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Occupational therapy students' experiences and perceptions of journal club participation

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ABSTRACT

Background: Journal clubs can be used as a learning activity for developing students' skills in critical appraisal and are perceived as suitable for increasing students' exposure to research methods.

Aims/objectives: To explore how undergraduate occupational therapy students experienced journal club and how they perceived their learning outcomes from participating in this learning activity.

Materials and methods: A mixed methods study comprised of a survey followed by two focus groups was conducted. Seventeen occupational therapy students completed the survey, four of whom also participated in a total of two focus groups.

Results: The participants perceived journal clubs as suitable and they suggested that emphasis on this learning activity be increased. Across the two focus groups, four integrated themes were identified: 'organisational prerequisites'; 'potential for learning'; 'learning barriers'; and 'journal club as an integrated learning activity'.

Conclusions and significance: Journal clubs were described as having the potential for increasing students' learning regarding research methods, promoting skills in reading and critically reviewing research articles and having relevance for professional practice. Some barriers were identified, and changes are suggested for future educational practice.

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Introduction

Journal clubs are fora where research articles are discussed and criticised [1]. They can be used as a learning activity for developing students' skills in critical appraisal and data analysis and for introducing them to various methodologies and current research [1]. Moreover, journal clubs are perceived as suitable for increasing students' exposure to research methods in educational settings [2]. Findings from a systematic review and meta-analysis indicated that there is no 'gold standard' of conducting a journal club; however, they are often used for discussing and critically reviewing scientific papers in collaboration [3]. Furthermore, journal clubs are suitable for teaching evidence-based practice (EBP) to health professionals [3].

Basic research skills are common graduate requirements for health-care students [2]. It is necessary that health-care students achieve research consumer skills such as seeking, appraising, and applying research evidence relevant for clinical contexts [4–6]. Journal clubs enables students to become future generators of knowledge [5]. The World Federation of Occupational Therapy Minimum Standards for the Education of Occupational Therapists also emphasise students' knowledge and skills related to locating research results, as well as evaluating the relevance and trustworthiness of the detected research [7, p. 38–39]. Occupational therapy students' research skills are also emphasised in regulations on national guidelines for occupational therapy education in Norway. The following learning outcomes are particularly relevant: 'The candidate has knowledge of scientific theory,

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research ethics and methods, and how this has implications for knowledge development in occupational therapy' and 'The candidate can find and evaluate scientific literature that is relevant to one's own professional practice' [8, p.5].

In a recent scoping review on research-based education in occupational therapy and physiotherapy undergraduate education programmes, the authors suggested journal clubs as a teaching strategy to promote research-based education [9]. Findings from other reviews have also highlighted journal clubs as a learning activity suitable for learning EBP in health profession education programmes [10,11]. Furthermore, some studies have specifically investigated journal clubs in occupational therapy education programmes [12–14]. In one of these studies, students had an overall positive experience and perception of the guided journal club activity, and they reported improved EBP skills and greater confidence in these areas [12]. Among entry-level occupational therapy students, a faculty-led journal club was found to be valuable as a teaching strategy to provide students with opportunities to practise and develop EBP skills [13]. Journal clubs used in fieldwork indicated that occupational therapy students perceived an increase in their ability to search the literature and to comprehend and appraise research literature [14]. In these previous studies, journal clubs with students have largely been organised as part of the formal curricula, for instance included in EBP courses [2,10–14].

Journal clubs may not only improve knowledge and skills, but may improve attitudes and practices of health professionals regarding EBP [3]. However, there is insufficient evidence supporting the effectiveness of journal clubs in increasing the knowledge, attitudes, and implementation of EBP skills among health professionals in clinical practice [3]. Fieldwork education is a significant part of the occupational therapy education programme and journal clubs have been highlighted as a beneficial tool for practice educators to remain up to date with current research [15]. In a systematic review, online journal clubs were perceived to help clinicians keep up to date in their medical practice, and their critical appraisal skills were improved [16].

The use of journal clubs has been described as a powerful pedagogical tool within postgraduate clinical education, and a 'flipped classroom' approach has been described as suitable [17]. In a flipped classroom, the students become more responsible for their own learning process and the teaching involves discussions, problem-solving and hands-on activities rather than traditional lectures [18]. However, there is

sparse knowledge regarding the use of journal clubs as a learning activity in undergraduate research training, and it is unclear whether journal clubs effectively prepare students to understand research fundamentals [2]. This study adds to the literature by exploring first and second-year undergraduate occupational therapy students' experiences and perceptions of participating in a journal club. Specifically, we explored whether journal clubs facilitated students' development of research skills. The aim of the study was to explore how undergraduate occupational therapy students experienced journal club and how they perceived their learning outcomes from participating in this learning activity.

