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# Outlining and dictating scientific manuscripts is a useful method for health researchers: A focus group interview

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## Abstract

**Background:** Young researchers may experience difficulties when writing scientific articles for publication in biomedical journals. Various methods may facilitate the writing process including outlining the paper before the actual writing and using dictation instead of writing the first draft. The aim of this study was to investigate the experiences and difficulties for young, experienced researchers when writing articles using a detailed outline and dictation of the first draft.

**Methods:** We used qualitative focus group interviews and the study was reported according to the COnsolidated criteria for REporting Qualitative research guideline. Participants were sampled from a group of researchers participating in a writing retreat/course. The interviews were recorded on a digital recorder and transcribed. The text was analyzed according to content analysis and coded and condensed into themes and subthemes. Groups of participants were added until data saturation was reached.

**Results:** A total of 14 researchers participated (9 women and 5 men). Their clinical experience was median (range) of 6 (1–11) years since graduation from medical school. Two themes arose during the analyses of the data: “Process guidance with the outline as the map” and “arrival at dictation.” The outline was used in the preparation phase leading up to the day of dictation and was used in collaboration with co-authors and supervisors. The participants found it to be a useful tool for preparing the manuscript and dictating their initial first full draft.

**Conclusion:** Experienced young researchers found beneficial effects of using a structured outline to prepare for dictation of scientific articles. The outline was a tool that would develop in close collaboration with co-authors and mentors. With dictation, a full first draft of a manuscript can be produced in a few hours. Participants positively evaluated this structured and reproducible way of producing scientific articles.

## Keywords

Medical education, qualitative methods, scientific writing, focus group, medical writing, scientific publishing

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## Introduction

Researchers are under pressure to publish, a phenomenon by some expressed as *publish or perish*.<sup>1</sup> It can be problematic to find the time to write and publish scientific articles, including all correspondence, revisions, etc., especially when also having a full-time clinical job.<sup>2</sup> Even for people with full-time engagement in research, time dedicated to the writing process might be fractioned and unproductive. It is even more difficult for physicians who want to have an active research career besides their clinical work. Thus, lack of time has been found to be one of the largest barriers for doctors in conducting and publishing research.<sup>2</sup>

In our research group, we have developed an efficient process when writing articles and have now used the method

for several years.<sup>3,4</sup> The process starts with a detailed outline and then the manuscript is drafted via dictation to a smartphone. The purpose of the outline is to develop a “map” of the article before it is written. The idea is to facilitate a

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logical structure and in the end produce a manuscript with a natural flow.<sup>5</sup> Using an outline it is easier to get an overview of all parts of the article, which part might not fit in, or which parts should be added to the final article. Outlining before writing is used in many disciplines and could also be used when writing scientific articles.<sup>6</sup> When the article has been outlined and all results, references, figures, tables, and so on are ready, the lead author will produce a full draft of the article (from introduction to conclusion). This is done by dictating the article, since dictation has been demonstrated to be a useful method for young researchers to achieve first draft and overcome writer's block.<sup>4</sup> The lead author will clear the outline with co-authors prior to dictation so that no changes are needed afterward. The dictation usually takes place during a writing retreat, where all participants dictate their manuscripts in a "disturbance free" environment.

The hypothesis of this study was that outlining (planning) and dictating scientific manuscripts would help young researchers to write scientific articles. The aim of this study was to investigate the experiences and difficulties when writing articles in this structured way.

## Materials and methods

The methodology chosen for this study was qualitative focus group interviews. Focus group interview allows participants to discuss and respond to ideas, opinions, and feelings expressed by others, thereby allowing the researchers to get a better and deeper understanding of the phenomena investigated.<sup>7</sup> This focus group study has been reported according to the COnsolidated criteria for REporting Qualitative research (COREQ) guideline,<sup>8</sup> please see supplementary material.

Participants for these focus group interviews were sampled from a group of researchers participating in a 1-week writing retreat/course. Participants had to have some experience with producing and publishing scientific manuscripts. We sampled participants who had finalized their PhD or were in the processes of obtaining their PhD degree, or on a similar academic level. The authors knew some of the participants beforehand, but not all.

