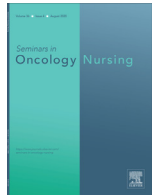




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How to Write a Comprehensive and Informative Research Abstract

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ABSTRACT

Objectives: This article provides practical guidance on developing a comprehensible abstract, including those required for funding applications, conferences, and publication. In addition, we discuss and demonstrate the practicalities of editing and revising an abstract for conference or peer review and identify emerging formats that may be more relevant to nurses and researchers.

Data Sources: This article has been informed by literature and the coauthors' respective experiences of preparing and reviewing abstracts for publication and conference presentation.

Conclusion: Abstracts are a valuable tool to communicate the most important elements of the methods and results of a research project for a conference, manuscript, or even a research funding application. However, abstracts may often be an overlooked part of the dissemination process. An abstract determines whether or not a piece of research is relevant for presentation at a conference or valuable enough to be considered for peer review and subsequent publication. A strong and clearly written abstract positively predisposes reviewers of grant applications.

Implications for Nursing Practice: Writing an abstract is arguably the most challenging component of academic writing, summarizing the results of a substantive research project in three to five sentences and positioning them concisely within the background and implications for future practice, policy, and research. A well-written abstract is clear, concise, and critical and requires time and revision to ensure success.

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Introduction

An abstract is one of the most important components of academic writing. Although abstracts are traditionally associated with manuscripts or with research conferences, increasingly, abstracts are also required for funding applications. Abstracts are a valuable tool to communicate the most important elements of the methods and results of a research study, yet they may receive the least time and consideration because they are often the last component of a large body of work.

After the significant undertaking of a research study, it may be difficult for novice researchers to clarify the key aspects of the study

with the level of conciseness that an abstract requires. Furthermore, those preparing abstracts for the first time may find themselves overwhelmed by the diversity of guidance from different publishers and conferences. With this in mind, we aim to provide practical guidance to researchers for developing a comprehensible abstract, including those required for funding applications, conferences, and publication.

What Is an Abstract?

An abstract should be a stand-alone summary of a research project.¹ Although abstracts are most used to provide an overview of a research project, they may also be used to summarize an implementation project related to practice, policy, or education in nursing. The abstract may be a precursor to a scientific manuscript, chapter, thesis, or report, or it may be the basis for an oral or poster presentation at a conference or symposium. For a completed research study, the

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abstract must summarize all key aspects of the study: how and why the research was done and what was found;¹ therefore, it can only be written once all aspects of the research have been completed and written up. For a grant application or research proposal, the abstract must represent a cohesive summary of the research plan and its potential impact. Similar to abstracts disseminating study results, an abstract for a grant application or research proposal cannot be written until the proposal is written and the research plan is clear.

The abstract's most critical and obvious aim is to draw attention to a study, inviting the reader to learn more via the manuscript or presentation. The less obvious purpose of the abstract is to make a piece of research stand out. The audiences that abstracts are written for may include editors, reviewers, conference attendees, or journal subscribers. Considering that the abstract is often the most read component of a conference or journal paper,^{2,3} it is critical that the abstract demonstrates the importance of the research and its findings. In the context of a manuscript submitted for peer review in a scientific journal, the abstract is the elevator pitch that determines whether the research should be considered for publication. In addition, a poorly written abstract can slow down the reviewing process because potential reviewers will decide whether or not to review a paper based on its title and abstract.⁴ In the context of a conference, the abstract must provide sufficient information to demonstrate the significance of the research, how it aligns with the conference themes, and how it will add value to the conference. The quality of the abstract also determines the reviewers' decision on whether a submission is accepted for a conference.⁵

Beyond achieving the opportunity to disseminate the work through publication or presentation, the abstract serves an important purpose for research impact. Abstracts published as part of a peer-reviewed publication or conference proceedings are often available to the public, though access to the full manuscript or presentation may be limited by subscription paywalls. Therefore, the information communicated in the abstract may also have unintended audiences, including members of the public, journalists, policy makers, health care professionals, and key stakeholders with an interest in the research topic. Where an abstract is available without further information about the study and its results, it becomes even more important that the abstract is accurate and representative of the research findings and implications to prevent misinformation or disinformation arising from how the information is interpreted.^{6,7}

Ultimately, an abstract is often a factor in determining whether someone will access a manuscript, attend a conference presentation, or consider an application for funding in full.³ Researchers undertaking systematic searching and screening for a literature review will use the abstract to determine the relevance of the publication for the review. Abstracts published as part of conference proceedings may be searchable in academic and grey literature databases and, even if unpublished, may have relevance for a systematic review. Policy makers and journalists may also be other unintended audiences of an abstract, which can increase the reach, impact, and citation of a journal article.