Materials and methods

A convergent, parallel, mixed methods study was conducted to explore journal club as experienced and perceived among undergraduate occupational therapy students. There are various models for data collection when using mixed methods [19]. In the convergent, parallel design, the researchers collect both quantitative and qualitative data at the same time, analyse them separately, mix the results during the overall interpretation and look for convergence, divergence, contradictions and relationships between the two sources of data [19, p. 219]. This study design was chosen to gain an in-depth, nuanced understanding of the topic, collecting both quantitative and qualitative data. To collect the quantitative and qualitative data, the authors used a survey, followed by two focus groups. The focus groups were planned for and organised as recommended by Malterud and Krueger [20,21]. We intended to conduct two focus groups with 5–8 participants, however only two participants participated in each group. Focus groups constitute a suitable research design for exploring experiences, attitudes or views among participants with a shared experience or who take part in joint projects [20, p. 22].

Participants

We recruited participants among first- and second-year occupational therapy students enrolled in one bachelor's degree education programme in Norway. Before the journal club was held, the students' digital learning platform was used to inform the students about the study and the possibility to participate. The students also received information about the study from a teacher who was not involved in the research project; the information was given at the end of a lecture.

In addition, written information about the project and its ethical aspects, including anonymity and the students' right to withdraw from the study, was provided on the institution's digital learning platform. The participants were recruited January 2023 and the quantitative data collection took place in January 2023 and the two focus groups were held in February 2023. The first- and second-year students were recruited since they had been exposed to the same way of organising journal club since starting in the first study year. A total of 17 students participated in the study: 9 (53%) were first-year students and 8 (47%) were second-year students. Thirty-two of the first-year students participated in the journal club. Nine of them completed the questionnaire and four participated in focus groups, where two participants participated in each focus group. Among the second-year students, 29 participated in the journal club. Eight of them completed the questionnaire, while none of them participated in focus groups. In total, 17 students completed the questionnaire, 4 of whom participated in two focus groups.

The learning activity

The journal club was designed in accordance with a 'flipped classroom' and was a part of the mandatory teaching. The journal club was held in January 2023 for both cohorts of students and lasted three hours. For the first-year students, the journal club was included in a course focusing on participation in everyday life and for the second-year students, it was included in a course focusing on rehabilitation. In the journal club, students were trained in reading, discussing, and critically reviewing research articles relevant for these courses. The learning activity included elements of both lectures and group discussions, where 5–7 students participated in each of the groups. The students worked in their regular groups and there were eight groups in total in each class. The student groups were assigned one research article from their reading list, which they were encouraged to read prior to the learning activity. Four articles from the students' reading list were distributed among the eight student groups, where two of the groups were assigned the same article. The journal club commenced with an introductory lecture on research methods. Next, the students read and discussed the article in groups, describing the article's aim or research question, the methods used, the intervention (if present), the main findings, the main elements of the discussion, the conclusion and the findings' relevance for professional practice. The students had access to a teacher when

they were working in their groups. The second-year students used a formal checklist based on CASP (Critical Appraisal Skills Programme) for the critical review of the article, whereas the first-year students did not use a formal checklist. At the end of the learning activity, there was a plenary session where the groups described their work and results from the group discussions. A teacher guided the discussions. The learning activity lasted three hours. The first-year students had not participated in a journal club before, whereas the second-year students had participated in a three-hour, digital journal club one year earlier. Both the first-year students and the second-year students had participated in an introductory course in their first study year which introduced them to the philosophy of science, research methods and development work, and they were received training in academic writing, critical thinking, and professional reflection. In this course, they had worked on an assignment where they should locate, read, and critically review a research article. Furthermore, they had searched for and used research articles as a part of assignments in other courses. A description of the learning activity is presented in [Figure 1](#).

Quantitative data collection (survey)

Sociodemographic variables were age (in years), gender (male or female) and years of experience from work in the health-/social care sector. Education-related variables were year of study (first-year versus second-year students) and years of experience from higher education before enrolment in the current occupational therapy study programme.

A survey related to the students' knowledge, skills and experiences from the journal club was used. The questionnaire consisted of 10 statements and are based on 8 of the 16 statements in the quality improvement survey by Friesth and Dzara [2]. The statements are described in [Table 1](#). Specifically statements 2–6 and 8–10 were directly translated from the survey by Friesth and Dzara [2], while statements 1 and 7 were added by the research group. Since the quality improvement survey [2] was not available in Norwegian, it was translated into Norwegian by the research group. The translation process was first undertaken individually by the researchers before the resulting translations were discussed. To ensure the quality of the translation, a researcher who was not involved in the project translated the questionnaire back to English, and the back-translated questionnaire was considered to have identical meaning compared with the original. The comparison was conducted by

the research group consisted of the three authors. It was done individually first and then discussed. For each item, response categories ranged between 1 (to a

very little degree) and 5 (to a very large degree). No statistical tests were employed, due to the small sample size.

