

Teaching Modalities and Their Effect on Nursing Students Knowledge and Satisfactions

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Abstract

Nursing education plays a crucial role in preparing healthcare professionals to provide high-quality care in different healthcare settings. The acquisition of knowledge and the development of nursing education, be it online or face-to-face, is crucial to ensure that students are competent enough to address the complex challenges of the healthcare work environment. Aim: The primary aim of the study is to compare the knowledge and satisfaction of students pursuing online and lecture-based diploma courses on adult health nursing studies in South Jordan. Methods: Quantitative research was employed, involving a sample from 200 diploma nursing students enrolled across 3 nursing institutions across South Jordan. Two questionnaires were conducted to compare knowledge derived from the syllabus and the content of the courses, and comparison of satisfaction of the course by different teaching styles. A set of multiple-choice questions were asked to students to examine their knowledge about courses and make subsequent comparisons between lecture-based and online courses. Data was collected through surveys to gauge their knowledge along with their satisfaction levels, to evaluate their perceptions about learning experiences. Results: The findings indicated that 79% of students rated face-to-face learning above average, whereas the online learning group showed lower scores amongst the two with 22% reported good results. Also, satisfaction surveys revealed that 69% of students in the face-to-face learning group reported higher levels of satisfaction, primarily because of the feasibility of direct interaction with instructors and peers in the learning environment. Conclusion: The demand for nursing professionals in Jordan continues to grow, entailing the need to explore innovative approaches to education that effectively facilitate knowledge acquisition. Even though online lectures are important for students, the ones attending face-to-face lectures provided more competency and depth in their knowledge when contested for.

Keywords: teaching modalities, e-learning, nursing students, knowledge, satisfaction, South Jordan

1. Introduction

1.1 Student Perspectives in Nursing Education

The healthcare industry, with its ever-growing demands, necessitates a dynamic approach to nursing education. Jordan, like many other countries, has witnessed a surge in popularity of both offline and online nursing programs, catering to diverse student needs. While existing research (Kasem & Abuhammad, 2022; Al-Dweik et al., 2023) has explored the advantages and disadvantages of these delivery methods, a critical gap remains: understanding student perspectives on learning within offline and online environments.

Student-Centered Research

Nursing education in Jordan has seen significant advancements in recent years, particularly with the rise of online learning platforms. Existing research in Jordan has focused on various aspects of nursing education, including simulation-based training for pediatric basic life support (PBLs) skills (Kasem & Abuhammad, 2022), online teaching methodologies (Al-Dweik et al., 2023), pain management knowledge and attitudes (Al Khalailah & Al Qadire, 2013), midwifery education for male students (Mrayan et al., 2020), and student stress and coping mechanisms during psychiatric/mental health clinical experiences (Al-Zayyat & Al-Gamal, 2014). However, a crucial gap exists in studies comparing the effectiveness of online and offline nursing programs in South Jordan.

This study aims to address this gap by measuring and comparing student knowledge acquisition and satisfaction

levels when exposed to different teaching modalities within Bachelor of Nursing programs. By analyzing the effectiveness of online and offline approaches in terms of knowledge retention and student experience, this research seeks to contribute valuable insights to the ongoing discussion on optimizing nursing education in Jordan.

Teaching Modalities and Nursing Student Outcomes

The effectiveness of teaching modalities in nursing education has been a topic of ongoing research due to the ever-evolving healthcare landscape and the need for well-prepared nurses. This review examines the existing literature on the impact of different teaching modalities, including face-to-face learning, online learning, and blended learning approaches, on nursing students' knowledge acquisition and satisfaction.

Traditional Face-to-Face Learning:

Face-to-face learning remains a cornerstone of nursing education, fostering deep understanding and knowledge retention through interactive experiences (Al-Dweik et al., 2023). In-person interactions allow for active learning strategies like case studies and simulations, enhancing critical thinking and problem-solving skills crucial for complex nursing concepts (Basheti et al., 2021). Face-to-face environments also promote a positive learning environment and a sense of community, which contribute to student motivation and engagement (Mrayyan, 2007; Jarrah, 2013).

The Rise of Online Learning in Nursing Education

Online learning offers flexibility and accessibility, catering to diverse student needs and preferences. However, research suggests challenges associated with knowledge acquisition in online nursing programs (Smith et al., 2009; Langowski, 2005). Assessing practical skills and maintaining student engagement can be difficult in asynchronous online environments. Additionally, online learning may not effectively address the development of essential communication and interpersonal skills crucial for nursing practice (Mancuso-Murphy, 2007).

