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Patients' experiences of being treated by an interprofessional student team compared with uniprofessional treatment by residents supported by nurses: a case study

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ABSTRACT

Clinical experience, preferably interprofessional, is an important part of health professionals' undergraduate training. In recent years, more and more patient treatment has been moving to outpatient clinics with research suggesting that this shift is not compromising students' learning outcomes. The purpose of this study was to explore orthopedic outpatients' perceived experiences of being treated by an interprofessional student team consisting of one medical and one nursing student versus being treated by a resident doctor supported by nurses in a uniprofessional setup. We performed an exploratory single case study with two embedded units: 1) a quantitative part with a survey (n = 89) including seven questions and 2) a qualitative part with interviews (n = 46). In the questionnaire, three of the seven questions revealed a significant difference in favor of the student teams. However, the qualitative part of the study did not indicate any differences between the groups. In this study, patients' experiences in an orthopedic outpatient clinic were not influenced by being treated by interprofessional student teams compared to normal patient pathway with registrars and nurses working uniprofessionally. This information is important in designing and implementing student curriculums with clinical training in outpatient clinics. Furthermore, the interprofessional student team can undertake unassisted consultations with selected patients with indirect supervision from the supervisors, making the clinical setting realistic for the students. However, in this teaching model, feedback to the students relies only on the students' written patient records; even if patient satisfaction is high, structured observation of student performance may be necessary as a supplementary teaching tool. This may be incorporated in future studies of patient-student relations in clinical training in an outpatient setting.

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Introduction

Interprofessional education (IPE) in the form of clinical learning is important to promote collaborative practice between future professionals (World Health Organization, 2010). For decades, IPE in clinical settings has taken place in hospital wards dedicated to this approach (Jakobsen, 2016; Reeves et al., 2002; Wilhelmsson et al., 2009). Because of shorter hospital stays (McKey, 2004), follow-up care in outpatient clinics for patients is becoming a necessity. This change in the course of patient care makes inpatient training alone insufficient for the students' learning of clinical skills. Therefore, in 2015, we supplemented our earlier IPE initiative (Jakobsen et al., 2009) and started IPE in an orthopedic outpatient clinic. Our results indicated that medical and nursing students' learning could be shifted to the outpatient clinic setting without compromising the students' learning outcome (Jakobsen et al., 2017, 2018). Patients treated by the interprofessional student team would normally have been treated by a resident doctor, with the resident referring the patient to a nurse for further treatment tasks such as removal of sutures and application of plaster bandages. Therefore, a question

remained to be answered: What were the outpatients' experiences from being treated by an interprofessional student team with a medical and a nursing student compared to being treated by a resident and a nurse working uniprofessionally?

Background

Even though patient experiences are not always a valid measure for the overall quality of care, they are often used as an indicator of the success of the treatment in the health system because patients' answers to questions likely represent their subjective contentment with the care provided (Godil et al., 2013; Prakash, 2010).

A systematic review indicated that the presence of medical students in the patient's treatment room had no influence on patient satisfaction (Vaughn et al., 2015). A Swedish mixed methods study that included an investigation of how a publicly funded, interprofessional student-run primary health care clinic was perceived by patients found that most of the respondents reported satisfaction with the care given (Froberg et al., 2018). A publicly funded Australian clinic explored the perceived value of an interprofessional approach

to the support of community-dwelling older people recently discharged from acute hospitals. The patients reported that they had fine communication with the students, and they felt that the students took good care of them (Kent et al., 2016).

In the United States, there are more than 100 medical-school affiliated student-run free clinics serving poor and uninsured populations. Research indicates that patients are satisfied with the care given and that they would recommend the clinics to friends (Asanad et al., 2018; Lu et al., 2018). Lawrence and colleagues performed a comparative evaluation of patient satisfaction outcomes in an interprofessional student-run free clinic, versus a non-interprofessional non-student-run free clinic, and found that the interprofessional student-run clinic was capable of performing at the same level as the non-student-run free clinic (Lawrence et al., 2015).