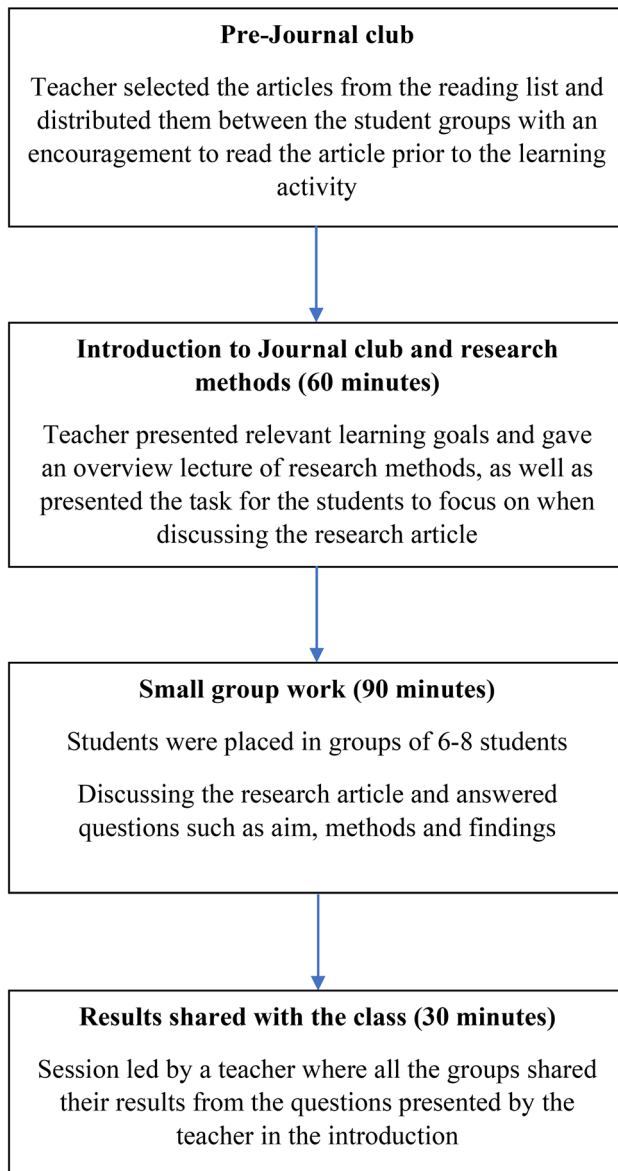


Figure 1. Description of the learning activity.

Qualitative data collection (focus groups)

Two focus groups were conducted, and there were two participants in each group. A moderator (GM) and a co-moderator, both unfamiliar to the participants, guided the two focus groups. The two focus groups lasted 41 and 64 min, respectively, and a digital voice recorder was used to record the interviews. The two focus groups were transcribed verbatim by the first author. A thematic interview guide was developed by the first author based on the aim of this study and on previous research on journal clubs. The interview guide was then discussed with the two other authors. The following subjects were covered in the interview guide: (a) learning outcomes, (b) research methods, (c) reading and critically reviewing research articles, (d) relevance for professional practice and (e) students' perceptions of the need for changes or improvements regarding the learning activity (Table 2). The focus group questions were designed to explore the content of the survey questions in more depth, as well as whether the students had suggestions for improvement. The participants were briefly introduced to the moderator and co-moderator and the purpose of the study before the two focus groups started.

Analysis

For the quantitative analyses, background variables were summarised descriptively, using frequencies for categorical variables and means (M) and standard deviations (SD) for continuous variables. The journal club variables were examined descriptively with means on each variable for the total sample and for students in each of the two study years separately.

Table 1. Survey questions and participant responses (mean values and standard deviations).

	Statement	All students M (SD)	1 st year M (SD)	2 nd year M (SD)
JC 1	Journal club is a suitable activity for learning research methods	4.18 (0.64)	4.22 (0.67)	4.13 (0.64)
JC 2	I understand quantitative research methods	3.65 (0.70)	3.89 (0.33)	3.38 (0.92)
JC 3	I understand qualitative research methods	3.71 (0.69)	3.89 (0.33)	3.50 (0.93)
JC 4	I can interpret statistical tests	2.88 (0.70)	2.89 (0.60)	2.88 (0.84)
JC 5	I can interpret research results	3.35 (0.70)	3.33 (0.71)	3.38 (0.74)
JC 6	I can critically review research articles	3.53 (0.51)	3.56 (0.53)	3.50 (0.54)
JC 7	I understand how reading and critically evaluating research articles in a Journal Club can be relevant in a clinical context	4.12 (0.99)	4.33 (0.87)	3.88 (1.13)
JC 8	Overall, my participation in the journal club has been a positive learning experience	3.76 (0.75)	4.00 (0.71)	3.50 (0.76)
JC 9	Overall, the journal club has improved my critical reading skills	3.53 (0.51)	3.33 (0.50)	3.75 (0.46)
JC 10	Overall, the journal club has been worth the time and effort I invested	3.76 (0.66)	3.89 (0.78)	3.62 (0.52)

Note. Table content is mean values (M) and standard deviations (SD, in parentheses) on each of the survey items.

Table 2. Interview guide.

INTRODUCTORY QUESTIONS

How do you experience participating in journal club in your education program?