Blended Learning: A Promising Synergy

Blended learning approaches, combining face-to-face and online components, have emerged as a potential solution. These approaches leverage the strengths of both modalities, allowing for a more comprehensive learning experience (Basheti et al., 2021). Face-to-face sessions can provide a foundation for theoretical knowledge and clinical skills development, while online platforms can be used for asynchronous learning activities and supplemental resources (Gallagher-Lepak et al., 2009).

Cultural Considerations in Teaching Modalities

The effectiveness of teaching modalities may vary depending on cultural context. For instance, some cultures may favor the social interaction and active participation fostered by face-to-face learning, while others may be more comfortable with the independent learning style of online environments (Al-Hassan, 2014).

1.2 Aim of the Study

The purpose of this study is to measure and compare the knowledge derived from the syllabus and the content of the course and compare the satisfaction of doing the course by using different teaching styles.

1.3 Hypotheses

Hypotheses: there is a difference in the level of knowledge and satisfaction of Bachelor nursing students between Lecture-based learning and online learning.

Null Hypotheses: there is no difference in the level of knowledge and satisfaction of Bachelor nursing students between Lecture-based learning and online learning.

2. Method

2.1 The Study Design

The study in consideration is an objective topic that requires an understanding of comprehensive knowledge and is aimed at comparing offline and online learning in adult health nursing courses. This is a focused study that necessitates the critical importance of empirical evidence to understand the topic. Positivism will be adopted to explain and quantify the study, thereby gaining responses in large numbers to dictate and create a rationale. Therefore, quantitative research was adopted to gather data from professionals who have studied nursing courses online as well as offline.

2.2 Participants

A total of 200 nursing students were approached to gain a cognizance of their preferred learning route by sending out surveys comprising of questions that directly address the research objectives. This comprised of 100 nurses each from the two fields. The following schematic shows the research methodology in this study (fig.1):

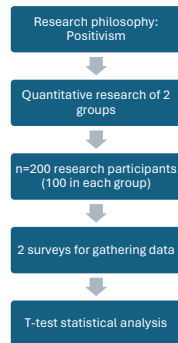


Figure 1. Outline of Methodology in This Study

The above figure shows the steps that will be taken by this study to gather data. Furthermore, the research will adhere to ethical considerations to respect the privacy of research participants.

2.3 Variables

Dependent: knowledge acquisition and satisfaction of Bachelor nursing students.

