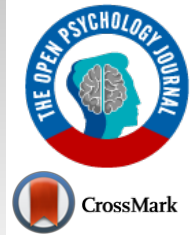




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RESEARCH ARTICLE

Impact of Transition from Onsite to Online Education on Students Learning and Psychological Well-being: A Cross-sectional Study of King Faisal University, KSA

Seema Irshad¹, Osama Al-Saeed^{1,*} and Nurjahan Begum¹

¹Department of Clinical Neurosciences, College of Medicine, King Faisal University, Al-Hasa 31982, Saudi Arabia

Abstract:

Background:

The COVID-19 pandemic has caused disruptions in a variety of industries, including education and way of life. The educational system has undergone significant transformation as some activities have abruptly moved from on-site to online. Researchers' curiosity about how the transitional period affects students' learning and well-being has grown during this time. This study intends to assess how King Faisal University students perceive the effects of switching from traditional classroom instruction to online learning on their academic performance and psychological well-being.

Methods:

A total of 915 male and female students from King Faisal University in the Al-Ahsa Governorate participated in the survey. The Students' Perception of Online Learning Questionnaire (51) and the Psychological Well-Being Questionnaire (52) was used to gather data from students at King Faisal University (all colleges). E-learning and face-to-face learning were compared by percentage and T-test to address the research concerns.

Results:

The findings of this study revealed that students rated face-to-face learning 375 (41%) as a more acceptable way of learning in comparison to the e-learning method 320 (38%). Students rated access to online materials 186 (20%) as the main advantage of the e-learning method, whereas technical problems 312 (34%) were the main disadvantage of e-learning. There was a statistically significant relationship between students' psychological well-being in response to e-learning and face-to-face learning method, specifically autonomy ($t=10.13$, $p=.002$), personal growth ($t=21.19$, $p=.000$), and social relations ($t=34.64$, $p=.000$).

Conclusion:

It is crucial to implement healthy policies and health promotion initiatives inside the university that are specifically tailored to the physical and mental health issues that were discovered in this study.

Keywords: Online education, Learning, Psychological well-being, Pandemic stress, COVID-19 pandemic, Students.

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1. INTRODUCTION

The World Health Organization proclaimed a pandemic state on March 11, 2020, following the first report of the new coronavirus disease (COVID-19) epidemic at the end of December 2019 in Wuhan, China [1]. Italy was the first nation in Europe to be afflicted by the epidemic, which started on Fe-

bruary 21. Lombardy was the region with the highest number of COVID-19 cases and fatalities (representing 39 and 48% of the total, respectively).

Online learning is the transfer of knowledge *via* synchronous and asynchronous internet technologies. These platforms enable students to communicate with their instructors and fellow students while maintaining a social distance [2]. Students and teachers who utilize online technology for learning must be able to use it to establish and sustain healthy social relationships [3]. Other elements, such as the availability

* Address correspondence to this author at the Department of Clinical Neurosciences, College of Medicine, King Faisal University, Al-Hasa 31982, Saudi Arabia; E-mail: sirshad@kfu.edu.sa

of appropriate facilities, infrastructure, and the financial situation of the students, play a significant role in online learning in addition to the efficient use of technology [4, 5].

Online learning has grown excessive and pervasive, and as a result, it negatively impacts students' mental and emotional well-being and their ability to live fulfilling lives around the world. This is true even though asynchronous and synchronous types of distance learning have been more or less organized properly. These psychological concerns frequently make it difficult for students to adjust to online learning. Furthermore, the enormous impact of the pandemic (and everything associated with it) on young adults' psychophysical state, emotional well-being, and physical health results in significant organismal tension, which, when combined with other detrimental factors causes diseases, functional disorders, and, ultimately the development of organ pathology. It's possible that the prevalence of sadness, worry, exhaustion, *etc.* among young people will sharply increase.

However, to what extent students perform equally well in online and face-to-face classes is the subject of conflicting research. According to several studies, there are no performance differences between face-to-face and online learning modalities [6 - 8]. Contrarily, other research indicates that online students tend to drop out more frequently than their face-to-face counterparts [9, 10]. Researchers are paying more attention to the possibility that some student types may benefit from online learning more than others. Adult learners, or those who are 24 years of age or older, are one category that has received a lot of attention [11]. Online courses, on the one hand, boost accessibility for adult learners, who are more likely to have to balance employment and family obligations while earning a degree [12, 13]. Because they are more independent and self-directed, adult learners might perform better in online courses [14]. However, they might not be as efficient at navigating online learning environments, which could have an impact on their performance [15, 16].

