

## 5 Supplemental Instruction Implementation in Healthcare Education

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*Abstract:* Within pharmacy or nursing education, the literature on the implementation and evaluation of Supplemental Instruction (SI) is limited. The objective of this study was to describe the experiences of an SI pilot in two first-year courses in pharmacy and nursing education, and to evaluate the impact of the SI model on SI leaders and students. A case study was performed on the development and structure of an SI pilot programme, and qualitative analysis was used in the evaluation. Students and SI leaders were concerned about not receiving or providing answers to questions in SI sessions, respectively. However, various helpful learning strategies were used in the sessions. The organisation of the SI programme was challenging and required continuous attention and evaluation. Positive outcomes for both students and SI leaders included improved self-confidence, socialisation, knowledge of learning strategies, and communication skills. Students were motivated to study, and SI participation was relevant to exams. SI leaders gained increased management, teamwork development, and discussion facilitation skills. We conclude that care must be taken when implementing peer-assisted learning interventions, and this study provides valuable insights into adapting SI as a pedagogical model in healthcare education. This work lays the foundation for the further development and utilisation of the SI programme in healthcare education.

### 1. Introduction

Withdrawal rates from higher education have been relatively high in recent decades. In Norway, approximately 50% of bachelor's degree students finished their degree within the predicted time frame in 2016. There are multiple complex causes for this trend, including external factors as well as factors related to the quality of education. Notably, student retention is affected by professional and social belonging, support services, and whether teaching and feedback engage students. The transition from high school to higher education is often difficult, and withdrawal often occurs during the first two semesters (Meld. St. 16, 2016–2017). Thus, in any study programme, it is important to implement effective tools and methods to increase retention. Maize et al. (2010) reviewed remediation programmes in pharmacy and other health professions. Generally, such study programmes have poor generalisability, and the effects of this depend on numerous factors. For example, student success is affected by preprofessional preparation, class size and diversity, motivation, teaching, and learning skills.

PAL is relatively well described in the literature concerning nursing education (Nelwati, Abdullah, & Chan, 2018; Stone, Cooper, & Cant, 2013). Within pharmacy education, the documentation is relatively scarce, with methodological limitations and study findings lacking generalisability (Aburahma & Mohamed, 2017). In both study programme areas, literature concerning the experiences and effects of implementing SI is particularly lacking, especially when considering the 'strict' SI model. SI in healthcare education is of interest to improve student achievement and education completion rates. Furthermore, through facilitation by working with peer assistants, SI has the potential to engage students in course material and contribute to the development of study skills. As an educational model, SI is richly described in typical science courses (Hurley & Gilbert, 2008). Moreover, SI has also been implemented within health education – especially in anatomy and physiology courses (Bruno et al., 2016; Forester, Thomas, & McWhorter, 2004; Owens, Rainey, Tucker, & Edmunds, 2018). However, within pharmacy or nursing education, the literature on both the implementation and evaluation of SI remains limited. Furthermore, certain educational interventions might be presented as SI but ultimately fail to comply with the aforementioned characteristics of the programme (Forester, Thomas, & McWhorter, 2004; Mosley, Maize, & LaGrange, 2013). As Dawson et al. (2014) point out: *What is called SI in one circumstance is not necessarily the same intervention as SI in another circumstance.*

Thus, this work is novel in describing the implementation of SI as an educational model in pharmacy and nursing education. The aim of this chapter is to describe the experiences of an SI pilot in two first-year courses, while also evaluating the impact of the SI model on SI leaders and students. The research questions were: How can we implement SI as a pedagogical model in pharmacy and nursing education? What is the impact of SI on pharmacy and nursing students? What is the impact of SI on SI leaders?

## 2. Methods

### 2.1 Context and SI Programme Structure

The SI programme for healthcare education was developed and performed in several steps, and an overview of the development and structure is provided in Figure 1. The design of the SI implementation was initiated through faculty collaboration (Faculty of Nursing and Health Sciences and the Business School) at Nord University, Norway, during the spring of 2019. Preparation of the SI pilot included creating the project group, defining the project aims and objectives, selecting courses and programme staffing, educating four SI supervisors, defining programme evaluation and reporting, anchoring the pilot within faculty management, and ensuring financial support. The SI pilot ran in the Bachelor of Pharmacy and Bachelor of Nursing study programmes during the autumn of 2019. Two first-semester courses were selected: (1) Cell Biology and Physiology (course code FAR1004) in pharmacy, and (2) Anatomy, Physiology,

rectly, but instead to redirect questions and facilitate discussions in the student group. However, if students did not have specific topics or questions to address, they also prepared suitable assignments for the students to work with. Additionally, while the SI leaders could contact the course coordinator/lecturer when needed, lecturers were not involved in the SI sessions. The SI leaders were observed by the SI supervisors during a few SI sessions and received supervision and feedback on their performance.

