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Solving the Challenges of Learning Fundamental Clinical Skills among Nursing Students: An Action Research Approach

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Abstract

Background: Despite the rapid development of innovative teaching methods in practical nursing education, acquiring clinical skills remains a significant educational challenge. It is essential to identify and solve the challenges of nursing students in learning and promoting fundamental clinical skills. Accordingly, this study aimed to explore and address the challenges of learning fundamental clinical skills among nursing students.

Methods: This action research, conducted in 2023, employed two iterative cycles using both qualitative and quantitative approaches. The participants included 32 nursing students, the director of the Clinical Skills Unit, and academic researchers serving as facilitators. Qualitative data were collected through in-depth interviews, focus group discussions, observations, and field notes. For the quantitative phase, a checklist was used to assess the students' satisfaction. Data analysis involved descriptive statistics for the quantitative data and conventional content analysis for qualitative data.

Results: The qualitative findings identified three main categories, including lack of feedback, superficial learning, and ineffective communication. Following the intervention, students reported improvements in interpersonal communication, receiving more effective feedback, and engaging in active learning. Quantitative results demonstrated statistically significant increases in the mean scores of factors influencing effective learning after the activities of the action research project.

Conclusion: Active participation in learning fundamental skills can reduce some of the associated challenges faced by nursing students. Through reflective processes, students were able to recognize the challenges affecting their learning and subsequently improve their learning outcomes.

Keywords: Clinical skills, Nursing students, Teaching, Learning, Challenges, Action research

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Introduction

One of the key characteristics of a competent nurse is possessing sufficient knowledge and skills to provide quality care. Having a solid knowledge base and performing nursing procedures correctly are crucial for ensuring patient safety (1). Moreover, such competence boosts the self-confidence of both nurses and nursing students. When nursing students perform the relevant skills with greater confidence, their satisfaction levels tend to increase. Therefore, it is necessary for nursing students to acquire adequate knowledge and receive proper training to develop these skills before entering the clinical setting in an academic environment (2).

Learning fundamental nursing skills not only enhances students' success and self-confidence but also promotes critical thinking and fosters professional interest. These qualities, in turn, contribute to better patient recovery (3) and strengthen professional values, attitudes, and clinical competence (4). To optimize students' practical learning, it is important to employ effective educational strategies that are tailored to both clinical settings and learner characteristics (5).

Research indicates that traditional teaching methods often hinder the satisfactory acquisition of fundamental skills among nurses (5, 6). Accordingly, nursing education programs should seek engaging and effective practical methods that facilitate more autonomous and effective learning (5). Evidence also suggests that self-directed learning can improve students' clinical competencies, satisfaction, and self-efficacy (5, 7). This underscores the importance of active learning methods in nursing education (8).

According to Mayer's cognitive theory, learning through multiple sensory channels - auditory and visual - enhances

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the learning process, as engaging more than one sense can significantly improve retention and understanding (9-11). Among different technological tools, videos are practically effective in supporting learning compared to other methods (7, 12). Moreover, research indicates that incorporating technology and mobile-based education increases student satisfaction (2, 13, 14). A review of the literature further confirms the positive impact of feedback in improving learning outcomes (15, 16).

Building on these insights, the present study aimed to develop an innovative learning approach that actively engages nursing students in the learning process to enhance their practical skills.

Efforts to improve nursing students' learning are crucial, yet previous research reveals three main gaps:

1. Most studies in this area have adopted quantitative approaches, primarily describing existing conditions and factors affecting students' practical skill development (17, 18), with limited intervention-based research (19). This indicates a need for broader exploration of fundamental nursing skills.
2. Many studies have been conducted solely by researchers without the active participation of students (20-23).
3. Concerns related to learning in fundamental nursing courses include barriers such as the inability to develop lifelong learning habits, an unsupportive learning environment, insufficient feedback, and the lack of self-learning skills, all of which can diminish motivation and impair learning outcomes. These challenges highlight the need for more comprehensive studies, particularly qualitative research conducted in real-world environments with stakeholder involvement to test practical solutions.

