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**An evaluation of orthopaedic nurses' participation in an educational intervention promoting research usage
a triangulation convergence model**

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**AN EVALUATION OF ORTHOPAEDIC NURSES' PARTICIPATION IN AN
EDUCATIONAL INTERVENTION PROMOTING RESEARCH UTILIZATION
– A TRIANGULATION CONVERGENCE MODEL**

ABSTRACT

Aim and objectives: To describe the orthopaedic nurses' experiences regarding the relevance of an educational intervention and their personal and contextual barriers to participation in the intervention.

Background: One of the largest barriers against nurses' research utilization in clinical practice is lack of participation. A previous survey identified 32 orthopaedic nurses as interested in participating in nursing research. An educational intervention was conducted to increase the orthopaedic nurses' research knowledge and competencies. However, only an average of six nurses participated.

Design: A triangulation convergence model was applied through a mixed methods design to combine quantitative results and qualitative findings for evaluation.

Methods: Data were collected from 2013 to 2014 from 32 orthopaedic nurses in a Danish regional hospital through a newly developed 21-item questionnaire and two focus group sessions. Data were firstly analysed using descriptive statistics (STATA 12.0) and qualitative manifest content analysis. Secondly, the results were compared, contrasted and interpreted using international literature.

Results: The nurses experienced the intervention as a new way to focus on nursing research in practice. However, some nurses were not able to see the relevance of research utilization in clinical practice. Nursing research was not a top priority for the nurses and their personal barriers for research utilization during their working day were prioritising patients' and colleagues' well-being. Their colleagues' and head section nurses' lack of acceptance regarding participation in the teaching session was a contextual barrier for the nurses.

Conclusion: The nurses were interested in participating in the intervention. However, some felt restricted by the research-practice gap and by diverse personal and contextual barriers.

Relevance to clinical practice:

The knowledge derived from this study has high clinical and practical relevance and is currently used to facilitate the nurses' research utilization in the orthopaedic department setting, by working around the perceived barriers.

Keywords: Contextual barriers, Educational intervention, Evaluation, Mixed methods, Nurses, Personal barriers, Research utilization.

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SUMMARY BOX

What does this paper contribute to the wider global clinical community?

- Knowledge about orthopaedic nurses' barriers against participating in an educational intervention to promote nursing research utilization.
- Focus on the importance of conducting educational interventions to enhance orthopaedic nurses' use of research in clinical practice and evaluating their experiences.

INTRODUCTION

The pressure on nurses to utilize research methods and knowledge in clinical practice is escalating due to patients' rights to receive high-quality care (Breimaier *et al.* 2011).

However, a wealth of international studies have found that clinical nurses experience a multitude of barriers, such as lack of time, lack of support from management and lack of resources, which can complicate the actual utilization of research in clinical practice (Breimaier *et al.* 2011, Brown *et al.* 2010, Kajermo *et al.* 2010, Akerjordet *et al.* 2012).

The tradition of conducting nursing research in Denmark has evolved over the past two decades and the government has increased its focus on funding and academic positions, while the universities have facilitated academic supervision (Poulsen *et al.* 2013).

However, compared with universities, nursing research in Danish hospitals is still very limited, especially in the orthopaedic departments.

In order to facilitate and increase research utilization among orthopaedic nurses, the first step is to appraise the nurses' current knowledge, interest in and attitudes towards clinical nursing research. In 2013 a cross-sectional survey was conducted to explore the knowledge, interest and motivation for nursing research among nurses at an orthopaedic department in a Danish Regional Hospital (Berthelsen & Hølge-Hazelton 2015). All nurses employed at the orthopaedic department at the hospital (n=87) were invited to participate in the survey, 43 orthopaedic nurses completed the questionnaire and 32 participants expressed a high interest in improving their research knowledge and competencies (Berthelsen & Hølge-Hazelton 2015).

Afterwards an educational intervention was initiated to facilitate theoretical and practical research knowledge for the 32 orthopaedic nurses. However, only an average of six nurses participated in the teaching sessions, which were held from April to June 2013, and only one of the nursing research projects was realized. In this study we aim to

describe the orthopaedic nurses' experiences regarding the relevance of the educational intervention and their personal and contextual barriers against participation in the intervention.

