Nursing Skills Laboratory as Milieu of Clinical Learning and Practice

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Abstract Objective: The study's objective is to assess the effectiveness of the university nursing skills laboratory if it functions as the milieu of clinical learning and practice. Methods: The research employed a mixed-method approach that included both quantitative and qualitative components. Results: The study revealed that most nursing students are still female and have already long experienced using nursing laboratories. The nursing skills laboratory assists in developing the psychomotor skills of the students (3.34) and builds confidence and overcome fear in performing nursing procedures (3.26). The checklist used in the nursing skills laboratory is essential. The rubrics of the checklist provided accurately measure student skills (3.21); however, it should be based on or designed after the hospital setting (2.86). The respondents stressed that an additional time for an open laboratory hour enhances their nursing skills (3.06.). Some respondents feel the insufficient time to practice specific nursing skills for a particular session (2.78). Respondents stated that the availability of equipment and supplies affects the quality of their nursing skills performance (3.08). There was a significant difference in the assessment of the respondents when the year level was considered. Lastly, respondents stated that the challenges they face in the nursing laboratory are a lack of sufficient equipment and materials and a lack of time to practice the skills they have learned. Conclusions: Based on the study's findings, the nursing skills laboratory should have sufficient equipment and supplies in the simulation to use during the nursing skills demonstration and re-demonstration. Additional time should be given to the students to practice the skills they have learned, and the checklist should be designed after the hospital setting to reduce the risk and ensure patient safety.

Keywords: nursing skills laboratory, clinical learning, clinical practice

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1. Background

Skills laboratory prepares nursing students for their clinical placement and helps them to practice a scenario using the nursing skills countered in their workplace environment. It is described as a practice room, equipped with training facilities offering students in the medical field a safe environment to practice their clinical skills before the actual application. With that, it should be well established as it will support and facilitate students' psychomotor learning. Moreover, the problem may occur if the nursing skills laboratory are not enhanced in the school [1].

Acquiring the necessary skills used for nursing care is an essential part of nursing education's psychomotor skills. However, well-rounded nursing education should be a combination of theory and psychomotor skills. It is not through theory alone that the student will develop the plausible characteristics of a competent nurse. That is why clinical competencies require integrating theory and practice of a real-life scenario honed in the skills laboratory.

Building a mental model for a particular nursing situation create a smooth transition; thus, laboratory exercises and activities are needed to boost nursing student confidence in working with the actual patient. Confidence in performing nursing care is significantly affected by the nursing student's prior knowledge of what he will do and how he will do it. Also, hands-on learning and experience before the actual patient care should take place to acquire such skills. The skills laboratory plays an integral part in overcoming nursing students' fear and anxieties of performing a nursing procedure. Hence this confidence in handling patients may be developed through learning and constant practice in the skill laboratory.

The nursing skills laboratory's teaching and learning process allow students to use the theoretical knowledge they have acquired and assimilate necessary skills to perform techniques correctly. Students need to simulate different steps and techniques in handling different equipment necessary in actual patient care. Therefore, a nursing laboratory shall be designed to provide students
opportunities to handle equipment and develop their competency in performing skills. To achieve such objectives, a nursing skills laboratory should have the necessary system, checklist, scheduling, equipment and supplies, and materials to establish a real-life scenario of a hospital setting and possess the milieu of ideal clinical learning and practice. The system refers to the operational process of how nursing skills are performed in the laboratory. It should meet the objectives of the course-specific for each year level. Also, the nursing skills should have a standard, and the student's performance should be evaluated. As a result, a checklist should be provided to accomplish this. A checklist is a list of nursing skills procedures, how they are performed, and the factors that must be considered. Scheduling is also important, as time should be set aside for learning and practicing nursing skills. Finally, to make the learning more realistic, there should be equipment and supplies available.