Action research is one of the most effective methods to achieve meaningful improvements through collaborative efforts and innovative approaches. Addressing these gaps, this study adopted a participatory action research design involving stakeholders to improve first-semester nursing students' practical skills, identify existing problems, and formulate a plan to enhance learning outcomes. The findings can contribute to advancing the fundamental skills of nursing students through active participation and shared responsibility in the learning process.

Methods

Participants

This action research involved 32 nursing students, selected through convenience sampling, along with the director of the Clinical Skills Unit and academic researchers who served as facilitators and were actively involved in the program. The participants' mean age was 20.17 ± 2.50 years. They participated as action researchers, engaging in all stages of the research process, including recognition, planning, implementation, and evaluation. Of the participants, all except one were female. Moreover, the head of the nursing department and the director of the faculty's Education Development Office (EDO) actively contributed by providing support, resources, reviewing program content in line with the philosophy and mission of the faculty, and participating in drafting and revising the programs. Besides, academic researchers, i.e., three assistant professors of nursing, serving as facilitators and external consultants, guided the participants throughout the project, offering educational resources and oversight of the change process.

Data Collection

Data were collected using both qualitative and quantitative methods, with the facilitator facilitating active engagement of all participants throughout the process.

Qualitative Methods

Aligned with the objectives of the study, qualitative data were collected through interviews, focus group discussions, field notes, and observations. Unstructured observations were used to explore environmental aspects, and all observations were documented through detailed field notes. Ten semi-structured interviews were conducted with purposively selected participants. The facilitator initially informed participants about the study, and the arrangements for interviews were coordinated via telephone. To ensure openness and comfort, interviews were conducted either in the college library or the facilitator's office, allowing participants to share their experiences freely. At the beginning of each interview, the researcher explained the objectives of the study. An interview guide with key questions was used to facilitate discussion. Each interview lasted 35 to 70 minutes. During interviews, the researcher attentively listened, allowing pauses and silence to encourage reflection. Data collection continued until data saturation was achieved, and no new information emerged.

The first author (N.M.) arranged and conducted all interviews. The main interview questions included, "What are your experiences regarding learning fundamental nursing skills?", "How was a typical practice day at the Clinical Skills Center?" and "What factors contribute to learning, and why?" Follow-up questions such as "Can you explain more?", "What do you mean?", "Can you give an example from your personal experience?", "Why?", and "How?" were used to clarify responses and deepen understanding.

Two focus group discussions comprised 5 and 6 students. Participants were encouraged to discuss ways to promote learning of nursing principles and fundamental skills, as well as related challenges. These discussion sessions were held from 13:00 to 14:00 and lasted 60 to 80 minutes. All participants actively contributed throughout data collection cycles.

Rigor

To ensure trustworthiness, the study employed the four criteria proposed by Lincoln and Guba, including credibility, dependability, confirmability, and transferability. Credibility was enhanced through prolonged engagement with the phenomenon, devoting sufficient time to collecting data, and establishing rapport with participants. Validation of the accuracy of the findings and their relevance to the transcripts was achieved via peer debriefing with three qualitative research and nursing experts, as well as member checking with four participants, who affirmed that the findings accurately reflected their experiences. To reduce bias, the researcher limited prior literature review and maintained transparency in data coding and analysis. Dependability was addressed through independent review of all research stages by external observers (qualitative researchers). Furthermore, confirmability was supported by detailed documentation and auditing of data collection and analysis processes. While qualitative studies are not generalizable, comprehensive descriptions of participant selection, data collection, and analysis procedures were provided to enhance transferability (24).

Quantitative Methods

A seven-item checklist on a 5-point Likert scale was developed by facilitators based on a literature review and revised and refined by nursing experts. The items addressed self-learning, interpersonal communication, a supportive environment, encouragement to learn, opportunities for feedback, motivation, and lifelong learning. Students rated each item from 1 (very low) to 5 (very high). The checklist's internal consistency was acceptable, with a Cronbach's alpha of 0.79. All first-semester nursing students participated voluntarily, providing written informed consent.