TOPIC QUESTIONS

1. Learning outcomes

- Can you describe what learning outcome you get from participating in the journal club?
- Can you give examples of what you learn in connection with participation in the journal club?

2. Research methods

- Can participation in journal clubs promote learning about research methods? In what way? Can you give examples?

3. Reading and critical reviewing research articles in a journal club

- How do you experience to read a research article?
- How do you experience to critical review a research article?
- Do you think journal club is suitable to promote knowledge and skills in reading and critical reviewing research articles? Can you give examples?
- How do you experience discussing a research article with fellow students in a journal club?

4. Relevance for professional practice

- Do you think journal club is relevant for future professional practice? Please describe with examples.
- Have you experienced that journal club or similar have been used in professional practice? Can you give examples?
- Do you see yourselves using journal club or suggesting this in clinical work? Can you give examples of how?

5. Changes/improvements

- Do you have any thoughts or suggestion for improvements regarding the journal club?

CLOSING QUESTIONS

In conclusion, do you have anything you would like to add?

For the qualitative analysis, interpretive description by Thorne [22] guided the process. Interpretive description is a research strategy suitable for studying phenomena in practical disciplines, such as nursing, teaching and management [23], as it is driven by the imperative to generate findings that are both credible and useable [22, p.12]. The analysis was characterised by a back-and-forth process that involved 'taking things apart and putting them back together again', in line with Thorne [22]. The first author returned to the transcripts if needed to ensure that the interpretations reflected the data. To ensure rigour and credibility, the authors stepped away from the data periodically to ask questions, such as 'What am I seeing?', 'Why am I seeing that?', 'How else might I understand this aspect of data?', 'What might I not be seeing?' and 'What are they not telling me?' [22, p. 174, 178–179]. These types of question prompted the authors to see the data through 'alternative lenses' and to acknowledge that there were many aspects within the data [22, p. 174].

After each focus group, the moderator and co-moderator engaged in a short debriefing session. The first author had the main responsibility for performing the analyses of the two focus groups. The other authors read the transcriptions independently first and then themes and patterns were discussed and agreed upon by the three authors. Discrepancies between the authors did not occur, however the conceptual model presenting the qualitative findings was subject to discussion and negotiation. Word processing was used as a tool to analyse the data, and the analysis consisted of these operations: (a) reading the transcripts several times while being open-minded,

(b) writing remarks in the margin by questioning the text and identifying important points, possible themes or patterns, (c) condensing, (d) broad coding, (e) comparing and contrasting within the two focus groups and (f) comparing and contrasting between the two focus groups. Comparing and contrasting within and between the two focus groups enabled the generation of patterns and themes within the entire qualitative data set.

To analyse and compare the quantitative and the qualitative data, the authors conducted a side-by-side comparison [19, p. 222]. In this approach, researchers first report the quantitative statistical results and then describe the qualitative findings that supplement, question, or confirm the quantitative findings [19, p. 222].

Ethical considerations

The study was approved by the Norwegian Centre for Research Data (NSD), with ID number 403950. The participants were informed that the study was voluntary and that they had the opportunity to withdraw from the study at any time without consequence. Furthermore, written consent was obtained from the participants, and the transcripts were kept anonymous.

Results**Questionnaire responses**

The sample mean age was 27.3 years (SD = 6.1 years). Fifteen (88%) of the students were women, and 12 (71%) had no previous experience from higher

education before enrolment in the occupational therapy programme. Four students had between two and three years of prior higher education. Seven (41%) students had no work experience from the health and social care sector, while those who had such work experience reported between one and eight years of experience ($M=2.5$, $SD = 2.8$). In the total sample, scores were between 3 and 4 on most items. Mean scores higher than four was shown for item 1 ('Journal club is a suitable activity for learning about research methods'; $M=4.18$) and item 7 ('I understand how reading and critically evaluating research articles in a journal club can be relevant in a clinical context'; $M=4.12$). Only item 4 ('I can interpret statistical tests'; $M=2.88$) had a mean score below 3.

Compared to the second-year students, students in their first year had somewhat higher mean scores on items 2, 3, 7, 8 and 10: 'I understand quantitative research methods' ($M=3.89$ versus 3.38); 'I understand qualitative research methods' ($M=3.89$ versus 3.50); 'I understand how reading and critically evaluating research articles in a journal club can be relevant in a clinical context' ($M=4.33$ versus 3.88); 'Overall, my participation in the journal club has been a positive learning experience' ($M=4.00$ versus 3.50); and 'Overall, the journal club has been worth the time and effort I invested' ($M=3.89$ versus 3.62). The second-year students had higher scores on item 9, compared to the first-year students: 'Overall, the journal club has improved my critical reading skills' ($M=3.75$ versus 3.33). The students' responses to the journal club questionnaire items are illustrated in Figure 2.

Findings from the focus groups

Across the two focus groups, we identified four integrated themes; 'organisational prerequisites'; 'potential for learning'; 'learning barriers'; and 'journal club as

an integrated learning activity'. The themes 'organisational prerequisites', 'potential for learning' and 'learning barriers' influenced the theme 'journal club as an integrated learning activity'. Figure 3 illustrates the relationship between these four themes.

