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Editorial

How to get your work published

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The pressure on academics to publish is greater than ever. Sharing knew knowledge has always been satisfying and is necessary for career development. There are also ethical imperatives to avoid withholding knowledge and to prevent colleagues duplicating research unnecessarily, which would waste their time and burden participants. On top of these long-standing drivers, academic institutions must now manage their resources carefully and want to see a return on their investment in you, which will be measured in terms of quality and quantity of research outputs. As the need for publications has increased, so has the number of submissions and consequently, the competition to publish in the best-known journals. In some years CDH receives ten times more manuscripts than we can fit in the journal. Academics must publish more often, and their submissions must be of the highest quality to stand a chance of publication.

As dispiriting as this may sound, the converse is also true. Good research will always find a home in a good journal.

After 8 years as Editor of Community Dental Health (CDH) I hope I can advise less experienced colleagues about getting their work published. This advice draws on the features of manuscripts that have reached the pages of the journal during that time. It is mostly aimed at early career researchers in dental public health (DPH) and related subjects who want to submit to this journal. That said, this advice is applicable to other disciplines and journals.

This paper sets out some of the things you can do to increase the likelihood of your work being published. It will start showing how you can align your work to the preferences of journals.

Sadly, a good paper does not begin when someone decides to write about some data. It originates with a skilled person who knows their subject and who recognises important gaps in the literature. So unfortunately, the steps toward publication must include a preliminary research training and the essential criterion of reading. You should be reflecting all the time, but deliberate thought is needed to formulate an aim and choose an appropriate method. The research is then planned and conducted, including analysing the data. This is followed by more careful thought to turn your results into findings. You should then be ready to plan, write and submit your manuscript. Of course, these stages are not discrete and are usually iterative, but setting them out as a sequence makes them easier to follow. Here then is a step-by-step guide to getting your work published.

1. What does an academic journal want?

Recent feedback accused CDH of being *elitist*. Whilst this comment was intended as criticism, the Editorial Board regarded it as the best possible praise. Our journal publishes in a small discipline where it competes with two others. Our priorities of disseminating works of practical relevance to the field of DPH, of encouraging emerging authors and of internationalisation also influence the type of research we publish. In addition, more experienced colleagues sometimes direct their best work to better known journals with wider circulation. Despite all those restrictions, our aim is still to publish the highest quality research possible.

Quality has three broad aspects in academic publishing: originality; importance and rigour. Originality refers to advancing knowledge, either by starting to think about things in a new way, by developing novel methods or by discovering new findings.

Importance can be regarded as a quantitative phenomenon, favouring large rather than small incremental steps in originality. For example, does a reconceptualisation of aetiology make us see the causes of a disease completely differently? Do new insights from patients force us to deliver services in a radically new way? Does our powerful meta-analysis show that a treatment previously thought of as useless, has an important effect?

Another aspect of importance is generalisability, or the applicability of the research findings to other situations. In epidemiology we regard generalisability as whether a relationship or a treatment effect observed in a sample exists in populations. Descriptive epidemiology (where a survey simply reports the quantities of something in a sample) is often less generalisable than an analysis of the relationship between variables (such as the effect of socioeconomic status on health). That is why a descriptive study of the number of children with caries in a small town will be of little interest to readers in other countries. For this reason, CDH only publishes survey data from nationally representative samples.

While qualitative researchers avoid quantitative generalisations, they do adopt analogous ideas. Conceptual generalisability considers whether phenomena seen in one setting are present in others. Likewise, 'contribution to theory' relates to whether ideas developed in one setting may be applied elsewhere.

The final aspect of academic quality is rigour. Rigorous work is that which is placed in the context of existing understanding (even if it refutes it). Rigorous work is conducted to high methodological and ethical standards.

Nearly all academic journals place a premium on originality, importance and rigour. It follows that authors who wish to publish in those journals must do so too. The remaining steps advise on the most likely way to meet journals' needs.

2. A research training

As we have seen, journal editors want to publish high quality papers. You need to do good research to be able to write high quality papers.

Many readers of CDH will have had clinical training and will recognise the necessity of that before providing treatment. Your fillings won't be any good if you've not been taught how to place them. The same applies to research. Completion of a preliminary research training is indicated by the award of a PhD or equivalent. A PhD is a stepping stone to research in the same way as a bachelor's is a stepping stone to dentistry.