The COVID-19 pandemic has impacted young people's mental health in a variety of ways, including social isolation and the nearly total loss of all social activities, as well as short-term effects on school, employment, and training [17]. Predictions of a severe economic catastrophe may have an impact on young people's psychological well-being. Immigrants, children, women, and persons with low education levels are particularly sensitive to the effects of changing labor markets on their physical and emotional health. Because of societal unrest, including financial insecurity, the need to take better care of their health, not knowing when the pandemic will stop, and the uncertainty of the long-term effects, the COVID-19 pandemic poses a threat to the well-being of the younger generation and their families [18, 19].

According to Sahu [20], the COVID-19 pandemic caused numerous psychological shocks and had a detrimental impact on students' psychological well-being, which immediately caused severe job stress and anxiety [21]. Cao *et al.* [22] studied the psychological impact of the coronavirus outbreak on university students in China. They discovered a detrimental effect on the students' performance as well as a severe psychological burden. Previous studies confirmed that students'

psychological pressure and academic progress are both severely impacted by uncertainty [23, 24].

We have chosen to concentrate on how young people see the current developments as a result of the pandemic's psychological effects. New difficulties have been confronted by young people in training. We conducted this study to examine the effects of online education on students' well-being, amid the isolation conditions imposed by the Pandemic, in order to better understand the changes to the educational system and the uncertainty and hazards represented by a completely new situation. Similar to other countries, Saudi Arabia abruptly switched from on-site to online education during the epidemic based on these factors. Our study seeks to determine how switching from traditional classroom education to online education affects students' academic performance and psychological well-being. As a result, the following research questions served as its guiding principles:

1. To find out students' perceptions of the advantages and disadvantages of e-learning and face-to-face learning.
2. Is there any impact of different aspects of e-learning and face-to-face learning on student learning?
3. Is there any difference between e-learning and face-to-face learning in terms of knowledge, clinical skills, and social competence?
4. Is there any relation between the positive and negative perception of e-learning/face-to-face learning and student psychological well-being?
5. To find out the relationship between e-learning/face-to-face learning on the factors of psychological well-being i.e. autonomy, environmental mastery, personal growth, positive relations with others, the purpose of life, and self-acceptance.

2. LITERATURE REVIEW

2.1. Social Isolation and Psychological Wellbeing

The pandemic has created a growing interest for researchers in impact studies that analyze the relationship between the perception of contaminated fear and well-being. The threat of the pandemic has generated insecurity, fear, stress, vulnerability, and isolation. A study carried out by Tee *et al.* [25] has shown that 16.3% of respondents perceived the psychological impact of the COVID-19 pandemic as moderate to severe; 16.9% observed that the depressive symptoms were moderate to severe; for 28.8%, the anxiety level was moderate to severe; 13.4% found out that the stress level ranged from moderate to severe during the pandemic [26, 27].

The effects of quarantine during the pandemic were examined by Taylor *et al.* [28] in a group of Canadians and a group of Americans; general stress, isolation, and an effort to avoid contagion were identified. The dread of spreading the illness, particularly to loved ones, and the loss of control in such a situation led to the severe pain that occurred during social isolation. Gender, sociodemographic traits, chronic diseases, being a member of a risk group, and death brought on by COVID-19 in the family or in the social group were all positively connected with fear of contagion and resulted in

worry, stress, and sadness, according to Bitan *et al.* [29]. In another study of Spanish students with a mean age of 21.59, Martnez-Lorca *et al.* [30] found that while they did experience fear and anxiety, it was moderate rather than severe.

2.2. Economic Crises and their Influence on Wellbeing

As discussed above, the COVID-19 pandemic and its crisis have affected and continue to affect many people's psychological states and well-being [31, 32]. The maintenance of psychological health is specifically required for social and economic effectiveness. Governments around the world have implemented preventative measures including population quarantine, protective mask and glove use, lockdowns, online schooling, and home-based employment. However, social exclusion, loneliness, and travel limitations have lowered the labor force across all industries and led to major job losses, raising concerns about impending a serious economic catastrophe [33]. The UNDP (United Nations Development Programme) [34] claims that the unemployment problem is caused by the decline in economic activity due to the halted production processes and the effects of the recession on global welfare.