## 2.2 Evaluating the Programme: Data Collection and Analysis

An explorative design utilising a qualitative method was used to assess the SI pilot; all SI leaders and the pharmacy and nursing students attending SI sessions were invited to participate. Participation was voluntary, and written informed consent was provided by all participants and could be withdrawn at any time. Personal identifiable data were collected, and the assessment of personal data protection was performed and approved by the Norwegian Centre for Research Data (reference code 357756). An overview of the data collection process is included in Figure 1.

Six SI leaders (50% women) volunteered for the SI evaluation, which consisted of individual semi-structured interviews after they attended the SI leader training course but before the first SI session. Additionally, two focus group interviews with five and three SI leaders, respectively, were performed after the academic courses were completed.

First-year pharmacy and nursing students (N = 16, 81% women) participating in the two courses were interviewed via four focus groups after the courses were completed. The average age of the students was 22 years (range 19–33 years), and five of the students had previous study experience of 1–3 years.

Semi-structured interview guides were used. Interviews were recorded and subsequently transcribed. Transcribed text (46,075 words) was then analysed using qualitative content analysis (Graneheim & Lundman, 2004). The authors (HS, ALGL, ML, and LAR) participated in the analysis via an iterative reading of the transcripts and an overall discussion of the content, resulting in a consensus regarding the categories and sub-categories. Subsequently, the text was systematically analysed and coded, resulting in four main categories. The results were discussed by all authors.

## 3. Results

The evaluation of the SI programme pilot in pharmacy and nursing courses resulted in four main categories: answering questions concerning course content, learning strategies, organisation, and outcomes.

### 3.1 Answering Questions Concerning Course Content

Both SI leaders and students were concerned about not receiving or providing answers to questions concerning course content during group discussions in SI sessions. The SI leaders were focused on not giving the students direct answers to questions, but rather followed up with new questions to continue facilitating discussions between students. The SI leaders expected the issue of not answering questions to be a challenge, as expressed during interviews before the initiation of SI sessions. SI leaders also found this aspect challenging during sessions, particularly when leading the initial sessions. They wanted to give answers to confirm or praise the students, and they also sensed the students' expectations of getting answers.

I find it difficult not to answer when people ask questions, I just want to nod or say yes or no. So, I had to work a lot on that on my own. (SI leader #4)

It may be an important feature of being an SI leader, not to give the answers to questions. One must be equipped to restrain answers and try to get the answers from the SI session participants. That can be a challenge. (SI leader #2)

On the other hand, students expected to receive answers to their questions during SI sessions and found it difficult and frustrating when answers were not provided. As a result, they felt that the SI sessions were not helpful. Students said that this issue was most prominent during the first sessions, which influenced their further participation. However, after providing feedback to the SI leaders, students perceived an improvement, as SI leaders started to provide hints to students, pointed discussions in specific directions, and thereby helped discussions toward the path to answering questions.

In a way, the questions were not answered. That is, we had discussed for five to ten minutes without reaching a conclusion, yet still no answer. That was the problem. You just wanted to have a simple explanation, and yet you couldn't get it. (Student #10)

[T]here was no help going there because you did not get answers to your questions. But after we told them [the SI leaders], they became better at giving us hints and helped us on the right track. (Student #8)

### 3.2 Learning Strategies

SI leaders and students reflected on the varied and numerous learning strategies used during SI sessions, and how these affected them. The mentioned methods and tools included counselling, quizzes, alias (word explanation game where players explain word or phrases to each other by giving them hints and tips), physical visualisation, watching YouTube videos, using Post-it Notes, drawing, reflection, multiple-choice questions, and discussions in general, while assignments were used for colloquiums and exams. The students noted that the various learning strategies were helpful and

found that the SI leaders assisted them in achieving a better understanding of the subject. They also mentioned that the SI sessions were safe learning arenas.