Data analysis

Qualitative Data

Qualitative data were analyzed manually using conventional content analysis based on Graneheim and Lundman's approach (25). First, the facilitator listened to the interviews multiple times and reviewed the recordings thoroughly. All interviews, field notes, observations, and focus group discussions were immediately transcribed verbatim. To reach a general understanding, all transcripts were read line by line, and key phrases were identified and underlined. In the next phase, these meaning units were assigned codes, which were written in the margins of the pages. To ensure the accuracy and validity of the findings, the coded transcripts were shared with the participants for validation, and three experts experienced in qualitative data analysis were consulted. All the necessary modifications and revisions were made based on their feedback. For a broader perspective, all codes were documented on a separate sheet of paper and categorized according to their similarities and differences. During this process, codes were labeled carefully to prevent fragmentation and scattering of concepts. After compiling a comprehensive list of codes, similar codes were grouped into larger categories to reflect overarching themes and concepts.

Quantitative Data

Quantitative data were analyzed using SPSS version 21. Descriptive statistics, including frequency, means, and standard deviations, were employed to summarize the data.

Ethical Considerations

This research project was approved by the Vice-Chancellor for Research of Mazandaran University of Medical Sciences, Iran (approval code: 15209) and was confirmed by the Ethics Committee of the university (ethical code: IR.MAZUMS.REC.1401.421). Participants were fully informed about the study objectives and procedures, and their participation was voluntary. Confidentiality and the right to withdraw from the study at any stage were guaranteed. In addition, given the nature of action research, informed consent was obtained from all participants at each phase, acknowledging potential role changes of facilitators and participants during different stages.

Action Research Steps

The present action research was conducted from 2020 to 2022 at the Nursing School of Mazandaran University of Medical Sciences, Iran. It involved the active participation of the staff and the researcher, who served as a facilitator. The Nursing School, established in 1992, was selected due to the researcher's familiarity with its environment. With over 10 years of experience in clinical and educational fields, particularly in teaching nursing principles and fundamental skills, the researcher has established a strong rapport with students, understanding their concerns. The nursing principles and skills are taught through a four-credit course in the nursing curriculum, comprising 2.5 theoretical credits and 1.5 practical credits. The practical part covers all fundamental nursing skills, with a passing grade requiring at least 8 out of 10, making it critically important for student success.

The study was carried out in two cycles across 15 months. Given the research objectives and setting, as well as the participants' characteristics, a participatory action research approach was employed based on McTaggart et al's model, involving examining the current situation, planning for change, action, and evaluation (26).

Step 1: Observation

During this initial phase, which lasted three months, the facilitator and participants explored existing conditions

and identified challenges related to learning fundamental nursing skills through various sources. The goal was to thoroughly understand the current state and involve participants in examining the existing situation.

Step 2: Planning for change

This stage of the action research lasted two months. During each planning stage for action, steps, roles, and methods were determined collaboratively with the participation of the students. At this stage, the main ideas, factors requiring change, necessary preparations for change, required resources for implementing change, ethical considerations, and the specific actions to be undertaken, along with the timeframes, were clearly identified (27). It was decided that after the instructor taught the skills, the students would divide into small groups of five to six for practice outside of their regular class hours. These groups performed the trained skills, and one student recorded their performance using a mobile phone. Then, the group watched the recorded video carefully and evaluated their performance collectively. This evaluation and analysis process was carried out by all group members, and when guidance was needed, the video was shown to the instructor for review and feedback. Through this method, students evaluated their skills step-by-step, gaining awareness of their own weaknesses and strengths, as well as those of their peers. The clinical skills unit head—who had previously received training in this area—monitored the overall quality of the performances. With student participation at this stage, it was decided what tasks should be performed, by whom, how, and in what time periods. Furthermore, during three collaborative sessions, the action plan, including specific goals, responsible individuals, groups, and timeframes for each activity, was developed together with the participants. These plans were communicated to the participants by the facilitator and the director of the faculty's clinical skills unit. Following data collection and analysis, comprehensive plans of action were formulated to address all identified solutions, with the active engagement of participants.

