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Impact of Laboratory Hours on Improving Practical Skills and Clinical Understanding of General Nursing Students at Aldent University

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ABSTRACT

Laboratory hours play a crucial role in developing the practical skills and clinical understanding of nursing students. This study aimed to assess the impact of laboratory hours on improving nursing students' practical skills and clinical understanding at Aldent University. A total of 102 first-year Bachelor of Nursing students participated in the study, which was conducted between October and December 2024. The students' perceptions were measured using a structured survey with a Likert scale. The results indicate that the majority of students highly value laboratory hours, reporting improvements in practical skills and clinical understanding. Notably, the study found a positive correlation between the availability of equipment and the improvement of practical skills. Furthermore, most students reported higher satisfaction with laboratory hours than with theoretical sessions, though a concern regarding insufficient practice time emerged. This study highlights the importance of laboratory hours for nursing education and suggests improvements in the organization and availability of resources.

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Introduction

In nursing education, bridging the gap between theoretical knowledge and practical application is essential for the preparation of competent healthcare professionals. Laboratory hours are an integral component of nursing curricula, providing students with opportunities to develop practical skills and clinical understanding necessary for professional practice [1]. These hands-on experiences enhance students' confidence, technical competence, and clinical judgment, and are fundamental in preparing them for the challenges of real-life clinical settings [2]. While existing research acknowledges the importance of laboratory experiences, there is limited focus on how laboratory hours specifically impact nursing students' preparedness at Aldent University.

The primary aim of this study was to assess how laboratory hours influence the practical skills and clinical understanding of nursing students at Aldent University. Additionally, the study sought to examine the relationship between the availability of resources (such as equipment and manikins) and students' improvement in clinical skills, as well as the level of student engagement in these laboratory sessions. The hypothesis driving this study is that active participation in laboratory hours will significantly enhance nursing students' clinical abilities and preparedness for professional practice.

Literature Review

Hands-on laboratory experiences are widely regarded as essential for nursing education, providing students with the opportunity to practice nursing procedures and clinical skills in a controlled and supervised environment. Research has shown that these experiences are crucial for improving students' technical competence and clinical reasoning. According to Benner et al., experiential learning in clinical settings enables students to better understand theoretical concepts and develop essential skills for patient care [1]. The importance of practical exposure in clinical learning environments has been well documented, with studies highlighting the role of simulation and skill-based training in improving student outcomes [2].

Cant and Cooper conducted a systematic review highlighting the importance of simulation and practical training in nursing education [2]. Their study revealed that simulation-based education enhances nursing students' clinical competence and decision-making skills. Similarly, Cavanagh et al. reported that structured laboratory hours improve students' readiness for clinical practice, enabling them to feel more confident and capable when transitioning to real-life clinical environments [3].

However, the availability of equipment and resources in laboratory settings has been identified as a significant factor influencing the effectiveness of laboratory hours. McCoy and Thelen argued that well-equipped laboratories provide more opportunities for effective learning, enabling students to practice a wider range of nursing skills [4]. In contrast, a lack of sufficient resources can hinder skill development and limit students' ability to engage in hands-on practice.

Moreover, peer learning and collaboration in laboratory sessions also play an important role in skill development. Hayes et al. emphasized that interactive learning, such as collaborative practice in laboratory settings, fosters a deeper understanding of nursing concepts and enhances students' confidence in applying their knowledge [5].

Materials and Methods

This study involved a group of 102 first-year Bachelor of Nursing students at Aldent University, selected from a total population of 120 students. A convenience sampling method was used to select participants. The data were collected using a structured survey, which included questions on students' perceptions of laboratory hours, the availability of resources, and their perceived improvements in practical skills and clinical understanding. The survey used a Likert scale to assess students' ratings of various aspects, such as the availability of equipment, learning from peers, and preparation for professional practice.

The study was conducted between October and December 2024, and the variables considered were:

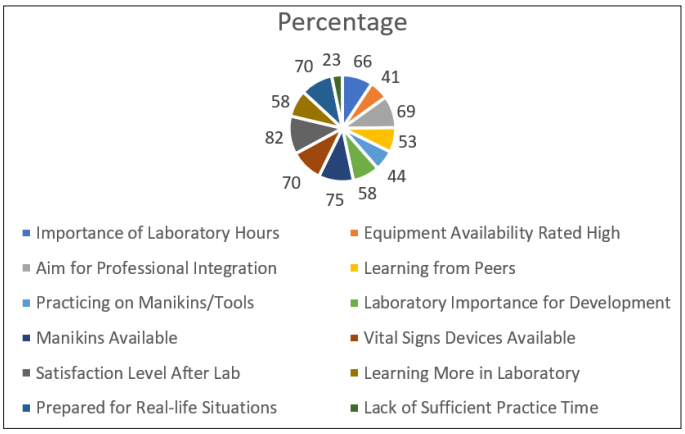
- **Independent Variable:** Laboratory hours (time spent in laboratory practice, availability of equipment, and level of student engagement).
- **Dependent Variables:** Practical skills improvement, clinical understanding, and professional preparedness.

