ORIGINAL RESEARCH

Perspectives of Medical Students in Using Blended Learning: A Thematic Analysis

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Background: Today, blended learning (BL) is crucial for the implementation of technologically enhanced pedagogical innovations especially after the COVID-19 pandemic. This study aims to explore students' perspectives toward BL and how a blended learning method affects medical students' learning results. Additionally, it seeks to identify BL challenges, advantages, and disadvantages.
Methods: A qualitative design using a thematic analysis was used. The study included 48 female medical students from years three through six who switched from traditional face-to-face to online during COVID-19 to mixed learning in the post-COVID-19 era.
Results: Data were extracted from focus group discussions. Three broad themes emerged from thematic analysis: perceived self-efficacy, blended learning as the new normal, and institutional support. Blended learning was the most students preferred because they could adapt quickly to the combination of online and face-to-face learning. Institutional support played a significant role in determining students' learning outcomes from the sudden switch.
Conclusion: The findings of this study underscored the importance of BL to maximize student learning while maintaining health and safety procedures. The students' adherence to school schedules, which required them to be disciplined regarding time, travel, and class preparation, contributed to their development of excellent habits. However, this presents a challenge for institutions that continue to offer an outstanding education despite the increasing acceptance of blended learning, as it may influence the motivation and learning outcomes of future doctors. These results are beneficial for educators and students in universities to have better institutional policies and strategies.
Keywords: perspectives, blended learning, COVID-19, medical students

Introduction

Blended learning (BL) came before modern teaching technologies. Even in 2011, it is currently termed the new normal" in course delivery.[1] The establishment of a blended learning environment is crucial for the implementation of techno-logically enhanced pedagogical innovations. Effective face-to-face (F2F) and online learning environments can be established by analyzing the characteristics of students, educational resources such as laptops and the Internet, and learning outcomes as effectiveness factors. Although the students highly favored blended learning, some students find it frustrating because of the drastic implementation.[2]

Even at the beginning of one's medical education, the requirement for clinical and laboratory skills makes online learning in medical courses difficult. These disciplines, such as pathology, histology, and microbiology, require labora-tory expertise. Additionally, clinical management involves physical presence for a comprehensive patient examination. The clerkship phase of a medical student's education presents several obstacles, much more in using blended learning. However, medical practitioners and their students found ways to stay dedicated to their jobs during the pandemic by resorting to online or telephone consultations and rotating hospital duties.[3] When the COVID-19 restrictions were eased, blended learning combined in-person instruction with online materials and methods asynchronously or synchronously. In a study by Vallée et al (2020),[4] they considered variations in the effectiveness of blended learning among health

professions. Online, computer-assisted training and virtual patient learning support yielded equivalent outcomes. Since blended learning has several benefits over conventional teaching, it is a viable option for medical school.[5]

The literature suggests that the abrupt transition from F2F to BL presents various challenges, including preference, motivation, stress, flexibility, support, engagement, and group work.[6] Studies on these issues can provide valuable insights from students and help improve academic experience. While some students preferred blended learning during the COVID-19 pandemic, face-to-face instruction became the favored approach when the pandemic was no longer a concern, highlighting the impact of external circumstances on learning preferences.[2]

As the medical education landscape continues to evolve, understanding the role of blended learning in shaping future physicians is crucial for the development of more effective educational strategies.[7] Saiz-Manzanares et al (2020)[8] found that nursing students who used blended learning had better learning outcomes and were more engaged with learning management systems, which was attributed to the integration of interactive multimedia systems and project-based learning methods. Ruiz et al (2006)[7] revealed that e-learning is effective in medical education because students see it as a valuable complement to the traditional instructor-led teaching. Similarly, Gong et al (2021)[9] corroborated that blended learning was effective to address the gaps in clinical skills. It was observed that BL improved students' clinical competencies and ensured learning efficacy and quality.