Organisational prerequisites

Some organisational factors were described as a prerequisite for a journal club to be successful, from the participants' view. All the participants expressed the need for the journal club's aim to be clarified. Furthermore, they all stated that the teacher should take more time to explain the expected learning outcomes from participating in the learning activity. Some of the participants expressed a need for an introduction to journal clubs in class before attending the learning activity, in addition to having written instructions on their digital learning platform. As one participant stated:

It could have been an introduction, one hour or two, with a thorough explanation of the aim of journal club and the expected learning outcomes from participating.
(P2, Focus group 1)

Moreover, the participants expressed the importance of working in small groups and that students need the opportunity to have supervision from a teacher when discussing and reviewing the article. Working in small groups was described as having great potential for learning. Moreover, all the participants highlighted that journal clubs should be increasingly used in the curriculum. Two of the participants suggested that journal clubs could be implemented in all the courses in the curriculum, whereas the other two participants were less specific. These participants recommended using journal clubs, especially in courses related to professional practice. One of the participants who suggested that journal clubs be

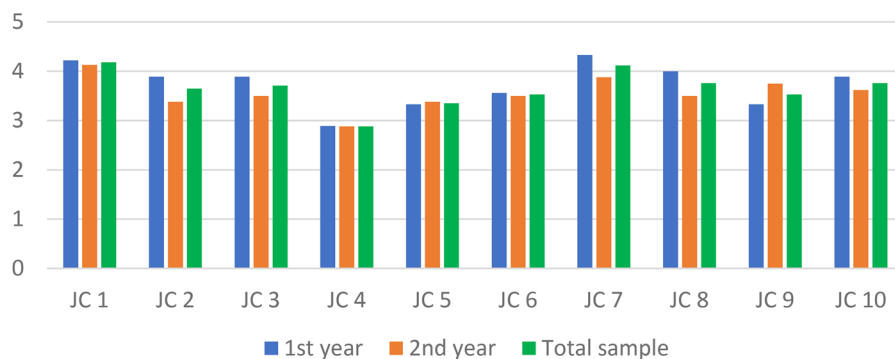


Figure 2. Responses (mean scores) to the journal club questionnaire items in the total sample and in the two class cohorts. Note. JC 1-10 refer to the ten items used to assess knowledge, skills, and experiences with journal clubs (see Table 1 for a complete overview of the items).

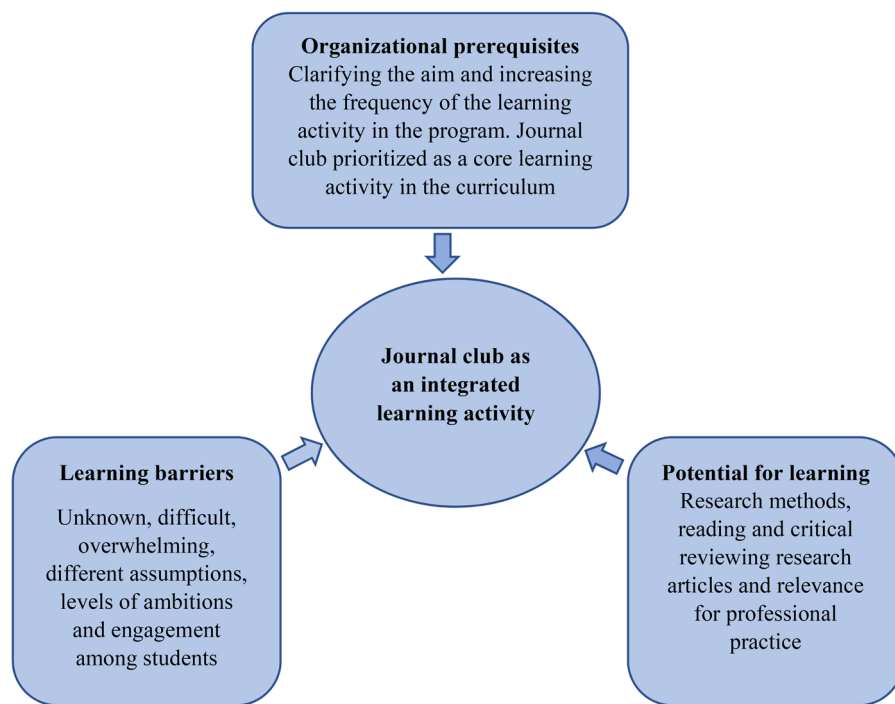


Figure 3. Conceptual model of student experiences with journal club in undergraduate occupational therapy curriculum.

integrated into each course explained how they could be introduced in the very first course:

It would have been useful if journal club was introduced in the first course, where a teacher could explain that ‘In this education programme, we use a learning activity called journal club. We will use it in several courses where we will focus on research articles which you will analyse.’ (P2, Focus group 1)

Moreover, two of the participants expressed that journal clubs should have increased priority and status in the education programme. At the time of the study, they experienced the journal club as not sufficiently integrated. Consequently, they suggested giving it more time in the curriculum and prioritising it as a core learning activity, due to the importance of reading and discussing research articles for future professional practice. One of the participants explained that it should not necessarily be an independent course, but rather a significant part of several courses.

