Overcoming challenges of PhD supervision in a clinical setting

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Abstract

Introduction:
Clinical settings, i.e. healthcare facilities or hospitals affiliated with universities are now common sites for doctorate supervision (PhD supervision). This study aimed to identify challenges and opportunities in a clinical setting from the perspective of participants in a university course for supervisors.

Methods:
Twenty-one PhDs from the medical faculty, Linköping University, who participated in one course on supervision arranged by the university during the period 2016-2018 agreed to have their papers on PhD student supervision reviewed. From these papers, aims and suggestions for enhanced supervision were collected.

Results:
We identified several supervision issues specific to the healthcare and hospital-based contexts. These include the demands on supervisors to combine clinical and supervisory roles, the demand to create an academic environment integrated in the clinical context, the challenges of academic medical/scientific writing, and career issues for both PhD students and supervisors already established in their healthcare professions.

Discussion and conclusion:
We identified that researchers who are going to be supervisors and who combine clinical and supervisory roles report significant challenges with supervision. To better support their PhD students and to create an academic environment integrated in the clinical setting the postgraduate supervisor training programmes should be tailored to the needs of these supervisors.
Keywords: PhD supervision; clinical settings; teachers’ roles

Introduction

Teachers of university students at advanced level should have at least a PhD degree. At the Faculty of Medicine and Health at Linköping University, Sweden, several programmes lead to a Master’s degree within the healthcare area such as medicine and midwifery. For students to reach the PhD level and thereby be allowed to teach at an advanced level, they need to be supervised by at least two supervisors with competences not only within their own specialist fields but also in the area of research supervision. Therefore, the university arranges two courses for supervisors, one faculty specifically focusing on formalities and rules and one general focusing on learning and pedagogics.

A specific challenge for many PhD students at a medical faculty is that they work professionally within the healthcare sector as for example medical doctors, midwives, nurses, or physiotherapists in parallel with their PhD studies. Usually a Swedish PhD student is a part-time student, spending at least eight years working for half his/her time on the PhD studies besides doing clinical work. "Becoming a student again" could be a real challenge for many doctoral students with a professional background since in their profession they are trained to be problem-solvers, but in their role of student they have to become problem-seekers (Watts, 2009). In a way this is a regression from professional life back to becoming a student again. In other professions than medicine, the difficulties of being "Professional Doctorates" and part-time PhD students compared to full-time PhD students have been identified (Lee, Brennan and Green, 2009; Teeuwen, Ratkovic and Tilley, 2014).

The number of PhD students in clinical medical context is increasing internationally and often the academic supervisor also has part- or full-time clinical work (Gardner and Gopaul, 2012) causing difficulties for the supervisor in balancing clinical work, career and supervisory responsibilities (Caldwell, Oldmeadow and Jones, 2012). Scientists working in a clinical setting play a critical role in medical research, but during the 1980s and 1990s they declined in number (Ley and Rosenberg, 2005). Therefore, it is important to encourage clinical PhD students by improving the conditions for their academic career.

PhD supervisors claim that they need training to improve their supervision competence, an issue discussed by Rafling, Bern Jensen and Tönnesen, 2017. The study was performed since approximately half of the students withdrew from their PhD studies claiming that they had insufficient supervision.

During the general courses on research supervision at Linköping University the participants discuss supervision in relation to scenarios provided by themselves through experience-based case studies. They also have a semi-structured interview with another supervisor or PhD student and finally they write a paper. This paper should include a literature review of relevant issues within research supervision and a discussion including reflections based on the literature review combined with own experiences and what has been discussed during the course. All participants choose their own topic related to supervision but should address essential, controversial or problematic perspectives. During the opposition seminar, chaired by another course participant, several interesting aspects and points usually appear, often of general value. We think these issues deserve attention beyond the context of the course and they should be discussed in relation to the clinical environment where the academic supervision takes place.

The topics chosen probably also illustrate what supervisors within medicine and health find essential in their own supervisory practice.