Preparing to Write Your Abstract

Preparation is key to success in abstract writing, and with this in mind, ensuring adequate time to prepare, draft, and revise the manuscript will enhance the likelihood of success. An abstract representing a concise and targeted communication, following the guidance of the conference or journal, will increase the chance of acceptance.^{8,9} Targeted communication requires authors to understand the guidelines and nuances of the target journal or conference that the abstract is being prepared for. The author guidelines will provide insight into the information required in the abstract, for example, the structure, length, types of presentation, and specific themes that must be

addressed.¹⁰ This information can be obtained from the home page of the target conference or journal within the abstract or author guidelines. The context or theme of a publication or conference will often determine the types of research that are accepted for publication or presentation. The conference or journal home page will outline their primary aims, objectives, and mission, and the abstract must convey the relevance of the research to the topic and scope of the journal or conference.⁶

For early career researchers who may be preparing an abstract for the first time, it may be of value to look at examples of abstracts from previous conferences or issues of the target journal to understand how they are structured, the types of information that are typically presented in the abstract, and the tone and language used within the abstract.⁸ In addition to the specific author guidelines or abstract guidelines for the target conference or journal, reporting guidelines can provide useful information on the types of information that must be reported for particular research methodologies. The majority of reporting guidelines will also provide specific guidance for abstract content related to the methodology, many of which can be identified via the Enhancing the QUALity and Transparency Of health Research (EQUATOR) Network.^{11,12}

What Should Be Included in an Abstract?

A good abstract is one that is *clear, concise, and critical*; it needs to be informative, providing a succinct overview of how the study was conducted, what it found, and what it means for practice. An abstract must be critical, in that implications and conclusions derived from the results of the study emerge logically from the findings and do not overestimate or underestimate the meaning of the findings for real-world applications.^{1,3} Abstracts are broadly structured (with specified headings) or unstructured. In research contexts, the abstract will broadly include the same information, whether structured or unstructured (Table 1). With that said, although there are a variety of abstract types, each journal and conference will provide specific guidelines for the content, length, and format of the abstract.¹³ Abstracts may take alternative forms depending on the discipline, context, and topic of research.¹⁴ However, the key messages communicated within various forms of abstract remain consistent. Although structured abstracts remain the predominant format for conferences and journals related to cancer nursing, there are several alternative abstract formats that increasingly used in cancer nursing journals (Table 2).¹⁴ Therefore, researchers must ensure, as a first action, to familiarize themselves with the specific guidelines provided by the journal or conference.

To achieve concise communication in an abstract, planning the key messages of the abstract is helpful. Outlining the key messages of

TABLE 1
Research Abstract Content.

Research Study Abstract	Innovation/Implementation Abstract	Systematic/Literature Review Abstract
Title	Title	Title
Background/Rationale for study	Background/Rationale for project	Background/Rationale for review
Aim of the study	Aim of the project	Review question
Methods	Description of the innovation/implementation	Search and review methodology
Findings	Impact of the innovation/implementation	Findings
Conclusions and Implications	Conclusions and Implications	Conclusions and Implications