The focus group interviews were conducted according to a pre-specified interview guide. The focus group interviews were conducted in a comfortable room where everybody faced each other. Two researchers were present during the interviews, one acting as interviewer and the other acting as observer. The purpose of the observer was to ensure that ideas and opinions expressed by participants were followed appropriately with follow-up questions.<sup>7</sup> Furthermore, the observer also ensured that the interviewer did not engage solely in a dialogue with one or two of the participants. The interviews lasted approximately 1 h, were recorded on a digital recorder, and transcribed verbatim. All interviews were conducted and analyzed in Danish. Themes and quotes were translated to English for presentation of the results.

After transcription, the interviews were analyzed according to content analysis.<sup>9</sup> The data were read in whole in order to get a sense of the interviews; then meaning units were identified, coded, and condensed into subthemes; and the themes were finally identified.<sup>9</sup> This process starts with many codes, then fewer subthemes, and finally the themes that are the main results. The researchers conducted the analysis process separately and then met to discuss the findings and agreeing on the final themes.<sup>9</sup> New groups of participants were added until data saturation was reached. Data saturation describes a situation where no new themes, ideas, or opinions are being expressed in the interview and is a way to ensure a sufficient sample size has been reached.<sup>9</sup>

Prior to each focus group interview, the participants were informed about their rights to decline participation, withdraw their statements, or leave the study at any time during the interview without stating a reason. Anonymity was ensured. If participants were willing to participate, an informed consent form was signed. The recorded and transcribed interviews have only been available to the authors of the study. The study was approved by the Danish Data Protection Agency (HGH-2016-061). According to Danish law, no ethical permission was required for this study.

## Results

Three focus group interviews were made with groups of three to six participants. A total of 14 researchers participated, whereof nine were women. The median (range) age was 34 (28–40) years. We aimed at young experienced researchers and their clinical experience was median (range) of 6 (1–11) years since graduation from medical school. They had participated in full-time research for median 2.5 years and had written a median of 5.5 articles that were either published or submitted. Two had finalized their PhDs and 12 were still PhD students. It was planned to conduct two interviews and then determine if a third one would be added. After the two first interviews, data saturation was not reached and the third interview was conducted, thereby reaching data saturation.

Two themes arose during the analyses of the data: "Process guidance with the outline" and "arrival at dictation." These two themes both include *feelings and challenges* as well as a focus on the *structural part*.

### Process guidance with the outline

In general, the participants described their experience about outlining the article and then dictating the article as very process-orientated. As one participant expressed,

*The keyword is preparation. The outline is the embodiment of preparation. The outline is not useful if you make it 5 minutes before you dictate. You should work on it and use it as a tool to get overview, in order to prepare thoroughly so you have full clarity before you start dictating.*

The outline was the map leading toward the dictation situation, but it was difficult for the informants to construct the outline. There were obstacles when working with the outline, and it was not always easy to have all co-authors to follow the same path and go the same way. However, the outline was used to align expectations among co-authors regarding the final article.

The structural part was very important to the informants, such as the physical space and setup for working with their outline and the actual setup of dictating the article. There were external things that needed to be in place, both physically and timewise in order to ensure good and well-functioning outlines and dictation outcomes. For example, it was important that they allowed themselves time, as well as getting time from supervisors, to work with the outline:

*It's about the overview, to become better at making the outline and also become better at taking/making the needed time and peace for the project and get it done—it can be difficult to find a day without any disturbances.*

For some informants, the hardest part of writing the article was to do the outline. When producing and working with the outline, informants had to maintain focus over time, to read all background literature, make all the figures and tables so a large part of the work had to be done when outlining the article.

The outline was used as a framework and it became clear throughout the interviews, that the more experience the informants had, the better they were at depicting large parts of the outline before they even knew the final results of the study. This helped them to get a kind of overview and understand the article even before they had all the results:

*I made empty tables to get an overview. I made half of the outline even before I had any of the results.*

Sometimes there were barriers in the collaboration between the young researchers, the supervisors, and co-authors because the co-authors did not always understand the outline. In order to have a meaningful outline of the article, the process does not require a full drafted article but only headlines, short paragraphs, keywords, and so on. This sometimes developed into a sort of personal logic with notes and keywords that could be difficult for others to understand. It was clear that meetings during the time of development of the outline helped the process:

*I have tried sometimes, with external collaborators, to arrange a meeting and discuss what the results show. Spread them out on the table, graphs and tables, and simply just talked for an hour about the findings. That I can use for an outline. If we can agree on the findings, I can make an outline and dictate the draft.*

In these meetings, they could explain what they meant by certain paragraphs, keywords, etc. and this would allow

the co-authors to give their inputs and provide suggestions for paragraphs that were either missing or paragraphs that could be omitted in the final article, without having to read a full draft.