This is disconcerting news to some early or aspiring academics, but *many* manuscripts are rejected because they describe research that lacks the quality that would come from an adequate training. Such training teaches a researcher to read comprehensively and critically so that they can understand the topic. It helps identify a suitable research question and aim. It teaches them to plan and conduct the data collection appropriately and to fully interpret the data so that they can write it up successfully.

Most papers are rejected by journals because the science is not very good, rather than because they are not well written. Statisticians and senior academics are often distressed when a less experienced colleague approaches them with some irredeemable data from poorly designed research. CDH has a policy to encourage new authors, which sometimes involves advising on revisions to a manuscript, but we cannot revive a weak study. If you want to publish, you must do good research. You can do that by getting a formal research training or by collaborating with somebody who has one. Naturally, we can point out occasions when untrained researchers have been successful, but we cannot see the many more who have failed.

3. Read

Although the need to read may seem obvious, many submissions to CDH would stand a better chance of success if the authors had a full grasp of the literature. Read around your topic so that you can place your work in the context of existing understanding. In the most extreme cases this might mean that you do not duplicate a study that has already been carried out, which would be unethical and a waste of time, not to mention being unoriginal!

Put more positively, reading is the best way to identify gaps in the literature so that you can develop novel and important research questions. Studying the literature is also essential to guide all aspects of the methods you will use, from your basic research design to the selection and development of measures and to your analytic strategy. This reading must be analytic and critical and should cover previous work in your own and related topics. Reading is a skill that should be developed as part of a research training.

Modern epidemiology recognises that many factors influence the relationships we investigate, be they the chains of causation of a disease or the variables that influence quality of life. Often the effect of one variable is mediated or is confounded by another. A comprehensive knowledge of the literature is essential to identify and theorise these relationships. People working in dentistry tend to be very practical rather than theory-based. Nevertheless, it's essential to think of all the variables that should be considered in our research and how they fit together (Baker and Gibson, 2014). Manuscripts reporting secondary analyses seem especially prone to omitting theory. A series of cross-tabs from a large database is not research.

A suitable theoretical model will identify the variables of interest and explicitly hypothesise their interrelationships. We can adopt an existing model or develop a new one if necessary. Sometimes known as directed acyclic graphs, such models form a visual representation that can be used to make sure all relevant variables are included in your study; to assist in the selection of your analytic strategy and to help interpret your results. There are numerous examples where such a model would have aided authors' attempts to publish their work. For instance, papers that study the role of behaviours in caries incidence must incorporate the upstream variables that will influence those behaviours. An adequate theoretical model of caries incidence, such as the one by Fisher-Owens et al. (2007) would have pointed the authors in that direction. Another common example is when regression analysis is used to identify predictors of disease. Unfortunately, multiple regression assumes that all the independent variables act at the same point in the aetiology of disease, whereas they operate in a sequence that is better analysed with multilevel analyses or structural equation modelling.

4. Think and plan

You will have been thinking all the time. Now is the time for proper reflection. These thoughts will be iterative as you search for the optimal compromise between the research you think needs to be undertaken and the research you are able to do. What are the important gaps in the literature? Can those gaps be turned into answerable questions? Which theories underpin existing understanding in this field? What methods are required to answer those questions? Are those methods compatible with the theories? What are the ethical considerations of such work? These are important strategic decisions that can be reported as part of the rationale for a study. They lead to the aim, which should always be stated late in the background section of a manuscript.

This planning is an essential step towards publication as errors at this stage may render your work invalid and unpublishable. These types of deconstruction, hypothesis generation and protocol development are learned and so again indicate the need for research training. However, the numerous guidelines for reporting research are very useful in protocol development. They advise on all the things you will have to report when you come to publish and so are invaluable reminders to include them at the planning stage. Like many journals, CDH requires authors to show they have used the relevant guidelines available at the Equator Network (https://www.equator-network.org/).

5. Collect and analyse the data. Generate your results.

This stage is directed by the protocol and warrants little attention here. It goes without saying that data collection should adhere to the protocol and any deviations from it must be reported.

6. Think again.

Your data analysis will have generated many files containing statistical tables or qualitative maps. It's time to think again so that you know what you have found out. Many researchers find it hard to distinguish between their results and their findings. Start with your aim then think beyond your data to consider what your results mean. For example, if 20% of girls and 30% of boys in your study have caries, do these results indicate that boys are more susceptible to caries? Your findings are a development of your results towards some kind of theoretical or statistical generalisation.

