading research as a clinician, epidemiologist, and an editor. When you first approach a paper, what are the most important questions you ask to assess the reliability of its findings?

Nick Brown

That's a very good question, and a lot of what I do comes down to this. And so, I I have to inherit my job as editor at least is dealing with quite a high volume of manuscripts and so I've developed quite a relatively quick screening way of assessing manuscripts and their robustness which I I think is a fair screen, and it really comes down to two or three critical components for me. Novelty, of course, is a bonus. Generalisability is a bonus, but really the absolute essentials, the deal breakers, the prerequisites for a good manuscript, are that there's a clear question, that the exposure and outcome have been defined clearly, and that the design is appropriate to answer that question, and everything else really falls into place or doesn't fall into place subsequently, and I found that's a fairly good, and I believe it's a fair discriminator, and helps me make relatively quick and I think reasonable assessments on the manuscript we receive.

Leila Ellis

That's really interesting, and I like the kind of mix of methodological kind of narrative there, and also those kind of big questions of novelty and generalisability. I guess to just kind of pick into that a bit further, when you say about ensuring that the methodology is appropriate to answer the question that's being asked, what are some things that you might look for within that? And I appreciate it's going to be question specific.

Nick Brown

Yeah, no, that that that's a good question. So, in terms of hierarchy evidence, I guess so. Cross sectional designs are good for hypothesis generating, but they fall at the the essential requirement of showing a temporal relationship, which is from a causal inference point of view, is quite limiting. So of some interest, but limited.

And then I guess yeah, like you say, it does it does come down to the to the specific question, whether an observational study is the right design, is it? As it very often is, not everything lends itself to a randomised controlled trial, both from a logistical and sometimes ethical. If we're dealing with environmental exposures, disease latency issues, so all sorts of reasons why observational design is sometimes the only option, or even better.

And then within the other observational studies, there's a cohort on the basis of showing temporality more robustly and collecting more information on confounders contemporaneously is oftentimes the best way, but for diseases with longer latency, a case control approach is sometimes the better or the only or the only option.

And then, though randomized control trials are the commonly held believed gold standards, as they as when done well, they genuinely are. But the proviso is a randomized control trial is only of merit if it's done well, and there are so many pitfalls within RCTs.

Right, right from the question to the exposure and outcome measurement, the same basic questions that that to which the others are susceptible. And then the ethical side, the registration-that's that's a common reason, a slightly sad one, for having to reject a paper because registration followed the start of recruitment. But that's the International Committee of Medical Journal Editors rule and has been for a very long time now, so there, there, there. I'm, I'm not sure if that answered your question or whether it was just a long detour. But they're the sorts of things that I try to assimilate as I'm as I'm doing my screen.

Leila Ellis

Absolutely, Nick. That's extremely valuable to hear, and I think it's nice I think for particularly listeners who are still residents and in training programs, who you know have an awareness of the hierarchy of evidence, but actually thinking about how to apply it in practice and you know when critically applauding a manuscript, and the fact that it you know rings so true as to you know that fundamental methodology.

And so something else I wanted to pick up on, which you mentioned, and actually was something that came out in your presentation during the RCPCH Trainee Research Network Conference was that actually often you see manuscript where they're perhaps trying to do too much, so you'll have kind of the primary outcome measure, but then there's a lot of additional analysis that's been included. Do you have any advice, perhaps for those who might be in the process of preparing a manuscript or thinking about doing that in the future, how to ensure that you know the manuscript's addressing perhaps one key question, and then you know other material might be better placed in supplementary materials?

Nick Brown

Yeah, that's a good question, and again, it's slightly difficult to generalise, but I, my if my biggest piece of advice would be try to remove as much noise from a question as one can, and just focus on a as a one exposure outcome relationship while gathering the additional information in forms in in in the form of noise around the exposure and outcome, and I could talk about directed acyclic graphs and other related things, and and another time, but just focus on that.

And I think a common pitfall, unfortunately, is where authors try to answer too many questions in one paper, and what happens then? Well, nothing is clear in the abstract or the methods, and you wonder what when the actual question was posed, whether it was the data gathering happened before the question was actually put into was actually fully formed. That's a common and quite understandable sort of mistake, but it's usually quite clear when that's happened.

And then another common mistake is multiple secondary analyses in order to this is important to find a significant value. Now that really doesn't mean anything to me. Statistical significance is a bit of a false holy grail in many ways. The only quality that, in my eyes, that a paper requires is a robust account of the truth, and that's our responsibility

as a journal, as well as editors, is to publish an account of what these findings actually show, and so and I think it's it's very deeply ingrained in many people thinking that if you don't show a difference for which the p-value is less than this arbitrary 0.05, which somehow has become embedded in people's cortices. It's it's not worth reading.