Step 3: Action for change

The third stage of the first cycle involved the implementation of the planned changes. Unlike other qualitative research methods, action research does not conclude by documenting findings. After completing data analysis, group members decide on the plan of action or change to be implemented, ensuring that the intended change is grounded in the findings (26). At this stage, in collaboration with the members, the plan of action was reviewed and revised to increase its efficiency and effectiveness. The plan was then executed according to the designated resources, facilities, and goals. It is impossible to change the existing situation without proceeding through the implementation stage. Thus, the implementation phase is the most important part of action research and represents the outcome expected from this approach. In this case, the actions focused on giving mobile-based feedback on the nursing students' performance of fundamental skills. The developed program for teaching nursing principles and skills was carried out for three months, and the students performed their functions through the new knowledge and skills they acquired. They were also encouraged and supported by the director of the clinical skills unit and the facilitator.

Step 4: Evaluation

At the conclusion of the first cycle, a one-month evaluation was conducted utilizing mixed methods, both quantitative and qualitative, to assess program effectiveness in collaboration with the facilitator and participants.

Step 5: Reflection

The second cycle of the research was conducted, building upon the knowledge gained during the first cycle. The facilitator and participants reflected on their experiences to find the next solutions. Reflection was carried out both individually and in groups within the department of nursing. The implementation of strategies was discussed, and their correct implementation was monitored by the group through weekly meetings. Moreover, if any specific problems arose, group members investigated and attempted to resolve them. Participants were encouraged to provide feedback to the researcher about what actions they took, why they took them, and what steps they should follow. The group reflection process lasted one month. At this stage, five group reflection sessions were held, and through continuous oversight and monitoring, the results from the first cycle were discussed in the group. The proposed solutions were examined based on the challenges encountered. Continuous monitoring of data collection and recording, interim reports, commentary and reflection, group evaluation, task supervision, feedback to the research team, and data classification and analysis were systematically performed in this stage. In each action cycle, the group members monitored the strengths and weaknesses of the program, with efforts made to improve or revise it based on ongoing findings. Following Gibbs's reflective cycle (Figure 1) (28), group members shared their experiences, including their acquired knowledge and skills, changes in their performance and feelings, impacts on their personal lives, and adjustments they made. The facilitator encouraged all participants to express their opinions and suggestions. Finally, participants identified the strengths and weaknesses of the previous program, provided comments on the learning promotion program, and established new goals for improvement.

Step 6: Planning

Re-planning for change was undertaken at this stage

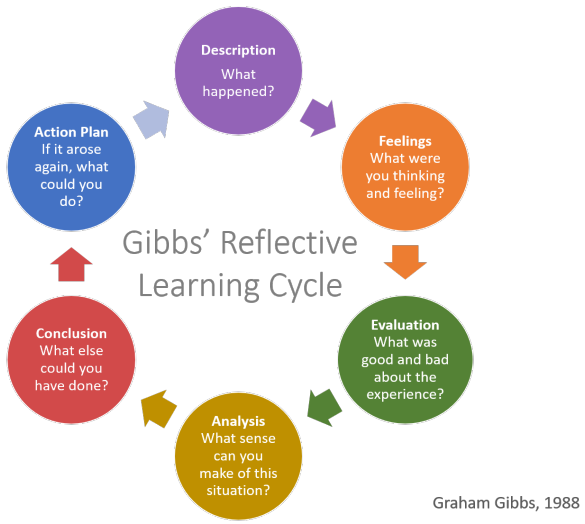

Figure 1. Gibbs's reflecting cycle

over a one-month period. The strengths and weaknesses of the program were summarized, and areas requiring correction were identified. The facilitator supported and encouraged participants to draft or revise a new plan of action, offering feedback and suggestions to enhance their contribution. The main problems raised included a lack of smartphones, time-consuming procedures, limited access hours to the clinical skills center, and insufficient coordination among groups. Based on students' opinions and available facilities, several solutions were proposed: groups should be organized so that at least one member possesses a smartphone; skills should be performed and recorded in turn, with each student performing at least one skill per session and recording it; access hours to the clinical skills center should be extended, and a schedule should be posted at the center's entrance by the head of the center to inform students of accessible hours; and to improve coordination, groups should be small and students should visit the center at designated times with prior notification. Furthermore, the head of the nursing department and the director of the EDO reviewed the proposed plan and provided feedback and suggestions aligned with the philosophy of the faculty.

Step 7: Action for change

This stage of the study lasted two months. As students gained more experience, they continued their activities to improve learning. New programs were developed, and existing ones were improved based on ongoing reflections and insights. Students participated in the teaching-learning process with increased satisfaction, applying their experiences and reflection activities. The facilitator observed the implementation process and resolved some problems as they arose, ensuring continuous progress.