TABLE 2
Alternative Abstract Formats.¹⁴

Abstract Type	Characteristics
Highlights	It is increasingly common to include the highlights of a paper before or after the abstract. Highlights are six or seven comments that describe what is already known about the project and what the results of the study reported in the paper adds to the literature.
Lay or Public Abstracts	In some cases, abstracts that are written in non-technical language are presented so the results are understandable to a member of the public who may not be a health care professional or a researcher.
Tweetable abstracts	Tweetable abstracts provide a concise summary of the main point of the study in 140 characters or less and also include a hyperlink to the study paper.
Graphical abstracts	A graphical abstract is a visual representation of the key points of a study, for example, the methods and results of the study. While these are not a common type of abstract, they may be a valuable way to share the methods and key findings of a study in a visual format (eg, diagram/image/figure).
Video abstracts	Video abstracts usually consist of brief interviews with the authors explaining what they did, why they did it, and what happened. A video abstract allows authors to present their research in a personalized media-rich environment in a manner that cannot be achieved via a print abstract.

each section of the abstract using structured questions can be helpful to achieve this,^{8,9} for example:

- **TITLE:** What is the study/project about, and how was it achieved?
- **BACKGROUND:** Why was this study/project needed – What was the problem?
- **AIM:** What is this study/project about?
- **METHODS:** What did you do?
- **RESULTS:** What are the most important/impactful things you found in the study/project?
- **CONCLUSIONS/IMPLICATIONS:** What does the results of your project/study mean for patients/nurses/cancer care?

Table 3 provides an example of the process of revising a draft conference abstract and identifying limitations of the first draft to present a high-quality abstract. As guidance for preparing each section of the abstract is discussed, we refer to the relevant section of the abstract presented in Table 3 to illustrate common issues that arise in the preparation of abstracts.

Title

A title should be concise and aligned with the contents of the abstract.¹⁶ Although titles should be designed to capture readers' attention, they should convey the scope and design of the research in a manner that is unambiguous, informative, and not misleading.^{8,13} There are usually word limits of between 10 and 15 words on abstract or manuscript titles, and as a result, passive statements such as "a study of . . ." should be avoided.⁸ Increasingly, authors are encouraged to use a title that describes the topic and design of the study, using the structure [study topic]: [study design]. In addition, to ensure the abstract is searchable, the title should use standardized keywords within the title that conform with MeSH and CINAHL index terms.⁹ Reviewing the title of the first draft abstract in Table 3, the title of the study is descriptive and does not provide any critical information about either the topic or design of the study. The revised title provides a clearer statement of the objective of the study, to model

health care factors influencing quality of life in cancer survivorship, and the study design, a mixed methods study.

Background/Introduction

The background or introduction of the study should provide a clear and concise rationale for the study that is easy for readers who are not experts or specialists in the topic to understand why the study was required.^{16,17} This section might explain briefly what is already known about the topic and what is not known, for example, a statement of the problem that the study aims to address and why it is important and necessary.^{6,13} Two to three sentences are generally acceptable because readers will primarily be interested in the results of the paper and how they were achieved.^{7,10,12} Unlike the main text of an article or a presentation, references are not cited unless the abstract guidelines state it is a requirement. Although conciseness is important, the first draft of the background presented in Table 3 is exceptionally concise and does not provide adequate insight as to why quality of life is important nor why further research is necessary to understand quality of life. In the revised abstract, there is a clearer statement of the context in which quality of life is examined, and the evidence that is and is not already available to understand the impact of health care experiences on quality of life in cancer survivorship.

Purpose/Aim

The purpose or aim of the abstract should logically follow on from the background, and the highlighted gaps in knowledge.¹⁶ The aim should provide a clear statement of (1) what the study set out to do, (2) with whom (ie, the population), and (3) in what context. For those who are less experienced in preparing a research aim statement, the participant, intervention, comparison, outcome (PICO) or participant, exposure, outcome (PEO) statement can provide all of the information required to present a comprehensive and informative, yet concise aim.¹⁸ The purpose of the draft abstract in Table 3 is vaguely stated and does not fully represent the exposure of interest within this study nor the population with whom the study was undertaken. Within the revised abstract there is a clearer statement of the participants (colorectal cancer survivors up to 5 years after diagnosis), exposure (undergoing routine follow-up care; health care-related predictors) and outcome of interest (quality of life).