That's not true because findings where you don't show a difference are just as important. And I I very much like find studies of high quality where no difference is found, because that has equal weight in my mind in public health terms and bedside management terms. You want to know what doesn't work or where there isn't an association just as much as where there is one, and so. you know, in in short, this phenotype of wanting to please, I suppose, is is is you know has different umbrella terms, multiple secondary analyses, data dredging, and so on. But just stick to one question, save the rest for another day.

Leila Ellis

So much amazing advice in there, Nick. Thank you.

I just want to pick up on another thing that you mentioned within that is the component of registration slash pre-registration for trials versus observational studies, and particularly sort of in the observational studies lens, we're seeing an increase use of pre-registration repositories. And is there sort of any tools or training materials that that people can go to if that's something that is new to them, or any top tips for considering whether someone should pre-register their observational study.

Nick Brown

That that that's a really good question. I mean, I don't know of any specific sources, but that they you know you can use the same generic registration sites as as as used for trials, and and we get quite a lot of observational studies where there is pre-registration, which I find quite refreshing, actually. But it isn't yet embedded in the ICMJE recommendations. Maybe it will at some point become so in the future for.

For certainly for bigger cohort studies where data collection is going to take place prospectively and where there will be testing of some sort involved and so on, so it might be alongside the ethical approval. But I think it's quite a good practice to come into because I think it helps formalize the question. It helps everyone think, and I so I don't think there's any any harm in doing so. It's and it just helps clarity of thinking. I I would say, but as you say, for for trials, it's an absolute prerequisite.

I think the RCMJ rule came into place in 2007 and it's quite clear. It's fair, and the reason it's such a you know deal breaker is that the risk that if trials aren't pre-registered is that whatever was thought to be the primary outcome isn't the one that turns out to be 'the best,' or the 'effect size is smaller or bigger than one previously thought.' So the sample size is adjusted. So all sorts of post-recruitment adjustments. adjustments, I mean, simple message is just stick stick to your question, whatever happens, and you will have done

have undertaken good research and should be proud of what you've done because you have shown what you set out to show. It doesn't matter what the p value is.

Leila Ellis

Excellent, thank you, Nick. I'm also really curious - you mentioned the concept of novelty as something that might be considered, and I imagine that means a lot of different things to a lot of different people. What does it mean to you from an editor's perspective?

Nick Brown

Well, I guess I guess there are two, well, probably more than two issues related to novelty. One is an entirely new question, an entirely new exposure outcome association, and sometimes these things happen serendipitously. As a result of you know a chance question on or a small case series which leads to a hypothesis generating idea, so that's that's one aspect, a genuinely completely new question, or an another novelty aspect is where something has been a question has been posed in one population geographical setting, but the implications for another setting aren't quite clear.

And this is quite common in RCTs, where what has an effect in one population may not apply in another, and that's important to know. And it's not always clear cut whether those sorts of findings are generalisable, i.e. novel, or whether that question is you know the answer to the question is generalisable or not, and if it isn't clearly so, then there's a degree of novelty in testing it somewhere else.

Leila Ellis

That was really interesting. Thank you for for clarifying. Yeah, those two different ways to view novelty. So I now want to move on a little bit, perhaps to demystify some of the practical steps behind the publication and editorial process.

So if someone's gone through the process of you know conducting their rigorous research, creating a manuscript, and then you know finding their way to either archives or another journal, submitting it. What happens next? So you briefly mentioned that there's a screening process. Then what?

Nick Brown

Yes. So I get around 2000 papers a year, and I I screen out a fair proportion at source on the basis of largely the the the criteria I've mentioned. But if I feel there's a good science and a nugget, then more than likely, if it's appropriate for if it's got clinical and or public health epidemiology implications, I will very likely send it on to an associate editor, and I I will allocate well by edition, fetal and neonatal or ADC or education practice to to the the editor who whose interest most closely overlaps with the area, the subject area of that particular manuscript.

They then make their own decision on. They make their own judgment, and sometimes there's an exchange between, we'll have an exchange, and I, I, I usually write, in fact, invariably write a short note saying, "Yeah, this. There's. I feel like there's a nugget in here. See what you think. Something like that, pretty informal, or and then they and but they

might be they might think 'Nick, what do you what what are you thinking? This is this is no this isn't novel at all' and they will say 'I don't I don't think we should send this out for review,' and I say 'well that's fine it's your call.' But more often than not, I think I can't quantify it. But we we will run with a paper. The associate editor will send the paper out for review, and our aspiration is that we get two reviewers by default, and very often a third stats review, if it's analytically or methodologically complex at all.