One aim of this investigation was to identify which topics were chosen to review and discuss by participants from a medical faculty in a university course on PhD supervision. Another aim was to collect ideas and suggestions expressed in these papers on how to improve supervision of usually part-time PhD students within a medical faculty.
Methods

Twenty-four PhDs from the medical faculty, Linköping University, Sweden, who had participated in a course on supervision were asked if they were willing to supply us with their papers on PhD student supervision. All of them were working clinically as well as pursuing their research career. The request included information on our intention and that we would not reveal their names as authors of the papers in the report. Three PhDs did not reply, leaving 21 papers for analysis.

The papers were read by one of the three authors, condensed and sorted into categories according to the choice of topic and content. Suggestions on improvements of PhD supervision practice appearing in the papers or during the discussions were collected and categorised. After individual classification by each author, we discussed and reclassified some of the papers until we found shared agreement.

A conventional content analysis (Hsieh and Shannon, 2005; Krippendorff, 2013) was carried out, focusing on the aim of the project and how the course participants conceived the area they had decided to investigate. The text was searched for meaning units and coded independently by the authors with the purpose of capturing key concepts. Codes were merged into categories (Graneheim and Lundman, 2004). Thereafter, the authors looked for latent content to identify themes and all papers were assessed according to the themes.

Results

All but two authors of the 21 papers reviewed were clinically active when they wrote their own thesis, and had experienced the concurrent combination of clinical and academic work.

Classification according to choice of topic.

Topics are compiled in Table 1. Some papers dealt with more than one topic.

Ten papers focused on the conflicts associated with being a clinically active supervisor or PhD student, namely how the time allocated to supervision and to working on one’s own research is in temporal conflict with clinical work. Since many clinical PhD students are older than preclinical PhD students they often have a family needing attention and care, and it can be a challenge to combine this duty with others.

Two papers focused on cultural and gender differences including hierarchical systems that can differ between the PhD student and the supervisor. Another two papers discussed how the long time and process of supervising a part-time PhD student changed the involved persons in terms of being professional, emotional and cognitive at different points in time.

The focus of two papers was the "troublesome PhD student" or "when supervision does not work", either because of inadequate supervision or insufficient effort by the PhD student.

The potential interdependencies between the PhD student and his/her supervisors were discussed in most of the papers, as well as how these dependencies can change over the long PhD study period. At times the PhD student can be dependent on the supervisor and at other times the supervisor is dependent on the work performed by the PhD student to qualify for project-bound research grants.

Tutorial groups with more than one supervisor were discussed in three papers, along with the different roles of supervisors, mentors and co-supervisors. Also, the double roles of supervisors in PhD studies and in a clinical setting were discussed in a few papers, along with how the clinical career is parallel to the academic career. Qualification at the clinic is often more straightforward and faster than the academic career. Several papers discussed the double roles that sometimes appear when the PhD supervisor can be clinically supervised by the PhD student.
"balance" of supervision can change over time depending on both the academic and clinical training during the long process of PhD studies.

Two papers discussed how to use Problem-Based Learning (PBL) or supervision in a group of PhD students. One paper focused on feedback and emphasised that the supervisor must be aware of his/her ability to give feedback and the student's ability to receive and process it.

Table 1: Topics dealt with in the 21 analysed papers. Note that some papers dealt with more than one topic

| Topics                                              | No of papers dealing with this topic |
|-----------------------------------------------------|--------------------------------------|
| Conflict between clinical work/academic work         | 4                                    |
| Balance between a professional and private relationship and feelings of guilt | 4                                    |
| Balance between clinical work and private life in relation to research | 3                                    |
| Gender and cultural differences between PhD student and supervisor | 2                                    |
| Different roles of supervisors, co-supervisors and mentors | 2                                    |
| Tutorial in a group of PhD students and journal clubs | 2                                    |
| Workload in relation to psychological stress and time allotted to supervision | 1                                    |
| The dysfunctional PhD student and warning signals    | 1                                    |
| Dependency of PhD student vs supervisor regarding grants and financial issues | 1                                    |
| The quality of the tutorial                          | 1                                    |
| The framework of the academic system and why PhD students quit | 1                                    |
| The pedagogic model of problem-based learning applied to PhD supervision | 1                                    |
| The topic tutorial, professional, emotional and cognitive aspects | 1                                    |
| The issues of giving feedback                        | 1                                    |

