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Enhancing Clinical Skills through Flexible Learning: Insights from Nursing Educators

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ABSTRACT

A fundamental part of nursing is clinical skills. Clinical skill practice is essential in the curriculum of nursing students to enhance their skills. However, the COVID-19 pandemic event changed the traditional teaching methods of nursing educators in clinical skills. To ensure the continuity of the clinical learning process, flexible learning approaches emerged in nursing education courses, replacing the conventional face-to-face method. This qualitative study aimed to explore the experiences of nursing educators using any type of flexible learning method in teaching clinical skills in a public university in Malaysia that offered a nursing programme. A purposive sampling method was employed to recruit eight participants. Semi-structured in-depth interviews were conducted through face-to-face or online interviews. Data were analysed using thematic analysis. The findings revealed four main themes: (a) integration of technology-enhanced learning methods in the teaching of clinical skills; (b) empowerment and efficacy through flexible learning methods; (c) overcoming hurdles to the implementation of flexible learning; and (d) institutional support and capacity building for effective flexible learning implementation. The integration of flexible learning methods has transformative potential to improve nursing education and better prepare students for clinical practice. Overcoming challenges and leveraging institutional support are critical for successful implementation and educational improvement.

Keywords: *Flexible learning, Clinical skills, Nursing educator, Nursing education*

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INTRODUCTION

The Malaysian healthcare landscape is currently undergoing rapid transformation, driven by advances in medical technology, an ageing population, and increasing demand for high-quality patient care (1). This evolving environment requires a well-trained and adaptable nursing workforce with the knowledge, skills and critical thinking abilities to navigate complex clinical scenarios (2). Traditional nursing education, while valuable, may not fully address the contemporary need to prepare students for the realities of modern healthcare

practice. In Malaysia, the Nursing Board has emphasised the importance of clinical skills in the nursing curriculum, with this accounting for a significant portion of the training (3). The development of clinical skills is essential for nursing students to make an effective transition from theory to practice. The Malaysian Qualifications Agency (MQA) plays a vital role in ensuring the quality and relevance of nursing education programmes in Malaysia. The MQA sets standards for nursing curricula, including the incorporation of clinical skills training to meet industry requirements and ensure that graduates are competent and prepared for professional practice (4). The redesign of the nursing curriculum in Malaysia to focus on specific areas, such as mechanical ventilation weaning pedagogy, highlights the importance of aligning educational content with the needs of the healthcare system and developing critical skills among nursing students (4). By emphasising the acquisition of clinical skills, nursing education programmes in Malaysia can better prepare students for the challenges they will face in clinical practice.

Clinical Skills

Clinical skills encompass a diverse set of technical and nontechnical competencies that are essential for providing safe and effective patient care. Clinical skills are defined as the abilities and knowledge that nurses use to perform various tasks, ranging from administering medications to performing physical assessments and communicating with patients (5). These skills are crucial for nursing students, as they bridge the gap between theoretical knowledge and practical application in clinical settings. Nursing competence, which includes proficiency in clinical skills, is essential for ensuring the quality of nursing interventions and outcomes and has implications for various aspects of nursing education, practice and management (6). The importance of clinical skills in nursing education cannot be overstated, as they prepare students for the realities of clinical practice. Developing clinical skills and their assessment through methods such as the Objective Structured Clinical Examination (OSCE) are integral components of nursing education that equip students with the necessary competencies to deliver high-quality care (7). Clinical skills training is a cornerstone of nursing education that enables students to acquire the knowledge and skills necessary to provide competent and compassionate patient care.

Teaching and learning experiences in clinical skills laboratories are central to nursing education because they provide students with hands-on practice in a controlled environment. These laboratories play an important role in shaping competent nursing practitioners who can deliver safe and quality care to patients in clinical settings (8). The hands-on experiences of nurse educators in utilising clinical skills laboratories highlight the significance of practical training and experiential learning in developing clinical competencies. By engaging in clinical practice, nursing students develop critical thinking, decision-making and communication skills essential for their roles as future healthcare professionals.