Students' time management and preferred learning styles significantly influence the effectiveness of BL in enhancing learning outcomes. This, in turn, contributes to improved clinical competence, greater learning efficacy, and overall educational quality. On the contrary, a study in Indonesia found that a lack of hands-on clinical activities lowered students' practical skills due to limited laboratory experience because of blended learning.[10]

Blended learning in medical education comes with several drawbacks, including student stress,[11] social and technical limitations, and restricted clinical practice exposure.[12] However, a national cross-sectional survey of 2,721 medical students in the UK found that self-directed learning in online environments helped students achieve their learning objectives,[13] with similar results reported among medical students in Poland[14] and India.[15] Despite its global adoption, research on the impact of blended learning on medical students' learning outcomes remains limited, particularly in Saudi Arabia.

This study aimed to determine the perspectives of medical students at Taibah University regarding their blended learning experience. It specifically studied the benefits, drawbacks, and difficulties of blended learning and associated them with learning outcomes, to determine the usefulness of blended learning. This study will help personalize student education to meet the specific needs of educators and policymakers in Saudi Arabia, particularly at Taibah University, would also be able to tailor student instruction to meet their requirements in the post-COVID-19 era.

Methods
Study Design & Setting
This study was carried out in the female section of College of Medicine at Taibah University using an indicative qualitative method. Focus groups were conducted with female medical students in years; 3, 4, 5, and 6, who have gone through the transition from traditional (F2F) to online learning during the COVID-19 pandemic (either synchronous (live or in real-time) or asynchronous (recorded) and to blended learning (the combination of online learning with the traditional (F2F) in post-peak COVID-19 pandemic. Focus groups were particularly useful in this study since they are time-efficient, flexible and can generate rich data. Through group interactions, focus groups provide a platform for exploring the diverse views of participants simultaneously and hence enriching the research study. Focus groups were conducted between December 25, 2020, and April 30, 2021. This is the period of partial opening post-complete lockdown period until the period of blended learning where students were able to differentiate and experience virtual learning and blended learning.

Study Participants and Data Collection
Student selection was based on non-probability, purposive sampling from the 3rd to 6th-year students. For a student to be eligible for the study, they must have taken part of their learning online and part through other methods in the classrooms

or at the bedside before the pandemic. Based on that, participants were expected to adequately reflect on their previous experience as well as their online learning after the lockdown due to the COVID-19 pandemic.

Participants were informed of the purpose of the study at the beginning of each focus group, and they were assured of total anonymity and expressing themselves freely. Students' participation was on a voluntary basis after signing an informed written consent, and they did not receive any payment or compensation for their participation in this study. However, at the end, an appreciation certificate was offered to them by the research team as an acknowledgment for their time and input.

This study consisted of eight focus groups (8 FGs); two from each year. Each FG consisted of 6 students. The students from the same year of study were brought together in the same focus group to ensure the homogeneity of the study sample.

Focus groups were facilitated by two moderators of the research team and were done through face-to-face small groups' discussions. The two moderators were faculty members from the same institution of the students and were involved in their teaching. They were familiar of the educational program, modes of instruction and potential challenges faced during the COVID-19 pandemic. The discussion took place in a meeting room at the university and lasted approximately 45 minutes until data saturation was reached, at which no additional data were discovered.

Focus group discussions were held based on a set of carefully predetermined open-ended questions arranged in a semi-structured interview guide. The moderators used the list of questions and probes to stimulate group discussions and interaction. All the groups were asked the same questions in the same way by the trained moderators who followed the questions included in the interview guide. In preparing for their roles, the moderators had frequent discussions and familiarized themselves with the interview guide. Through questioning techniques and probing, the moderators were able to elicit detailed responses from the participants. The pilot questions were tested on 6 students. The necessary modifications, changes, and corrections were done to ensure ease of understanding and clarification of all questions. The validity of the structured questions was ensured by reviewing them with three experts. Open-ended questions were structured around two broad areas: Students` technical skills and their views of blended learning on one side, and their perception of the challenges of online learning on the other side. For elaboration and to obtain in-depth information probes were used.

All participants were introduced at the start, then each participant stated her name before speaking, so they were clearly visible to the transcriber. Notes were taken by the facilitator from each group, and all discussions were audio recorded with the participant's permission and later transcribed.