More research concerning patients' experiences from being treated by interprofessional student teams is required (Oosterom et al., 2018). To our knowledge, there are no studies comparing patients' experiences in the same setting when being treated by an interprofessional student team versus being treated by residents and nurses. When we provide medical and nursing students clinical training in the orthopedic outpatient clinic we emphasize for the students to take a starting point in the physical, mental and social situation of the patient and thereby learn as a team to handle often unexpected situations. From anecdotes, it was our impression that the patients felt safe and well treated by the interprofessional student teams. Therefore, the aim of this study was to identify and compare patients' experiences of being treated by an interprofessional student team versus being treated by a resident doctor and nurses unprofessionally in an orthopedic outpatient clinic.

Study context

The project took place in an orthopedic outpatient clinic where patients came for e.g., conservatively treated minor trauma cases or postoperative joint replacement wound care. Normally this patient group is seen by a resident doctor, that refers the patient to further treatment and care by a nurse such as removal of sutures, wound care, applying of orthosis and plaster splints. The resident and the nurse do not see the patients together, but work independently side by side in their consultation rooms in the outpatient clinic. As part of their clinical training, an interprofessional team consisting of one 12th-term medical student and one 6th-term nursing student treated three patients during two sessions of three hours each per week. After familiarization with the patients' situations, the student team was meant to collaborate and contribute their professional knowledge and capability to provide care for the patients. The student team saw the patients together in the same consultation room facilitating the sharing of knowledge and collaboration. Furthermore, the student teams were alone with the patients. However, a surgeon and a nurse supervised the student team before they performed the consultations. Additionally, the students had the possibility of calling for help during the consultations. Using the students' notes from the patients' records, the supervisors performed a debriefing with the students after each session. For this

project, a chief surgeon selected comparable patients for the interprofessional student team and for the residents.

Methods

We selected an exploratory single case study design with two embedded units. A case study "investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (Yin, 2014). The "case" can be individuals, groups or processes. In this study, the "case" is "patients' experiences of consultation with an interprofessional student team consisting of one medical and one nursing student versus patients' experiences of consultation with a resident doctor. The two embedded units are 1) a quantitative part with a survey and 2) a qualitative part with interviews.

Data collection

We included all patients seen by an interprofessional student team in 2018. Questionnaires were sent to all patients seen by students and, during the same period, to a similar number of comparable patients seen by residents. The questionnaire was constructed by using selected questions from the validated Danish National Investigation of Patient Experiences (<https://patientoplevelser.dk/lup/landsdaekkende-undersoegelse-patientoplevelser-lup/lup>). On a five-point Likert scale ranging from 'not at all' to 'to a high extent', patients could indicate their experience with the consultation. The questions were about the staff's approach to the patient, time, oral information, communication, and overall satisfaction with the consultation (Table 1). Finally, we asked the patients to write their phone number if they would give us permission to call them for a short interview. The interview gave the patient a possibility to elaborate on the answers given on the questionnaire. The patients who were seen by students were also asked if they knew that students managed the consultation and if they had felt safe with this.

Data analysis

The answered questionnaires were entered into EpiData and transferred to Stata 11 for descriptive analysis (frequencies, mean, SD). Scale scores were calculated for comparison between patients' experiences of being seen by the interprofessional student team and by the resident. Spearman's rank correlation test was performed, and a *P*-value of 0.05 was considered statistically significant.

The interviews were transcribed verbatim by an experienced secretary followed immediately by review by the interviewer to check for inevitable misunderstandings. For analysis of the transcribed interviews, we used Content Analysis with a deductive approach, concentrating on manifest content (Elo & Kyngas, 2008). We started by reading the transcribed interviews several times to become immersed in the data and obtain a sense of what the patients had experienced during the consultations. The categorization matrix used for coding the data was the set of questions sent to the patients (Table 1)

Table 1. Overview of answers concerning patients' experiences. Mean percentages are calculated without including missing and N/A values.