Flexible Learning in Nursing Education

In recent years, flexible learning has emerged as a promising approach to improving nursing education. The concept of flexible learning has become increasingly important, especially in the context of the COVID-19 pandemic, which has necessitated a shift to remote and online teaching (9). Flexible learning expands choices about what, when, where, and how people learn and supports different learning styles (10). Implementing flexible learning in nursing education requires educators to make choices in various areas, including modes of interaction and delivery of materials, structure and content, pace, learner–educator and learner-learner contact and interaction, type and mix of media used, degree of learner self-

direction, and constraints such as time, space and access to learning resources (10). These choices are necessary to create a flexible learning environment that caters to the diverse needs of nursing students. Table 1 shows the types of flexible learning modes that can be used in the teaching of clinical skills.

Table 1: Types of flexible learning modes in clinical skills teaching

Online modules and courses	Develop online modules and courses covering various clinical skills procedures. Include video demonstrations, interactive simulations and assessments. Allow students to access these resources at their own pace and convenience.
Virtual reality (VR) and augmented reality (AR)	Implement VR and AR simulations for hands-on practice of clinical skills in a virtual environment. Provide a realistic and immersive experience for students to enhance their skills.
Blended learning	Combine traditional face-to-face instruction with online components. Conduct theoretical aspects of clinical skills through online modules and reserve in-person sessions for hands-on practice and feedback.
Simulated learning experiences	Set up simulation labs with realistic mannequins and equipment to mimic clinical scenarios. Allow students to practice and refine their skills in a controlled environment before working with real patients.
Mobile learning apps / gaming	Develop mobile applications that nursing students can use to access learning materials on the go. Include interactive features, quizzes and multimedia resources to engage students in their learning process.
Flipped classroom model	Assign pre-recorded lectures or instructional videos for students to watch before coming to class/clinical session. Use in-person class time for hands-on activities, discussions and clarification of doubts.
Peer collaboration	Encourage peer-to-peer learning through group activities and collaborative projects. Foster a supportive environment where students can learn from each other's experiences and insights.
Flexible scheduling	Offer flexibility in scheduling clinical rotations and practical sessions to accommodate students with different time constraints. Provide options for evening or weekend sessions to meet the diverse needs of students.
Self-directed learning portfolios	Assign portfolios where students document their learning journey, reflections and achievements. Encourage self-directed learning by allowing students to set goals and track their progress.

The integration of technological advancements and digital transformation is in line with the evolving landscape of healthcare delivery and the demands of the Fourth Industrial Revolution (4IR). The use of e-learning platforms, simulation technologies and virtual reality tools in nursing education in Malaysia enhances the flexibility and accessibility of learning clinical skills. Nurse educators can leverage these digital resources to provide interactive and immersive learning experiences for students, enabling them to develop competencies in clinical decision-making, patient care and critical thinking. By incorporating technology into nursing education, students can engage in virtual patient scenarios, practice clinical procedures in simulated environments, and receive real-time feedback, thereby bridging the gap between theoretical knowledge and practical application in clinical settings.

These methods offer opportunities for enhanced knowledge acquisition, safe skill development, self-directed learning, improved accessibility, reinforcement of clinical skills and development of soft skills. Flexible learning also offers numerous benefits to nurse educators, enabling them to tailor teaching methods to meet the diverse needs of students, increase engagement and provide personalised learning experiences (11). By creating dynamic and interactive learning environments, nurse educators can accommodate different learning styles and promote student motivation and active participation (12). Moreover, flexible learning allows educators to overcome constraints such as time and space limitations, facilitating effective student engagement regardless of physical barriers (13). By integrating technology and innovative teaching methodologies, educators can craft enriching learning experiences that cater to the individual needs of students and foster a supportive and engaging educational environment (12). The integration of flexible learning into nursing education is promising because of its potential to enhance the development of clinical skills.