Although collecting data through focus groups has the benefit of providing insights that cannot be obtained through quantitative methods, however, it is difficult to avoid bias. Sources of bias may be related to the researchers or the participants. Researchers' subjectivity, non-random selection of participants, and social desirability are potential biases in this study. However, different strategies were used to minimize bias, for example, using neutral interview techniques eg creating comfortable environment, active listening, avoiding leading questions, and setting aside personal experiences to approach the research with open mind.

Data Analysis

Student discussions produced rich information. Data was analyzed using thematic analysis. The analysis was iterative and involved multiple rounds to interpret and make sense of the data. It followed a three-step process which included data transcription, coding, and themes development.

The first step was to get familiar with the obtained data through repetitive reading, preparation, and transcription. Data were in the form of mixed Arabic-English audio recordings. All discussions were transcribed verbatim, and all Arabic discussions were translated into English. The translation mainly focused on the meaning of the spoken language rather than a word-for-word literal translation.[16]

Next, after reading the data critically, and repeatedly significant points emerged. This step was followed by data coding and categorizing the entire data set. Coding was done manually with the aid of highlighter pens, where similar data were grouped under the same code based on researcher interpretations. Lastly, after several reviews, codes were combined into themes and sub-themes. A final thematic map was generated capturing the depth and breadth of the coded data as demonstrated in Figure 1
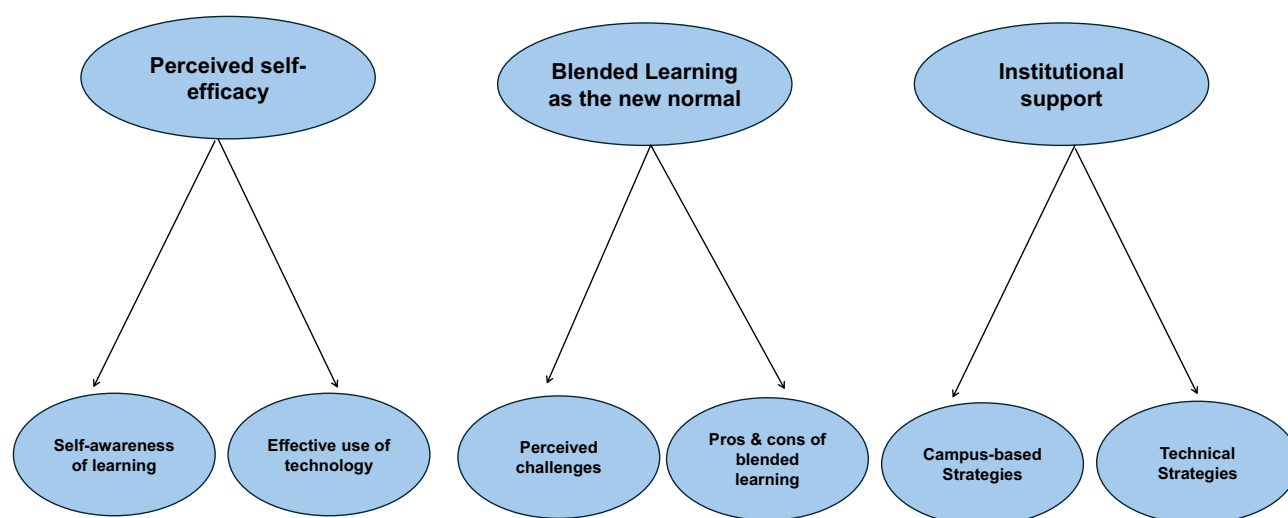
Figure 1 Summary of key themes and sub-themes using thematic analysis.

Results

A total of 48 female medical students participated in this study and were in the age range of 19–22 years. The thematic analysis focuses on three key themes: perceived self-efficacy, blended learning as the new normal, and institutional support as demonstrated in Table 1.