	Not at all (1)	To a limited extent (2)	To some extent (3)	To a high extent (4)	To a very high extent (5)	Missing or N/A (0-6-9)	Mean (SD)	Spearman's rho
1) Was the staff prepared for your arrival?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 1 (2,70%)	4 (7,14%) 1 (2,70%)	23 (41,07%) 19 (51,35%)	29 (51,79%) 16 (43,24%)	0 (0,00%) 6 (13,64%)	4,45 (0,63) 4,35 (0,68)	0,51
2) Was the staff kind and accomodating?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 0 (0,00%)	0 (0,00%) 1 (2,27%)	19 (33,93%) 22 (50,00%)	37 (66,07%) 21 (47,93%)	0 (0,00%) 0 (0,00%)	4,66 (0,48) 4,45 (0,55)	0,06
3) Was the staff acquainted with the course of your disease?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 2 (4,76%)	2 (3,70%) 8 (19,05%)	27 (50,00%) 17 (40,48%)	25 (46,30%) 15 (35,71%)	2 (3,58%) 2 (4,55%)	4,43 (0,57) 4,07 (0,87)	0,05
4) Did the staff have enough time for you?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 0 (0,00%)	0 (0,00%) 6 (13,29%)	22 (39,29%) 20 (47,62%)	34 (60,71%) 13 (38,10%)	0 (0,00%) 2 (4,55%)	4,61 (0,49) 4,24 (0,69)	<0,01
5) Was the oral information understandable?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 0 (0,00%)	4 (7,14%) 3 (6,98%)	30 (53,57%) 21 (48,84%)	22 (39,29%) 17 (39,53%)	0 (0,00%) 1 (2,27%)	4,32 (0,61) 4,23 (0,78)	0,79
6) Were your questions answered?	Stud 0 (0,00%) Res 0 (0,00%)	0 (0,00%) 0 (0,00%)	8 (14,55%) 7 (17,07%)	27 (49,09%) 17 (41,46%)	20 (36,36%) 17 (41,46%)	1 (1,79%) 1 (2,27%)	4,22 (0,69) 4,24 (0,73)	0,80
7) Overall, are you satisfied with the visit	Stud 1 (1,79%) Res 0 (0,00%)	0 (0,00%) 2 (4,76%)	2 (3,57%) 2 (4,76%)	22 (39,29%) 24 (57,14%)	31 (55,36%) 14 (33,33%)	0 (0,00%) 2 (4,54%)	4,46 (0,74) 4,19 (0,74)	0,03

Stud: Patients treated by students. Res: Students treated by residents

supplemented with one extra question for those patients seen by the students.

Ethical considerations

The questionnaire part of the project was on behalf of The Danish Data Protection Agency (<https://www.datatilsynet.dk/english/>) registered at the legal office for the Central Denmark Region (Registration number 1-16-02966-17). Provide their phone number was considered consent to have a telephone interview. According to the Danish National Committee in Health Research Ethics (<http://en.nvk.dk/>), studies based on interviews are exempt from approval from the committee.

Findings

The questionnaire was sent to 89 patients seen by the interprofessional student team (student patients) and 83 patients seen by residents (resident patients). The response rates were 56 (63%) and 44 (53%) for the student patient and resident patient groups, respectively. Of those who responded, 28 student patients and 18 resident patients agreed to participate in a telephone interview. They were all called for interviews that lasted an average duration of 5 minutes (range 1.25–10.55).

Questionnaire results

The questionnaire included seven questions. Three of the questions revealed a significant difference in answers from student patients and resident patients, all in favor of the student patients. One question was close to being significant, and the remaining three questions showed no significant difference between the responses of the two groups (Table 1). Next, we relate the results from the interviews to the answers to the questions in the questionnaire.

With regard question 1, no differences were found between student and resident patients (Table 1). This was supported in the interviews, where there were almost identical answers from student patients and from resident patients as demonstrated in this quote from a resident patient:

Absolutely, it was so pleasant, it was well prepared. (Interview 201)

On question 2, even though the difference in student patients and resident patients' reported experiences is small, it is close to being significant in favor of the student patients (Table 1). However, the answers in the interviews from student patients and resident patients indicate fairly similar experiences.

The questionnaire responses showed a significant difference in favor of the student patients on question 3. However, there were only positive remarks in the interviews, as this one from a student patient who indicated:

I did not think so much about that. They concentrated on the cicatrice and how it was healing. They took an instrument and scraped some of the edges off. It was my impression that they were very professional, and it did not hurt, so I just let them do it. (Interview 121)

Another significant difference was found in favor of the student patients concerning time allowed for the consultation. In the interviews, almost all patients stated that they did not feel any time pressure. Nevertheless, there were also remarks such as this one from a resident patient who said:

They were very busy, and there was a huge queue. I am a self-employed bricklayer, and because I am alone, it hits hard. I could have used more time and a more precise description of what I was allowed to do. (Interview 206)

Student patients and resident patients said that the oral information (question 5) was understandable. Non-Danish residents saw two of the patients; one patient said:

Last time I was here, it was a foreign doctor. When making an effort, I did understand him; he spoke semi-good Danish. (Interview 238)

Student patients and resident patients said that their questions were answered sufficiently (question 6); one student patient said:

I had made a list of questions on my telephone and all of them were all answered. (Interview 115)

Overall, even though we found a significant difference in favor of student patients' answers to the final question, the interview analysis indicated that almost all patients said they were satisfied with their visit to a high extent or a very high extent. The one student patient who declared that she was not at all satisfied with the visit (Table 1) gave permission to be called for an interview. It appeared from the interview that she was unsatisfied because she had expected to be seen by the operating surgeon. Directly asked, the patient said that she felt fine with the consultation performed by the interprofessional student team. Another student patient said:

Yes, I feel privileged living in a country where you can get such fine treatment. (Interview 146)

Similarly, a resident patient said:

Everything went fine, and it is fantastic to be in a community where you just can show up and get things fixed. (Interview 206)

Interviews with student patients

In the telephone interviews, the student patients were asked if they were aware that the consultation was managed by students. Some of the patients said that the students had made it clear that they were students and that they could call for help if necessary. Other patients did not remember if they were told they were seen by students, and some thought they were seen by one student together with one trained professional.

Next, the patients were asked about their opinion on being treated by students and all patients said that they had felt safe in the consultation. However, there were important supplementary remarks from the student patients, which we present below.

Three of the interviewed patients were surprised that they were met by students because they had expected to be met by the operating surgeon. A student patient said:

I had some questions for the operating surgeon, and because of that, I was surprised to be met by two students. However, they seemed to be well prepared; they had probably discussed my case

with someone in the morning. I felt my questions were answered sufficiently. (Interview 104)

Two other patients said that the trained nurses were better at applying bandages than the students were. One student patient said:

You see, I have been a banker all my life so I am used to trainees; they should also be trained in procedures. Nevertheless, it is evident that the two other times when I was seen by a trained nurse, the bandage was better. I acknowledge that you have to be trained in procedures before you can get skilled, and if no patients are willing to be seen by students, we would not acquire any further skill. Therefore, please do not write anything indicating I am unsatisfied, because that is not the case, I am just trying to answer your questions. (Interview 121)

One half of the rest of the patients were satisfied with their visit and had no further comments. They said that the students were kind, they were easy to understand, they performed a thorough examination, and they were almost fully qualified. The patients said that if they were not told beforehand that they would be seen by students, and could not see that the students were young, it did not feel different from being seen by trained staff.

The other half of the rest of the patients were also satisfied with the visit. Additionally, they felt content with the students being open about their positions and that they could call for a supervisor if necessary. The patients elaborated on this and said that if the students needed supervision on assessing an X-ray, this could be done via a phone call because the supervisor could assess the picture on his own computer. Direct supervision was described as follows:

A student was removing staples from my cicatrice. She got a little uncertain of something and called for a supervisor who came in, looked at the cicatrice and said that everything was fine. I felt absolutely safe, and it was a good experience for me. (Interview 151)

Overall, the findings described above indicate that patients' experiences of being treated by an interprofessional student team versus being treated by residents, apart from a few exceptions, are fairly similar. However, there are also statements that deserve some extra reflection, which we discuss next.

Discussion

In this article, we have presented patients' experiences of being treated by an interprofessional student team versus being treated by a resident with the possible support by a nurse in a follow-up consultation in an orthopedic outpatient clinic. A key finding is that patients' self-reported experiences indicate that patients felt safe and comfortable being treated by a supervised interprofessional student team. Furthermore, when compared to being treated by a resident, patients report a significant difference indicating that the interprofessional student team was more acquainted with the course of their disease and had more time for the consultation than the residents had. In addition, overall, the student patients were more satisfied with their visit than the resident patients were with theirs.

When asking the patients if the staff were kind and accommodating, it was almost statistically significant that the interprofessional student team was evaluated more positively than the resident was. This is in line with Coleman et al. (2017), who found a significant difference in the experiences of patients with diabetes who were treated by an interprofessional student team compared to those in the control group. The patients treated by students rated the friendliness and helpfulness of the staff higher than did the patients from the control group (Coleman et al., 2017). The finding in our study might be because the supervisors emphasized to the students that the starting point and common ground for the consultation is the patient's situation. In other words, the students were supposed to have a collaborative patient-centered approach.