Methods

The methods section of an abstract should make it clear how a study was conducted.^{7,8,13} At a minimum, the abstract should identify the study design, setting, sampling strategy, sample size, and methods of data collection and analysis, including the questionnaires used or broad topics of the interview schedule that guided data collection.^{9,10,12,13} Abstracts that lack transparent reporting of study methods are more likely to be rejected because it is not possible for a reader to evaluate the rigor of the study and the trustworthiness of the results.⁸ The first draft of the methods section presented in Table 3 does not provide meaningful information about the design of the study nor the methods which were used to capture the outcomes investigated in this study. The revised abstract provides comprehensive information about the study methods, including the specific study design, the setting and sample, the data collection and analysis instruments, and the outcomes of interest within each phase of the study.

Results

The results section is the most important section of the abstract, providing an objective, high-level summary of the key findings of the study.¹⁰ The results of the study should logically link to the

TABLE 3
The Process of Drafting and Revising an Abstract.

	First Draft	Issues to Be Addressed	Revised Draft ¹⁵
Title	The Cost of Survival Study	The title does not convey any information about what the study was about.	Modeling Health Care Factors Influencing Quality of Life in Cancer Survivorship: A Mixed Methods Study
Background	Quality of life is important	The statement does not provide insight to why quality of life is important and does not present sufficient information to justify why this study was needed.	Follow-up care and quality of life (QOL) are important consequences of cancer survivorship. However, as cancer survivors transition to follow-up care, the frequency of contact with health care professionals declines. Evidence suggests that the nature of posttreatment relationships between colorectal cancer (CRC) survivors, and their health care professionals is related to survivors' psychological well-being, their access to supportive care services, and experiences of unmet need. There is limited empirical evidence to support the potential impact of health care experiences upon CRC survivors' QOL, therefore . . .
Purpose/Aim	This study aimed to explore Quality of life.	The aim presented in this abstract is vague, doesn't fully reflect the variables that were investigated in relation to quality of life (eg, health care factors). There are typographical errors – capitalization of quality of life.	. . . this study seeks to explore the health care-related predictors of QOL outcomes among CRC survivors undergoing routine follow-up care up to 5 years after diagnosis.
Methods	A study was conducted to explore quality of life with people who had CRC. A questionnaire was sent to participants. Interviews were conducted with participants.	The methods section does not adequately explain how or where the study was conducted. Undefined abbreviations. There are typographical error – “qulautity.” There is repetition of the aim of the study.	A sequential explanatory mixed-methods study was conducted with CRC survivors 6–60 months after diagnosis. Participants were purposefully recruited from three public and private hospitals and 21 cancer support centers in Ireland. A cross-sectional survey (n = 304) assessed survivors' QOL (EuroQOL; FACT-C), continuity of care (PCCQ), and unmet information and supportive care needs. Semi-structured interviews were subsequently conducted with a subsample of survey participants (n = 22) and analyzed thematically, eliciting more in-depth information about survivors' experiences of cancer-related health care and QOL outcomes.
Results	People had good quality of life. Several things were associated with more positive QoL. People who were interviewed also said they had good quality of life but interacting with hospitals was upsetting.	The results provide a very limited and unclear explanation of the findings. The language used is colloquial (informal) and inappropriate for an academic context. There is limited relationship between some of the findings presented in the draft abstract and the stated aim of the study.	Overall, CRC survivors reported positive QOL and continuity of care. Positive QOL outcomes were predicted by private health insurance status, remission of disease, greater continuity of care, nonuse of cancer support and lower levels of social difficulty ($P \leq .05$). Interview data corroborated these results and identified a range of individual, organizational, and political issues that enhance understanding of the means by which CRC survivors' health care experiences may influence QOL outcomes.
Conclusion	The complexity of QoL and impact of health care on quality of life. Action from health care professionals is needed to improve quality of life.	The conclusions are not clearly related to the study aim. The recommendations are vague. Sentences are not complete or grammatically correct.	The results suggest that health care experiences are predictive of QOL outcomes and may be influenced by survivors' unmet information and supportive care needs resulting from perceived shortcomings in survivorship health care. Strategies to address such unmet needs are necessary and should consider survivors' preferences for cancer support and social difficulties.

background, aims, and methods of the abstract, in that there is consistency in the population and outcomes with the methods used.¹² For example, within the abstract presented in Table 3, the first draft of the abstract presents results related to participants' experiences of interacting with hospitals. However, there is no evidence within the background, aim, or methods of the abstract that interaction with hospitals was a focus of this study.