Flanagan *et al.* [35] contend that the unsustainable nature of economic globalization, generated by supply and demand mismatches and the discrepancy in the labor market, which primarily affects women, emigrants, and young people, is making the disastrous effects of the COVID-19 pandemic. In their study, Nicola *et al.* [33] discussed how the closure of educational facilities has impacted 900 million children and students, with significant social and economic ramifications, such as the inability to provide free meals to children from low-income families and school dropouts due to a lack of technology for online courses. The most impacted area of higher education was post-university research since many areas that contributed to the advancement and economic prosperity were delayed. However, it's important to pay attention to the detrimental impacts on kids' and teachers' wellness.

2.3. Influence of Face-to-Face and Online Education on Student Well-being

Students' emotional resilience and healthy lifestyle are related to their well-being [36]. Educational institutions must take into account students' and pupils' well-being so that they can make healthy lifestyle decisions and comprehend the importance of such decisions for their well-being [37]. Depression, worry, and stress are more likely to strike students who have low levels of well-being [38]. Traditional schooling predominated globally compared to online education up until the outbreak of the COVID-19 epidemic. As Barrett [39] demonstrates, worries regarding the effectiveness and timeliness of online education have been around for a very long time. Many organizations have created virtual work teams to work together on a variety of tasks, however even while the performance and effectiveness were comparable to those of traditional teams, traditional face-to-face team members reported better levels of happiness. Online education offers greater flexibility in the time and location for learning, which is one of its main benefits [40]. According to a UNICEF report [41], online courses should be offered but with a well-

organized strategy; otherwise, they increase students' stress levels, which can severely impact their mental health and well-being.

2.4. Online Learning and the Growth of Students

The best time for students' personal growth to develop is while they are learning; it has two components: the first relates to the commitment teachers have to ensure that their charges make the most of every learning opportunity, whether formal or informal. The second refers to establishing a culture of accountability for one's performance and learning by redefining the curriculum as self-directedness in learning [42]. Universities continuously worry about their students' personal growth and work to provide them with services that are not just educational but also complementary. These include information, career counseling, and orientation, as well as assistance for both personal and professional growth.

Today, career advisers are crucial to students' lives and futures since they assist them in discovering how to maximize their potential [43]. Daily meetings are held by several university centers on various platforms, where students can receive advice and services for personal growth to improve their well-being and participation in activities that foster personal development [44]. Career development for students is crucial. Students prefer face-to-face learning and counseling for communication reasons where a shared understanding must be reached or where interpersonal relationships must be created [45].

2.5. The Relationship between Well-being and Personal Development in the Context of Online Learning during the COVID-19 Pandemic

The UNDP [34] calls attention to the fact that, depending on the educational process, there was a sharp decline in human development and learning efficiency even though schools were not entirely shut down globally and online learning was the new trend at the time of COVID-19. Because some teachers and students will not return to the classroom when the schools reopen, the COVID-19 pandemic undermines public education and poses fragmentation risks [46]. Children and young people's mental health and psychological welfare have been severely biased, with long-term effects on their well-being. According to a report from ECLAC-UNESCO (Economic Commission for Latin America and the Caribbean—United Nations Educational Scientific and Cultural Organization) [47], the current environment and new educational practices have a serious negative impact on mental health and personal development and expose kids and teenagers to violence.

In their investigation of the mental health of Spanish students during the COVID-19 epidemic, Odriozola-González *et al.* [48] discovered that students were more likely than the general population to exhibit symptoms ranging from mild sadness to severe anxiety. They discovered that the primary causes of these symptoms were: fear of spreading the disease, problems with family finances, interruptions in the educational setting, the pandemic's effects on education and employment, and decreased social interaction [49].

2.6. The Effectiveness of Universities following their Switch to Online Education and its Significance

Because of the epidemic, higher education institutions have had to adjust to the new learning requirements. To maintain students' communication and educational continuity, online programs, learning platforms, and resources have been developed [50]. Initially intended to be taught in classrooms, online courses use technology to broadcast and retain information for later access by students. The amount of access a student has to a course over time significantly impacts their degree of understanding and critical thinking; as a result, the course contents uploaded or saved must be developed and improved. Students value the online learning approach since knowledge is easily accessible.