There was a significant difference in student patients and resident patients' answers to the question of whether the staff was acquainted with the course of the patient's disease. A reason for this difference could be that the students, unlike the residents, had access to and were told to read the patients' records the day before the consultations and to present their plan for the consultation to their supervisors in a supervision meeting before the consultation. The residents participated in the surgeons' morning meeting where general discussions, review of X-rays, and planning of the day take place. Because of the activity-based financing of clinics (Olejaz et al., 2012), it is important for the orthopedic outpatient clinic to avoid undershooting the so-called baseline number of consultations; therefore, the residents start consultations immediately after having finished the morning meeting. However, the findings in this study, together with the Danish Health Authority and Danish Orthopedic Society's statement of aims for specialist training in orthopedic surgery, which states that supervision must be given on a daily basis (Målbeskrivelse for Speciallægeuddannelsen i Ortopædisk Kirurgi, 2004), indicate that establishing a short individual supervision session with the residents before they start the day's consultations should be considered.

When asking patients if they felt that the staff had enough time for them, we were not surprised to find a significant difference between student patients' and resident patients' answers to this question, which made it clear that the interprofessional student team had more time for the consultation than the resident. This is in agreement with reality because the interprofessional student team had 45 minutes for each consultation supplemented with 30 minutes for documentation, while the resident had 15–20 minutes for each consultation including documentation.

The question about having understandable information had a high score with no significant difference between answers from student patients and resident patients. This finding is in opposition to Hallin and colleagues, who found that patients rated a higher grade of satisfaction with the information given in an interprofessional clinical education ward compared to that given in a ward providing the usual care (Hallin et al., 2011). However, it should be added here that in Hallin and colleagues' study, there were two separate wards compared, while in our study, student patients and resident patients were from the same outpatient clinic.

The significant difference in patients' answers to the question of whether they were satisfied with the visit overall was a surprise. We assume that the interprofessional student team's kindness combined with their thorough preparation, resulting in acquaintance with the course of the patients' disease, and ample time could be the reason for this difference. However, one must remember that the qualitative part of the study did not reveal any difference in patients' satisfaction from being seen by the interprofessional student team or residents.

Limitations

This study is not without limitations. The telephone interviews of the patients lasted on average five minutes, but using more time on the interviews might have given more and deeper information about differences in answers to the questionnaires. When using interviews and questionnaires, respondents may have inaccurate recall when answering questions about what happened in the past (Bernstein, Erdfelder, Meltzoff, Peria & Loftus, 2011; Choi & Pak, 2005). Another possibility for unintended bias could be that respondents perceive the situation from an angle other than the intended one. However, when comparing two groups of seemingly identical respondents, one may assume that this discrepancy is irrelevant as long as one group's answers tends to be different than answers from the other group (Streiner & Norman, 2008). Furthermore, we mixed our setup and in reality may have tested on two different questions. First we wanted to test the difference of being treated by an interprofessional student team compared to be treated by residents and for some patients also nurses as our main purpose. Secondly, we have without intention tested interprofessional teams versus a uniprofessional approach in the patient pathway. As not all patients were referred from the resident to further treatment or care by a nurse, we focused on the difference between the patients' experience in being seen by the interprofessional student team versus being seen by a resident. Including questions concerning the two different setups with interprofessional teams versus the uniprofessional approach may have provided us with further understanding of possible differences in the patient experience.

Concluding comments

Interprofessional team training for medical and nurse students may provide a realistic and supportive learning environment, and in this study, we found no negative influence on patient experiences in an orthopedic outpatient clinic from being treated by interprofessional student teams compared to being treated by residents and nurses. This information is important in designing and implementing student curricula with clinical training in outpatient clinics during a time where we are experiencing a shift in treatment location from hospital wards to outpatient clinics. Furthermore, the interprofessional student team can undertake unassisted consultations with selected patients with indirect supervision from supervisors, making the clinical setting realistic for the students. However, in this teaching model, the feedback relies only on the students' written patient records, and even if

patient satisfaction is high, structured observation of student performance may be necessary as a supplementary teaching tool. This may be incorporated in future studies of patient-student relations in clinical training in an outpatient setting.

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Declaration of interest

The authors report no conflict of interest. The authors alone are responsible for the writing and content of this article.

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