Step 8: Evaluation

The final stage, conducted after twelve months, evaluated the overall impact of the measures taken to improve nursing students' learning. This evaluation lasted one month and considered the collective efforts and collaboration of the students, whose contributions were highly appreciated.

Results

The qualitative data analysis from the first cycle identified 351 primary codes related to the challenges of learning fundamental nursing skills. The extracted codes were organized into three main categories and six subcategories. The identified categories included *lack of feedback*, *superficial learning*, and *ineffective communication* (Table 1).

Participant and facilitator reflections on the action plan were also documented in two cycles of action research.

A reflection from a 19-year-old female student regarding the new program is as follows:

"When I was practicing wearing sterile gloves in the group, I just wanted to wear them, and I wasn't paying attention to the details of the process. When we watched the video that my friend recorded of me wearing the gloves, I realized how awkwardly I was wearing them and discovered my strengths and weaknesses. Watching the video helped me understand the whole process".

Another illustrative reflection from the researcher during the process is:

"Once, while I was observing students in the clinical skills unit of the faculty, I had a very good feeling that they were practicing nursing skills with interest, out of a strictly formal environment. I was happy to work with them in a friendly atmosphere".

In the final stage of the second cycle, ten participants were interviewed. They were asked to answer the question: "What effects has the program implemented over the last year had on your learning style?" Moreover, probing questions were asked based on participants' initial responses. Data saturation was achieved after ten interviews. Qualitative analysis of the data revealed eight subcategories and three main categories, including improving interpersonal communication, active learning, and effective feedback (Table 2).

Quantitative data analysis, conducted in three stages—baseline, post-first cycle, and post-second cycle—showed increases in the mean and standard deviation of the variables. These findings corroborated the qualitative results, indicating improved nursing students' satisfaction with their learning outcomes at different stages of the study, as illustrated in Table 3.

Discussion

The analysis of qualitative data in the first cycle of this study revealed that nursing students face significant challenges in learning fundamental nursing skills, primarily due to a lack of feedback, superficial learning, and ineffective

Table 1. Factors affecting learning fundamental nursing skills in the first cycle

Categories	Subcategories
Lack of feedback	Lack of feedback from the instructor
	Lack of feedback from peers
Superficial learning	Moving over the surface
	Meaningless learning
Ineffective communication	Avoiding confrontational attitudes
	Avoiding teamwork

Table 2. Factors affecting learning fundamental nursing skills at the end

Categories	Subcategories
Improved interpersonal communication	Improved communication with peers
	Improved communication with the instructor
Active learning	Using personal educational aids
	Active student participation in learning
	Lifelong learning
Effective feedback	Instructor feedback to students
	Student feedback to peers
	Student feedback to themselves

Table 3. Descriptive statistics for factors affecting learning fundamental nursing skills

Factors	Stages	Mean ± SD
Self-learning	Before the start of the cycle	1.81 ± 0.15
	End of the first cycle	2.01 ± 0.15
	End of the second cycle	4.54 ± 0.41
Interpersonal communication	Before the start of the cycle	2.11 ± 0.11
	End of the first cycle	3.80 ± 0.67
	End of the second cycle	4.80 ± 0.54
A supportive environment	Before the start of the cycle	1.01 ± 0.13
	End of the first cycle	2.30 ± 0.21
	End of the second cycle	4.00 ± 0.83
Encouragement to learning	Before the start of the cycle	1.21 ± 0.17
	End of the first cycle	2.91 ± 0.17
	End of the second cycle	4.03 ± 0.85
Opportunity for feedback	Before the start of the cycle	1.71 ± 0.10
	End of the first cycle	2.62 ± 0.45
	End of the second cycle	3.80 ± 0.69
Creating motivation	Before the start of the cycle	1.31 ± 0.32
	End of the first cycle	3.11 ± 0.14
	End of the second cycle	4.83 ± 0.85
Lifelong learning	Before the start of the cycle	2.01 ± 0.11
	End of the first cycle	3.87 ± 0.24
	End of the second cycle	4.10 ± 0.44