There are limited number of published articles on flexible learning in nursing education in Malaysia (14). Therefore, this study aims to explore the experiences of nursing educators in implementing flexible learning methods for teaching clinical skills and to investigate their views and perspectives on the transition from conventional learning to flexible learning methods within the context of nursing education in Malaysia. By understanding educators' experiences and perspectives, the study aims to inform curriculum development, instructional design and faculty training initiatives aimed at optimising the integration of flexible learning approaches into Malaysian nursing education programmes. Overall, the findings of this study may contribute to the advancement of nursing education and the improvement of patient outcomes in Malaysia and beyond.

METHODS

Study Setting, Design and Sample Size

A descriptive qualitative study was conducted to explore the experiences of nursing educators with flexible learning approaches to teaching clinical skills to nursing students. Eight nursing educators from a public institution in Malaysia known for its nursing programme participated in the study. Participants were recruited through purposive sampling to include individuals who met specific criteria critical to the study's objectives. These included at least one year of teaching experience and practical experience in teaching clinical skills procedures to nursing students using various flexible learning approaches, such as online simulations, blended learning and interactive virtual labs. According to Benner's novice-to-expert theory, individuals with only one year of experience would typically be categorised as novices (15). Nevertheless, the participants in this study were able to provide in-depth insights and expertise on the implementation and effectiveness of these flexible learning methods (16). All participants were full-time nurse educators, ensuring their active involvement in the daily teaching practice of nursing education.

Data Collection

A formal email invitation was sent to potential participants that clearly outlined the study's aims, eligibility criteria, and research protocols, as well as detailed assurances of data privacy and confidentiality. After expressing interest, participants were contacted via WhatsApp to schedule interviews, whereby they could choose their preferred time, date, and method of

interaction. Interviews were customised according to participants' preferences and offered as either face-to-face or online options. For face-to-face interviews, the author carefully selected locations that were convenient and comfortable for the participants to ensure a conducive environment. For online interviews, the researcher used secure online platforms that allowed for smooth interaction while maintaining confidentiality.

To fully address ethical considerations, participants received detailed information about the study and were required to provide informed consent. This included a consent form that explained the purpose of the study and obtained the participants' explicit consent to record the interviews. Participants were informed about how their data would be used, stored and shared, and robust measures were taken to protect their confidentiality and privacy. The researcher used encrypted digital platforms for the online interviews and ensured that all data were stored securely and could be accessed only by authorised personnel. Participants were encouraged to choose a private location for their online interviews to maintain confidentiality. The authors also offered technical support to resolve any issues that might arise during the interviews. Participation in the study was voluntary, and participants were assured that they could withdraw from the study at any time. Prior to each interview, participants signed a consent form and were informed that they could skip questions or terminate the interview at any time if they wished. To maintain consistency and convenience, all interviews were conducted during normal working hours. Following the interviews, each session was transcribed to allow for thorough and accurate data analysis.

Data Trustworthiness

Trustworthiness is crucial when conducting qualitative research (17). In this study, the trustworthiness of the data was ensured by adhering to the principles of qualitative rigour. Lincoln and Guba's proposed four criteria to determine trustworthiness: credibility, transferability, reliability and confirmability (18). Reading and rereading the dataset and cross-checking by team members helped to increase credibility (19). Next, transferability was enhanced by including detailed descriptions of the research setting, methodology, and participant demographics and experiences. Finally, all analytic decisions made during the study were recorded in a protocol to improve confirmability and reliability.

Data Analysis

Data analysis in this study followed a thematic analysis approach, driven by the research questions and broader theoretical assumptions. According to Braun and Clarke, thematic analysis involves a number of phases, from raw qualitative data to the identification of codes and themes (19):

Step 1: Familiarisation with the data. The authors familiarised themselves with the data by transcribing the audio recordings of the interviews. This phase involved reading the transcripts several times to gain a deep understanding of the content. Through this process, the authors identified preliminary meanings and patterns within the dataset, ensuring a strong foundation for subsequent phases of analysis.

Step 2: Generating initial codes. The authors systematically generated initial codes by carefully reading and rereading the transcripts. Repetitive patterns and meaningful segments of the data were coded manually. This manual coding process allowed for an in-depth and critical interpretation of the data, capturing key ideas relevant to the study's focus. To help to manage and organise the codes systematically, the data were analysed using NVivo software.