Table 1 Summary of BL's Themes, Sub-Themes, and Descriptions Response Examples

Theme	Sub-Themes	Focus Group (FG)	Example
Perceived self-efficacy	Effective use of technology	(6th year FG)	"We already had a background on how to use online apps. So, I did not have any difficulties" "I have always used to study from online platforms and textbooks"
	Self-awareness of learning preferences	(3rd year FG)	"I am a visual learner. Our instructors took advantage of the online learning environment and presented useful educational images, which saved me a lot of time and helped me understand"
Blended Learning as the new normal	The pros and cons of blended learning	(4th year FG) (6th year FG) (5th year FG)	"The only thing that I like about online learning is that it saves time" "I feel my concentration level is reduced in an online setting than in the traditional classroom" "In online learning, the physical environment is very comfortable I can control the air-conditioner, no noise. I have my own space" (5th year FG)
	Perceived Challenges	(5th year FG) (6th year FG)	"I do not like online learning because we did not get the chance to go to the hospital as much as we need. Learning clinical skills is highly dependent on practice. " "We have hospital visits in the morning, and online sessions in the afternoon. We find it difficult to focus, and we do not seem to have enough sleep"
Institutional Support	Campus-based strategies	(3rd year FG)	"I think dividing students coming to the campus into groups is a smart plan in the current circumstances"
	Technical strategies	(3rd year FG)	"The pre-session helped us to understand the practical sessions better and not to waste a lot of time on campus"

Theme 1: Perceived Self-Efficacy

Students expressed strong beliefs in their capabilities to work independently and competently with electronic devices while conducting their studies. Furthermore, most students reported awareness of their preferred learning style and how that affected their learning during the transition to remote e-learning platforms. Under this theme, two subthemes were identified: effective use of technology and self-awareness of learning preferences.

Effective Use of Technology

Students expressed high self-efficacy about internet access, skills, and usage. Even before the COVID-19 outbreak, they had demonstrated the ability to use personal electronic devices for learning.

> We already had a background on how to use online apps. So, I did not have any difficulties. (6th year FG).

However, several of the participants acknowledged that the transition to online education came with some early challenges. They initially struggled with transitioning to the online learning environment but eventually thrived there.

> During the complete lockdown, the experience was difficult because we were unprepared for the sudden change and were also concerned about the pandemic. However, during the partial lockdown, the experience improved, as online learning helped me manage my time more effectively. (3rd year, FG)

> Regarding the personal skills, was not prepared for the sudden transition but I adapted to it quickly. (6th year, FG)

It has become ordinary to look for information on the Internet. Before the pandemic, senior students studied from e-resources and textbooks and did not rely solely on lectures. Thus, their study habits have not changed substantially. They had no problems and believed themselves to be technologically proficient.

> I have always used to study from online platforms and textbooks. (6th year FG).

Self-Awareness of Learning Preferences

Numerous students discussed their preferred learning style and how it impacted their use of and learning on technological platforms. Visual learners like to receive information in a written or visual manner using visual aids. Nonetheless, results from students who self-identified as visual learners differed. Some students viewed the use of visual content, such as written slides, photos, and videos, as advantageous.

> I am a visual learner. Our instructors took advantage of the online learning environment and presented useful educational images, which saved me a lot of time and helped me understand. (3rd year FG)

Nonetheless, some visual learners find the online setting challenging due to the absence of body language and limited opportunities for interaction with instructors. They view direct visual engagement with lecturers as a crucial component of the learning experience.

> I prefer in-class learning. There's no doubt it's always better seeing the lecturers in front of me helps me stay more focused. (3rd year FG)

> I prefer in-class learning because it's more efficient, it helps me concentrate better, and the use of body language greatly supports my understanding and ability to express myself. (4th year FG)

However, students who perceived themselves as auditory learners preferred the online learning environment. They benefited from listening to audio recordings.

Regardless of the preferred learning style, some students felt no difference in their learning experience following the shift to e-learning platforms.

Although online learning appeals to most students because it is perceived as flexible, accessible, and convenient, some students believe that it does not address all learning styles.

Online learning does not suit all learning styles. I may be a visual and auditory person at the same time. However, when I attend online lectures for two hours, even if I am focused, I don't feel I receive the information as in the sessions when we discuss information and interact with the instructor. (6th year FG)

Theme 2: Blended Learning as the New Normal

Students reported variable views toward the combination of online learning with face-to-face instruction. Most students perceived the hybrid situation as better than the early time of the pandemic when only remote online learning was possible during the complete lockdown.