Nursing students appreciated repetitive nursing skills practice on the continuous practice and skills that demonstrated improved knowledge and enhanced performance [2]. Contrary to other studies, nursing students' challenges in the clinical setting environment were deficient in practical skills [3]. A student may encounter difficulties in performing procedures in some situations due to the lack of necessary skills. It is vital to consider that each student must have an opportunity to perform a return demonstration to experience the actual learning experience. On the other hand, if the students were unprepared to perform the assigned skills, the faculty would discuss and lecture more time. There will be less time for the student to demonstrate the skills or practice for more proficiency [4].

1.1. Objective of the Study

The study's objective is to assess the effectiveness of the university nursing skills laboratory if it functions as the milieu of clinical learning and practice. It investigates how this nursing skills laboratory serves as the ideal clinical setting for student clinical learning and practice. It also evaluated the significant difference in the respondents' assessment of the nursing skills laboratory as the milieu of clinical learning and practice when grouped according to their gender and year level. Additionally, it determined the challenges they encountered by the respondents in the nursing skills laboratory.

1.2. Research Hypothesis

1. There is no a significant difference in the assessment of the respondents on the nursing skills laboratory as milieu of clinical learning based on their gender.
2. There is no a significant difference in the assessment of the respondents on the nursing skills laboratory as milieu of clinical learning based on their level in different academic.

1.3. Significance of the Study

Confidence and competency in performing the nursing procedure are much affected by the prior knowledge and skills inculcated to the nursing students. To achieve that, fear and anxiety should be addressed first so that the nursing students can perform the nursing procedure without apprehension. With that, clinical learning and practice should first take place in the nursing skills laboratory.

The nursing skill laboratory is a learning ground for all clinical skills. It is an important setting where the nursing students learn nursing procedures and at the same time practice what they have learned without worrying about the risk of harming the patient. A nursing laboratory should provide the necessary equipment, supplies and ensure that it is the ideal milieu for the students to have their clinical practice and learning. It should be somehow near to a real-life setting so that the student can confidently perform nursing procedures in the actual setting.

This study determines the nursing student's assessment of their nursing skills laboratory. It assessed the clinical needs for the practice, the laboratory's strength, and what needs to be improved to be the ideal milieu for nursing students to learn and practice their clinical skills.

2. Methods

2.1. Design

The study used a mixed-method of a quantitative and qualitative approach. For the quantitative, the researchers utilized descriptive evaluative and descriptive comparative. Descriptive evaluative was used in the nursing skills laboratory assessment. The descriptive comparative seeks the significant difference in the respondents' assessment on the nursing skills laboratory as the milieu of clinical learning and practice when group according to their profile. The questionnaire also provided an open-ended question to determine the challenges encountered by the respondents in the nursing skills laboratory, which serves as the qualitative approach of the study.

The researchers designed a researcher-made questionnaire with an open-ended question. The researchers-made questionnaire consists of two (2) parts. Part I investigates the profile of the respondents focusing on their gender and year level only. Part II determined how the respondents assess their nursing skills laboratory as the milieu of clinical learning and practice in system, checklist, scheduling, and equipment and supplies. The respondents utilized the 4 Point-Likert scales.

An open-guided question was also used in the study to determine the problems encountered by the respondents in the nursing skills laboratory. These questions support and give more in-depth analysis as it asks more specific details of the respondents' assessment of their nursing skills laboratory. The instrument was translated into Arabic for easy comprehension, and Cronbach's alpha was used to measure its reliability. Moreover, the researchers conducted a pilot study with thirty (30) respondents not included in the study.

Table 1. Validity and reliability of the instrument

|                        | System | Checklist | Scheduling | Equipment and Supplies |
|------------------------|--------|-----------|------------|------------------------|
| Test of reliability    | 0.974  | 0.959     | 0.917      | 0.901                  |
2.2. Sample and Setting
The study was conducted in one of the Universities in Madinah, Saudi Arabia. The respondents were nursing students who have an ongoing nursing skills lecture and laboratory and already have their clinical duties in the hospital. The total respondents were 287; eighty-five (85) male students and two hundred twenty-three (223) female students. Respondents are from sophomore (level 4), junior (level 5 and 6), and senior (level 8). The respondent population and their levels are from the list of nursing students in the University administration.