Independent: using different teaching styles

2.4 Data Collection

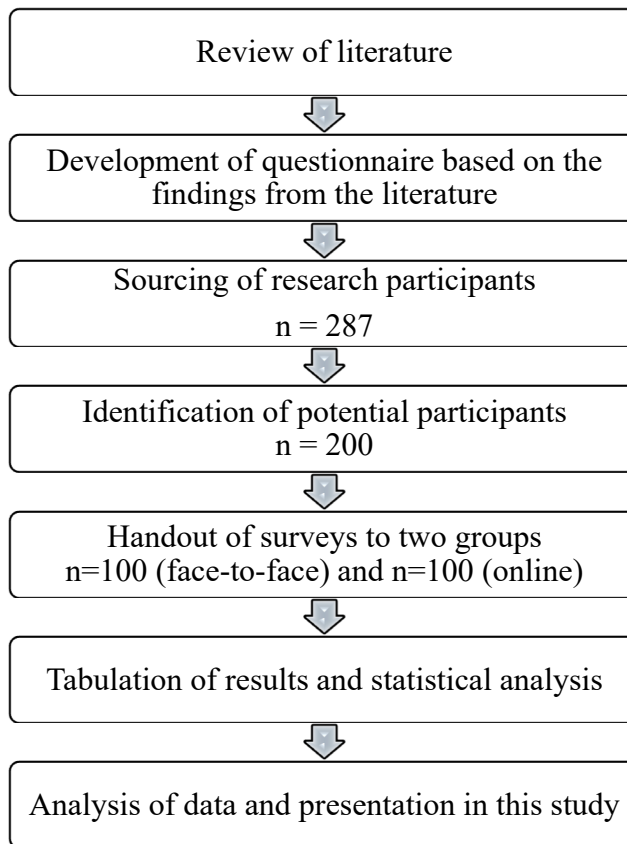


Figure 2. Methodology in this Study

Quantitative research was adopted to gather data from 200 nursing students across 3 healthcare institutions in Southern Jordan area by conducting two surveys (fig.2): Positivism was adopted to gain a cognizance of objective information and answer the research gap by devising a questionnaire comprising of probing questions that give an indication of ‘satisfaction’ amongst students, ‘knowledge development’ and ‘testing methods’ to understand and compare online and offline learning. The students were sourced from mutual sources, reaching out to them through emails and WhatsApp with questionnaire that was developed on Google Forms. Sampling was simple, random sampling based on the assumption that there is no infinite sampling. The results have been tabulated and analysed using t-test statistical analysis; the graphs and figures are included in the Appendix section of this study.

The study conducted a literature review followed by the development of a questionnaire that comprised of comprehensive questions for two surveys. These surveys were handed out to over 287 participants, of which exact 200 responses were received (69.68% ratio), with 100 each on offline and online learning systems. The results were discussed in the next section which determined if there were differences between students before commencement and after completion of their courses. Both the groups studied for 2 days in a week for 16 weeks, where online courses were on every Sunday and Tuesday from 1900 hours to 2030 hours and face to face courses were conducted every Monday and Wednesday from 1900 hours to 2130 hours. A total of 32 lectures distributed across a span of 16 weeks. As an example, 29 theoretical multiple-choice questions were asked to both groups having 4 options. They are included in the results sections.

2.5 Data Analysis

The two data sets here include the two groups, that is, one for knowledge derived from the syllabus and the content of the course, and the second concerning the satisfaction of doing the course by using different teaching styles. First the standard deviation was identified from each data set along with mean. T-test value was calculated. Once the T value is determined, the t- distribution table is used to compare and determine the p-value.

3. Results

The results shows (fig, 3) that about 65% students had good and excellent results from their face-to-face courses after answering questions to tests, whereas just 16% students had the same results in their online courses. The results also noted that approx. 23% of students scored below average in their online courses. Therefore, the post-test knowledge amongst students was better in face-to-face learning. However, the counterpart scored less with 69% average satisfaction and only 23% noting good or excellent results on a Likert scale. The t-test showed P value to be 0.002 and the confidence interval of this difference was between 0.679 to 2.454.

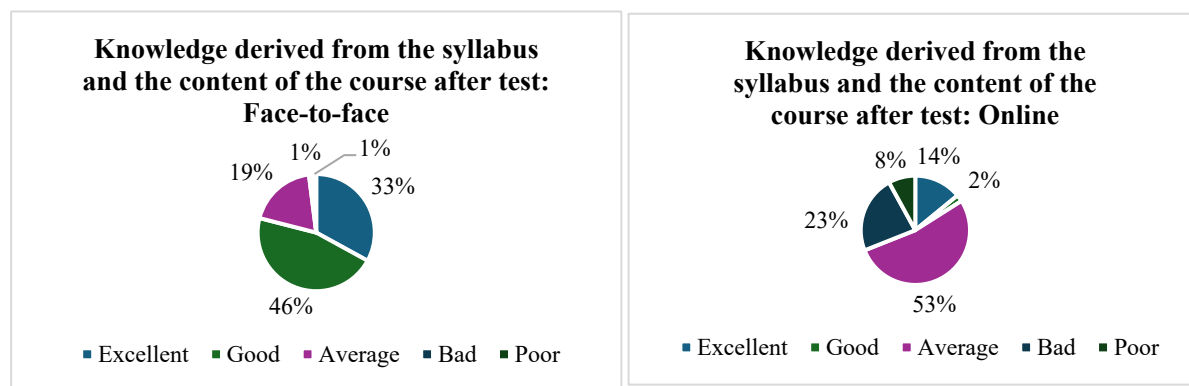


Figure 3. Knowledge Derived from the Syllabus and the Content of the Course after Test

The fundamental basis for analysis in this study was the main research objective, that is, satisfaction of doing course before tests amongst students who opted for offline or face-to-face and online courses in adult nursing studies. The figure below shows the results from the survey.