Complete lockdown was bad and I do think I learned much during that period. However, now with partial lockdown, I feel more comfortable with the current timetables. I can study from home, and I do not have to go out much and expose myself to the infection except for the hospital visits, which are planned twice a week for about 3 hours a day. It is a new comfortable way of learning. (5th year FG)

The Pros and Cons of Blended Learning

Every university mandates a particular proportion of online (synchronous and asynchronous) and face-to-face activities in blended learning. Distance and time savings were the students' most significant advantages of the online learning environment. They could supplement their independent study by participating in live online classes and later studying the recordings.

The only thing that I like about online learning is that it saves time. (4th year FG)

Additionally, they stated that they see the slides more clearly in online presentations. Moreover, they described the online setting as quiet and less distracting, which enhanced their concentration

For me, online learning is better. For instance, when presenting ECG or X-ray images, the slides looked clearer unlike when presented in the classroom. (4th year FG)

However, some students found it challenging to pay attention and reported that their focus declined when they transitioned to an online learning environment.

I feel my concentration level is reduced in an online setting than in the traditional classroom. (6th.year FG)

In addition, participants expressed that online learning offered a relative benefit over face-to-face learning since it allowed them to attend lectures at their preferred locations. Because they had more control over the physical setting in terms of space, lighting, and air conditioning, they felt more at ease when taking classes remotely.

In online learning, the physical environment is very comfortable I can control the air-conditioner, no noise. I have my own space (5th year FG)

Furthermore, online learning offers excellent convenience to students, particularly those who reside far from school, because it allows them to dedicate more time to their studies and reduces the time spent commuting to campus.

Online learning saves our time and energy instead of going to and from the campus. (6th year FG)

Meanwhile, difficulty in contributing to class discussions in an online environment appeared to limit the relative advantage of online learning, as reported by some students. They indicated that communication between students and instructors during online sessions was more challenging than in face-to-face classes. Meanwhile, face-to-face classes enable students and instructors to communicate directly and see the body and facial gestures that make the delivery of the messages clear.

During online discussions, our interactions were not good, although we were distributed into breakout rooms, yet not everyone was participating in the discussion. (3rd year FG)

On-campus learning helped me to better communicate with students and instructors, unlike online learning. (4th year FG)

Additionally, technical challenges were common during online classes. Students reported fear of technical problems, particularly during online exams, and weak internet connection.

> Until now we still encounter technical issues during online sessions, and sometimes we miss part of the discussions. (5th year FG)

On the other perspective, students who viewed themselves as shy had more favorable attitudes toward online education. They found that online interactions were more conducive to engagement than face-to-face classes, where they frequently keep silent.

> I feel shy to talk in on-campus discussions, but now in online sessions, I participate more. (6th year FG).

Students who favored face-to-face learning stated that traditional classes were distinguished by stronger discipline, giving closer attention to lectures, adhering to fixed schedules, and better communication between students and instructors.

> Personally, though we saved a lot of time not having to go to college, it is difficult to remain disciplined during online sessions. (5th year FG).

> Actually, until now I still have problems with concentration in the online learning environment. It is totally different from when I attend on-campus classes where I feel I can remember the information better. (5th year FG)

> I prefer on-campus learning because schedules are fixed I can better arrange my plans. (4th year FG)

Additionally, some students argued that a face-to-face environment is enjoyable and more dynamic, where they could actively participate in activities instead of being passive receivers.

> The interaction between students in on-campus classes is highly efficient. (4th year FG)

Overall, students reported a significant difference between online learning and face-to-face classes regarding learning practical and clinical skills. Generally, students prefer to have theoretical lectures online while attending face-to-face problem-based learning sessions, lab sessions, and clinical skills sessions.

> Online learning is very convenient for theoretical sessions instead of spending a lot of time on-campus listening. (6th year FG)

Interestingly, some students reported indirect benefits of face-to-face learning. They indicated that attending the campus allowed them to socialize and connect with friends. Students believed that socialization had a positive impact on their mental well-being.