And again, I think the process is fair in that we then gather all those opinions together, and the paper we and there aren't that many journals that use this system. We we then, irrespective of how positive or negative the reviews are, we then discuss the paper at an editorial meeting, and these are held every week. And there are usually between five and ten of us at these meetings. I'll have asked one of the editors to prepare the paper. So whether it's paper they handled or not, they'll be very equipped to present, very well equipped to present, and then we discuss it with with the perspective of the reviews, which gives us an extra angle, and then make a decision as to whether we run with it or we don't run with it.

And the the probably the most important principle we follow is that no paper, however warmly the associate editor and the reviewers feel towards a paper. We never accept a paper straight out without going through an editorial discussion, and that's because of this aphorism that it's better to reject a good paper than take a bad one, just in case something has been missed, which will come back to bite us as a journal, so we we by doing that we take on it's like a shared responsibility. It's an insurance policy in a way. It's not it's not perfect, and no system is completely watertight. But we feel that both gives authors a fairer hearing and gives us a fallback, really.

Leila Ellis

That's really interesting. Thank you for sort of describing that in great detail. I think it's really nice to just think about how many eyes have gone into that decision, and and similarly, you know, we're in a time where we're hearing that there are a lot of challenges with the peer review process, and I wonder if that's something that is, you know, on the minds of editors. And you know, do you think that we might see changes in how peer review is done? You know, there's sometimes been a shift to sort of post-publication peer review. What do you see kind of landscape over the next sort of five-ten years?

Nick Brown

That's a really interesting question. So that at at the moment we feel that I guess the general feeling I and this is a recurrent topic of discussion at annual meetings and even at we at the regular editorial meetings as to as to whether we can simplify this process. And but we -I can't speak for other journals, but the impression I get is that the general feeling is yes, we should still get reviews by human beings rather than AI, which has been something that's been touted and might in the future have a place. But I, I'm, I am haven't reached the stage where I'm ready for that.

Because there are subtleties in interpretation, where I would like the thoughts of someone who's been doing this for a long time to give us feedback on. And yes, there is definitely more of a problem in finding reviewers, and so there are occasional delays in the process, and you know feedback is occasionally longer than we would like. But we feel still that that's the best that's the best option. We haven't gone into to post post publication review. It's not something I've got any experience with, to be honest.

At the moment, I would say it's the situation is stable, I suppose, and it hasn't got any worse over the last five years. I mean, again, I can't quantify it. We occasionally take papers to at the editorial meeting with one review and a very thorough recommendation by an AE and discuss to expedite the process. If it's a clear cut one, otherwise, otherwise we, you know, we do try to find reviewers and we welcome author suggested reviewers as well because often they know the territory better. I mean, if it's a niche area. Then any any of us will do, and will know the people to ask.

Leila Ellis

Absolutely, I mean it's really valuable I think to hear just how much work goes into that process and ensuring robustness as a priority, and that you say you know all of the efforts to uphold the highest quality of evidence is so evident.

You, I think, it kind of leads us on nicely to a question I had that was around for colleagues who may be interested in. Becoming a peer reviewer, either sort of now or in the future. Do you have any advice for how people might get that experience? Because again, I appreciate you know there's probably a lot that comes from someone who's extremely experienced in a peer reviewer and being able to quickly pick up, you know, what what works or what doesn't work. Are there protocols? Are their standards? Are there training that people can access? And what what would you suggest as a first steps?

Nick Brown

Yeah, thanks, Leila. You mentioned the the recordings I've made for the RCPCH site. I mean, they I'd like to think that they're a reasonably useful starting point, but I don't know. I would like to think so, but I'm I'm clearly biased there. But they, they are no substitute really for just even if they're used or something similar is used as a framework - just practising. And my my my strongest advice would be to practice reading manuscripts and and discuss them with us with a senior, and you know people who are really keen are welcome to get in touch with me. Just give me a shout through through a mail or whatever, and and then I I will be able to if there's I see there's genuine interest and a little bit of prior experience put them in touch with the relevant AE who would, in verticals, have them on their books, on their sort of potential reviewer subconscious list somehow, or even formally on on the on the on the on the scholar listings. But if you if you're starting, I get. It's always useful to have someone in your immediate environments, in a consultant or senior trainee mentor who's done quite a bit of this sort of thing. But just just practising.

Then I guess the other thing is practice asking questions. Set yourself, you know, design exercise. What something that comes up on a ward round? Okay, this might be an interesting hypothesis to test. How would you how would you design your question? What would your exposure and outcome be? I just sort of starting to get into that mindset, and it's not - I had no formal training. I just did this a lot over a long period of time, and it starts to become intuitive.

Leila Ellis

Yeah, I love the idea of sort of applying that inquisitive hat into daily practice, as we are so used to doing anyway. But perhaps kind of advocating for a research lens to feature, I think, is really nice. And as you say, it's I guess wonderful to see, and I'm sure you've seen many colleagues kind of involve in in like the contributions they make as peer reviewers over time. So it's nice to hear, you know, that that everyone can take steps towards that.