2.3. Ethical Considerations
The researchers wrote a letter to the Nursing Ethics Committee for the review of the study. A letter and sample questionnaire and interview were submitted to ensure that the tool will not violate the respondents' rights. After it is approved, the researchers asked the respondents for permission whether they are willing to participate in the study. They signed informed consent after providing a complete explanation of study requirements. The instruments of the study were given after the skills laboratory lecture of the respondents. Those who are absent during the data collection were not included in the study.

3. Results
The frequency and distribution of nursing student’s demographic data demographic profiles are presented in Table 2. Out of two hundred eighty-seven students, most are female (77.4%) and in level 8 (45.3%). The male nursing students are 22.6%, and level 6 has only 40 students.

Table 2. Frequency and distribution of nursing student’s demographic data (n=287)

| Indicators          | Frequency | Percent |
|---------------------|-----------|---------|
| Gender              |           |         |
| Male                | 65        | 22.6    |
| Female              | 222       | 77.4    |
| Total               | 287       | 100.0   |
| Year Level          |           |         |
| 4                   | 60        | 20.9    |
| 5                   | 57        | 19.9    |
| 6                   | 40        | 13.9    |
| 8                   | 130       | 45.3    |
| Total               | 287       | 100.0   |

Table 3. Mean scores of nursing skills laboratory as milieu of clinical learning and practice

| Indicators                                      | Mean  | Std. Deviation | Rank |
|------------------------------------------------|-------|----------------|------|
| **System**                                     |       |                |      |
| 1. It assists in developing psychomotor skills that I will use in the actual scenario. | 3.34  | 0.7665         | 1    |
| 2. It teaches to improve my non-technical skills such as patient communication, prioritization, and management. | 3.15  | 0.8329         | 7    |
| 3. Skills taught in nursing skills laboratory are aligned to the nursing theory concept, so it is easy to apply. | 3.16  | 0.8515         | 6    |
| 4. It meets the course objective specific to my year level. | 3.18  | 0.8814         | 4    |
| 5. I learned the required nursing skills that I need in the actual setting. | 3.17  | 0.8874         | 5    |
| 6. It serves as the right environment for nursing skills learning and practice. | 3.09  | 0.8427         | 9    |
| 7. Provide nursing skills procedure appropriate for my level. | 3.11  | 0.8817         | 8    |
| 8. It offers a hands-on learning before the actual patient care. | 3.24  | 0.8814         | 3    |
| 9. Builds confidence and overcome fear in performing nursing procedures. | 3.26  | 0.8387         | 2    |
| 10. Provide opportunity for each student to perform the skills taught in the laboratory. | 3.08  | 0.9645         | 10   |
| **Grand mean**                                  | 3.18  | 0.6686         |      |
| **Checklist**                                   |       |                |      |
| 1. It is clear and easy to understand.          | 3.03  | 0.9063         | 6    |
| 2. It is easy to follow and execute.            | 3.08  | 0.8427         | 3    |
| 3. It is concise, focusing on the needed skills for a specific procedure. | 3.05  | 0.8963         | 4    |
| 4. It accurately measures my nursing skills.    | 3.04  | 0.8966         | 5    |
| 5. It is the same with the real scenario in the clinical or hospital setting. | 2.86  | 0.9405         | 7    |
| 6. The rubrics of the checklist is clearly stated, and it is fair. | 3.11  | 0.9499         | 2    |
| 7. The rubrics of the checklist provided accurately measure my skills. | 3.21  | 1.5489         | 1    |
| **Grand mean**                                  | 3.05  | 0.7887         |      |
| **Scheduling**                                  |       |                |      |
| 1. Open laboratory hours enhances my nursing skills. | 3.06  | 0.9570         | 1    |
| 2. The time is sufficient to practice specific nursing skills for a particular session. | 2.78  | 0.9932         | 5    |
| 3. There is an available faculty to assist during practice in open laboratory hours. | 2.94  | 0.9515         | 4    |
| 4. Provide an opportunity to enhance nursing skills through scheduled practice with peers or clinical instructor/s. | 3.02  | 0.8638         | 3    |
| 5. Scheduled practice improves my confidence and competency in performing nursing skills. | 3.03  | 0.9732         | 2    |
| **Grand mean**                                  | 2.97  | 0.8004         |      |
| **Equipment and Supplies**                     |       |                |      |
| 1. Equipment is functioning and ensure learning opportunities. | 2.8432 | 1.0625         | 4    |
| 2. It is readily available for simulation.      | 3.0035 | 0.9426         | 2    |
| 3. Provide realism of nursing skills practice.  | 2.9686 | 0.8839         | 3    |
| 4. There are sufficient equipment and supplies in the simulation that can be used during the nursing skills demonstration and re-demonstration. | 2.7038 | 0.9886         | 5    |
| 5. The availability of equipment and supplies affect the quality of my nursing skills performance. | 3.0801 | 0.9499         | 1    |
| **Grand mean**                                  | 2.9199 | 0.7984         |      |
Table 3 depicts the mean scores of the nursing skills laboratory as the milieu of clinical learning and practice. It is sorted into four categories: system, checklist, scheduling, equipment, and supplies.