Step 3: Searching for themes. Once the data had been coded, the authors began identifying potential themes. Codes that appeared to be related were grouped, and preliminary themes were identified. The interpretative analysis helped to organise the codes into meaningful themes and subthemes. Thematic maps were employed to visualise the relationships between the themes and sub-themes.

Step 4: Reviewing themes. The identified themes were then reviewed and refined. The authors cross-checked the themes against the coded extracts to ensure that they accurately represented the data. This phase also included a review of the entire dataset to confirm that the themes captured the essence of the data and reflected the research questions.

Step 5: Defining and naming themes. The themes were further refined, and their core meanings were clearly defined. At this stage, the authors conducted a detailed analysis of each theme, describing its relevance to the research questions. Theme headings were adjusted where necessary to ensure that they effectively conveyed the essence of each theme.

Step 6: Writing the report. Finally, the authors wrote up the findings, presenting the themes along with data extracts to illustrate them. The report explained the themes in relation to the research questions and showed how the data addressed the objectives of the study.

Overall, the thematic analysis approach allowed for a comprehensive exploration of the data, enabling the authors to uncover meaningful themes and provide a thorough analysis of the research findings.

RESULTS

In this study, a sample size of eight participants was considered appropriate to gain in-depth insights into nurse educators' experiences of flexible learning approaches to teaching clinical skills to nursing students. The participants included one male and seven female nurse educators, all of whom were full-time and actively involved in teaching clinical skills. The male participant was selected because of his extensive experience with flexible methods of teaching clinical procedures, ensuring the inclusion of diverse perspectives. This sample size was chosen to ensure data saturation, taking into account practical constraints, such as time and resources, as well as the need to consider gender diversity. Data saturation occurs when no new themes or information emerges from the interviews, indicating that sufficient data was collected to effectively address the research questions. In qualitative research, the focus is on the depth and richness of the data rather than the number of participants. In the context of semi-structured interviews, a sample size of eight is considered sufficient to achieve in-depth understanding and data saturation (20).

Eight semi-structured interviews were conducted for this study, each lasting between 45 minutes and 60 minutes. Of these, two interviews were conducted in person at a location convenient to the participants, while the remaining six interviews were conducted online. The majority of participants opted for online interviews in order to accommodate their busy schedules and allow for flexible participation during working hours or in their free time. All of them were full-time nurse educators with work experience ranging from 7 years to 18 years and had implemented some form of flexible learning in the teaching of clinical skills to nursing students. Their demographic data are detailed in Table 2.

Table 2: Demographic characteristics of participants

Participant	Working experience (in years)	Teaching area
1	7	Critical care in nursing
2	12	Fundamentals of nursing
3	14	Fundamentals of nursing
4	8	Medical and surgical in nursing
5	11	Medical and surgical in nursing
6	15	Critical care in nursing
7	8	Medical and surgical in nursing
8	18	Critical care in nursing

During the thematic analysis, the authors initially generated 42 codes from the interview transcripts. These codes were derived based on the recurring patterns and significant points identified during the manual coding and supported by NVivo software. Each code represented a specific idea or concept related to the use of flexible learning methods in the teaching of clinical skills. After the initial coding phase, the authors undertook a thorough review and refinement of the codes. Through an iterative process of reviewing the coded extracts, similar codes were grouped based on their relevance to broader concepts. As a result, the initial 42 codes were gradually reduced and refined to 20 final codes. These codes were then organised into four themes, each with associated subthemes that further described the underlying aspects of each theme, as shown in Table 3. The main themes are as follows: the integration of technology-enhanced learning methods in the teaching of clinical skills, empowerment and efficacy through flexible learning methods, overcoming implementation hurdles in flexible learning, and institutional support alongside capacity building for the effective implementation of flexible learning.