Another challenge when working with the outline was that sometimes supervisors or co-authors would give more feedback on language and editing issues instead of the content of the final article. Even though these researchers were relatively experienced, they still needed input and discussions to identify “the big picture,” leading to an outline with a clear common thread and main message. Those things take time and effort and were not always given the required time by co-authors as well as supervisors. However, the outline could help with this process since no language editing is needed as long as it is just keywords, short sentences, and notes:

*I think the structured outline has been a help to create overview and to get on top of things in order to create a common thread throughout the manuscript.*

The outline was also used to take the lead of their project. They had an established way of engaging their co-authors and getting inputs by sending them an outline and asking for help with certain paragraphs. Some informants had to motivate their supervisor to use an outline before writing the article. They had to convince their supervisors about the benefits and in some cases found it difficult. Often the supervisors had been writing articles for several years and had developed a more traditional way of writing where they would only consider and comment on more or less full drafts. However, most participants managed to convince their supervisors about the benefits of an outline. Some had tried to work both with and without the help of an outline, and they found that it was an easier, quicker, and better process to use an outline.

### Arrival at dictation

When the participants were ready for dictation, it was important that the environment, the physical space, the time, the outline, and all necessary preparations were well prepared. The participants described the importance of being isolated from their normal daily work and ideally have their electronics switched to “flight mode.” One described it as going into a “monk-state of mind”:

*It has to be “monk-like,” you have to sit in your “cell” and be completely cut off from the world around you. It is very important that the phone is on flight mode, and the computer is off, so you don't receive mails—you cannot do anything else. You should not go online and I find it very important to stick to this idea. Dictate your draft based on what you have prepared.*

The reason was that they had to focus 100% on dictating their whole article in one day. The informants expressed that the mind-set was important in order to get into the “bubble” of motivation, where they were just themselves, their outline, their references, and then taking the time needed in

order to get from *introduction* to *conclusion*. There should be no disruptions when they were dictating. It was expressed as a privilege to have full dedication to the dictation process and many of them expressed that in comparison it would be difficult to gain the same outcome at their office or at home, because even though they could find an hour or two here and there, they were never totally isolated and fully prepared for dictation. If they were at home, their spouse or their children could disturb them and at work they could be disturbed by peers asking questions, the phone ringing, emails, and so on. Therefore, the effect of being on a writing retreat and having to isolate themselves in order to dictate the article was challenging, but very fulfilling and an important aid to write articles. Often the informants expressed that they were able to write good articles, in an effective and time-efficient manner. After having done it several times, one expressed,

*I felt comfortable with the process. Having one recipe, one way to prepare and then having one way to make a full draft.*

There were also challenges when dictating articles. One expressed that it could be difficult to get started with the dictation. It was awkward for some of the participants to sit isolated and having to dictate to their digital voice recorders or an app on their smartphone. However, when dedicating themselves to it, and forced to do it, it would only take about four to five sentences before the words would flow and then it felt fine. Some said that they had a bit of anxiety when they were dictating articles, because they could not see what they had just “written,” they could not check their wording or correct their sentences:

*I get anxious when I cannot see what I just said, I get confused. . . . but after transcription I see that I spontaneously made good sentences and the language was nicer than if I had written it—that was a very positive experience.*

Others expressed this is a good thing because they would not get caught up in revising the draft before they had finished it. The participants all wrote articles in English. However, none of them have English as their native language. An informant reported the dictation as an opportunity to practice pronunciations in a “safe place.” This was good preparation for future presentations and conversations with international colleagues.

Throughout the interviews the informants expressed that when arriving at the retreat with one goal (to dictate an article), they found that the engaging community were a large part of the whole process. The participants felt obliged to prepare themselves well, because all their colleagues were doing the same. They did not want to arrive at the retreat and be less prepared than the others. The retreat was a very solid deadline. The deadline could not be moved, so it was not an option to *not* make it to the deadline and have the outline ready. This ensured the finalizing of the outlines and sometimes that was hard in the last weeks leading up to the departure but was seen as a very good thing because everybody was forced to finish their article drafts.