> I prefer on-campus learning. I like going to the college and meeting others. (3rd year FG)

Perceived Challenges

The effect of the COVID-19 pandemic on education has been tested through the transition from virtual to blended or hybrid learning. It is still possible for institutions, including medical schools, to give an excellent education. Students generally exhibited positive sentiments toward the transition to online and blended instruction. As the COVID-19 infection has been controlled, senior medical students can practice and improve their clinical skills owing to integrated learning. Before graduating, clinical skills must be mastered through an experiential learning approach. Students objected vehemently that online learning could not replace hospital-based instruction for gaining practical skills.

> I do not like online learning because we did not get the chance to go to the hospital as much as we need. Learning clinical skills is highly dependent on practice. (5th year FG)

Although students thought that the ability to learn in a blended setting made learning more convenient, this was not the case. They reported that the components of their learning that they disliked the most were long working hours, attending online sessions after their daytime activities, and interrupting sleep patterns due to the transition between online and face-to-face modes.

> We have hospital visits in the morning, and online sessions in the afternoon. We find it difficult to focus, and we do not seem to have enough sleep. (6th year FG).

Theme 3: Institutional Support

The third theme that emerged from this study was related to the institutional support and resources provided in response to the sudden and rapid transition to online learning. The administration established several ways to maximize the benefits of blended learning for students. Institutional support was discussed under two sub-themes: Campus-based strategies and technical strategies.

Campus-Based Strategies

Students recognized the institution's efforts to limit the number of students attending on-campus sessions and the orientation they got as preparations for social distance on campus.

> I think dividing students coming to the campus into groups is a smart plan in the current circumstances). (3rd year FG).

Technical Strategies

Even after the peak of COVID-19, the college was still making arrangements for the students to continue their education online. Some students expressed that orientation sessions and a fully functional online platform were built for them to address the difficulties of online education.

An online theoretical presentation was made available to the students before they participated in on-campus practical sessions to promote learning and limit the likelihood of infection.

> The pre-session helped us to understand the practical sessions better and not to waste a lot of time on campus. (3rd year FG)

Discussion

This study investigated the relationships between students' perspectives, including their experiences in purely online classes, learning tools, and learning outcomes, to determine the usefulness of blended learning. Also, we explored the benefits and drawbacks of blended learning and how the university addressed the students' concerns. This research interviewed forty-eight female medical students and examined the common answers using thematic analysis. Three major themes emerged self-efficacy perception, blended learning as the new normal, and institutional support.

Students' self-efficacy is their strong belief in their capacity to work independently and competently with their electronic equipment, such as laptops and apps like Microsoft Office for school presentations (ie, MS PowerPoint), communication tools like Whatsapp, and the internet. It also demonstrated how the shift affected their learning.

Blended learning as the new normal found that most students could adapt quickly. This is the learning approach for the students that have several advantages over pure online classes. Lastly, institutional support played a significant role in determining students' learning outcomes. The administration's strategies would determine how students perceive the changes.

One study by Khalil et al, in 2020[17] determined that students usually utilize updated educational technologies that helped them achieve active and student-centered learning. Universities also provided instructional methods conducted via orientation that would provide structured guidance for self-directed learning.[17,18] Even in blended learning, the online learning portion made the students spend more time with their families and improve their sleeping patterns. Although there were problems related to managing time, the overall satisfaction was positive, and this was found to be consistent in other studies related to online learning modalities.[17,19–22]

A study mentioned that individual learning via online modules was more productive and preferred in some medical and pre-clinical subjects but not precisely in clinical disciplines.[23,24] Additionally, pre-clinical students preferred their lectures to be taught via live online lectures instead of video-recorded lectures, and it was found to be an effective style of acquiring knowledge.[25]

Technical challenges and insufficiencies, such as internet connectivity and a lack of computer skills among students and teachers, are among the most prevalent obstacles encountered during transitioning from traditional classes to online and blended learning. The effectiveness of technological applications and the educators' capability to use the technology and transcribe information for the students significantly impact the level of education students receive. This demands mastery and can only be accomplished through effective faculty training to adapt to the new form of instruction.[26]

Students also identified their preferred learning methods and openness to new learning modalities and types of involvement. The quality of online learning implementation by universities also has a significant effect. It is essential to consider fostering collaboration amongst all departments to increase the efficiency of learning. When learning approaches are presented correctly and organized, students will be more receptive and provide more favorable feedback.[27] Lastly, nonverbal communication and physical connection presented individuals with substantial obstacles. Psychosocial connections experienced by students towards their instructors and peers and nonverbal implicit cues are absent in an online teaching setup[28] and must be addressed. For the benefit of the students', blended learning is utilized. It is critical for the post-COVID-19 era.