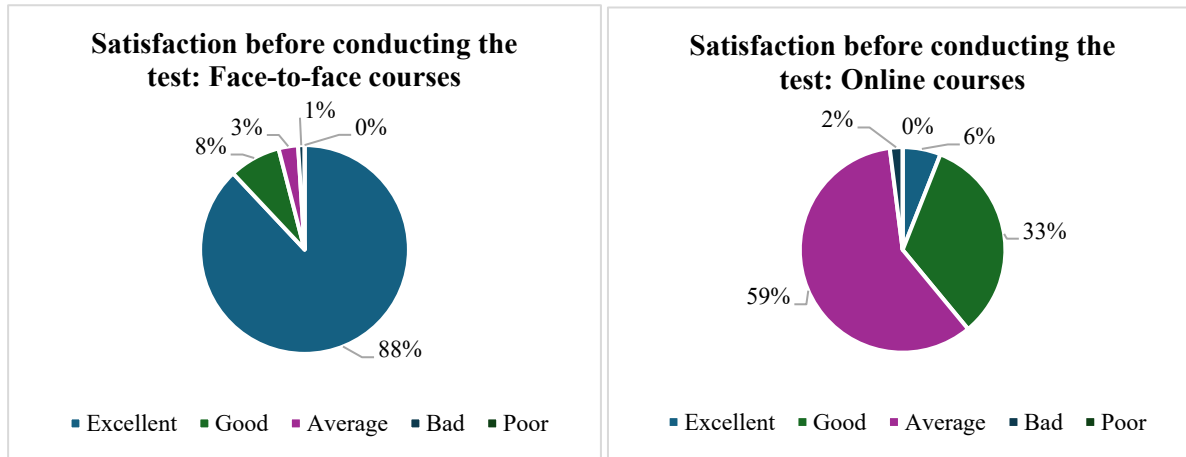


Figure 4. Comparison of Satisfaction of Students before Conducting Tests

The above results (fig.,4): compare the questions asked before satisfaction amongst students between the two groups, that is, offline learning and online learning ones. For most students, about 88% satisfaction was displayed who appeared face-to-face, whereas the other groups had an average satisfaction score of 59%. Less than 10% overall poor reviews or satisfaction was identified face-to-face learning group, whereas just about 39% noted online courses to be good or excellent. The t-test value when compared before asking questions for satisfaction between the two groups is 4, whereas the two-tailed P value equals 0.0013. By conventional criteria, this difference is very statistically significant between the two groups. 95% confidence interval of this difference is 0.742 to 2.458.

The results below show the satisfaction of doing courses using different teaching styles amongst the two groups.

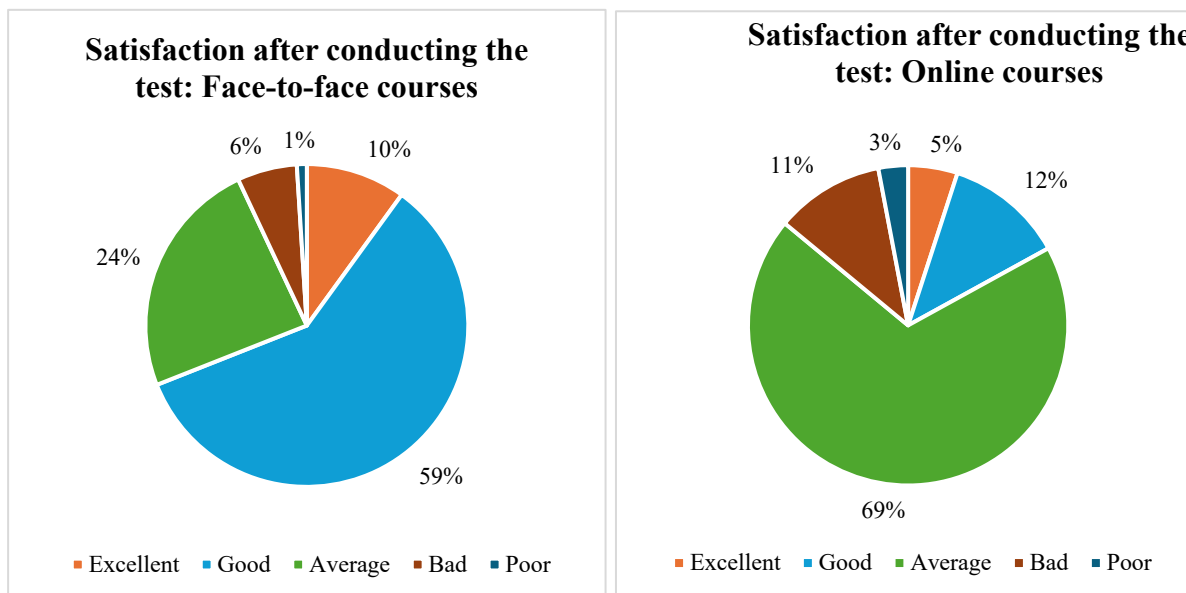


Figure 5. Satisfaction after Conducting the Tests

About 59% of the total students felt that the face-to-face course was good and about 10% noted excellent reviews (fig5): Most students had above average satisfaction score to give to the face-to-face courses after reviewing every question. However, their counterpart scored less with 69% average satisfaction and only 23% noting good or excellent results on a Likert scale. The t-test showed P value to be 0.001 and the confidence interval of this difference was between 1.220 to 2.580. t value is 5.9941, and standard error of difference is 0.317.