Based on the system category, the students were told that the psychomotor skills would be developed, which can be used in real situations. It received the highest mean score of 3.34 (SD=0.7665). Furthermore, it builds confidence and overcomes fear in performing nursing procedures (WM=3.26, SD=0.8387). However, the study revealed that providing an opportunity for each student to perform the skills taught in the laboratory has the lowest mean of 3.08 (SD=0.9645). Overall, the system category is an essential factor in ensuring the nursing skills laboratory's effectiveness as the milieu of clinical learning and practice (WM=3.18, SD=0.6686).

Regarding the checklists used in the laboratory, students agreed that the rubrics of the checklist accurately measure their skills with the highest mean of 3.21(SD=1.5489). It is also clearly stated and fair (WM=3.11, SD=0.9499). Although, they scored low (WM=2.86, SD=0.9405) when asked if it is the same with the actual clinical or hospital setting scenario.

Concerning the nursing laboratory scheduling, the students revealed that an open laboratory hour enhances their nursing skills with 3.06(SD=0.9570). They agreed that a scheduled practice improves their confidence and competency (WM=3.03, SD=0.9732). However, they feel the time is not enough to practice specific nursing skills for a particular session, with the lowest mean of 2.78.

As for laboratory equipment and supplies, the study showed that the availability of equipment and supplies affects the quality of their nursing skills performance (WM=3.08, SD=0.9499). It is readily available for simulation (WM=3.0035, SD=0.9426); it provides realism of nursing practice (WM=2.9686, SD=0.8839); and ensures learning opportunities (WM=2.8432, SD=1.0625). However, the student stressed the importance of sufficient equipment and supplies in the simulation to use during the nursing skills demonstration and re-demonstration (WM=2.70, SD=0.9886).

Table 4 represents the Relationship between nursing student’s demographic profile and nursing skills laboratory categories such as system, checklist, scheduling, and equipment and supplies. In terms of gender and system (p=0.775), checklist (p=0.845), scheduling (p=0.685), and equipment and supplies (p=0.870) are more significant than 0.05 level of significance, the null hypothesis is accepted; therefore, there is no significant difference.

However, with regards to level and system (p=0.0000), checklist (0.0000), scheduling (p=0.0000), and equipment and supplies (p=0.0000) less than 0.05 level of significance, the null hypothesis are rejected. Hence, there is a significant difference.

4. Discussion

Most of the respondents in the study are female and in level 8. It implies that most of the nursing students are still female and have extensive experience with nursing laboratories. The study revealed that the nursing skills laboratory assists in developing the psychomotor skills of the students that they will use in the actual scenario. It can be concluded that nursing laboratories play a significant part in improving and developing nursing skills before exposing students to the real setting. Moreover, it enhances the student's psychomotor skills that will be later used in the patient. Clinical laboratories had become an important place in which nursing students can develop their practical skills through simulation exercises [5]. It provides a safe environment to acquire initial psychomotor skills while offering opportunities to socialize students into a nurse's professional role [6].