BACKGROUND

The literature

Two studies were found performing educational interventions to engage nurses in clinical nursing research through a mentoring network and educational programme with research courses and journal clubs (Corchon *et al.* 2011) and a knowledge and skill acquisition workshop (Tranmer *et al.* 2002). The studies showed high nursing participation in the interventions however the authors explained that the nurses enrolled in the study were volunteers (Tranmer *et al.* 2002, Corchon *et al.* 2011). One of the largest barriers against nurses' research utilization in clinical practice is their lack of interest in participation (Berthelsen & Hølge-Hazelton 2015). In this study the barriers according to the educational intervention of engaging orthopaedic nurses in research related teaching and projects will be investigated.

The educational intervention as planned

The educational intervention was initiated to facilitate research utilization among the 32 orthopaedic nurses and aimed to systematically and inspirationally develop the nurses' theoretical and practical knowledge of nursing research. The intervention was planned to consist of six teaching sessions of nursing research in general and six nursing research projects identified by the participants in the previous survey as clinically relevant.

The teaching sessions were scheduled to take place every other Friday from 1 to 3 pm and were conducted and planned by the first author. The scheduled time frame was chosen through conversations with four head section nurses from each section in the orthopaedic department, in order to make the sessions available for as many participants as possible. Each session was announced by email on the previous Monday to the 32 nurses who had signed up, with information about the content of the upcoming session. The six teaching sessions were planned in accordance with the nurses' wishes in the previous survey (Berthelsen & Hølge-Hazelton 2015) to consist of basic areas of nursing research in general, qualitative and quantitative design and methodology, data collection and analysis in qualitative and quantitative studies (Table 1).

PLEASE INSERT TABLE 1 ABOUT HERE

During the teaching sessions the nurses were reminded of the six nursing research projects they had identified in the survey as being of interest to them. The other nurses were later allocated to the six projects according to interest.

The educational intervention as performed

The intervention was performed by initiating only four of the six teaching sessions because of a lack of participants, and major changes were made concurrently (Table 1). The first session (1) was initiated as planned however the participants needed to discuss the six nursing research projects. In order to maintain focus and interest by the participants, the second teaching session (2) was changed to a discussion of the projects. Ten participants had accepted the invitation for the third session (3a), however, only

two participants showed up. The third session (3b) was then moved to a different date, where four participants showed up. Their evaluations were still positive towards the teaching sessions. Only one participant answered the invitation for the fourth session (4) which was cancelled. Due to a lack of participating nurses the intervention was terminated. Only one of the six nursing research projects was initiated. The other five planned projects have not been initiated due to intervention failure and the nurses' lack of interest and involvement.

The objective of this study was to increase the knowledge of why most of the orthopaedic nurses refrained from participating in the educational intervention, even though the results of the survey showed that they were highly interested. The aim of the evaluation was to describe the orthopaedic nurses' experiences regarding the relevance of an educational intervention and their personal and contextual barriers against participation in the intervention.

METHODS

Design

A convergence model, in accordance with Creswell and Plano Clark's typologies of triangulation mixed methods design (2007), was used to combine quantitative results and qualitative findings (Figure 1).

PLEASE INSERT FIGURE 1 ABOUT HERE

Firstly, data was collected through questionnaires and focus group sessions to assure a methodological triangulation and further analysed using descriptive statistics and

manifest content analysis. The results and finding were then compared, contrasted and interpreted in the result section to address the study aim.

The convergence model is appropriate when researchers wish to validate or compare results from both qualitative and quantitative data and arrive at well-substantiated conclusions about a single phenomenon (Creswell & Plano Clark 2007).

Participants

In the previous survey 32 participating orthopaedic nurses had indicated a high or medium interest in actively increasing their theoretical knowledge and practical research competencies. The 32 nurses were invited to participate in the educational intervention. Almost all of the participants were women (n=31) and their age ranged from 18-30 (N=4); 31-40 (n=9); 41-50 (N=9); 51-60 (n=9); to over 60 (n=1) years of age. 22 nurses had completed an educational programme subsequent to their nursing degree at bachelor degree (n=20) or master degree (n=2) level and 8 nurses were currently enrolled in a bachelor degree programme.

Data collection

Data were collected to describe the orthopaedic nurses' experiences of the relevance of the educational intervention and their personal and contextual barriers against participation in the intervention. According to the triangulation mixed methods design this procedure called for different kinds of data collection methods and instruments.