Table 3: Themes and categories

Theme	Teaching area
1. Integration of technology-enhanced learning methods in the teaching of clinical skills	Utilisation of online platforms and YouTube videos Simulation videos Assessments via online platforms Introduction of micro-credential method Blended learning approach
2. Empowerment and efficacy through flexible learning methods	Freedom and flexibility Readiness and comfort Time-saving Diversification of teaching methods Transferability to real clinical settings
3. Overcoming hurdles to the implementation of flexible learning	Student attitude and engagement Technical challenges Financial constraints
4. Institutional support and capacity building for effective flexible learning implementation	Structured timetables and support Training and continuous education Academic management support Resource allocation Technological infrastructure Adaptation and training Continuous improvement

Theme 1: Integration of Technology-Enhanced Learning Methods in the Teaching of Clinical Skills

The integration of technology into the teaching of clinical skills has led to the introduction of various methods aimed at enhancing the learning experience for both students and educators. This approach combines the use of online platforms, simulation videos, digital assessments, the micro-credential method and a blended learning strategy, all of which support the development of clinical skills. Participants emphasised the importance of using online platforms and YouTube videos as complementary tools to traditional teaching. Participant 3 stated, "We have embraced technology for teaching clinical skills and utilise online platforms by sharing the URL link to YouTube and recorded videos to provide additional resources for our students." This method allows students to move through the learning material at their own pace and extends the classroom into a more flexible digital space.

In addition to online platforms, the use of simulation videos has become an integral part of clinical teaching. These videos provide students with visual demonstrations of complex procedures, allowing them to better understand each step before performing it in a real environment. Participant 5 said, "We often use simulation videos to demonstrate clinical procedures step-by-step. This helps students visualise the process before they try it out in the lab." The use of simulation videos, therefore, enhances student learning by providing them with a visual reference that they can revisit as needed.

Assessments via online platforms were also integrated into the teaching process, providing a flexible and interactive way to assess students' understanding of clinical skills. Participant 7 explained, "We have started to use online platforms to assess students' understanding of clinical skills, including video presentations and quizzes to make learning more interactive and accessible." These digital assessments allow students to self-assess and receive feedback in real time, facilitating continuous learning and improvement.

Another innovative method was the micro-credential approach, which allowed students to earn certifications for specific competencies. This method enabled a more targeted approach to mastering specific skills. Participant 6 noted, "The micro credential approach helps students focus on mastering specific skills, and they receive certification for those competencies. It's a great way to improve their learning pathway." This approach offers students flexibility and recognition of their skill acquisition, contributing to their overall learning outcomes.

The blended learning approach, which combines face-to-face teaching with online tools, further supports the integration of technology into clinical education. Participant 4 emphasised,

> We have incorporated recorded videos into our teaching methods and provide step-by-step demonstrations of clinical procedures to support our students' learning. It's a blend of traditional teaching and modern technology that allows students to review the content at their own pace.

This approach fosters a collaborative and flexible learning environment and ensures that students engage with the material both inside and outside of the classroom.

Despite the benefits of these technological tools, participants expressed concerns about the quality and reliability of online resources. Participant 2 stated, "Online platforms do provide valuable resources, but we need to make sure the content is accurate and reliable. We validate the materials before recommending them to students to maintain educational standards." This highlights the need for careful evaluation of digital resources to ensure the integrity of the learning experience.

In summary, the integration of technology-enhanced learning methods into the teaching of clinical skills represents a shift towards more innovative and adaptable pedagogical practices. Participants acknowledged the benefits of these advances and how they have improved both the flexibility and effectiveness of the learning experience in nursing education.

Theme 2: Empowerment and Efficacy through Flexible Learning Methods

Flexible learning methods empower both educators and students and promote a dynamic and adaptable educational environment. Participants highlighted several important benefits associated with these methods. One important benefit is the freedom and flexibility that flexible learning offers. Participant 8 remarked, "Flexible learning means allowing students to choose the way they learn, when, how, and where they want." This flexibility allows students to shape their learning experiences according to their own needs, preferences and schedules, which promotes a more personalised and self-directed approach to education.