Challenges and opportunities

The most challenging topic discussed by the supervisors was how to schedule meetings for PhD supervision within the routine clinical work without overusing time outside office hours. Another challenge was how to combine the roles of supervising a PhD student and at the same time being a clinical colleague. Also, personal relations between the supervisor and the PhD student, and the balance between family life and research were discussed. This dilemma has been previously discussed, i.e. that many part-time (professional) PhD students (all fields) are older than full-time PhD students and combine doctoral studies with substantial family and work commitments (Watts, 2010). Many professional PhD students struggle with constant conflicts when balancing family life, work life and PhD studies. This, together with the perceived feeling of being unimportant in the academic setting, leads many professional PhD students to question whether they should undertake postgraduate studies in the future (Mawson and Abbott, 2017). Therefore, it is even more important to strengthen the part-time clinical PhD student in the scientific work and support his/her involvement in the academic environment. Opportunities to improve supervision were also discussed in terms of supervision in different forms, e.g. to create groups of PhD students who otherwise might experience loneliness in the role as a clinically working part-time PhD student. Loneliness in the academic context and difficulty in identifying oneself as an academic person are also considered troublesome among part-time PhD students in other professional settings than clinical (Teeuwsen, Ratkovic and Tilley, 2014, Mawson and Abbot, 2017).

Suggestions to improve supervision:
Here we summarise suggestions brought up in the papers by the course participants and during the seminar discussions of the papers.

**The importance of good collaboration between the healthcare sector and the academy.** One paper stated that the collaboration between the healthcare sector and the academy is a typical "win-win" relation. Internationally acknowledged scientific results lead to better and more efficient care of the patients and increased knowledge and satisfaction among the clinical staff. Still there are shortcomings and challenges for clinically active PhD students who usually go through their studies with less satisfaction, are often older, have families, and experience ongoing competition between their clinical and academic tasks (Gardner and Gopaul, 2012). On the other hand, they are often highly motivated since their scientific work is perceived to be relevant for their professional work in the healthcare system (Watts, 2009). The university must adapt its support and infrastructure for research to make it available also for part-time students. The supervisor and the PhD student should both pay attention to the professional clinical expertise of the student and also enhance the PhD student's transition from an academic novice into a researcher.

**The importance of developing an academic environment.** One main challenge brought up in many papers concerned how to develop and sustain an academic environment for clinically working part-time PhD students. It was pointed out that the research seminars arranged by the university are often not adapted for clinically active students who must schedule participation in seminars well in advance and may still be prevented from participation due to the clinical burden and last-minute interventions. Participation in seminars arranged by an institution and involving topics such as theory development, laboratory methods or new equipment should of course be encouraged, but may be difficult in practice due to constraints of clinical work schedule, time and location.

The advice put forward in many papers was to arrange specific seminars for clinical PhD students along with the academics belonging to the clinic (such as clinical doctors who are part-time professors or senior lecturers). These seminars should also invite other interested staff representing all professions at the clinical department, who may be PhDs, PhD students or people who have not yet started their PhD studies. These seminars should be planned well in advance and ideally on a strict regular basis so that participants know that every Friday afternoon is devoted to these seminars. It is crucial that the head of the clinical department realises the importance of such seminars which facilitate an academic environment, but also stimulate critical thinking and the provision of evidence-based care and medicine.

The topics of the seminars and their focus should vary but presentations of new project ideas are a good way to involve colleagues in recruiting patients in a study and also allow them to receive valuable input on the study design and methodology from colleagues not directly involved in the study. Half-time seminars and exercises preparing for the dissertation are examples of topics of the seminars put forward. Also, seminars in which a manuscript is presented by the author, preferably a PhD student, and discussed before it is submitted to a journal, are suggested as fruitful to the scientific progress of the PhD student as well as for the other participants. It is important that the supervisor and co-supervisor including other senior academics participate and catalyse the process during the seminar, although the discussions between the PhD students should be encouraged and dominate.