In this regard, Basilaia and Kvavadze [51] affirmed that the quick shift from in-person instruction to online instruction had been successful and that the knowledge obtained could be applied going forward. In addition, the lessons learned from the pandemic will affect how well future generations are able to adjust to new rules, legislation, online learning resources, *etc.*, and solve problems in the future [52]. According to studies, students have mixed feelings about online learning [53, 54, 55]. Positive comments were made regarding the online environment's adaptability, financial viability, and research views, as well as the platforms' user interfaces and accessibility to Internet networks.

3. MATERIALS AND METHODS

3.1. Study Design

This is a cross-sectional questionnaire-based study conducted online. The cohort is the students enrolled in our institute at the time of the study.

3.2. Study Population

All the undergraduate and postgraduate students studying at the institution were included. A total of 915 students representing the university's different colleges made up the sample size. The sample size was evaluated with the formula suggested by Pocock. All of the respondents, including males and females, were 16 years old or older and belonged to various socioeconomic situations.

3.3. Inclusion and Exclusion Criteria

All the students who willingly participated in the study and submitted their responses with informed consent were included. Feedback collected maintained total anonymity and promised that the students were free to voice their opinions, which would not affect their academic results.

3.4. Place of Study

The study was conducted at King Faisal University, Al-Ahsa, Kingdom of Saudi Arabia.

3.5. Measures

The first questionnaire used in this study was the Students' perception of the online learning Questionnaire [56], consisting

of 13 items. In the first section of the survey, students were required to provide personal information (age, gender, and academic year), an overview of their IT knowledge, and a declaration of whether they had ever taken an online course before. The second section of the survey asked respondents to select as many of the six categories of possible advantages and disadvantages of online learning that applied to them. In the third section, respondents were required to compare face-to-face learning versus online learning in terms of their capacity to master learning objectives (knowledge, clinical skills, and social competencies) using a 5-point Likert scale (1 = definitely ineffective, 5 = definitely effective). Additionally, students were asked to rate how active they were in class (1 = extremely inactive, 5 = extremely active). In the final section using a Likert scale of 1 to 5 (1 = extremely unenjoyable and 5 = extremely enjoyable), students were asked to score their level of acceptance of online classes.

Another questionnaire used in this study was Psychological Well-being Questionnaire [57] included 18 items that are basically related to autonomy, environmental mastery, personal growth, positive relations with others, the purpose of life, and self-acceptance. Responses were scored on the basis of a Likert 5-point scale where 1 is strongly agree and 7 strongly disagree. To calculate subscale scores for each participant, sum respondents' answers to each subscale's items. Higher scores mean higher levels of psychological well-being.

Sociodemographic variables of participants' gender, age, education, financial condition, and level of IT skills were added for the general information of the participants

3.6. Procedure

The survey was conducted among college students at King Faisal University in Saudi Arabia. The target population included students from a range of socioeconomic backgrounds, both male and female students, and students from medical and non-medical colleges. The survey was conducted online using Google Survey, a widely used platform (Google LLC, Mountain View, California, USA). All respondents willingly agreed to participate after being fully informed of the study's goals. Data were kept private and only released when necessary for research.

3.7. Ethical Clearance

The institutional ethical committee of King Faisal University in Al-Ahsa, Kingdom of Saudi Arabia, granted approval for this study with reference number KFUREC-2022-JAN-EA000384. An anonymous and validated questionnaire form was distributed to the students after describing the study's goal.

4. RESULTS

4.1. Characteristics of the Population (n=915)

The characteristics of the students are summarized in Table 1. Among the 915 students, 405 (44%) were males and 510 (56%) were females. The age of the students ranged from 18 to 34 years ($M = 22.66$, $SD = 2.15$). The total number of undergraduate students was 639 (70%) while post-graduate

students were 126 (14%). A total of 483 (53%) students had prior e-learning experience, while 432 (47%) did not. A total of 412 respondents (45%) said they had high IT skills, 410 (44%) said they had moderate skills, and 93 (11%) said they had bad skills.