Another important benefit is the sense of preparedness and confidence that educators gain from using flexible learning methods. Participant 1 reflected on how the availability of prepared materials, such as videos and presentations, contributes to a smoother teaching process: "I think that showing a video changes the way I use flexible learning in the classroom and gives me more readiness." The use of such resources not only helps educators feel more prepared but also facilitates student engagement, promoting a more effective learning environment.

Saving time was a key theme. Participants noted that flexible learning methods reduce the need for repetitive teaching. Participant 2 explained, "Lectures used to have to be repeated several times, but with the videos, students can watch the procedures several times at their convenience, saving time for both the instructor and the students." This approach allows students to review the material at their own pace, freeing up instructor time and making the overall teaching process more efficient overall.

In addition to these benefits, flexible learning supports the diversification of teaching methods, allowing teachers to adopt a blended approach that caters to different learning styles. By combining flexible learning with traditional face-to-face methods, educators can engage students through a variety of media, improving understanding and retention while accommodating different learning preferences.

Finally, participants stressed the transferability of skills learned through flexible learning methods to real clinical situations. Participant 5 emphasised the practical relevance of these skills: "It's important to practice certain procedures correctly because this ensures you can apply them effectively in the clinic. Mastery in practice leads to confident and accurate application in real clinical situations." This demonstrates the importance of flexible learning in equipping students with the necessary knowledge and skills for clinical practice and ensuring that this expertise is directly applicable to real-life scenarios.

In summary, flexible learning methods benefit both educators and students by providing flexibility, increasing readiness, saving time, diversifying teaching methods and supporting the transfer of skills into clinical practice. These findings highlight the transformative potential of flexible learning in healthcare education and confirm its role in creating a more efficient, adaptable and effective learning environment.

Theme 3: Overcoming Hurdles to the Implementation of Flexible Learning

Despite the numerous benefits of flexible learning, its implementation is not without its challenges. Participants identified three main categories of hurdles: student engagement, technical limitations and financial constraints, which collectively hinder the adoption and effectiveness of flexible learning methods.

One of the biggest challenges is maintaining student engagement in a flexible learning environment. Participant 1 commented on this issue: "Engagement was a big problem for me because I am a person who likes face-to-face interaction." This highlights the difficulties some nursing educators face in adapting to the less interactive online environment, where the lack of direct, face-to-face interaction can reduce student engagement and attention. Face-to-face interaction is often critical to fostering a strong bond between students and instructors, which is difficult to replicate in flexible learning modalities.

In addition to engagement issues, technical problems are also a major barrier to effective flexible learning. Participant 4 expressed frustration with students' internet connectivity issues: "Most of them have a very poor internet connection, so some of them can't [participate] during online classes." This illustrates how inconsistent access to reliable internet services can disrupt the learning process and prevent students from fully engaging in online classes or accessing learning materials. The availability of a stable technological infrastructure is crucial for the successful implementation of flexible learning methods, especially in remote or underserved areas.

Financial constraints are also a significant barrier to the implementation of flexible learning methods. Participant 7 referred to the lack of institutional financial support for the production of instructional materials, stating, "There were [many] issues...We had to raise money to make our instructional video." This statement underscores the financial burden that educators face in securing funding for resources such as video production, specialised software, and other tools essential for teaching flexible learning. Without adequate financial support, the quality and reach of flexible learning can be compromised, leading to inequalities in educational access and outcomes.

Overall, addressing these challenges will require a concerted effort from a range of stakeholders including academic management, IT and support staff, and the financial administrative team. To optimise the implementation of flexible learning, institutions must work to promote student engagement, improve technology infrastructure, and provide sufficient financial support. While these barriers are significant, proactive and collaborative measures can mitigate them and increase the effectiveness of flexible learning methods, ultimately leading to better educational outcomes in healthcare.