The study hypothesis was that active participation in laboratory hours would lead to significant improvements in students' practical skills and clinical understanding. Statistical analyses were performed using descriptive statistics, correlation analyses, and regression models to explore the relationships between the availability of resources, student participation, and skill improvement.

Results

The study revealed some key findings regarding the role and effectiveness of laboratory hours in preparing nursing students for professional practice:

- 66% of students rated the importance of laboratory hours in developing practical skills and clinical understanding as highly valuable. This finding aligns with research that highlights the importance of hands-on learning for nursing students' clinical competence [2,3].
- 41% of students rated the availability of laboratory equipment and materials as high, while 34% rated them as average. These results support previous studies emphasizing the importance of resource availability for effective learning in nursing education [4].
- 69% of students identified the primary aim of laboratory hours as preparation for integration into professional practice, while 30% saw it as improving technical and practical skills. This is consistent with findings that show the importance of linking practical experience to clinical practice for nursing students [1,6].
- 53% of students reported learning from their peers during laboratory hours, while 44% said they only practiced on manikins and simulation tools. This suggests that peer-assisted learning plays a significant role in skill development, which is supported by studies on interactive learning methods [5].
- 75% of students reported that manikins were available for practice, while 70% confirmed the availability of vital signs measurement devices. This shows that adequate resources are essential for effective practical training [4].
- 82% of students expressed high satisfaction with laboratory hours, reporting that they felt well-prepared for real-life nursing practice. This supports research indicating that students who engage in practical training report higher levels of self-efficacy [7].
- However, 23% of students expressed concerns about the lack of sufficient time for practice, suggesting a need for improvements in the organization of laboratory hours to maximize learning outcomes [6].



Link Between Variables

Correlation analysis showed a positive relationship between the availability of equipment and the improvement of practical skills. Students who reported higher levels of equipment availability showed significant improvements in their practical skills compared to those who reported lower levels of equipment availability ($r = 0.65$, $p < 0.05$). Moreover, regression analysis indicated that active participation in laboratory hours was a strong predictor of the improvement in practical skills ($\beta = 0.72$, $p < 0.01$), reinforcing the notion that active engagement is crucial for developing clinical competence [1,2].

Discussion

The findings of this study align with existing literature on the role of laboratory experiences in nursing education. Benner et al. emphasized the importance of experiential learning in bridging the gap between theoretical knowledge and practical application in nursing practice [1]. Similarly, Cant and Cooper noted that practical training significantly enhances clinical competence and student confidence [2]. The results from this study show that 66% of students valued laboratory hours for developing practical skills, which is consistent with the findings of Cavanagh et al., who found that structured laboratory sessions improve student readiness for clinical environments [3].

Furthermore, our study supports McCoy and Thelen's argument that well-resourced laboratories are essential for effective skill acquisition, as a higher level of equipment availability correlated with improved practical skills among students [4]. Patterson et al. also suggest that adequate resources and support in the laboratory

environment are critical for optimizing the learning experience in nursing education.

Additionally, 58% of students in our study reported that they learned more in the laboratory than in lectures, supporting Hayes et al., who argued that interactive learning fosters deeper understanding and engagement in nursing education [5]. The 82% satisfaction rate after laboratory hours also aligns with Taylor et al., who highlighted that student engaged in hands-on practice report greater self-efficacy [7].

However, a key challenge identified by 23% of students was the lack of sufficient practice time, which echoes the concerns raised by Coyle and Morrow regarding the need for extended laboratory hours to enhance skill mastery [6]. This gap indicates the necessity of optimizing the organization and duration of laboratory hours to maximize student learning outcomes. According to Flin and Maran, effective risk perception and decision-making during hands-on experiences are also essential for student success in clinical settings [8-15].

Conclusions

Based on the findings of this study, it is evident that laboratory hours play a critical role in enhancing the practical skills and clinical understanding of nursing students. Active participation in laboratory hours significantly improves students' preparation for real-life clinical challenges. However, improvements in the organization of laboratory hours are necessary to ensure that students receive adequate time for practice and skill development, leading to better outcomes in nursing education.

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Ethical Statement

This research did not involve human participants, animal subjects, or any material that requires ethical approval.

Compliance with Information

This study did not involve human participants, and therefore, no compliance was required.

Author Contributions

- Mirela Tushe: Conceptualization, Methodology, Writing
- Ledion Lybesha: Review and Editing
- Megilda Rrushi: Review and Editing

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