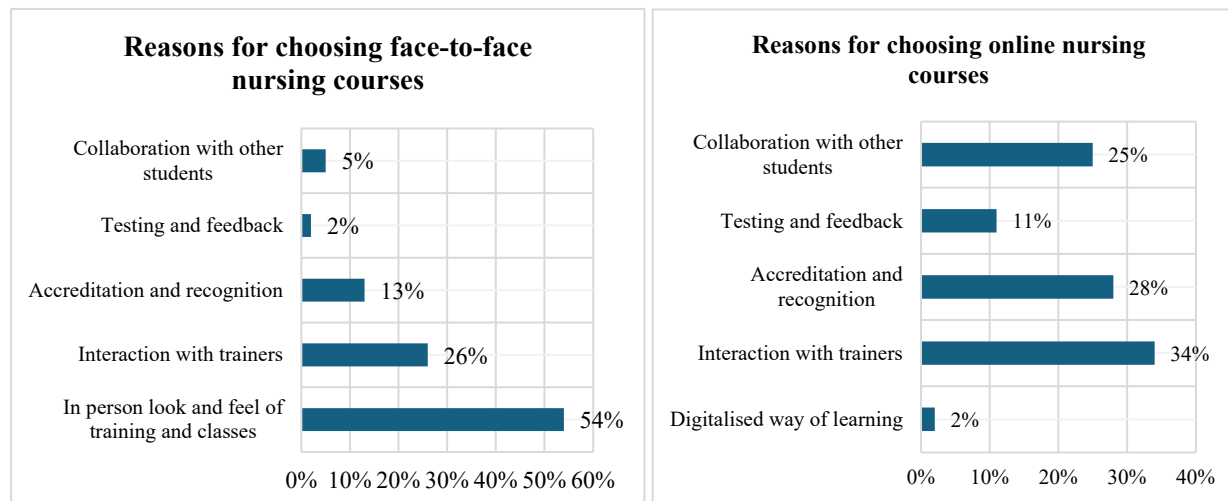


Figure 6. Comparison of Reasons for Students to Choose Their Courses

Even though digitalised way of learning is an important parameter of online learning, students rated it to be the least favoured reason for studying. Their preferred reason was convenient interaction with the teacher with 34% score and interaction with students with 25% score on the Likert scale. The face-to-face learning group noted 54% results because they wanted the look and feel of a class and learning environment. Students noted testing and feedback was not their main reason for choosing digital or face-to-face courses. P value here is 0.002 and t for it is 3.787 with a standard error of difference with 0.414.

4. Discussion

Our study investigated the impact of teaching modalities on nursing students' knowledge and satisfaction in South Jordan. The results support previous research highlighting the advantages and disadvantages of both face-to-face and online learning approaches. The results also point out that there are multitude of benefits for offline training for adult nursing students, which include experienced trainers, in-person interaction, and established accreditation. Face-to-face courses provide students with ample opportunities for to discuss and experience real healthcare settings, allowing them to develop essential clinical skills and gain valuable experience. Direct interaction with instructors and peers facilitates immediate feedback, clarification of doubts, and collaborative learning.

Face-to-Face Learning: Our study suggests that face-to-face students reported greater satisfaction before and after tests. This heightened satisfaction likely stems from the direct interaction with instructors and peers. Mrayyan (2007) underscores the significance of fostering a positive learning environment in nursing education, which flourishes through face-to-face interactions. Additionally, Jarrah (2013) emphasizes the sense of community that often develops in in-person classrooms. This sense of community fosters a supportive learning environment where students can learn from each other, ask questions without hesitation, and feel motivated and engaged.