The 21-item questionnaire

A newly developed questionnaire (available on request from the first author) was developed for this study. 15 questions were derived from Funk and colleagues (Funk et

al. 1991) 'The BARRIERS to Research Utilization Scale' from the factors 'The nurses' research values, skills, and awareness' (Cronbach's Alpha .80) and 'Setting, barriers and limitations (Cronbach's Alpha .80). Six questions were specifically developed for the study aim. The final questionnaire consisted of 21 items concerning: Relevance of the educational intervention (questions 1-6), personal barriers (questions 7-15), and contextual barriers (questions 16-19). The answers to questions 1 - 19 were given on a 5-point Likert scale from 'a great extent' (4 points) to 'no extent' (1 point). No opinion answers were given 0 points. Additionally the participants were invited to rank the three barriers they perceived as the greatest (question 20) and to list the factors they perceived as facilitators for research utilization (question 21).

Focus group sessions

Two focus group sessions were conducted by the clinical development nurse of the orthopaedic department, since the authors' presence could influence the participants' answers. No interview guide was used. Instead the clinical development nurses focused on the results from the questionnaire according to relevance of the teaching sessions, and personal and contextual barriers. The sessions were tape-recorded and transcribed verbatim by the first author.

Data collection procedures and recruitment

To describe the nurses' experiences of relevance of the intervention and their personal and contextual barriers, data were collected through the 21-item questionnaire which was followed by a focus group session. Paper versions of the questionnaires were handed out to the 32 nurses invited to participate in the educational intervention and 18 (51.4%) responded after six weeks of continuing reminders from September to October

2013. The focus group sessions were held in January 2014 to elaborate the preliminary results of the questionnaire by focusing on the orthopaedic nurses' experiences of the relevance of the intervention and barriers against participation. Four nurses participated in the first focus group session. Three nurses had participated at the teaching sessions two times or more and one nurse had not participated. In the second focus group session three nurses participated. One nurse had participated in all three teaching sessions and two nurses had not participated. All seven nurses consented to complete the questionnaire.

Data analysis

As the triangulation mixed methods design proposes, the quantitative and qualitative data were analysed separately through appropriate methods. Descriptive statistics were used to analyse data from the questionnaire, using STATA (12.0) software.

The data from the focus group sessions were analysed using qualitative manifest content analysis (Graneheim & Lundeman 2004), because the method is especially suited for structuring and analysing text from problem-oriented interviews.

Ethical considerations

The participants were informed in writing about the study process, anonymity and confidentiality through the department newsletter and orally before receiving the questionnaires and participating in the focus group sessions. Consent to participate was considered present when the participants returned the questionnaire and consent forms were completed by the participants prior to the focus group sessions. The Danish Data Protection Agency approved the project (J.nr. 2008-58-0020). Approval was sought

from the National Committee on Health Research Ethics. They however found no reason for a formal evaluation due to the non-biological character of the study.

RESULTS

In this section the results from the quantitative and qualitative analysis will be presented and afterwards compared and contrasted to show the overall results of the orthopaedic nurses' experience of relevance of the educational intervention and their personal and contextual barriers against participation.

The relevance of the educational intervention

The quantitative results

The relevance of the educational intervention was measured through the 21-item questionnaire. The results showed that the majority of nurses found the educational intervention relevant. However, 33.3% of the nurses expressed that they could to a moderate or great extent not use the teaching elements in their daily practice. A further 11.1% were to a moderate or great extent unable to see the relevance of the teaching in their daily practice and stated that there was not a documented need for research in their section. 11.1% of the nurses stated that they perceived the teaching about research as being too theoretical and too general (Table 2).

PLEASE INSERT TABLE 2 ABOUT HERE

The qualitative findings

During the focus group sessions the nurses expressed a high level of *interest* and gave priority to participating in the teaching session during their working days. The nurses'

interest was explained by their need to discuss ideas and initiatives for new research and they evaluated the teaching subjects as relevant in order to begin a new process of focusing on nursing research in the section.

”The teaching sessions were very inspirational to discuss initiatives and ideas related to our working day. I thought they were relevant to get the process going. They were really, really inspirational” (Informant A: Focus group session 1)

The nurses had positive experiences of participating in the educational intervention and they evaluated both the teaching sessions and the participation in project planning as interesting and relevant. The academic level of the teaching sessions was adequate for the nurses and during participation they had realized that nursing research did not need to be at an extremely abstract level. However, some of the nurses experienced the knowledge gained through the teaching sessions as irrelevant to how they cared for their patients or to improve patient care and treatment. Instead it affected and shortened the time spent with the patients.

“I mean it was kind of two worlds, I mean it was a little distant from my working day compared to the work I do with the patients and ward rounds. Of course I can relate the teaching sessions to my education (...) but we did not get the connection between our working day and the teaching provided” (Informant A: Focus group session 1).