According to a systematic review by Dyrbye et al, female medical students are more prone than their male counterparts to stress, anxiety, and depression.[29] They concluded that gender bias, harassment, and the strain of juggling several responsibilities were contributing factors. Years after Baqi et al agreed and demonstrated that there was a gender bias in a government hospital in Riyadh for the selection of doctors to pursue surgical specialization and that there were noticeably more men than women among medical consultants.[30] Furthermore, there is a high incidence of stress and burnout among female medical students because of their balanced family, social, and academic obligations. A study by Thun-Hohenstein in Paracelsus Medical Private University (PMU) examining burnout syndrome among medical students showed that females were slightly higher than males in experiencing stress and burnout[31.] These concerns may worsen for female Arab medical students when they are pressured to conform to traditional gender stereotypes.

Limitations of the Study

As this study is a thematic analysis, it included some limitations, for example, subjective interpretation of the themes which considered as researchers bias, also participant bias from being female participants only who may have different experiences to males, but this limitation is related to the culture of the study country which separate male and female students in their educational process. Also, bias from medical students if they believe that their performance could be affected by expressing their opinions and sharing honest critiques of the blended learning system. Moreover, lack of generalization of results as thematic analysis is context specific on a particular group of participants, and perspectives on blended learning could differ significantly based on various technological resources, student needs in different institutions. At the same time, this study provides significant information, and future studies could benefit from having a more diverse participant groups such as male students and faculty members as well as expanding the sample size to include more medical campuses from different regions which would improve the findings' generalizability. Also, future studies should use mixed methods such as combining with quantitative data to provide insights into how comprehensive students' qualitative experiences relate to measurable outcomes.

Conclusions

In conclusion, this study sheds light on how female medical students at Taibah University perceived the shift from online classes to blended learning and how it affected their learning outcomes, and most medical students at Taibah University accept blended learning. As a result of school-mandated health and safety protocols, students have the opportunity to improve their clinical and laboratory competence without the risk of contracting COVID-19. In addition, it is observed that students establish good habits and behavior as they strive for academic and time control. They also gain social skills that are beneficial to their mental health. However, the disadvantage of blended learning is the students' and teachers' computer and technological skills. It may be challenging for professors who are not technologically skilled to hold online classes and engage in a discussion. Collecting feedback from faculty members is recommended because their role is crucial in giving lectures and ensuring that students understand them, even when employing a blended learning arrangement, and determining if they have received the proper support from the school. These results are beneficial for educators and students in universities to have better institutional policies and strategies.

Abbreviations

BL, Blended Learning; F2F, Face-to-Face; FGs, Focus Groups.

Data Sharing Statement

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Ethics Approval and Consent to Participate

The authors confirm that all methods were carried out in accordance with relevant guidelines and regulations. Before data collection, research proposal was approved by the Research Ethics Committee (CM-REC) at College of Medicine, Taibah University (ID: 006-1442). In Taibah University, the ethical committee's full name is Institutional Review Board of Taibah University. That's the organization where you can get ethical approval for your research. During the process, we needed to send to the (CM-REC) the following documents: – Research Proposal with the description of the study – questionnaires/ questions used- informed consent- CVs from all authors – authorship forms- research plan. – publication strategies. An informed consent was obtained from all subjects after being informed about the purpose of the study, the confidentiality of the shared information, and assuring their voluntary participation. Consent to publish the research was obtained from the study participants. All procedures of the research were conducted according to the declaration of Helsinki on ethical principles for medical research involving human subjects. All participants provided their informed consent including permission to publish anonymized quotes and responses before the study commencement.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

All authors declare no conflicts of interest in this work.

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