I found it very good, what we did was very diverse. Sometimes we played alias, where we tried to explain a word without saying it. We named the gastrointestinal system, drew on the blackboard, drew cells on paper sheets . . . yes, various things were discussed. (Student #11)

The SI leaders were conscious of the learning strategies they used, and discussed the methods among themselves, continuously evaluating and discussing what to do in the next session. They used many of the learning strategies introduced in the SI leader course; however, they wished that the SI leader course involved more training using such tools.

### 3.3 Organisation

SI leaders and students mentioned several aspects regarding the organisation of the SI programme. Overall, they expressed that the promotion of the SI programme was insufficient. Suggestions for improvements were more and repetitive information, both from SI leaders and academic staff, and the creation of incentives to participate in the sessions (e.g. exclusive SI assignments presented and promoted by the course lecturers).

That's what should have been done a lot more, from Day 1 – repeat the information, over and over again, really. Or if you [the students] want more assignments, maybe the lecturer can provide some tasks that will only be given to the students at SI sessions. Maybe then they will show up. (SI leader #3)

In the first SI session, it is important to create a good first impression and stimulate further student attendance throughout the SI programme. The students experienced the first session as lacking structure. It largely did not meet their expectations and they believed that this could have affected further attendance by fellow students. Both students and SI leaders commented on good attendance at the first sessions, which rapidly declined thereafter.

[T]here were many who did not return after attending the first session . . . they were present but got nothing out of it. And I can understand that because I felt the same. But if they had attended the other times as well, we would have told them it got much better. (Student #8)

The scheduling and organisation of SI sessions were perceived as challenging for the SI leaders, as there were many considerations to accommodate as well as individual opinions regarding the optimal solution. The students considered the length of SI sessions to be satisfactory; however, their opinions regarding the timing of the sessions varied in terms of both time of day and timing with course lectures. The use of

Facebook as a communication channel between SI leaders and students regarding SI sessions was mentioned as being positive. Facebook was used by SI leaders to remind students of session place and time and create polls for students to vote on session content in advance. The students used Facebook to notify SI leaders of their session attendance. The SI leaders organised the content of the sessions according to the study plan and course syllabus. They started the sessions with open questions to encourage students to describe what they wanted to discuss. If or when the discussions ebbed off, SI leaders used various learning activities that were prepared in advance to stimulate further discussions.

A Facebook page for the SI sessions was used to post when and where they are scheduled. Some days we asked the students when it suited them to be able to predict attendance, how many will attend. For example, on our days off, we thought that there might not be any point in us being present if no one will attend. To be able to predict. And to give information . . . That's mostly what we have used Facebook for. (SI leader #3)

Overall, the collaboration between individual SI leaders, SI leaders and academic staff, the faculty administration, and SI supervisors was perceived as satisfactory by SI leaders. However, they experienced some challenges related to changes in students' schedules, which subsequently affected SI session attendance. Contact between SI leaders and course lecturers was occasional and varied greatly between individual SI leaders – some planned sessions were based on lecture notes, while others had personal contact with lecturers and specifically asked for assignments that could be used in SI sessions. SI supervisors occasionally observed SI sessions and provided feedback to the SI leaders. This was perceived as constructive and useful, and some of the SI leaders said they would have benefited from closer follow-up and more feedback.

SI leader #2 and I had a session with one of the SI supervisors where she gave us feedback and we also told her about some concerns we had. She helped us by giving constructive criticism and at the same time solving a problem that may not have been our job to solve. (SI leader #5)

### 3.4 Outcomes

The SI model was well-received among SI leaders as well as pharmacy and nursing students. No negative outcomes regarding SI participation were mentioned during the interviews. The students experienced positive benefits from participating as either prepared or unprepared and gaining the self-confidence required for group discussion by daring to be insecure and asking questions. They also mentioned knowledge of learning strategies. The SI sessions gave students motivation to study and attend further sessions. The sessions were perceived as a kick-start, as students were motivated to learn the subject, gained energy from joining and considered it to be a social arena. The students perceived the learning environment in SI sessions to be safe, especially when the student groups were small. This was expressed by the fact that they

dared to ask questions and contribute to discussions despite being uncertain of their own knowledge. Group dynamics were important in this regard, and the students recognised the SI leaders as crucial since they helped the groups by, for example, including all participants in discussions and reducing the impact of dominant group members.

Since it was a small group, it was easier to talk, to discuss – so you dare to talk as well. (Student #4)

The students planned to continue meeting after the SI programme ended and wished for SI to be arranged in other courses as well. Furthermore, the students highlighted the SI sessions as being relevant for the course exams since it was helpful to sort and focus on the syllabus. Participating in SI sessions helped during the exam.