communication. These findings are consistent with existing literature highlighting similar obstacles in nursing education across various contexts. For instance, Younas et al identified that nurse educators in Pakistan perceive challenges such as inadequate feedback mechanisms and ineffective communication as key barriers to effective teaching and learning. This aligns with our findings, suggesting that the absence of constructive feedback impairs students' ability to grasp essential nursing skills and concepts, leading to superficial learning experiences (29). Moreover, Aliafsari Mamaghani et al in their study of Iranian nursing students, emphasized the critical role of the clinical learning environment in shaping students' educational experiences. Their research indicates that ineffective communication and the lack of supportive feedback contribute to students' feelings of inadequacy and disengagement in clinical settings. This further supports our findings that effective communication is vital for fostering a conducive learning atmosphere (30). Similarly, Jaganath et al explored nursing students' perceptions of the clinical learning environment in South Africa and found that challenges such as superficial learning and inadequate feedback significantly impacted students' confidence and skill acquisition. This highlights a common theme across different educational contexts, reinforcing the need for improvements in communication and feedback mechanisms (31). Besides, the review study by Shoja et al on the challenges of clinical education for Iranian nursing students underscored the importance of addressing these barriers to enhance the quality of nursing education. They noted that superficial learning often results from a lack of engagement and effective communication between students and educators, which mirrors the challenges identified in our study (32). In conclusion, the present study contributed to the growing body of literature emphasizing the importance of effective communication and feedback in nursing education. Addressing these challenges can create a more supportive and effective learning environment that promotes deeper understanding and skill acquisition among students. This, in turn, will better prepare them for the complexities of clinical practice and enhance their overall educational experience.

In the present study, after identifying the challenges to effective learning and taking into account the needs of all participants to make changes for improvement, some strategies were developed to make changes in the existing situation. To this end, the facilitator and participants collaboratively designed an action plan grounded in a thorough analysis of strengths, weaknesses, opportunities, and threats, as well as the latest findings in the literature. However, the successful implementation of such plans of action depends on existing capacity, available facilities, and participants' acceptance, conditions that were met in the present study.

The primary aim of action research is not to impose prescriptions derived from other countries and studies, but to develop, implement, and evaluate a plan of action based on the facilities and capacities in the target context and in collaboration with the involved stakeholders to

generate reliable and sustainable results (33). Accordingly, all plans and interventions in this study were tailored to the local context.

The new plan of action demonstrated some success in enhancing effective learning, as evidenced in the initial assessment at the final stage of the first cycle. However, there were still weaknesses and problems that needed to be resolved. During this stage, the facilitator and participants became more aware of the initial problems and tried to find effective solutions. Consequently, the second cycle of action research was initiated. Recognizing that students are the most influential factor in their learning process, engaging them in collaborative strategy development yielded more effective outcomes. The qualitative evaluation in the final stage showed improvements in interpersonal communication, effective feedback, and active learning.

Creating a positive learning environment and fostering effective communication are important for developing students' clinical performance skills, motivation for learning, and successful professional socialization (34). Professional and supportive relationships are key factors of such a positive environment (35). Farzi et al reported that improving relationships between professors and clinical staff, as well as increased participation of clinical nurses in education, contributed to enhanced clinical education (35). Mosslanejad et al also investigated the factors affecting the clinical skills of nursing students and showed that psychosocial factors such as the instructor's personality and their interaction with students, student acceptance, effective communication, and respect, played significant roles in promoting student engagement in skills training (36). Overall, our study reinforces the notion that creating a supportive and communicative educational environment is essential for fostering effective learning and professional development among nursing students. Addressing these factors can enhance the quality of clinical education and better prepare students for their future roles in healthcare.

In line with the paradigm shift from teacher-centered to student-centered education, active learning strategies, including peer learning, have garnered increasing attention (35). Although widely used in medicine, peer learning remains underutilized in nursing (37). It facilitates effective feedback, boosts students' self-confidence in clinical practice, and improves learning in emotional, motor, and cognitive domains (19). Engaging learners in the clinical environment and providing timely, constructive feedback serve as strong motivators for learning. Studies indicate that clinical educators highly value active observation or participation by students in learning opportunities (38). Another study showed that the current clinical education environment in Iran does not create sufficient incentives for developing critical thinking and autonomy among students, highlighting an area for improvement (39). By addressing these gaps, the present study contributed to ongoing efforts to enhance nursing clinical education. We advocate for integrating peer learning and autonomy-based approaches to create educational environments that stimulate critical thinking and promote self-directed learning, approaches that align with contemporary educational paradigms that better prepare nursing students for the complexities of clinical practice.