When writing an abstract, the results section should clearly address the aim throughout, and each sentence within the results should contribute to achieving the study's aim. Vague results statements should be avoided, for example “*Several things were associated with more positive QoL*” (Table 3). Instead, specific key results should

be highlighted, for example, “*Positive QOL outcomes were predicted by private health insurance status, remission of disease, greater continuity of care, nonuse of cancer support, and lower levels of social difficulty ($p \leq .05$).*” (Table 3). There is debate on the level of detail that is needed in abstracts with respect to statistical test results, with some authors arguing the test statistic (eg, t-value, χ^2 value) should be reported within the abstract, with others suggesting a P value alone is sufficient.^{1,7,13,16} The conventions regarding reporting of statistical test results vary from discipline to discipline and even from journal to journal within disciplines. Therefore, we recommend that the abstract guidelines are consulted and, where specific guidance is provided on reporting of this nature, that it is followed.

Within qualitative research, whether the results section is a descriptive statement of the research themes or a summary of the study results again varies between disciplines and journals.¹⁰ It is tempting to list the themes of a qualitative study or literature review within the results section. However, at a minimum, abstracts reporting qualitative studies should include the central themes and add a comprehensive description of the results in relation to the research aim and articulate the meaning of and relationship between the themes identified in a manner that makes the key results of the study clear to the reader. Depending on how many words remain, the authors can decide to include a list of subthemes with contextual information.

Conclusion/Implications

The conclusion or implications section of the study should interpret the meaning of the study results and provide the take home messages and recommendations explaining what the results of the study mean for nursing, patients, or cancer care.⁷ The conclusion should not introduce any new results that have not been discussed within the results section of the abstract and should logically follow from the results stated within the abstract.^{9,12} There are a number of issues that arise within the conclusions section of an abstract; first, is that this section becomes a paraphrased statement of the results section; second, that authors over- or underestimate the meaning and importance of the results; and third, that the abstract makes vague recommendations for future research or practice.^{7-10,12} Within the conclusions section, three sentences may be sufficient to address the needs of this section. The first sentence might provide a high-level statement of what the results of the study mean in relation to the aim based on the information presented within the results section of the abstract. The second sentence might provide an insight as to what this means for the intended audience or participants of the study and in relation to practice, future research, and policy. The final sentence could make a recommendation as to how to address any issues that have been identified within the preceding sentences.

Authorship

In general, authorship credits should follow the conventions of the International Committee of Medical Journal Editors (ICJME),¹⁹ whereby all authors contribute to the work across the following four criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

The ordering of authors varies according to discipline, but in general, the order reflects the level of contribution of each author, with the exception that the mentor or senior investigator is listed last.⁸ The first author is normally the person who conceives and writes the abstract and will normally be the person who presents the abstract at a conference or acts as the corresponding author for a manuscript.⁸

Final Thoughts and General Tips for Revising and Finalizing an Abstract

Writing an abstract is arguably the most challenging component of academic writing, summarizing the results of a

substantive research project in three to five sentences and positioning them concisely within the background and implications for future practice, policy, and research. It needs to be written in a style that is clear, even to those without subject matter expertise and attract the reader's interest to know more.⁴ Mind mapping or brainstorming are helpful first steps to put concepts onto pages and can help authors to identify what information must be communicated within the abstract. Getting involved in peer review of initial drafts can also provide constructive feedback that can help shape later iterations of the work. The first draft of a writing project is never the last draft; ensuring adequate time is made available to allow self-reflection and critical editing will help to optimize the chances of success. Redrafting is also necessary to ensure the abstract's word count is as close as possible to any specified word limit outlined but not more. Furthermore, ensuring adequate time for coauthors to provide critical feedback will enhance the quality of the work. As seen in the first draft abstract in Table 3, this process of editing and proofreading is also necessary to ensure that typographical errors and repetition are addressed. For conferences, allowing enough time for editing and redrafting the abstract is needed for online submission deadlines.

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