[D]uring the exam, I remembered that I discussed it during SI, and wrote what I remembered; thus, I felt the exam went better. (Student #7)

The outcomes mentioned by SI leaders included increased social skills among students and sessions being a social arena. Additionally, SI leaders got to repeat course content. Furthermore, they had an increased awareness of pedagogy and were also able to recognise the learning strategies used in the SI method elsewhere, thereby having prerequisites to master and fully benefit from the various strategies and methods. Overall, the SI leaders gained valuable experience as peers through improved skills, confidence, and capacity to lead discussions and manage groups of students. Moreover, they gained an enhanced awareness of their role as leaders.

It affects our capacity to lead discussions and conversations. I have also recognised a lot from the SI method when we (as students) receive question after question instead of an answer. And that's because teachers often want us to be able to reflect on the question and the answer too. And it gives a greater understanding, and at the same time, a greater ability to do so. So, it has been very educational to get an insight into how the SI method is used. (SI leader #5)

#### 4. Discussion

SI was introduced in healthcare education at Nord University to improve first-year student success in two high-risk courses. Guidelines for implementing SI programmes are valuable in describing generic approaches (i.e. programme staffing, selecting courses, funding, marketing, and assessment; Wilcox, 2008). However, it is important to customise the SI programme design to the specific needs of the students and the academic programme. This work is novel in describing the implementation of SI as a pedagogical model in the context of pharmacy and nursing education. The SI pilot was evaluated through reflections and perceptions from students and SI leaders, which provided valuable insights into their experiences in a healthcare education setting. Therefore, this work is of interest for academics, pedagogical researchers, pol-

icymakers, stakeholders, and others who are interested in adapting SI as a pedagogical model for practical application in general, and healthcare education in particular.

#### **4.1 Learning Strategies in SI, Including the Answering of Questions Regarding Course Content**

From both the students' and the SI leaders' perspectives, whether or not to directly answer questions was a prominent category in our results. The role of an SI leader is to ask questions, redirect questions, and help students become independent learners – not to teach students (Malm, Bryngfors, & Fredriksson, 2018). Compared to other peer-teaching programmes, this specific feature of SI will likely provide learning opportunities for students attending SI sessions as well as SI leaders (Bruno et al., 2016). During the training of SI leaders, this role as a supervisor and facilitator was thoroughly emphasised. Although SI leaders felt the urge to provide specific answers to questions, they avoided responding – especially in the first SI sessions. However, this aspect of SI was not described in the promotion of sessions to the students, nor was it thoroughly grounded in the first SI sessions. Students discovered that they were not given answers to questions, which subsequently made them question the usefulness of the sessions. Thereby, the students' expectations of SI were not met, which could lead to confusion regarding what they were supposed to do in the sessions. This likely resulted in lost opportunities for student learning (Boud, Cohen, & Sampson, 2014).

SI intends to promote students developing their own answers while learning from each other through discussions and problem solving (Helde & Suzen, 2019). To be proactive rather than reactive (Bruno et al., 2016), SI sessions need to start early in the semester. However, it seems that we must prepare both students and SI leaders for what to expect in the first SI sessions. Furthermore, adjustments to the SI leader course content may be necessary, with a need to focus on how questions can be used to support learning and start reflections in the students while providing them with additional methods and tools to facilitate discussions and other collaborative activities. Notably, providing SI leaders with some insight into social constructivist learning theory (Vygotsky, 1978) might help them understand the intention of not answering questions directly. Furthermore, SI session promotion and the information provided to first-year students should be elaborated, including a description of the intentions of SI and self-directed learning, an explanation of the rationales of learning strategies and how these are utilised in SI sessions, and the outcomes. Päuler-Kuppinger and Jucks (2017) examined the perceptions of teaching and knowledge acquisition and found that students prefer teacher- and content-centred conceptions (that is, high teacher activity with low student activity), while academics held more student- and learning-centred orientations with a focus on the student and their learning processes. The study concluded that students must be trained to change their role in the learning process and that academics should be aware of and be able to influence their students' approaches to learning (Päuler-Kuppinger & Jucks, 2017). Hence, a mutual clarification of expectations and approaches to learning processes and strategies



is recommended. Furthermore, we believe that a common understanding of the SI pedagogical model among all parties involved, including the students, is important to exploit the full potential of SI.