Table 1. Characteristics of the study population (n=915).

Variables	N (%)
Gender	
Male	405 (44%)
Female	510 (56%)
Age	
18-24	684 (75%)
25-34	231 (25%)
Educational Qualification	
Preparatory year	150 (16%)
Undergraduate	639 (70%)
Postgraduate	126 (14%)
Previous experience in e-learning	
Yes	483 (53%)
No	432 (47%)
IT skills	
High	412 (45%)
Moderate	410 (44%)
low	93 (11%)

4.2. Advantages and Disadvantages of e-learning

The most frequent advantages of e-learning chosen by respondents were the ability to record a meeting (26%), continuous access to online materials (20%), the opportunity to stay at home and in comfortable surroundings (18% each), and learning on your own pace (15%). While class interaction during online learning was chosen by only (3%) of students.

The majority of respondents chose technical problems with IT equipment (34%) and lack of self-discipline as the main disadvantages (Table 2).

Table 2. Advantages and disadvantages of e-learning.

Variables	N (%)
Advantages of e-learning	
Access to online materials	186 (20%)
Learning on your own pace	138 (15%)
Ability to stay at home	162 (18%)
Classes interactivity	30 (3%)
Ability to record a meeting	237 (26%)
Comfortable surrounding	162 (18%)
Disadvantages of online learning	
Reduced interaction with the teacher	183 (20%)
Technical problems	312 (34%)
Lack of interactions with patients	21 (2%)
Poor learning conditions at home	81 (9%)
Lack of self-discipline	201 (22%)
Social isolation	117 (13%)

4.3. Comparison Between Face-to-face and Online Learning

There was a statistically significant difference between face-to-face (M = 3.91) and online learning (M = 3.41) in terms of perspectives on the process of learning's capacity to increase knowledge (P < .001). In terms of enhancing skills, e-learning was thought to be less successful than face-to-face learning (M = 2.70, M = 3.86, respectively) (P < .001) and social competencies (M = 2.82, M = 4.03, respectively) (P < .001) (Fig. 1). Students reported being less active in their online classes (M = 3.36) compared with traditional classes (M = 3.68) (P < .001) (Fig. 2).



Fig. 1 contd.....

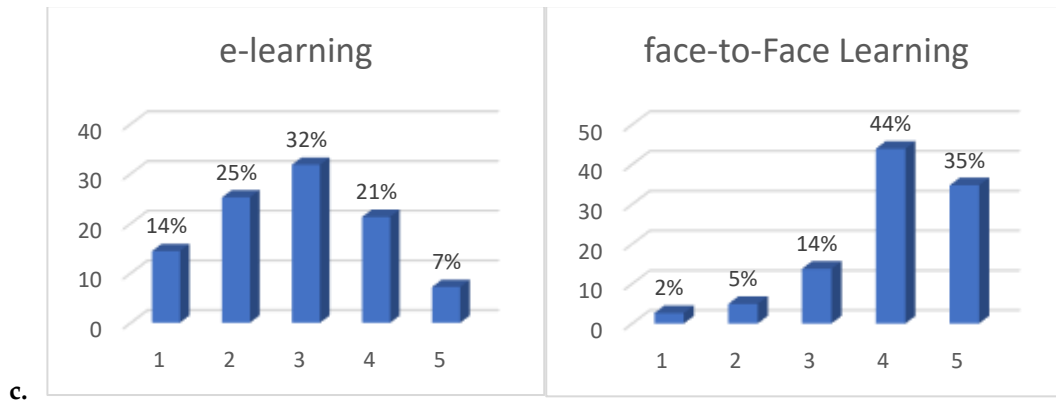


Fig. (1). Students’ perception on the ability to increase knowledge (a), clinical skills (b), and social skills (c) during face-to-face learning and e-learning. Responders used the Likert scale where 1 = extremely ineffective, 5 = extremely effective.