Online courses offer undeniable advantages in terms of flexibility and accessibility, our data suggests they may not be as effective for knowledge acquisition in adult nursing education. Students in online programs scored lower on post-tests and reported lower overall satisfaction. This aligns with research by Smith et al. (2009) and Langowski (2005) who identified challenges in assessing practical skills and maintaining student engagement in online nursing programs (Smith, Passmore, & Faught, 2009; Langowski, 2005). Al-Dweik et al. (2023) conducted a study on online teaching methods in Jordan noted that online instructions improved the academic performance of some students at certain phases. Their studies concluded that females, middle-aged students, and theoretical field-related students, along with faculties, had significantly higher online GPAs than face-to-face GPAs. However, they also noted that health and medical faculties were less suited for entirely online instructions as there is a need to advocate theoretical learning in the research. It is intended to propose that online teaching is a valid and effective teaching method equivalent to face-to-face teaching methods under specific criteria (Al-Dweik et al., 2023).

From the above discussed studies, it was noted that there are some demerits of conventional learning methods, which include limited flexibility, travel constraints, and economic unviability. In-person courses often have fixed schedules,

making it challenging for working professionals or those with personal commitments to pursue nursing education. Even though there are no paramount or significant constraints to conventional nursing institutions, student satisfaction is much higher as compared to online ones with most respondents noting that their learning process was better in person and face to face with teachers. The same was identified from the scores that were ascertained from the test results, showing better knowledge of students that attended in-person courses.

On the contrary, online courses in nursing have gained popularity in South Jordan due to their flexibility and accessibility. Our results show that courses utilize web-based platforms to deliver educational content, enabling students to access lectures, assignments, and resources remotely. Communication with instructors and peers is convenient and is facilitated through online forums, chats, and video conferencing. The advantages identified by the survey include flexibility and convenience, expanded access, and media-related learning resources. Online courses allow students to study at their own pace, balancing their studies with other commitments, such as work or family responsibilities, thereby overcoming several geographical and logistics-related barriers. Even though lesser marks were scored in knowledge tests, online courses are still popular because of their flexibility and convenience offerings.

From the t-tests conducted, the p values noted that all four tests were statistically significant and consistent, as all the values were less than 0.05. Except for post-test satisfaction comparison between the two group of students, the results showed that $0.0001 < P < 0.05$, advocating that the null hypothesis can be rejected, which in this case, is 0 as there is no difference in longevity between the two groups. Similarity was noted in pre-test knowledge displayed between offline and online learning groups. However, the satisfaction after tests between face-to-face learning and online learning students is different, as noted from the P value from face-to-face learning, which is 0.0001. In other words, there is very less probability of satisfaction amongst students pursuing online adult nursing courses as compared to those having face-to-face courses.

Study by Kasem & Abuhammad (2022) explored the effectiveness of simulation-based education in improving pediatric basic life support (PBLs) skills among nursing students. Conducted at the Jordan University of Science and Technology (JUST) pediatric simulation lab, the research employed a simulation-based PBLs course. The findings were positive, demonstrating a significant improvement in both knowledge and practical skills related to pediatric BLS. This suggests that simulation-based learning offers a valuable approach for enhancing nursing students' preparedness in critical pediatric emergencies. Furthermore, the study highlights the importance of continuous professional development programs for healthcare providers, particularly nurses, in BLS skills. The authors emphasize the feasibility of implementing such programs in most settings around the country due to their relatively low cost.

Mrayyan (2007) noted that real-world setting are vital for nursing education in Jordan, advocating the several problems that arise in a health-care work environment. They noted that students there often face challenges like dissatisfaction and burnout from their previous experiences in nursing institutions (Mrayyan, 2007). Dunn et al. (2005) noted that healthcare work environments these days are to use economic but high-quality tech to deliver nursing data. Mrayyan (2007) further noted that professional nursing studies in the private sector are limited and are often riddled with several challenges that need attention.

In Jordan, minimizing turnover is highly essential because of shortage of nurses in healthcare industries and hospitals (Mrayyan, 2005). This is applicable for nurse administration which is primarily focused on reducing turnovers in the industry. The context of job satisfaction is a debatable one for the nursing industry which Jordanian hospitals address with lucrative compensations and perks (Armstrong-Stassen & Cameron, 2003). Therefore, there is constant pressure in the educational institutions in the country to educate and train nurses; its healthcare institutions often face multi-dimensional challenges to train and deliver adult nursing courses.