A clinical PhD student belonging to a small clinic with only a few PhDs and PhD students presents a specific problem since a critical mass of participants is often essential for success. Suggestions to increase the number of participants put forward were to arrange the recurrent seminars together with one or more "neighbouring" small clinics or to use video-linked seminars in collaboration with other clinics.

Supervisors of clinically active part-time PhD students are advised to ensure they have enough knowledge of the administrative rules for PhD students, to keep updated about when and where the university arranges its seminars and courses, and to transfer this information to the PhD student. The supervisor should be part of a local, national
and ideally an international academic network within the field and should invite the PhD student to join these networks as well as attend the seminars and journal clubs arranged locally.

Use of journal clubs is a tool advocated to enhance the academic presence within the clinical area. Papers to discuss could be chosen by the chairman of the club but preferably by the participants. If the number of possible participants is too small, again collaboration with another clinic or video-linked meetings could be a solution. The supervisor should act as a facilitator and stimulate all participants to be active, and should also ask for feedback from everybody and schedule the next meeting (Bhattacharya, 2018).

The importance of availability - joint system supervision: Because of the difficulties for both the supervisor and the PhD student in finding times when they could come together a suggestion is to arrange "collective" or "joint system supervision". Several PhD students from different but adjacent clinical areas come together with more than one supervisor, but not necessarily one's own supervisor, to discuss topics such as critical reading of manuscripts, scientific approaches, or study design. In this way more perspectives and views will be put forward than if only one supervisor and PhD student come together. However, in the discussions it was emphasized that the supervisor/-s must be aware of the dynamics within the group of PhD students, and possible imbalances between them, and must be prepared to ensure a balance between positive and negative feedback.

The importance of a good link between the clinical and academic environment: It is important to strengthen the link between the clinical and the academic environment for many reasons. If the clinical PhD student is "isolated" from the clinic and its colleagues when conducting research the student may feel that she/he does not have responsibility for the clinical work, and feel insufficient to manage both clinical work and conduct research, and that the research project is separate from and irrelevant to the clinical issues. It is an important mission for the supervisor to clarify the relationship between the research issues and the clinical issues, and to emphasise that scientific competence strengthens rather than prevents clinical development and problem-solving. Isolation of the PhD student should be prevented apart from during very intense work, for example on a manuscript. A way to do this is to welcome clinical colleagues to all research seminars and to involve them in the discussions. To ask a clinical colleague from another research group or even one without any academic experience to be the "reader" and opponent of a manuscript in a group seminar, is suggested to decrease the distance between the clinical missions and the academic issues.

If the PhD student has difficulty seeing the relationship between the clinical and academic issues it is suggested that this difficulty should be the focus of a separate meeting between the PhD student and the supervisor/-s. Guilt should definitely be prevented and the relevance of the scientific questions and tasks in the clinical environment should also be discussed and emphasised. Feelings of inferiority and being less committed in relation to full-time researchers are reported in other studies (Curran, 1987).

The importance of time for supervision and PhD studies: The lack of time for supervision and PhD studies is general and not specific to the area of medicine. There are numerous professional duties such as research, teaching, and application of grants competing with social and private life with family and relaxation always present for both supervisor and PhD student. In the context of a medical faculty the clinical issues also affect the situation. Usually the PhD student is a part-time student, spending many hours per week on the PhD studies despite full-time clinical duty. Also, the supervisor is often clinically active, and this implies sometimes challenges in arranging supervision. Good planning and cooperation between the main supervisor and one or two other supervisors may possibly resolve the situation. Good supervision is therefore characterised by mutual learning between two or more parties, with all parties benefitting from increasing independence as an outcome. Also, the young co-supervisor should benefit from this arrangement and increase his/her competence and independence in preparation for becoming a main supervisor. The individual study plan (ISP) can be a valuable instrument in this process if it is used as intended. Too often this instrument is reduced to an administrative formality. It is also suggested that the ISP could be complemented by a ‘work-contract’ where responsibilities are settled, as well as communicative and documentary routines. Another
A proposed solution for clinically active supervisors with time constraints is to employ a person who supports more than one supervisor regarding applications for grants and to the ethical committee.