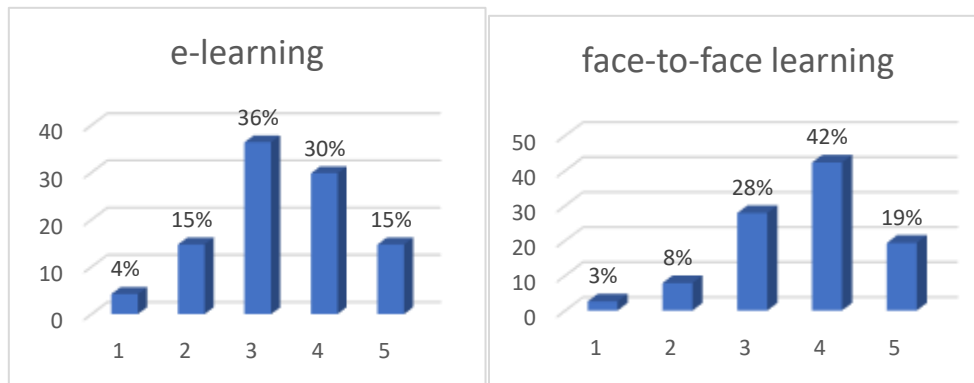


Fig. (2). Student’s activity during e-learning and face-to-face learning, where 1 = extremely inactive, 5 = extremely active.

4.4. Acceptance of e-learning & Traditional Face-to-face Learning

A total of 320 (38%) respondents evaluated e-learning as enjoyable. Of these, 164 (18%) found it very enjoyable, 192 (18%) found it extremely enjoyable, and 137 (15%) found it somewhat enjoyable. A total of 82 (9%) students did not enjoy online learning. For traditional face-to-face learning, 375 (41%) respondents rated it as enjoyable. Of these, 219 (24%)

found it very enjoyable, 137 (15%) observed it extremely enjoyable, and 128 (14%) found it very unenjoyable. A total of 45 (5%) students did not enjoy traditional face-to-face learning (Fig. 3). Students measured that they enjoyed traditional face-to-face learning (M=3.49) more as compared to online learning (M=3.08) ($P < .001$). There was a statistically significant difference ($P < .001, P < .05$) between males (M=3.41, M=3.24) and females (M=3.17, M=3.34) in terms of acceptance of e-learning and traditional face-to-face learning respectively.

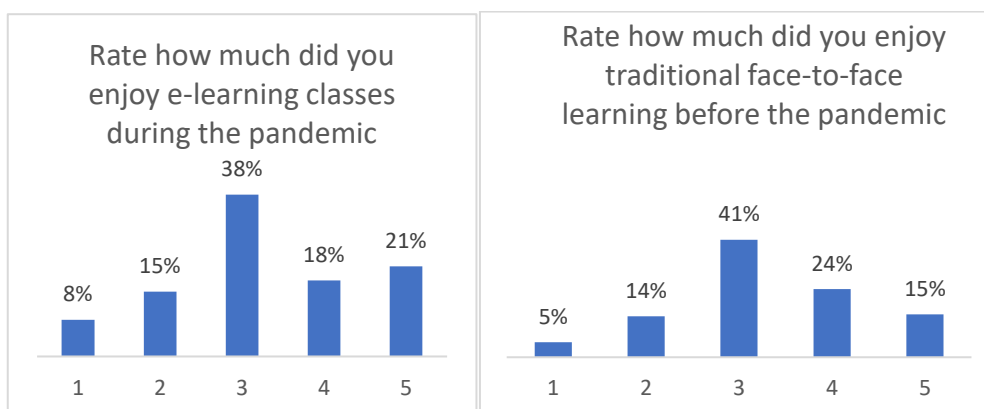


Fig. (3). 3 Level of acceptance of e-learning, where 1 = extremely unenjoyable, 5 = extremely enjoyable.

The study aims to determine if there is a difference in students' psychological well-being in response to e-learning and face-to-face learning methods. To test this hypothesis independent sample t-test was conducted. Table 3 reveals that the average psychological well-being score of students for e-learning (negative perception of e-learning M=86.92 SD=12.45) is not significantly higher than (positive perception of e-learning M=89.75 SD=13), t=1.23, p=.267. These findings suggest that there is no difference in students' psychological well-being in response to their perception of the e-learning method. Out of six components of psychological well-being (autonomy, environmental mastery, personal growth, positive relations with others, the purpose of life, and self-acceptance), only autonomy is significantly different in students' perception of the positive and negative effects of e-learning on psychological well-being (negative perception of e-learning M=14.71 SD=3.39) significantly higher than (positive perception of e-learning M=15.07 SD=2.83), t=10.13, p=.002. Students have good autonomy when they positively respond to the e-learning method.