Theme 4: Institutional Support and Capacity Building for Effective Flexible Learning Implementation

The successful implementation of flexible learning methods requires extensive institutional support and capacity-building efforts. Participants emphasised the need for a structured institutional framework, training and provision of resources to effectively integrate flexible learning into educational practice. One of the key recommendations from participants was the introduction of structured timetables and support from universities to enable flexible learning. Participant 7 emphasised the importance of institutional support: "I would also recommend good support from the college…to allow the time for flexible learning." This highlights the need for universities to provide flexible timetables and sufficient resources to meet different learning needs and ensure that both lecturers and students can engage in flexible learning without compromising quality.

Training and continuous professional development were also identified as essential components for effective implementation. Participant 6 commented, "Although I want to implement flexible learning in this course, I need to train my co-teachers," emphasising the need for ongoing professional development to ensure that instructors are equipped with the skills and knowledge to integrate flexible learning methods into their teaching. Continuous professional development enables nurse educators to keep up-to-date with new technological tools and pedagogical strategies, creating a more adaptable teaching environment.

In addition to professional development, participants emphasised the importance of support from academic management to facilitate the transition to flexible learning. Participant 3 emphasised the need for strong leadership and willingness on the part of academic management to ensure that staff members are prepared to adopt new teaching methods. This suggests that institutional leaders need to champion flexible learning by creating an environment that encourages innovation and adaptability among faculty members.

Another crucial factor for the successful implementation of flexible learning is the provision of adequate resources. Participant 6 emphasised this point by saying, "We need an adequate budget and strong faculty support to create the videos effectively. This is not something I can manage on my own." This highlights the importance of financial investment and collaborative efforts to produce high-quality teaching materials, such as instructional videos, which are crucial for the provision of effective flexible learning.

The need for a reliable technological infrastructure was a recurring theme among the participants. Participant 6 asked, "Where is the infrastructure? Where are the resources…the experts we need?" This emphasised the need for institutions to invest in both technological tools and expertise. Without a solid infrastructure and supporting staff, the potential of flexible learning methods can be limited, affecting the overall student experience and learning outcomes.

Constant adaptation and training were also highlighted as key elements in keeping up with technological advances. Participant 4 noted, "We are in the age of technology…we have to adapt…also in terms of skills," referring to the ever-evolving digital tools in education. Continuous professional development is essential to ensure that educators are proficient in using these tools and adapting their teaching methods to new technologies.

Finally, participants stressed the importance of continuous improvement through feedback and evaluation mechanisms. Participant 8 remarked that "academic management must be ready and open to change" and emphasised "the iterative process of refining teaching methods." This focus on continuous evaluation allows for the fine-tuning of flexible learning strategies, ensuring they remain relevant and effective in enhancing educational outcomes.

In summary, the implementation of flexible learning methods in clinical education requires strong institutional support, ongoing capacity building, and a commitment to continuous improvement. By addressing these key areas—structured schedules, training, resource allocation, technology infrastructure and feedback mechanisms—institutions can overcome the challenges associated with flexible learning and create a more adaptable and effective educational environment.

DISCUSSION

The integration of technology-enhanced learning methods into the teaching of clinical skills represents a significant advance in healthcare education. A previous qualitative study conducted in Jeddah, highlighted those participants who reported the adoption of various technological resources, such as online platforms, recorded videos and digital assessments, to complement traditional teaching methods (21), which aligns with the results of this study. This integrated approach, including the use of blended learning, aims to enhance the educational experience for both students and nurse educators. By incorporating recorded videos into face-to-face teaching, educators create a collaborative environment that supports skill development (22). However, concerns regarding the quality and validity of online content persist, emphasising the importance of validating resources before recommending them to students (23). These findings are consistent with previous studies that have demonstrated the effectiveness of integrating technology into medical education to improve learning outcomes (24).

Flexible learning methods play an important role in empowering both nurse educators and students, offering benefits such as freedom of choice, increased readiness, time-saving advantages and enhanced transferability of skills to real-world settings (25). Participants expressed satisfaction with flexible learning approaches, emphasising their positive impact on teaching and learning experiences (26). The ability to tailor learning experiences to individual preferences and needs enhances engagement and comprehension among students (27). Moreover, the diversification of teaching methods through a mixed approach of flexible and face-to-face learning caters to different learning styles, contributing to a more effective educational environment (28). These findings are in line with research highlighting the positive outcomes associated with flexible learning methods in various educational settings (29).