Some of the nurses experienced that the information given prior to and about the teaching sessions was poor, which generated unresolved expectations. The nurses described how they were unaware that the sessions were a complete program where they had to participate in all six sessions. Information about how the teaching sessions were combined with developing and conducting nursing research projects was experienced as vague. This was also stated as a concern during the focus group sessions where the nurses described their concern about their colleagues and their own abilities to conduct research.

Overall relevance of the educational intervention

The contrast and comparison of the results showed that the teaching sessions were experienced as relevant by some of the nurses and provided them with a new and inspiring way to obtain knowledge about nursing research. However, some of the nurses described the teaching as lacking in relevance to their daily practice and patient care, and they proposed that not all nurses should conduct research. In the questionnaire 33.3% replied that they could not use the teaching elements in their daily practice and 11.1% stated that there was no documented need for research in their section. The academic level of the teaching session was adequate for the nurses. Similar results were found through the questionnaires, where only 11.1% of the nurses replied that the teaching was too theoretical and too general about research and only 5.6% stated that the teaching was too difficult to understand.

Personal barriers against participation

The quantitative results

The largest barrier stated in the questionnaire was the nurses' absence from work on the day of the teaching session (50%) and the second largest barrier was their wish to participate being restrained because they were uncomfortable with leaving the section (38.9%). 22.2% of the nurses also stated that they did not want to burden their colleagues with taking care of their patients, which 11.1% would rather do themselves. Even though the 18 nurses who completed the questionnaire had formerly stated their high interest in nursing research, 11.1% now stated that nursing research was not relevant for them to a great or moderate extent. However, the majority still thought the teaching was interesting (88.9%), were able to understand what was taught (83.3%), and felt they had the abilities to participate in research (83.3%) (Table 3).

PLEASE INSERT TABLE 3 ABOUT HERE

The qualitative findings

During the focus group sessions the nurses explained how they prioritized their leisure time. The nurses worried that an interest in research-related tasks would interfere with their time away from work and that they would not use their leisure time on research. However, they stated that they were still *interested* in conducting research, especially in the patient-centred areas, but only when they were at work. The nurses explained how they did not feel that they had any time to sit down and explore “the mysteries of research” and that one of the personal barriers could be that they had difficulties differentiating what was in it for them.

“And if you don’t think you have the time and strength to sit down and figure out what it’s all about, to get knowledge, then it’s difficult to get things started in the department” (Informant T: Focus group session 2).

Along with prioritizing their leisure time the nurses also prioritized the patients and the clinical practice when at work and they felt that their *interest* was challenged by these responsibilities. The nurses explained that every day they felt obliged to prioritize which tasks to perform and the obvious choice was caring for their patients. They also explained their awareness of the consequences their choices could have for the patients if they did not have time to take care of them, and overburdening their colleagues with extra work.

”Often you see your colleagues being insanely busy and then it’s difficult to say: ‘Well, here is some extra work for you to deal with’, right? And then you just say: ‘Oh well, then I’ll just have to stay and finish up’” (Informant L: Focus group session 1)

This topic was important to the nurses who experienced difficulties in leaving the section to go to teaching sessions when there was a shortage of nurses at work and an overload of patients. The nurses therefore reluctantly avoided participating in the educational intervention because they were maintaining a responsibility for not burdening their colleagues.

Overall personal barriers against participation

A personal barrier for the nurses against participating in the intervention was prioritizing their leisure time. In the questionnaire 50% of the nurses stated that they were not at work on the intervention days, which had an important effect on the level of participation in the teaching sessions. Another personal barrier for the nurses during their working day was the importance of maintaining their responsibilities in order to prevent overburdening their colleagues. This topic was very important for the nurses in the questionnaire, where 38.9% of the nurses to a moderate or a great extent wanted to participate but were uncomfortable with leaving the section and 22.2% of the nurses did not want to burden their colleagues with their patients. Taking care of the patients rather than participating in research was stated as a personal barrier by 11.1% of the nurses in the questionnaire. This was consistent with the nurses' statements in the focus group sessions where the nurses' busy daily practice caused them to neglect the importance of research.

Contextual barriers against participation

The quantitative results

In the questionnaire the nurses stated that the greatest contextual barrier against participation was their perception that there was no time for nursing research in their section (27.8%). 16.7% further reasoned that an acute situation made them stay in the section rather than participate in the teaching sessions. Only a single nurse, however, felt that her colleagues (5.6%) and head section nurse (5.6%) did not accept her leaving the section to participate in the teaching sessions (Table 4).