The importance of courses adapted for part-time PhD students: Scientific educational courses for PhD students regarding for example statistics, scientific methodology, good clinical practice etc. must be announced well in advance. These courses are often arranged as full-time courses, and to be able to make it possible to take time off from full-time clinical work these courses have to be planned and announced yearly, and the PhD students who have been accepted have to be informed at least three to six months in advance in order to enable their participation in the course.

The importance of the supervisor and student relationship aiming at independence: Many papers discussed general issues regarding supervision, not specific to PhD students at a medical faculty. One such issue regarded the relationship and dependency between supervisor and student, especially the kind of dependency that inhibits the development of independence. A balance between challenge and support from the supervisor could be delicate and should be dynamic, i.e. it should develop over time in order to stimulate the development of independence. Also often emphasised is the importance of the supervisor realising that there is an imbalance in power and often between man and woman between supervisor and student. A discussion between the supervisors, that is the main supervisor and assisting supervisors, could be helpful to avoid problems in this area. Another suggestion that was raised was to devote a scientific seminar to discussions about relations considering probable imbalances.

Another general issue concerns the PhD student who shows insecurity and lack of self-esteem. The suggestions were to give the student more intellectual space, to promote own suggestions and inputs, even if these are not particularly brilliant.

The medical faculty at Linköping University, where these courses are arranged, has used PBL as the main pedagogical method since it was launched in 1986. One of the course participants stated: "As PBL shares many common features with the research process itself, it could be considered a natural part of research supervision. However, this requires that the student is allowed to be part of—or even be responsible for—the scientific process, which in turn requires that the supervisor steps back and gives the student time to reflect upon results but also the process itself. The lack of studies on PBL in third cycle studies and on how the increasing implementation of PBL in first- and second cycle studies in recent years affect academic development sets the stage for future studies on this topic."

The importance of feedback: Feedback is important in all kinds of supervision. One paper discussed feedback as the main item and stated that it should be given in the following ways: to highlight what is being well done, to identify what alterations are welcome, to suggest possible changes. It is important to learn how and whether the student can receive feedback, and to identify emotional reactions and issues of hierarchy. Moreover, it is important to identify the goal (where are we going?) Problems can arise if there is more than one supervisor. Three types of feedback are discussed: referencing (redactional, organisational, content), orienting (suggestions, questions, instructions), and expressive (praise, criticism, opinions). It was argued that the last form of feedback is the most effective for students who are at a level of independence characterised by self-learning.

It is important for the supervisor to reflect upon his/her ability to give feedback. One paper said: "Try to discuss this with the student so that you reach agreement on what it means and how it will be done. It should not come as a surprise. Clear and open communication is needed. Feedback should be adapted to the student, to the kind of problem discussed and to when in the process of the PhD studies the problem has arisen."
Discussion

In this investigation almost half of the authors who were or aimed at becoming PhD supervisors focused on the conflicts of interest associated with supervision of PhD students, i.e. how time to supervise and do one’s own research is in temporal conflict with clinical work and career. Also, it appeared that clinical PhD students are often older than preclinical PhD students and more often have a family that also needs attention and care, and it can be a challenge to meet these various demands.

The number of PhD students in clinical contexts is increasing internationally (Gardner and Gopaul, 2012). Studies of clinically active, often part-time PhD students show that they are often less satisfied with their doctoral education, less goal-oriented and less prone to be academically engaged. It also seems that the balance between research and clinical work is influenced by the facts that part-time PhD students tend to be older, married, and to have children (Gardner and Gopaul, 2012; Watts, 2010), and at the same time more than full-time work is often required in the end to fulfill the PhD studies and produce a doctoral thesis (Gardner and Gopaul, 2012). In other studies, this conflict has also been discussed in relation to different professions since it seems like part-time students are less prone to undertaking postgraduate studies in the future (Mawson and Abbott, 2017). In the present study, as in others, PhD students in a clinical setting more often pick a topic for their research that is relevant to their professional clinical work (Watts, 2009).