Nursing skills laboratories also build confidence and overcome the fear in performing the nursing procedure of the student. It can be implied that nursing skills practice in the laboratory enhances student confidence and overcome fear in performing skills. Based on a study, students practicing in simulation labs are more confident [7]. These findings suggest that if students can participate in a level-appropriate, traditional, or simulated laboratory experience, their self-confidence may increase due to active participation and the ability to practice new skills in a supportive environment. Therefore, learning laboratory is essential to build professional confidence that graduates must begin their nursing careers [6].

On the other hand, providing equal opportunity for each student to perform and practice a skill is also suggested to enhance their nursing skills. The current study recommends creating an equal opportunity for all the students to practice nursing skills. Students who have practiced more laboratory learning skills are more likely to adapt to the clinical setting. Nonetheless, it can be presumed that the system or operational process is an essential factor in ensuring the nursing skills laboratory's effectiveness as the milieu of clinical learning and practice.

A checklist for a nursing skills procedure is another point to consider. A checklist with rubrics accurately measures nursing skills according to the students. It sets ideals for correctly and safely performing nursing procedures type. Like any evaluation tool, rubrics are helpful for some purposes. Rubrics' primary purpose is to evaluate student performance. It sets standards, curriculum goals, and educational goals and goals for what performance students should do. Effective rubrics show students how they know, and to what extent their performance matches each important criterion. It can also show students what their next steps should be to improve the quality of their performance [8].
However, students expressed that it should be designed after the hospital setting. The open laboratory is another factor to consider in laboratory practice and learning. The checklist should be based on or designed after the hospital setting. It reduces risks and improves patient safety. It will also assist students in being more self-assured and less stressed when dealing with the skill procedures they will encounter. Checklists that are well-designed standardize what, when, how, and by whom interventions are performed and reduce errors in routine and emergencies. It provides a general framework for ensuring compliance with clinical or procedural requirements [9]. Checklists, on the other hand, are not a cure-all for medical errors. Any system can either complicate or assist; the design of the checklist determines its utility. A poorly designed or overly lengthy checklist can detract from performance just as easily as a well-designed one can boost it [10].

An additional time to practice in the laboratory revealed that it enhances student nursing skills. The open laboratory allows the student to practice nursing skills or procedures aside from their regular laboratory schedule. The laboratory-based open project can effectively improve teaching and laboratory service, motivate students' learning potential, and strengthen students' emergency and critical care abilities [11]. It is also effective in boosting nursing students' self-esteem and skill competency [12]. Moreover, insufficient time to practice specific nursing skills for a particular session may have a negative effect. To be able to optimize the effect of training and skills, practice is required. It is a way of becoming proficient in a new skill or behavior. Factors such as a lack of opportunities for hands-on practice can harm student performance in clinical practice [13]. Nursing students’ value repetitive nursing skill practice. One study showed that the practice of hand skills demonstrated improved students' knowledge and performance. They learned the value of repeatedly practicing as a tool for providing safe and ethical care to patients [14].

Lastly, every nursing laboratory requires a certain amount of equipment and supplies. When performing skills or procedures, it is used as a guide or a tool. For a realistic and safe procedure, equipment and supplies should be present when performing specific nursing skills. With the current study results, the availability of equipment and supplies affects the quality of nursing skills performance. It has been said that the platform of laboratory practices is comprised of laboratory equipment, materials, and facilities [15]. It is possible that teaching and learning practical work in the absence of a well-equipped laboratory may impede students' learning [16].

Having sufficient equipment and supplies in the simulation to use during the nursing skills demonstration and re-demonstration draws a critical point. Equipment shortages and unavailability have a negative effect [17]. To provide quality nursing care, nurses should have functional medical equipment. To provide quality nursing care, nurses should have functional medical equipment. Because of a lack of essential equipment and supplies for nursing care procedures, students avoid the clinical practice. According to the students, clinical practice provides better opportunities and a more conducive environment for applying theory to practice [18].