Many manuscripts could be improved by an account of the implications of the findings for policy and for future research. Note whether your findings concur with existing knowledge or sit at odds with it. If they are entirely compatible with the literature, you might want to consider whether they are sufficiently original to warrant publication. Conversely, if they vary from current understanding you will need to think very carefully about why this is so. Is there a problem with your data, perhaps arising from your method? Is your sample unusual? Or have you developed a genuinely exciting new perspective?

One caution here is that you should only triangulate your results against others' to help you understand your findings. Simple comparisons, for their own sake, of frequencies between studies, often carried out in different settings and using different methods are not helpful.

Its time then to decide how much you believe your results and how readily they can be applied elsewhere. These deliberations will form a paragraph about the strengths and limitations of your study that will go towards the end of the discussion.

The next decision is about the best destination for your manuscript. Be sure to check that your work fits the scope of a journal (always on its webpage) and find out whether it has published similar papers before. Journals receive hundreds of manuscripts that are out of scope, which is a waste of both authors' and editors' time.

7. Plan your writing

You can now plan what you will write about in your manuscript. Undergraduate examinations in clinical subjects have used more short answer and multiple-choice formats in recent years. This means that many authors preparing manuscripts lack experience of formulating a narrative or argument over 3000 words. Careful planning is essential to make sure everything necessary is included. A clear and logical structure in your writing will also convey meaning to the reader and show that you understand your work.

The journal's instructions to authors will give the maximum word count and list the overall structure required of submissions. You must read and adhere to both. Those instructions will also tell you how many tables and figures you can use, which will in turn determine what you include in the text. Read papers in the destination journal to see how they are presented and written.

The main text of a submission to CDH should have sections for background, methods, results and a discussion. Plan what you will include in each of these sections.

The background will summarise the existing relevant literature, provide a rationale for your work and present the aim. Where necessary it can include contextual information about the research setting, the theoretical perspective you selected and/or a brief account of why a particular method was used (this is methodology, the *study of method*, rather than a description of how the research was conducted, which is the *methods*).

The methods section should describe the design and conduct of the study with enough information for another researcher to be able to duplicate it. It should be an easy section to write as all the information should already be in your protocol and the material can be set out in chronological order. Return to the publication guideline you used to develop the protocol to make sure that all the relevant information is included. The methods section summarises the protocol, including your analytic strategy and is written in the past tense.

The results section will present the data and the results of your analysis. In both quantitative and qualitative research, you should start by describing the characteristics of your sample before giving the results of analyses. Proffer the results logically, in the same order as the analytic strategy of your methods section. Again, the results are written in the past tense.

The discussion can follow the structure of Section 6 above (Think again). It's often helpful to start with a brief paragraph that restates the aim and highlights the key findings. Throughout the discussion focus almost entirely on the findings related to your aim and dedicate very little space to incidental findings.

Plan what you need to write in each of these major sections using whatever medium (pen and paper, whiteboard, software) and format (spider diagrams, trees, hierarchical lists) that suits the way your mind works. Map out explicitly every point you need to make. Group similar points together into themes so that the writing is not repetitious and does not return to a theme. Place the themes in a coherent sequence. Also recognise which points are subsidiary to others. For instance, a theme about your questionnaires will form part of your selection and development of measures, which in turn is part of the conduct of your study. The order of paragraphs should reflect this hierarchy. All of this will present your work more logically. It can help if you turn your map into a series of subheadings, arranged in the right order. You can then devise a paragraph or two to explain each point, and then remove these subheadings later.

Whilst authors are keen to include all necessary information it's also worth reviewing your plan to see if it contains anything that is unnecessary. As always, your aim is helpful with this task. Any material that is not relevant to the background, method, results or discussion related to your aim should be a candidate for deletion.

8. Writing

The planning above will divide your manuscript into manageable chunks, each of which can be written separately. This should make it much easier to write.

Academic writing should be accurate, formal and concise. Where you can, write plainly rather than wrapping things up in unnecessary jargon. "More boys had caries than girls" is much easier to understand than "An increased number of boys had caries than girls". It's better English too.