I wanted to pick up on another point you mentioned about associate editors and in the TRN conference, you were a strong advocate for the associate editors scheme at ADC. Could you tell the listeners a little bit more about it?

Nick Brown

I can't remember how it started, but anyway, going back a few years, I struck up a conversation with with with the college about and I think Ben Stenson on fetal and neonatal about but and and about potentially recruiting. recruiting or formally recruiting new associate editors who were still trainees. So traditionally, and I don't think this is a good thing necessarily- anyway, traditionally, the the AE appointment has been to someone who's slightly longer in the tooth, but not necessarily better at it. Just longer in the tooth, and on on on the basis of their their time in job, gives them the academic clout to to to be to be the sort of AE we would always want to have.

So, in any case, we we decided that it would be very refreshing and symbiotic if we were to appoint some mid to senior level clinical trainees with some academic background in a in an area which would be appropriate to Archives to become AEs and we and we did this I'd like to think fairly rigorously through a formal adverts and online interviews after shortlisting and shortlisting from quite surprisingly large numbers, and and and then selecting some new AEs who has sort of fast track induction to the to the system, and it's been yeah generally fantastic.

I think the first group started in 2021 if I remember rightly, and we made some new appointments at the end of last year, and it's been, yeah, it's it's been very refreshing having their input at every level, and yeah, and having the new energy somehow, and have it fun for yeah. yeah, and we will definitely continue this in principle.

Leila Ellis

Yeah, that's wonderful, and I suppose it might be sort of a lasting message for people to look out for those opportunities as they are advertised.

And Nick, the final question I wanted to ask you this year is archives centenary, 100 years of archives interviews in childhood, and as part of that, I know there's a lot of editorial pieces reflecting back on the last 100 years. What's the sort of one message, if you can just put it down to that, that you're taking away from the evolution of archives over the last 100 years.

Nick Brown

Fundamentally, the overriding principle is that archives is there as an advocate for children in terms of health and rights has been is unaltered since its inception in 1926. I'm not sure if that's the answer you wanted, but spontaneously and I'm proud that that is the still the the aim of the journal, the means of disseminating that and undertaking that and advocating have changed, but the fundamental principle I don't think has.

Leila Ellis

And this is just a little reminder to all the listeners that all members of the Royal College of Paediatric and Child Health are able to access archives and disease in childhood, fetal neonatal, and education in practice online and via the flipbook. And yeah, that's a great way for people to get build up that experience of peer review process as well, perhaps.

So, Nick, thank you very much for sharing your experience and for taking us behind the editorial process.

Nick Brown

Thank you so much for asking me, Leila, and it's been a lot of fun. And I hope we can have some more similar discussions on yeah, on publication and maybe study methodology and so on at a later date because I'd really to think that we this this isn't we can continue this conversation and expand it.

Leila Ellis

Absolutely, Nick, and I think that's a true testament to your support of everyone around you and resident doctors in particular. And picking up on that, actually, for listeners seeking more practical step-by-step guidance, Nick has developed several additional resources.

So, the RCPCH Learning Peer Review Training Series includes sessions on getting published and reviewing a manuscript, which covers scientific writing, methodology, titles, abstracts, internal and external values, Biases, confounding, study design, statistical and ethical considerations, trial registration and conflicts of interest. So, a deeper dive into some of the conversations we've had today.

Similarly, the Training Research Network Education Seminars was recorded by Nick in May 2025, titled "How to Get Published". So this again dives into more about manuscript preparation, journal selection, the submission process, and common pitfalls to avoid, which is also available via RCPCH Learning.

And then finally, listeners can also hear Nick alongside ADC senior editor Rachel Agbeco, in the monthly Atom's episodes of the ADC podcast. These highlight papers from each issue, while the wider podcast includes interviews with authors and discussion on current topics in paediatrics.

So thank you again for everyone for tuning in today. Links to these resources, together with additional information about peer review and editorial opportunities, will be included in the notes of this episode. Thank you for listening to Building Capacity: Past, Present, and Future, produced by the RCPCH Trainee Research Network.

Nick Brown

There's just a little nugget I've remember which is is worth adding a little adage, and it's from a very famous Swedish skier called Ingmar Steenmark, who was omnipotent in the 70s, I can't. I don't know how many Olympic and world medals he won.

But anyway, Ingmar Stier was purported to have said, "Jag vet ingenting om tur. Bara att ju mer jag tränar desto mer tur har jag," which means the more one practices, the more luck one has, and I think it applies very much to this process.

Leila Ellis

That's brilliant, Nick. Thank you.

[Music starts]