Respondent's gender does not affect the student's clinical learning and practices as they have the same assessment of their nursing skills laboratory. However, there is a significant difference in the year level of the students and system, checklist, scheduling, and equipment and supplies. This result could be attributed to various factors, including the fact that each year level has a different course with different nursing procedures to perform. Furthermore, the laboratory experience of level 8 students is different from other lower levels. Although there is no clear literature that discusses the difference between level 4 and level 8 students in terms of nursing skills laboratory use, it is possible to conclude that level 8 students have more clinical practice experience in the laboratory than lower-level students.

Clinical practice allows students to apply their theoretical knowledge to delivering actual health care [18]. Therefore, the higher the student's level, the more extensive their clinical practice and learning in the laboratory in terms of its system, checklist, scheduling, and equipment and supplies. Furthermore, the student viewpoint on laboratory experiences revealed varying information based on individual experience.

5. Limitations

This study's sample size is its drawback. These factors influence data collection, interpretation, and, eventually, study results. The study excluded respondents who were not present in the university during the study period.

6. Challenges in the Nursing Skills Laboratory

Based on the responses on the challenges of in the nursing skills laboratory during clinical learning and practice along with its system, checklist, scheduling, and equipment and supplies. Identifying the challenges these students face in the clinical learning environment assists in resolving issues and contributing to their professional development and survival [19]. Failure to recognize the difficulties and issues students face in the clinical learning setting prevents them from learning and growing effectively [20]. Respondents expressed the need to add more equipment and supplies for practice. Working in a simulation lab is the closest one can get to work with actual patients. Skill lab uses a simple task trainer, a high-fidelity medical manikin, or a classmate. (Marquette nursing university). Equipment and supplies are part of the nursing laboratory practice so that the skills are becoming realistic. With sufficient supplies, the students can practice more in a structured environment of a particular skill, performing it more safely and correctly. This response may also mean that there is a need to add new or updated equipment. Nowadays, technology is becoming more tightly integrated into patient care as it advances [21]. That is why updated equipment is needed to practice in a real scenario without fear of committing errors or harming the patient. On-campus laboratories with simulation technologies and medical mannequins can provide valuable and satisfying immersive opportunities for gaining the trust required to treat actual "live" patients. They provide students with completely immersive learning environments that include visual, auditory, and tactile learning [22].
Another challenges the student faced in the nursing laboratory is not having enough time to practice the skills that have been taught. Students express concern and anxiety about their perceived lack of practice preparation due to a lack of time. Being a trained nurse necessitates mastery of clinical skills learning. Because clinical skills training in clinical practice is limited, undergraduate training at clinical skills laboratories is an integral part of nursing education [23]. The findings support the need to give more time to the student to practice a skill.

It is a fact that practical skills take time to develop, and students gain more confidence and mastery when they are given a more hands-on opportunity to practice skills. Learning became memorable because of hands-on opportunities related to practical skills.

7. Conclusions

The study findings revealed that the nursing skills laboratory assists in developing the students’ psychomotor skills, build confidence, and overcome fear in performing nursing procedures. The checklist used in the nursing skills laboratory is essential. The rubrics of the checklist provided accurate measurement of student skills; however, it should be based on or designed after the hospital setting to reduce the risk and ensure patient safety.

Additional time for an open laboratory hour enhances their nursing skills. However, allotting sufficient time to practice specific nursing skills for a particular session needs to be addressed. The nursing skills laboratory should also have sufficient equipment and supplies in the simulation to use during the nursing skills demonstration and re-demonstration. Thus, the availability of equipment and supplies affects the quality of their nursing skills performance.

The gender of a student has no bearing on their clinical learning and practice. The underlying explanation may be that both male and female students have the same nursing skills laboratory assessment. Nevertheless, when the academic year level is considered, there is a significant difference in the responses. It may be due to various reasons, such as the fact that each year level has a unique course with unique nursing procedures to complete. Furthermore, level 8 students’ laboratory experience differs from that of students in lower levels.

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