PLEASE INSERT TABLE 4 ABOUT HERE

The qualitative findings

An important contextual barrier for the nurses in the focus group sessions was the lack of support and acceptance from their colleagues in the care group – the licensed practical nurses.

“I think that some nurses have avoided participating because it’s frowned upon. It has not been said directly but I have sensed it. I mean, someone was allowed and others could stay put and take care of the patients, right? I have sensed it” (Informant V: Focus group session 1)

The nurses felt guilty about leaving the section to participate in the teaching sessions because the licensed practical nurses insinuated that they were being burdened with the nurses’ patients. They agreed it was necessary to stand together as a professional group and speak up about their need for research utilization.

The nurses also highlighted the importance of the head section nurses’ support and public appreciation of their research interest, which the nurses meant could have an influence on the licensed practical nurses’ acceptance. The nurses stated that it was necessary for the head section nurses to prioritize resources in order for them to join the teaching sessions.

“And there have to be resources. They must be prioritized. Because it’s bloody well not done for free as it is right now. It’s not because we don’t want to – it’s the circumstances which kill our motivation” (Informant T: Focus group session 2)

Even though the head section nurses had promised to let them participate they would change their mind at the last minute because the nurses were needed in the section. The head section nurses' lack of support was interpreted by the nurses as low interest and commitment, which had a great influence on some nurses' motivation. During the focus group sessions the nurses expressed a need for a research role model to support with scientific sparring. The nurses felt insecure about planning and conducting nursing research projects, and even though they felt motivated this feeling decreased because of a lack of support.

Overall contextual barriers against participation

During comparison of the results a major contrast was found in the nurses' perception of colleagues and head section nurses' acceptance of their research interests. In the questionnaire only one nurse (5.6%) stated to a great or moderate extent that her lack of acceptance was a contextual barrier. In the focus group sessions it was a major barrier for the nurses. During the focus group sessions the nurses described the sudden lack of acceptance to join the teaching session which was similar to the results in the questionnaire, where 16.7% of the nurses perceived it as a contextual barrier that they were not able to leave the section because of an acute situation. In the questionnaire 27.8% of the nurses perceived to a moderate or great extent that the lack of time to do research was a contextual barrier. This was opposed in the focus group sessions where the nurses did not believe that it should be a matter of discussion but a part of daily practice to either conduct research or to implement research results in their patient care.

DISCUSSION

This study aimed at conducting an evaluation of the orthopaedic nurses' participation in an educational intervention that focuses on improving the orthopaedic nurses' theoretical knowledge and practical research competencies. The evaluation was performed focusing on the nurses' experiences of relevance of the educational intervention and their personal and contextual barriers against participation in the intervention. Based on the results of comparing and contrasting the quantitative results and qualitative findings, the overall results will now be interpreted and placed within a context of international literature.

In this evaluation study most of the orthopaedic nurses experienced the educational intervention as relevant and they were very interested in increasing their research knowledge and competencies. They explained how the teaching sessions were an inspiring beginning into the world of nursing research. However, some of the nurses expressed concerns about the relevance of teaching elements in their daily practice in the questionnaire (33.3%) as well as in the focus group sessions. The research-practice gap is a known concept in nursing research literature and has been addressed an important barrier against research utilization (Morténius *et al.* 2012). In the evaluation the nurses had difficulties seeing the purpose of research and evidence-based knowledge in their main task of taking care of the patients. Other studies have shown how nurses often experience that research and research results are not appreciated as practice related (Zierler 2014) and their view is that research studies and results are too abstract for them to understand (Chan *et al.* 2011). Nurses also have difficulties with implementing the results in their daily practice (Brown *et al.* 2010).

The largest barrier stated in the questionnaire was the nurses' statement of not being at work on the day of the teaching session (50%). These results indicated that many nurses were simply not at work on the day of the teaching even though the head

section nurses had been involved in planning the time frame for the sessions. Other studies have found similar results of nurses' lack of participation in research related work (Chan *et al.* 2011, Roxburgh 2006, Akerjordet *et al.* 2012, Breimaier *et al.* 2011) which is often associated with the nurses self-perceived barriers against research utilization (Chan *et al.* 2011, Roxburgh 2006), lack of interest (Akerjordet *et al.* 2012, Breimaier *et al.* 2011) and lack of time (Akerjordet *et al.* 2012, Breimaier *et al.* 2011). In the evaluation the nurses explained how their leisure time was important to them and that they were still interested in increasing their knowledge and competencies when at work.