An important issue appearing recurrently in the papers concerned creating an academic environment. As a supervisor it seems important to help the PhD student to academise the clinical work, give feedback and to create platforms for academic work in the clinical settings. Often the papers and discussions around the papers suggested arranging specific research seminars (for example a joint adviser system) for clinical PhD students together with the academics belonging to the clinic. At smaller clinics these seminars could be arranged in cooperation with a neighbouring clinic or could be video-linked in order to create a critical mass of participants.

Shen, Gao and Zhao, 2018, sent a questionnaire to PhD students in China and conducted interviews with them to evaluate the satisfaction with and preference for different academic supervision systems: the single adviser system versus the joint adviser system. It turned out that most PhD students preferred the joint adviser system (dual advisers or group system) over the single adviser system, even though the latter is more common in China. However, medical students who received joint supervision were more satisfied with their academic supervision than those who received single adviser supervision. Unfortunately, the definition of medical PhD students was not included, so it is not known if they were or were not part-time PhD students or clinicians, which means that this study’s results may not be comparable to those from our study. However this issue was raised and discussed in the present investigation, and joint supervision was suggested to make it easier to collaborate in terms of scientific approach, methodology and critical reading of manuscripts. This could be done in addition to the personal supervision between PhD student and the supervisor, and could help to compensate for difficulties to schedule time for personal supervision due to the busy clinical schedule.

Other important topics addressed were the double and changing roles of supervision in PhD studies and in a clinical setting since the clinical career and the academic career are often parallel. It is often easier to define qualification at the clinic since it is usually more straightforward and faster than the academic qualification. Furthermore, the academic skills cannot be appreciated to the same degree in everyday work. In a Danish study, 20 PhD supervisors from a medical school were interviewed, to establish how their supervision competence could be improved. Nine of these supervisors were employed in a clinical setting on a full- or part-time basis. They stated that supervising PhD students in a clinical setting entailed an additional issue to deal with compared to traditional supervision of PhD students, namely the conflict between the everyday work at the clinical department and the lack of time for conducting research/supervision, and this issue made it difficult to arrange time for scheduled supervision (Raffing, Bern Jensen and Tönnesen, 2017).
A special situation has been described in several papers in this study, where a supervisor, albeit more competent in science, may be less experienced and competent and even younger than the PhD student working in the clinical specialty. In such situations strictly professional discussions and contracts could enhance the scientific supervision while considering the discrepant competences within the different areas. The double roles can also interfere with the relationship in the clinical setting when a PhD student might have more clinical skills than the supervisor in different areas, meaning that the "balance" of supervisor vs supervision in both respects can shift during the long process until the doctoral thesis is finalised. Supervisors in some studies describe conflicts between the role as an overachiever and physician versus being a novice researcher, and the literature does not give much advice on how to overcome this (Gardner and Gopaul, 2012).

Conclusion

In conclusion, still there is a paucity of research in the area of supervision of part-time clinical PhD students. Supervising PhD students who are working in the context of a medical clinical setting entails dealing with many challenging issues such as conflicts between clinical and academic work, the balance between professional and private relationships and feelings of guilt. Furthermore, clinician supervisors should reflect on this and undertake postgraduate supervisor training programme to better support their students.

Also, to change the way of supervising over time is an issue since relations, both private and professional, change over the period in which PhD studies are carried out. Many good examples of how to improve supervision were highlighted in this investigation but it seems problematic to find platforms for part-time PhD students to develop their skills in their academic career.

It is important to help the PhD student to academise the clinical work, to give feedback to the student and to create platforms for academic work in clinical settings. This could be done by arranging specific research seminars for clinical PhD students along with the academics belonging to the clinic.

Take Home Messages

- Clinical researchers who supervise PhD students need to balance clinical and supervisory responsibilities.
- There are conflicts between the clinical context and the academic settings for PhD students and their supervisors.
- PhD supervisors should be better prepared to integrate an academic environment into the clinical setting.

Notes On Contributors

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**Appendices**

None.

**Declarations**

*The author has declared that there are no conflicts of interest.*

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