Despite the advantages of flexible learning, implementing these methods faces challenges, such as student engagement, technical limitations and financial constraints (30). Participants identified the importance of interpersonal interaction in effective learning experiences, which may be compromised in flexible learning environments (31). Technical challenges, including internet connectivity issues, can hinder the seamless delivery of online education (32). Financial constraints further impede the implementation of flexible learning methods, underscoring the need for adequate resources and support from institutions (33). Addressing these challenges requires collaborative efforts to enhance student engagement, improve technological infrastructure and provide financial support for effective implementation (33).

Institutional support and capacity building are essential for successfully integrating flexible learning methods in healthcare education. Participants emphasised the need for structured timetables, training for educators, academic management support and adequate resource allocation to facilitate the transition to flexible learning (34). Continuous education and technological infrastructure are crucial for effectively supporting flexible learning initiatives (34). Moreover, feedback mechanisms and evaluation processes are essential for continuous improvement and optimising the implementation of flexible learning methods. These recommendations align with previous studies that emphasised the importance of institutional support and capacity building in improving educational practice (34).

This study emphasises the central role of flexible, technology-enhanced learning methods in the development of nursing education, particularly in the teaching of clinical skills. To take advantage of these methods, it is recommended that nursing education make greater use of technological tools such as online platforms, simulation videos and blended learning approaches, which allow students to engage with materials at their own pace and improve comprehension and retention. Institutions should invest in developing the digital literacy of faculty and students through ongoing professional development and training programmes. In addition, ensuring a reliable technological infrastructure and adequate resource allocation is critical to the effective implementation of these tools. Encourage active student participation through interactive elements and real-time feedback in digital learning environments, as well as structured schedules and institutional support. Expanding the use of micro-credentials to recognise skill development provides flexibility and recognises skill acquisition. Finally, ongoing feedback and evaluation mechanisms should be established to continually refine and improve flexible learning approaches. Implementing these recommendations will help nursing programmes to evolve to meet the demands of modern healthcare and equip students with both theoretical knowledge and clinical competence.

Limitations of the Study

There are two limitations to this study. This study was conducted in a single institution; hence, the findings might have limited transferability to different settings, although the interviews were conducted until the data were saturated. Therefore, future studies should recruit nurse educators from other higher institutions, whether in the public or private sector.

CONCLUSION

Current conversations about the integration of technology-enhanced learning methods in the teaching of clinical skills, empowerment through flexible learning methods, overcoming hurdles to implementation, and institutional support for effective implementation highlight a clear shift towards innovative and adaptable pedagogical practices in healthcare education. By leveraging technology, such as online platforms, simulation videos, digital assessments and blended learning approaches, educators can enhance the learning experience for both students and themselves. Flexible learning methods empower educators and students by offering personalised learning experiences, readiness, time-saving benefits and enhanced transferability of skills to real clinical settings. However, challenges, such as student engagement, technical limitations and financial constraints, need to be addressed to optimise the implementation of flexible learning methods. Institutional support and capacity building are essential for the successful integration of these methods in healthcare education. Participants' recommendations emphasise the need for structured timetables, university

support, training for nurse educators, academic management preparation, resource allocation, technological infrastructure, continuous adaptation and feedback mechanisms. These efforts are necessary to overcome barriers and enhance educational practices to better meet the needs of learners in healthcare education. The findings suggest that the incorporation of technology and flexible learning methods can significantly transform healthcare education by providing a more dynamic, engaging and effective learning environment. By addressing challenges, leveraging institutional support and enhancing capacity building, educators can better prepare students for practical applications in clinical settings and improve educational outcomes in healthcare education.

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ETHICAL APPROVAL

The study received ethical approval from the Kulliyyah of Nursing Postgraduates Research Committee, followed by approval from the International Islamic University Malaysia Research Committee (IREC 2023-KON/NURF39). All participants voluntarily signed a consent form before participating in the study.

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