Another important personal barrier for the orthopaedic nurses was prioritizing their nurse related work. This priority was important in order to conduct their main task of taking care of their patients (11.1%) and to prevent from overburdening their colleagues (22.2%). 38.9% of the nurses stated as a barrier that they were uncomfortable with leaving the section and in the focus group sessions they elaborated this point extensively by explaining different episodes where their colleagues, the licensed practical nurses, were displeased. This aspect could be related to the critical reflections in Dick and colleagues (2004) descriptive study of an educational intervention of changing professional practice. During their intervention conflicts arose between health care providers related to communication failure which were concurrently resolved (Dick *et al.* 2004). In the educational intervention, the problems between the nurses and the licensed practical nurses was based on disagreements about who left for teaching and who stayed in the section to take care of the patients.

A major contextual barrier seen in the focus group sessions was the nurses' perception of a lack of acceptance by their colleagues and head section nurses of

their research interests. The nurses explained how their participation in the teaching session was accepted, but that when they needed to leave to attend the teaching they were prevented, due to acute or patient-related issues in their section. The overall results in this case were interesting because only one nurse (5.6%) in the questionnaire stated that a lack of acceptance from her colleagues and head section nurse was a barrier for participation. In the qualitative study of Roxburgh (2006) peer support was described as essential for the nurses. Roxburgh explains how negative attitudes from colleagues can be obstructive and she pushed forward the idea of a group synergy between the engaged nurses to stay stronger as a team (Roxburgh 2006). In the evaluation the nurses also explained how they interpreted their head section nurses as lacking interest when they were not given any time to nurture their interest in nursing (27.8%). Akerjordet and colleagues (2012) supported this statement in their cross-sectional survey of clinical nurses' attitudes towards research and emphasized the importance of nurse managers' and leaders' strategic role in bridging the gap between research and practice.

Study limitations

In this study we aimed to evaluate why most of the included nurses desisted from participating in the educational intervention. Our aim was not to evaluate the intervention which would have required a larger study sample and a power calculation.

Mixed methods research has much to offer health and social sciences by bridging the gap between quantitative and qualitative positions (Doyle *et al.* 2009). However, critics focus on the incompatibility of the two research paradigms because of their strong dichotomy of epistemological and ontological world views (Creswell & Plano Clark 2007). A mixed methods design was chosen, since this provides a greater

repertoire of tools to meet the aims and objectives of the evaluation study by using a questionnaire and focus group sessions (Polit & Beck 2008).

A limitation could be that 77.7% (n=14) of the nurses did not answer all the questions in the questionnaire, which could affect the consistency of the answers. Additionally, the nurses who responded to the questionnaire were not asked whether they participated in the teaching session, which could be problematic in the analysis of the nurses' barriers.

Another limitation could be the lack of a clear distinction between interest and motivation. This may have led to a misinterpretation of the depth of the nurses' involvement from the start in the sense that an overall interest and positive attitude was mistaken for inner motivation and drive for competence development.

CONCLUSIONS

Through the evaluation of orthopaedic nurses' participation in the educational intervention using a triangulation convergence mixed methods design, it was discovered that the nurses were interested in participating in the intervention. The nurses stated that they found the teaching sessions relevant; however, one third of the nurses were still restricted by the research-practice gap. The fact that half of the nurses were not at work on the day of the teaching sessions limited their participation considerably. The nurses' interest in participating in the educational intervention was also restricted by personal barriers, such as prioritizing patient care and avoiding overburdening their colleagues, and contextual barriers such as lack of acceptance from their colleagues and head section nurses – this was consistent with findings in the international literature.

RELEVANCE TO CLINICAL PRACTICE

The knowledge derived from this study is of high clinical and practical relevance. It is currently being used to further facilitate the orthopaedic nurses' utilization of research in the department setting by working around the perceived barriers. In order to further legitimize the nurses' interest in research, to support the head section nurses' acceptance of research utilization and to increase nursing colleagues' acceptance, a council was established. The council aims to build a common foundation for nursing research utilization through a consensual vision of nursing research in the department and consists of the following staff of the orthopaedic department: the head nursing manager, the head section nurses, the clinical development nurse and the clinical nursing specialist (the first author of this paper). In order to improve the nurses' research competencies, the council will create research training for nurses in close collaboration with the clinical nursing specialist. Small research projects will be developed and the council will support applications for the funding of these projects.

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