Potential for learning

The participants expressed that participating in a journal club held potential for learning research methods, promote skills in reading and critically review research articles. Participation in this learning activity was also described as relevant for professional practice. Some of the participants highlighted that being experienced in reading and discussing research articles in journal

clubs, could promote an evidence-based practice and keeping up to date when suggesting interventions in future professional practice. Furthermore, all the participants highlighted that discussing research articles in groups was positive and held great potential for learning. They all also underlined that prioritising journal clubs in the curriculum has relevance for professional practice. The participants argued that occupational therapists must practise in accordance with EBP, which includes using updated research. One participant expressed it as follows:

You should base your professional practice on research, so it is important that the training focuses on research articles and how to find them. Being trained for this early in the education programme provides a better foundation. (P1, Focus group 1)

Journal clubs were emphasised as having the potential to be used in professional practice, and the participants expressed that they could see themselves using journal clubs in the future. They argued that journal clubs in a team, in particular, could be suitable for discussing the latest research to justify their suggested interventions. It was described by one of the participants as follows:

If you work at a rehabilitation clinic and hand exercises is a frequently used intervention, then you can find research articles, review them, and discuss with the team how it can be used in practice. (P1, Focus group 1)

They also highlighted the importance of being able to critically appraise research in their future professional practice, by helping them stay updated and ensuring that experienced-based knowledge would not be their main knowledge source. Journal clubs were emphasised as a suitable tool to ensure that new research was being discussed and analysed. One of the participants expressed how journal clubs might be linked to professional practice:

If you work with a client and the interventions is not suitable, it can be useful to work in a team to find a research article on newer interventions. (P1, Focus group 2)

Two of the participants described the research articles they had read in the journal club as having relevance for professional practice – something they perceived as useful and motivating. This helped them gain knowledge on interventions that they could suggest for some patient groups, based on recent research.

Learning barriers

The participants described several barriers to learning and participating in the journal club. They reported that it was unfamiliar, and that they had little prior knowledge regarding research and research articles, so participating was overwhelming and difficult. With regards to research methods, the participants stated that the lecture providing an overview of research methods was a necessary component of the learning activity; the participants noted that reading and understanding the research article was easier following this lecture. One participant expressed a need for more in-depth instruction regarding research methods, such as an overview of research methods, explaining that learning only about qualitative, quantitative, systematic reviews and mixed methods research was insufficient.

Moreover, some of the participants mentioned that students in their class had different assumptions and levels of ambition and engagement in this type of learning activity, which could be challenging in group discussions. One of the participants described the journal club as a ‘high-threshold activity’:

It is more like a ‘high-threshold activity’ since it is unknown and extremely difficult for most students, so if you don’t have the motivation or if you don’t see the point in it, then it gets even more difficult. (P2, Focus group 1)

This participant explained that she had the impression that some of the students had not read the

research article before participating in the learning activity, so it was challenging to discuss the article in groups. One of the other participants then highlighted that it was necessary to convey to students more strongly the importance of this type of learning activity. Prioritising journal clubs to a larger degree in the curriculum could be one way to do so. In addition, they suggested that the teacher should be present more often during the group discussions.

Furthermore, critically reviewing research articles was also described as challenging and as a learning barrier, by all the participants. One participant expressed that critical thinking was abstract and complex, requiring a degree of maturity among the students. Another highlighted that group discussion was helpful for the critical review of research articles:

I think it is difficult, but the groupwork session gave me a good experience due to other group members helping me to critically review the article. (P2, Focus group 2)

The participants in one of the focus groups highlighted that they needed more knowledge in research methods to be able to analyse and review an article critically and that they needed more supervision from the teacher.

In one of the focus groups, reading and understanding quantitative articles was described as particularly difficult: especially the results sections, as these were often found to be difficult to understand. In the other focus group, reading research articles in English was described as a learning barrier. They argued that reading research articles in English more often could help, and that – since many of the articles are only available in English – it is important to become accustomed to reading English, to be prepared for professional practice.

Journal club as an integrated learning activity

As described earlier, the themes ‘organisational prerequisites’, ‘potential for learning’ and ‘barriers to learning’ influenced the theme ‘journal club as an integrated learning activity’. To ensure that journal clubs become an integrated learning activity in the curriculum, the participants described some changes that they deemed necessary. Two of the participants described the need for emphasising journal clubs as a core learning activity in the curriculum. One of them articulated this in the following way:

As long as journal club is a core element and coherence are ensured, students become confident in what

they are doing and what they should look for. They become used to discussing research articles. (P1, Focus group 1)

Increasing training in research methods was highlighted, especially by two of the participants. Introducing journal clubs as a learning activity in the programme and ensuring progression were also described as important. Participants also expressed the need for increased focus on article analysis, which could be provided by a teacher *via* a lecture before a journal club. Some of the participants also suggested that two articles be read in a journal club, to compare different research designs (e.g. qualitative and quantitative). The participants stated the preference that these articles be from their reading lists.