In a study conducted at various branches of Balqa University in South Jordan, Jarrah (2013) investigated nursing students' perceptions of their chosen profession. Through questionnaires, the study aimed to understand student motivations and course satisfaction. Interestingly, the research revealed that while nursing students hold their courses in high regard, financial considerations often play a significant role in their decision to pursue the profession (Jarrah, 2013). Despite this, the study also found a strong sense of satisfaction among students, who reported positive experiences and a sense of pride when discussing their nursing education. These findings suggest that students perceive their chosen path favorably, potentially encouraging others to consider nursing careers (Jarrah, 2013).

Several studies (Smith et al., 2009; Langowski, 2005) have explored the challenges faced by students in online nursing programs. A key issue identified is the difficulty in effectively assessing practical skills and ensuring students achieve authentic learning experiences that translate to real-world nursing scenarios (Smith et al., 2009). These studies highlight the limitations of online assessments in capturing crucial high-stakes medical and interpersonal

skills required of nurses (Smith et al., 2009). Consequently, online nursing programs face challenges in guaranteeing the quality of education delivered. The research emphasizes the need for instructors to develop online courses with robust assessment strategies that effectively evaluate student competencies and provide adequate support throughout the program.

Mancuso-Murphy (2007) identified distance education as a possible solution; their research also highlighted a potential gap between theoretical knowledge acquisition and its practical application among online nursing students. Similarly, Langowski (2005) found that the quality of education delivered in online nursing programs can be a concern. Despite the potential benefits of online learning, such as exposure to online nursing documentation systems, Langowski's research (2005) also identified challenges with user satisfaction among adult learners in online nursing programs. These findings suggest a need for further research on optimizing online nursing education to ensure effective knowledge acquisition, practical skill development, and high student satisfaction.

Nursing education in Jordan is intrinsically linked to the country's rich cultural and social fabric. Studies by Haddad et al. (2004) and El-Qaderi (1997) highlight the significant influence of Jordanian traditions and customs on students' health knowledge and practices. Educational institutions play a crucial role in shaping these views, as evidenced by research by Lawrence and Schank (1993) which explores the impact of educational settings on students' understanding of positive and negative health behaviors. Understanding this cultural context is essential for developing effective nursing education programs that resonate with students' values and experiences while preparing them to deliver culturally competent care.

4.1 The Impact of COVID-19 on Nursing Education

The COVID-19 pandemic significantly impacted nursing education in Jordan, with studies by Basheti et al. (2021) and Naser et al. (2020) highlighting a decline in student mental health and satisfaction levels. The shift to online learning due to institutional closures and travel restrictions contributed to increased anxiety and depression among students. Both studies suggest that online learning acted as a barrier during the pandemic, hindering the effectiveness of knowledge transfer and reducing overall satisfaction (Basheti et al., 2021; Naser et al., 2020). Al-Balas et al. (2020) further emphasize this point, reporting a significant drop in student satisfaction (26.8%) due to the limitations of online learning. The reliance on internet and online streaming methods hindered students' access to live clinical examples, a crucial component of healthcare education. These studies underscore the challenges associated with online learning in replicating the interactive and experiential elements essential for effective nursing education.

Distance-learning has rapidly transformed the way education is delivered and knowledge is transformed with students. Gallagher-Lepak, Reilly, and Killion (2009) conducted a qualitative study by gathering data from focus groups to explain the perception of students towards online nursing courses and noted that isolation was the paramount problem with disconnection from classes and emotional problems being the major issues amongst students. Timothy (2009) argued that nursing can be enhanced using online distance learning through constructivist strategies like applying principles to courses and setting learning goals for individual students. They concluded that students would have self-sufficiency in terms of learning experiences because of these strategies. Hampton (2016) compared online and offline learning and noted that there were significant differences in engagement level amongst students because of online programs and courses.

It is noteworthy that in lieu of the COVID-19 pandemic, the online courses have proven to increase accessibility, even when it comes to healthcare industry. Online courses have expanded access to education, allowing institutions to reach out to a more diverse range of individuals to pursue their aspirations. This is applicable in the nursing, where there are shortages of jobs, as noted by different authors (Mrayyan, 2007; Mancuso-Murphy, 2007). There is a sense of satisfaction, however, only in the mindsets of students attending in-person at institutions because of the accessibility these courses offer. Most healthcare courses necessitate clinical requirements, mandating the need for students to be there in person to leverage their knowledge about adult nursing courses. Therefore, even though accessibility and flexibility are highly sought options, the lack of clinical experience still limits the online nursing courses. As for conventional, offline ones, accessibility is an impending challenge along with the cost incurred for conducting these courses.