## Discussion

In this qualitative focus group study with experienced young researchers, we identified two major themes: *Process guidance with the outline as the map* and *arrival at dictation*. With the use of a well-prepared outline, the participants would dictate a full article draft in less than a day. The outline was used in the preparation phase before the day of dictation and was used to facilitate collaboration with co-authors and supervisors. In general, the participants found the outline to be a valuable tool for preparing their manuscript and dictating the initial full draft.

The idea of outlining as a preparation before actually writing has been used in several other disciplines and also in medical writing.<sup>5,10</sup> Outlining of manuscripts has been used in other parts of the sciences, but to our knowledge this is the first investigation of biomedical researchers’ use of an outline and dictation in a structured and pre-planned writing course/retreat. There are few actual writing courses in spite of the focus on publishing papers.<sup>11</sup>

Outlining and dictating articles is a productive and valuable method to structure and organize ideas beforehand, and thereby ensure a logical flow in the storytelling throughout the final article. Furthermore, the use of dictation for making the first draft has previously been demonstrated to be beneficial.<sup>4</sup> Concerns about dictation includes uncertainty about the quality of the language. However, it has been demonstrated that the language has a linguistic complexity, which is appropriate for biomedical journals, while at the same time it is at a level where it is easy to read and understand. We believe that this way of producing manuscripts could be used more.

The participants for this study were exposed to an idealized working environment when dictating their manuscript drafts at the retreat. This could have influenced the results and the positive experience with outlining and dictation. However, without proper preparation with an outline and without dictation, it would not have been possible to create a full draft in a few hours. For the participants in this study, the retreat created a good working environment without disturbances. However, this environment could also be created by the individual, for example, by the use of an office outside normal office hours. When being in an environment with disturbances or allowing one self to be disturbed, the performance declines. A study found that use of “non-related” Internet in a learning situation negatively impacted test scores, irrespective of cognitive ability.<sup>12</sup> This finding underlines the importance of a disturbance-free environment.

As with all research, there are strengths and limitations with this study. When conducting focus group interviews, it is important to ensure that the sample size is representative and large enough. The study has to include a sufficient number of interviews in order to ensure that important themes are not left out. We believe that this was the case since data saturation was reached after the third interview. Data saturation is essential in order to minimize the risk of missing important opinions, ideas, and themes. Regarding representativeness, we believe the participants were representative of young experienced researchers

since the groups involved a mix of males and females, PhDs, and PhD students with a variety of experience in writing scientific articles although none were novices in medical writing. This case mix makes the results transferable. Transferability should always be carefully evaluated; however, we do believe that these findings are valid for any one writing scientific articles within the fields of biomedical publishing. This study also has limitations. Interviews were conducted and analyzed in Danish and then results and quotes were translated to English. There can be nuances lost in translation; however, we found the results to be relevant to researchers outside Denmark as well and therefore chose to translate. Another limitation is the use of verbatim transcription for analysis. Using the transcription only, it was not possible to capture non-verbal communication during the interviews. This could have been captured via video or notes, but for this study we believed the spoken word to be sufficient for analysis of thoughts, feelings, and experiences. One thing that also has to be taken into account is the cultural setting. All participants were Danish, and the transferability of the results and conclusions could be somewhat limited to people who have a higher or lower proficiency in English. Denmark ranks as second in English proficiency for non-native English speakers.<sup>13</sup> For authors whose English is more limited, the dictation might not be the best way to produce scientific manuscript; however, we do still encourage the use of outlines for preparation for the manuscript. Instead of dictation, it could be possible to create manuscripts using the technique of free-writing, but still based on an outline. In free-writing, the author writes without stop or editing, as one would do during dictation.<sup>14</sup> Focused free-writing has been shown to empower young researchers, allowing for discoveries while writing (or dictating), and they will learn to express themselves with confidence.<sup>14</sup>

## Conclusion

Outlining and dictating scientific manuscripts is a useful method for experienced young researchers. The outline is used as the roadmap and in collaboration with co-authors. It is a tool for gathering and structuring the ideas leading up to the final article. The dictation is used to produce the first full draft, without the disturbance of having to correct or rewrite sentences when writing. The participants in this study found it beneficial to use the outline as a recipe and do it the same way every time they had to write a scientific article.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Ethical approval

Ethical approval was not sought for the present study because it is not required for this kind of study according to Danish law.

## Supplementary material

Supplementary material for this article is available online.

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## Informed consent

Written informed consent was obtained from all subjects before the study.

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