Be direct by using the active form of verbs. In the past, scientific writing used the passive voice where each verb is acted on by another verb (e.g. *conduct analysis* instead of *analyse*). The active voice conveys meaning with more impact and is closer to natural speech. Direct writing is also easier because we can now use the first person ("We chose the Andersen model . . . ") rather than the third person ("The Andersen model was chosen . . . "). These forms or writing were supposed to imply scientific detachment, whereas we now acknowledge the subjective perspective of the researcher. Direct writing also avoids asides and subclauses, which can confuse the reader.

It is polite to your reader to write as succinctly as possible. Using ten words when three will does not impress anybody, it just looks pompous. Examples of superfluous wordage include 'prior to' instead of 'before' and 'following' instead of 'after'. Ask yourself whether each word in your writing adds useful meaning. If it does not, then delete it.

Paragraphs can often start with a topic sentence that introduces the theme of that paragraph. This signposts your argument and so makes it easier to follow. It's especially helpful if you have used the themes from your map as subheadings to structure your writing. The topic sentence can make a bold statement ("More boys than girls had caries") and then discuss the evidence that supports that statement. Alternatively, the paragraph can go on to discuss the implications of that difference.

As an editor, I always apologise to authors who do not have English as their first language. Unfortunately, manuscripts must be in correct English, and it will often be necessary for colleagues to pay for a translation or writing service. Experience has shown that having an English co-author is no guarantee that the language in your manuscript will be corrected.

The text of your results should draw attention to the key features of the tables and figures by paraphrasing them, rather than repeating them ("More boys had caries than girls . . ."). There is no need to duplicate all the data, results of analyses and *p* values, which should be in the tables.

The titles and legends of figures and tables should contain enough information so that they stand independently. Avoid unnecessary detail in the figures and tables, which reduces their impact. For instance, putting the number of participants in the title or column headings of a table means that only the proportions need be put into individual cells rather than the absolute numbers and percentage values. Having fewer numbers in the table allows your results to stand out. Likewise, regression models with odds ratios do not need p values.

Although CDH's instructions for authors do not require a dedicated section for conclusions, it is often worth summarising your most important findings and their implications in a final paragraph ("In conclusion, . . ."). This paragraph will be no more than two or three sentences and should contain no new information.

Ironically, the first section of a manuscript should be the last one you write. The format of our structured abstracts maps closely to the overall format of the paper. Use the relevant headings to copy and paste the relevant information from your main text into the abstract and then edit it for syntax. Notice that the headings of the abstract have colons, which allows you to write in note form and pack in more information. For example, "***Objectives:*** To determine whether caries in children is related to gender."

I am frequently bemused that colleagues who can follow detailed and demanding clinical protocols get so anxious about referencing in papers. It may be that the measurable rightness/wrongness of referencing brings it into the realm of conscious incompetence (i.e. they know its something they've not done before), whereas they are unconsciously incompetent at the skills of devising a research question or realising what they have found out. Every journal's instructions to authors has precise formatting requirements for the in-text citations and bibliography. Just follow those instructions. It's not difficult, only tedious. Unnecessary suffering can be prevented by not using too many references (The CDH limit is 20, except for systematic reviews). Reference management software is helpful as your research career progresses but may be another thing to learn as you prepare your first paper.

Whilst the first submission of a manuscript will rarely be rejected because of a handful of minor bibliographic errors, you should try to get it right. A manuscript that arrives with a completely alien referencing system looks like it's already been rejected by another journal and that the author hasn't bothered to reformat. That's not an impression you want to create.

The last thing you should always do is to set your work aside, for a few days if possible and then return to edit it. You will inevitably find more improvements to make. Also share it with collaborators and friends so that you can hone it ready for submission. Good luck!

In conclusion (!), I hope that this advice helps you publish your research. Align your work to the needs of journals. Do good research by recognising the necessity of training. Collaborate with a more experienced colleague if necessary. Read about your topic, the underlying theories and the appropriate methods. Pay special attention to formulating your aim and selecting the right method. Think carefully about what your results mean and then plan your writing. Write logically and plainly. Follow the instructions to authors. If you do all those things I will see your paper in print.

References

Baker, S.R. and Gibson, B.G. (2014): Social oral epidemi(olog) (2) y where next: one small step or one giant leap? *Community Dentistry Oral Epidemiology* **42**, 481-494.

Fisher-Owens, S.A., Gansky, S.A., Platt, L.J., Weintraub, J.A., Soobader, M-J., Bramlett, M.D. and Newacheck, P.W. (2007): Influences on children's oral health: a conceptual model. *Pediatrics* **120**, e510-520.