Discussion

The aim of this study was to explore how undergraduate occupational therapy students experienced journal club and how they perceived their learning outcomes from participating in this learning activity. A convergent, parallel, mixed methods design was conducted and the findings from the quantitative survey will be discussed in relation to the findings from the two focus groups.

A main finding in our study was that the participants perceived journal clubs as a suitable learning activity in their education programme, and they wanted to increase the time spent on this learning activity. Journal clubs were described as having the potential for increasing students' learning of research methods, promoting skills in reading, and critically reviewing research articles and having relevance for professional practice. Previous research has also argued that participating in journal clubs can promote skills in critical appraisal [1] and research methods [2]. Despite describing the potential for learning, the participants were clear regarding the need for some improvements in the learning activity. The participants recommended clarifying the aim of the learning activity and the expected learning outcomes from participating in a journal club. Based on a study of occupational therapy students' learning environment, Mørk, Stigen, Gramstad, et al. [24] argue that to facilitate a positive learning environment, educators should prioritise clarifying the goals and standards – and, if necessary, discuss the goals with the students to avoid confusion [24]. One way to clarify the goals and standards is to communicate lecture goals to the students and to reflect with the students afterwards on whether these goals were achieved [25]. In addition, the

findings suggest that there is a need for scaffolded learning with support and supervision from teachers during the journal club. A study investigating journal club among postgraduate students supports to this finding, highlighting the importance of scaffolding for students' critical thinking and training in research skills [26].

When looking for convergence, divergence, contradictions and relationships between the quantitative and the qualitative data, we found some similarities. The highest mean scores in the quantitative data were on the items 'Journal club is a suitable activity for learning research methods' and 'I understand how reading and critically evaluating research articles in a journal club can be relevant in a clinical context'. Findings from the qualitative data confirmed these results, as the participants highlighted the potential for learning about research methods in a journal club: both through the lecture on research methods and the discussion of research method terms in the articles they were meant to read and analyse. Previous research shows that journal clubs are suitable to teach undergraduate health-care students research [2] and can increase students' exposure to research methods [27,28]. Ensuring emphasis on research methods in students' training prior to the learning activity, as well as prioritising teaching research methods as a part of a journal club, seems essential.

Moreover, the participants in the focus groups confirmed that reading and discussing research articles in journal clubs has relevance for a clinical context. It is important that health-care students become consumers of knowledge and learn how to search, appraise, and apply research evidence relevant for clinical practice [4–6]. Previous research has identified journal clubs as also suitable in clinical practice, and online journal clubs have been found to potentially promote EBP, improve literature reading habits and aid the development of critical appraisal skills among clinicians [16,29]. Thus, given the preliminary evidence of positive outcomes related to the use of journal clubs, the participants' overall positive attitudes and perceptions appear to be justified. In addition, if such positive perceptions were to spill over to an interest and perceived competence in applying research in the students' later professional practice, a journal club might also have a positive influence on subsequent EBP adoption in practice. However, possible long-term outcomes of the learning activity in subsequent practice contexts remain to be examined.

The lowest mean score was on item 4: 'I can interpret statistical tests'. This finding is similar to previous research, which also indicated that students have low

confidence in EBP skills that involve understanding statistical procedures and tests necessary for the interpretation of study results [30]. This was also confirmed by two focus group participants, who stated that it was difficult for them to understand the results sections in quantitative articles. However, the first-year students in our study had very similar scores on statements regarding their understanding of quantitative and qualitative research methods. The second-year students had somewhat higher scores on the qualitative research methods statement. Results from a previous study indicated that, as students are exposed to additional quantitative research methods training, their overall confidence in statistical analysis increases [30]. Increasing quantitative research methods training might be a way to increase students' self-efficacy in interpreting quantitative findings and should ideally accompany the use of journal clubs throughout the education programme.

In our study, we identified a learning barrier where students were unprepared, due to not having read the article before the learning activity. Previous research has also reported that students often show limited motivation to read complex articles that are outside their immediate area of interest. This lack of motivation may result in a failure to read the assigned articles and in under-prepared students, who then contribute little to the in-class discussions [31]. A new approach has been suggested, with an increased student-centred format, in which students are asked to find papers, read them and then summarise the findings during class; this approach may have greater potential to increase student engagement and to train students in literature searching, focused reading and oral presenting [31]. In view of how our participants called for certain improvements – for instance, related to the students' own preparations for the learning activity – this new approach appears promising.