Students and SI leaders reflected on the learning strategies used in SI sessions, while SI leaders wanted more tools or activities that could be used to facilitate student activity. A review by Dawson et al. (2014) found that relatively few articles specify what occurs in SI sessions, which limits the generalisability of findings from published studies. While observational notes from SI supervisors might be useful, they are rarely treated as research data. A case study by Power and Kiyomi (2015) discussed the effectiveness of SI among first-year engineering students and included the reflections of a long-term SI leader, which provides insights into the activities used in SI sessions. This case study exemplifies that SI activities are not only dependent on the SI training, but also the context, the SI leader's experience, and the students' contributions and feedback. When implementing SI in a new context, the practical implications of the SI method are of interest, such as examples of various learning activities that can be used.

#### 4.2 Organisation of the SI Programme

While PAL and SI in healthcare education are scarcely described in the literature, recent reviews describe heterogeneity in programme content and activities, duration, and number of participating students (Aburahma & Mohamed, 2017; Burgess & McGregor, 2018; Stone, Cooper, & Cant, 2013). Notably, inadequate description of the PAL format is evident in pharmacy education, and the organisation of PAL varies largely between different studies regarding aspects such as tutor training and peer-teaching format (Aburahma & Mohamed, 2017). While the SI programme is well-described in *The Leader's Guide to Supplemental Instruction* (The Curators of the University of Missouri, 2014), examples of SI organisation in pharmacy and nursing curriculum are lacking. Additionally, many interventions described as SI in the literature are modified, thus making it difficult to compare findings between studies (Dawson, van der Meer, Skalicky, & Cowley, 2014; Mosley, Maize, & LaGrange, 2013; Owens, Rainey, Tucker, & Edmunds, 2018). A special adaptation of SI for this study involved sessions always being arranged by two SI leaders. The intention was that the two leaders could support each other and divide the group in two in case many students attended. Helde and Suzen (2019) reported a similar approach, finding that the presence of two SI leaders increased the feeling of safety and made it easier to organise and follow-up with individual students in the SI sessions.

When evaluating the SI programme, students and SI leaders had many thoughts and opinions regarding the organisation of the programme, which highlights the need to continuously assess the design and outcome while adapting and optimising the programme to the context. Communication between programme staff is also of great importance. Although collaboration between SI leaders, SI supervisors and other academic staff was a priority in the implementation process, the evaluation shows potential for improvement. Those involved must be thoughtfully selected, trained and

supported throughout the implementation since programme success is determined by the people involved (Wilcox, 2008). However, we had a limited capacity for SI supervisors to observe SI leaders during sessions. Helde & Suzen (2019) described the importance of allocating time to reflect on one's own experiences as an SI leader. In their study, SI leaders described reflection and supervision as important for their development. A review of PAL in nursing education also concluded that effective interventions within the curriculum required adequate academic supervision (Stone, Cooper, & Cant, 2013).

The low and rapidly decreasing attendance at SI sessions during the courses necessitates a discussion regarding whether at least some of the sessions should be compulsory to familiarise students with the model before they take an active standpoint on whether or not to attend SI. Mosley et al. (2013) argue that mandatory attendance may be required due to a high number of students not seeking academic assistance. However, this notion is not aligned with some of the main principles for SI (i.e. inner motivation and curiosity are the central driving forces for participation; Helde & Suzen, 2019). The present work found that while participating students indeed were motivated, more extensive SI promotion and incentives to participate could also be utilised.

### **4.3 Outcomes of the SI Programme for Students and SI Leaders**

While increased academic performance and student retention due to SI has been thoroughly documented in the literature, outcomes related to the students' and SI leaders' perceived benefits are scarcely reported. Such studies have generally included performance ratings using Likert scales. However, Bruno et al. (2016) reported many of the same outcomes that we found in this study – students felt more prepared for their exams, considered the setting as safe for asking questions, enjoyed the variety of methods used, and appreciated the SI leaders' advice. For SI leaders, the perceived benefits included increased social skills and the experience of working in a team. Bruno et al. (2016) also identified flexibility and increased knowledge in teams with numerous leaders. In our study, SI leaders stressed their improved insights into pedagogy and learning strategies. Therefore, SI may not only have effects on the students participating but may also serve as professional development for leaders (Bruno et al., 2016; Helde & Suzen, 2019).