The incorporation of self-directed learning approaches in nursing curricula helped students in promoting lifelong learning (40). Since nursing education is becoming more complex in terms of acquiring clinical skills, the emerging learning approaches that include self-directed learning are gaining prominence (41). Carlson et al suggested that empowering students through clearly defined learning goals and strategic implementation is more effective for fostering self-directed learning (42). Chuang et al highlighted that effective communication with students is vital for nursing teachers as role models for students (2). Education with a focus on values and respect facilitates the teaching-learning process and socializes students into the nursing profession (2). Hall et al also noted that inadequate communication and support from clinical instructors can diminish student motivation to learn and perform educational activities (43). Our study advocated for the incorporation of self-directed learning strategies and improved communication between educators and students to enhance motivation and engagement in nursing education. Addressing these issues can better prepare nursing students for professional challenges and promote a culture of lifelong learning.

The educational atmosphere in clinical settings also plays a crucial role. A supportive atmosphere, characterized by effective communication with learners and mutual respect, enhances students' self-confidence, facilitates learning in the hospital environment, and increases satisfaction and interest in the clinical environment (44). Previous research suggests that fostering cooperation between nursing schools and clinical staff can create a positive atmosphere conducive to clinical learning (45).

The theoretical study by Nazari Shadekam et al indicated that most graduates perceive their educational methods as exerting a moderate impact on their professional competencies (46). Moreover, adopting student-centered teaching methods can enhance long-term learning, satisfaction, and self-confidence (47, 48).

Validity criteria of action research

Five criteria have been proposed for evaluating the validity of action research approaches (49, 50), which were applied throughout the research process in the present study.

Process validity

In this study, efforts to identify the problems

involved continuous reflection sessions and enhanced communication among participants. Furthermore, triangulation of data and data analysis at the end of the two cycles verified the process validity, confirming that the problem identification and methodological procedures were credible and appropriately executed.

Democratic validity

The nursing students were actively engaged in conducting the study, and the facilitator attempted to enhance their participation by recording all events and taking into account the students' opinions. Moreover, all participants were invited to participate in meetings.

Outcome validity

Outcome validity pertains to the degree to which the study effectively addressed and solved the targeted problems (51). The facilitator increased the validity of the results by adhering to process validity criteria and following the principles of action research to implement effective changes collaboratively with participants. This claim was supported by the positive and satisfactory reports from participants, indicating successful outcomes.

Conclusion

Student participation in the process of learning improvement within the practical component of the nursing principles and skills course contributed to resolving some pertinent challenges. Through reflection, students identified challenges affecting their learning and were able to enhance their skills. The findings showed that engaging students in the learning process, along with improved communication and peer and instructor feedback, resulted in more effective and deeper learning of clinical skills among nursing students. Action research facilitated the identification and mitigation of barriers in the students' learning environment. By reflecting on their experiences, students gained deeper insights into ways to enhance learning. Moreover, their practical knowledge and understanding of clinical practice provided valuable evidence for nursing education. Based on these results, it is evident that including students in the learning improvement process can enhance educational outcomes and serve as an effective resource for future research. The results of this study can inform educational administrators and planners in making changes in the educational environment and curriculum by emphasizing new teaching approaches and highlighting the role of the learner in learning.

Given that the present study was conducted as a research project within a limited timeframe, it was constrained to two scientific cycles. Therefore, continuation into a third cycle of the present action research is recommended. Besides, the small sample size in the quantitative phase posed a limitation, and future studies with larger samples are advised to strengthen the generalizability of the results.

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Competing Interests

The authors declare no conflicts of interest related to this study.

Ethical Approval

This research was approved by the Ethics Committee of Mazandaran University of Medical Sciences with the code of ethics IR.MAZUMS.REC.1401.421

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