However, findings from our qualitative data also indicate that the participants perceived collaborating in small groups to be beneficial when discussing and analysing a research article. This is in accordance with previous research that recommends small group discussion and flipped classrooms for journal clubs [17,32]. Other factors for establishing a successful journal club include an awareness of the learning goals, judicious article selection and an emphasis on promoting participant engagement [17]. Thus, while journal clubs might increase students' skills in EBP and be of relevance for their future professional practice, the effectiveness and success of the learning activity may depend on the way it is implemented. Our study expands to the literature by focusing on

factors of importance when planning for journal club in the first year of study in undergraduate health-care education programmes.

Implications for educational practice

Journal clubs were perceived as suitable in an undergraduate occupational therapy education programme. They were described as having the potential for improving students' learning of research methods, promoting skills in reading and critically reviewing research articles and having relevance for professional practice. Based on our findings, some improvements and changes for educational practice are needed. First, we suggest including an introduction to journal clubs before the students attend the learning activity, clarifying the aim and expected learning outcomes and encouraging students to be prepared by reading the article in advance. Next, we suggest prioritising more time for teaching research methods and continuing with small-group discussions. When discussing the articles, groups of 5–7 students seems to be an appropriate size and there is a need for a teacher to be present during some of the time for group discussion. In addition, scaffolded learning prior to the journal club would be necessary, prioritising students learning research methods skills and critical thinking skills relevant for the journal club supervised by a teacher. Flipped classrooms seem to be suitable for journal clubs, both based on our findings and on previous research. To further improve outcomes from this learning activity, more time and teacher support could be allocated to journal clubs. In addition, taking a student-centred approach to journal clubs – as suggested in previous research – might help to minimise challenges arising from unprepared and unmotivated students. However, it is important to have some criteria regarding the research article if the students get to choose themselves to ensure the quality of the research article.

Limitations

A main limitation of this study is its small sample size, from one educational institution, as this has the potential to bias the results. Furthermore, the duration of the journal club was only three hours, and the participants had little prior experience with this learning activity. The second-year students had been exposed to journal club in their first year, and they had additional training in reading and critical reviewing research articles, which might have influenced the results, especially when comparing mean scores. Due to practical reasons, and with the aim of

including as many participants as possible, the two focus groups were conducted a few weeks after the learning activity took place. This may have challenged the participants' ability to recall details from the learning activity and their perceptions of it. The first-year students had a seminar on article analysis shortly after the journal club, and these learning activities had some similarities. This may also have caused some confusion regarding the two activities. Furthermore, the survey used for the collection of the quantitative data was not tested prior to the data collection. When it comes to the qualitative data, there were only two focus groups in this study, and this limits the qualitative data. In addition, the second-year students were not participants in the focus groups. Moreover, the focus groups had only two participants in each group, and one may question whether a group with two participants can be called a focus group. However, Malterud [20] has argued that recommendations and practices can vary regarding the number of focus group participants. It is nevertheless possible that more participants could have given us richer data material and conceivably more themes and patterns to analyse. Furthermore, we considered using member checking, but decided against this, following Thorne [22, p. 175]. Thorne argues that member checking may lead to false confidence, if participants confirm the researchers' preconceived notions, or potentially derail sound analytic interpretations if they do not.

Conclusions

Undergraduate occupational therapy students in our study perceived journal clubs as a suitable learning activity and they wanted to increase the time spent on journal clubs in their study programme. Across the quantitative and the qualitative data, journal clubs were perceived as suitable for learning research methods, and reading and critically evaluating research articles in a journal club was considered relevant in a clinical context. Furthermore, our findings suggested that scaffolded learning is important, specifically related to students research methods skills and prioritising that teachers are available as supervisors during the small groups discussions during journal clubs. Barriers to learning, such as little prior knowledge regarding research and research articles, made the learning activity seem overwhelming and difficult. Moreover, different assumptions and levels of ambition and engagement in this learning activity could be challenging in group discussions. Some participants also described reading research articles in English as a barrier, whereas others highlighted the difficulties in

understanding quantitative results. According to the identified barriers, some changes in the future use of journal clubs in educational practice are suggested. In future curriculum design, it will be of significance to prioritise journal clubs as a core learning activity, with emphasis on clarifying the aim and ensuring a progression. Moreover, focusing on scaffolded strategies regarding students research skills and critical thinking skills seems necessary prior to the learning activity.

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Author contributions

KVH was the project manager of this study and organised the recruitment of the participants. All authors contributed to the study design, interpretation of results, and critical revisions of the manuscript. GM was the moderator for the focus groups. The quantitative data were analysed by TB and GM, and the qualitative data were analysed by KVH and discussed with GM and TB. The manuscript was drafted by KVH. The co-authors provided scientific input for the manuscript drafts, approved the final version to be published and agreed to be accountable for all aspects of this work.


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Data availability statement

Due to the restrictions imposed by the Norwegian Centre for Research Data (NSD) with ID number 403950, data had been

stored on a secure server at VID Specialised University. The contents of the ethics committee's approval resolution as well as the wording of participants' written consent do not render open public data access possible. By emailing the project manager (KVH), at kjersti.v.helgoy@uis.no, access to the study's minimal and depersonalised data set may be requested.

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