Existing scientific evidence on the impact of PAL within pharmacy and nursing education is particularly limited (Aburahma & Mohamed, 2017; Burgess & McGregor, 2018; Stone, Cooper, & Cant, 2013); however, the outcomes of PAL are not expected to diverge significantly from those of other study programmes. A review published in 2017 examined the application and effectiveness of PAL within pharmacy education (Aburahma & Mohamed, 2017). This review included six educational research articles containing PAL activities (none of which involved SI) and – based primarily on subjective questionnaires/surveys with Likert scales – reported that PAL was well received among the students and had a positive impact on their learning outcomes.

However, the review provided no information regarding the impact of the interventions on peers (Aburahma & Mohamed, 2017). Furthermore, a review on the value of PAL in undergraduate nursing education (including 18 studies, none of which involved SI) reported numerous benefits from the PAL interventions among students, including increased confidence and competence as well as decreased anxiety. The peers benefited from PAL by gaining skills that prepared them for their role as registered nurses (Stone, Cooper, & Cant, 2013). Additionally, a qualitative systematic review including six studies (none of which involved SI) exploring PAL experiences among undergraduate nursing students found that PAL interventions contributed to student learning processes and prepared them to become professional nurses. The nursing students gained skills and competencies through personal and professional development (Nelwati, Abdullah, & Chan, 2018). In summary, the outcomes of the SI programme in pharmacy and nursing education presented in the present study align with and expand on the previously reported outcomes of PAL interventions in healthcare education.

Reviews of PAL interventions in healthcare education generally report the poor generalisation of results due to an insufficient number of studies and methodological limitations. As a result, they often recommend further research to fully investigate PAL programmes and their effects, while highlighting the need for high-quality research with consistency in the use of terminology, the reporting of PAL programmes, and the combination of objective and subjective evaluation methods (Aburahma & Mohamed, 2017; Burgess & McGregor, 2018; Stone, Cooper, & Cant, 2013). The implementation of PAL programmes would also benefit from continuous evaluation while combining qualitative and quantitative evaluation methods.

#### 4.4 Strengths and Weaknesses of this Study

To the best of our knowledge, few studies (e.g. Bruno et al., 2016) have investigated experiences in the implementation of a 'true' SI model in nursing and pharmacy education (i.e. an implementation complying with the SI manual). Moreover, few studies have collected qualitative feedback on students' and SI leaders' perceived benefits from SI participation. In the present study, the two included study programmes are relatively diverse – as are the authors' backgrounds in research. However, the two courses in which SI was piloted are similar in theoretical content. While implementing SI, we focused on following the principles for the SI model strictly (Stone & Jacobs, 2008). We chose historically difficult courses, arranged voluntary weekly SI sessions, recruited SI leaders among students who had performed well in the courses, provided a two-day SI leader training course and specifically focused on giving SI leaders instructions on what *not* to teach students while emphasising supervision and the facilitation of discussions. Earlier studies have shown a lack of screening in the recruitment process of peer teachers (Aburahma & Mohamed, 2017). One major strength of our study – and the SI model in general – is the focus on recruiting role models.

One limitation of this study is that a relatively small group of students attended the SI sessions. Therefore, we do not expect these students to be representative of the majority enrolled in the two study programmes. Self-selection bias has been thoroughly discussed in the context of SI (Dawson, van der Meer, Skalicky, & Cowley, 2014; Malm, Bryngfors, & Fredriksson, 2018). Some informants in our study had the impression that the ‘strongest’ students did not see the usefulness in attending SI sessions. Additionally, a reduced number of attendees from the first session and throughout the duration of the courses might be a signal that the SI sessions did not meet students’ expectations. Furthermore, although our findings concerning the outcomes of attending the SI sessions are in line with the literature (Aburahma & Mohamed, 2017; Bruno et al., 2016; Burgess & McGregor, 2018; Stone & Jacobs, 2008), we do not know how students who attended SI will perform later in the study programme.

#### 4.5 Conclusion

SI is an internationally recognised pedagogical model designed to help students in their learning through peer facilitation. However, scientific evidence related to SI in healthcare education remains limited. Notably, the present work is novel in providing a detailed description of SI programme implementation in pharmacy and nursing education, including the content of SI sessions, which have not been well described in the existing literature. The success of a peer-led intervention is dependent on both the learning activities and the people involved. Hence, the organisation of SI programmes is of great importance and should be continuously evaluated, preferably using a mixed-method approach. The SI programme described in this study had a positive impact on both pharmacy and nursing students as well as SI leaders and lays the foundation for the further development and utilisation of the SI programme in healthcare education.

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