From the literature also it was identified that engagement level of students takes a hit when conducting studies online as compared to in-person studies (Mrayyan, 2007). The literature also noted that clinical experiences of students is diminished when conducting nursing courses online, thereby hampering their abilities in the long run in a real-world situation (Hampton, 2016). As noted earlier, Gallagher-Lepak, Reilly, and Killion (2009) identified that emotional factors are very much in play when students study online, leaving them with isolation and trauma. Therefore, there are different challenges in several distinguished situations, forcing students to make their choices based on their

fundamental requirement and perception of online or offline classes; it creates a positive outlook for students to adopt that approach.

4.2 The Potential of Blended Learning

Considering the advantages and disadvantages of both face-to-face and online learning, a blended learning approach may offer the optimal solution for nursing education in Jordan. This approach leverages the strengths of both modalities, maximizing student learning outcomes in a way that caters to diverse learning styles and preferences. Face-to-face sessions could provide a solid foundation for theoretical knowledge and clinical skills development, as highlighted by Basheti et al. (2021) (Basheti, Mhaidat, & Mhaidat, 2021). During these sessions, instructors could utilize a variety of interactive teaching strategies and facilitate discussions to solidify student understanding.

4.3 Blended Learning Model for Jordanian Nursing Education

While the specific design of a blended learning model for Jordanian nursing education would require further research and adaptation based on local contexts and needs, some general principles can be outlined. A potential model could involve dedicating a portion of the curriculum to core theoretical knowledge delivered through face-to-face sessions. These sessions could incorporate interactive lectures, group discussions, and case studies. The online component could then focus on providing supplemental resources, self-paced learning modules, and opportunities for asynchronous communication and collaboration. Additionally, online simulations and virtual reality experiences could be integrated to bridge the gap between theoretical knowledge and practical skills development.

5. Limitations of Study

Our study, while contributing valuable insights on teaching modalities in Jordanian nursing education, has limitations that warrant consideration. Here, we acknowledge these limitations and propose directions for future research to address them:

Sample Size: The current study employed a sample size of $n=200$. While this sample provides a foundation for analysis, a larger and more diverse sample size encompassing nursing students from various Jordanian institutions would enhance the generalizability of our findings to the broader population. Future research could involve collaboration with multiple nursing schools across Jordan to recruit a more representative sample.

Data Collection Method: Our study relied on self-reported data collected through surveys. While self-reported data offers valuable insights into student perceptions, it can be susceptible to bias arising from factors such as social desirability or memory recall. Future research could incorporate a combination of data collection methods to strengthen the research design. This could involve including objective measures of knowledge acquisition, such as standardized tests or practical skills assessments, alongside self-reported data.

Focus on Knowledge Acquisition: This study primarily focused on the impact of teaching modalities on knowledge acquisition as measured by post-test scores. While knowledge is a crucial component of nursing competency, other essential skills like critical thinking, clinical judgment, and psychomotor skills were not explicitly evaluated. Future research could explore a broader range of learning outcomes to provide a more comprehensive understanding of how teaching modalities impact student competency in various domains.

Longitudinal Design: This study employed a cross-sectional design, providing a snapshot of student experiences at a single point in time. A longitudinal study design, following students over time, could offer valuable insights into the long-term effectiveness of different teaching modalities on knowledge retention and professional development.

6. Conclusion

This study delves into the intricate relationship between teaching modalities, knowledge acquisition, and student satisfaction in Jordanian adult nursing education. Our findings align with existing research, highlighting the advantages and limitations of both face-to-face and online learning approaches. While face-to-face instruction fostered deeper understanding, a stronger sense of community, and higher knowledge test scores, online courses offered valuable flexibility and accessibility.

The potential of blended learning emerges as a transformative solution. This approach, by strategically integrating the strengths of both modalities, empowers educators to create a dynamic learning environment that caters to diverse student needs and learning styles. Ultimately, this can lead to a more comprehensively educated and well-prepared nursing workforce in Jordan.

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Authors contributions

Dr. Wesam Almagharbeh was responsible for all aspects of the study, including the study design, revisions, data collection, and drafting of the manuscript. Dr. Almagharbeh also revised the manuscript. All authors read and approved the final manuscript. There were no special agreements concerning authorship, as Dr. Wesam Almagharbeh single-handedly contributed to every phase of the study.

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