Table 4 shows that the average psychological well-being score of students for face-to-face (negative perception of face-

to-face learning M=84.34 SD:12.28) is not significantly higher than (positive perception of face-to-face learning M=91.59 SD=12.40), t=.168, p=.682. These findings suggest that there is no significant difference in students' psychological well-being in response to their perception of face-to-face learning. Still, differences exist when we check the mean value of the groups. Among the six components of psychological well-being (autonomy, environmental mastery, personal growth, positive relations with others, the purpose of life, and self-acceptance), autonomy (negative perception of face-to-face learning M=14.71 SD:3.39, positive perception of face-to-face learning M=15.23 SD:2.91), personal growth (negative perception of face-to-face learning M=15.56 SD:3.59, positive perception of face-to-face learning M=17.25 SD:2.91) and positive relations with others (negative perception of face-to-face learning M=12.27 SD:2.81, positive perception of face-to-face learning M=13.65 SD:3.55) are significantly different in students' perception of the positive and negative impact of face-to-face learning on psychological well-being with t=10.13, p=.002. It means that students have high autonomy, personal growth, and positive relations with others when they have face-to-face learning methods instead of e-learning.

Table 3. t-test result of the impact of e-learning on psychological well-being and its factors.

Variable (factors)		M (mean)	(SD)	t	df	P
Total PWB	Negative perception of e-learning method	86.92	12.45	1.23	420	.267
	Positive perception of e-learning method	89.75	13			
Autonomy	Negative perception of e-learning method	14.71	3.39	10.137	420	.002
	Positive perception of e-learning method	15.07	2.83			
Environmental	Negative perception of e-learning method	13.95	2.96	1.6	420	.206
	Positive perception of e-learning method	14.72	3.13			
Personal Growth	Negative perception of e-learning method	16.36	3.14	3.11	420	.078
	Positive perception of e-learning method	16.65	3.47			
Positive Relation	Negative perception of e-learning method	12.91	3.42	1.02	420	.311
	Positive perception of e-learning method	13.18	3.24			
Purpose in life	Negative perception of e-learning method	14.44	3.25	1.29	420	.256
	Positive perception of e-learning method	14.50	3.22			
Self-acceptance	Negative perception of e-learning method	14.54	3.57	.28	420	.595
	Positive perception of e-learning method	15.61	3.43			

Note: *PWB (Psychological well-being)

Table 4. t-test result of the impact of face-to-face learning on psychological well-being and its factors.

Variable (factors)		M (mean)	(SD)	t	df	P
Total PWB	Negative perception of face-to-face learning	84.34	12.28	.168	396	.682
	Positive perception of face-to-face learning	91.59	12.40			
Autonomy	Negative perception of face-to-face learning	14.48	3.30	14.28	396	.000
	Positive perception of face-to-face learning	15.23	2.91			
Environmental	Negative perception of face-to-face learning	13.70	3.17	.615	396	.433
	Positive perception of face-to-face learning	14.87	2.90			
Personal Growth	Negative perception of face-to-face learning	15.56	3.59	21.19	396	.000
	Positive perception of face-to-face learning	17.25	2.91			
Positive Relation	Negative perception of face-to-face learning	12.27	2.81	34.64	396	.000
	Positive perception of face-to-face learning	13.65	3.55			
Purpose in life	Negative perception of face-to-face learning	13.98	3.03	3.07	396	.08
	Positive perception of face-to-face learning	14.84	3.33			
Self-acceptance	Negative perception of face-to-face learning	14.33	3.54	.09	396	.765
	Positive perception of face-to-face learning	15.72	3.41			

Note: *PWB (Psychological well-being)

5. DISCUSSION

In this empirical study, we evaluated KFU students' perception of online learning during the COVID-19 pandemic. Ease of access to educational materials and the ability to record a meeting were shown as the strongest advantages of online learning among participants in our survey. Remote access is of particular importance during the COVID-19 pandemic, but it can also reduce the cost of accommodation and transportation in other settings [58]. Through the method of e-learning, we can deliver learning materials to the students quickly and efficiently, standardized, and if needed, updated [59]. Two methods of content delivery are possible: instructor-led learning and self-directed learning. With self-directed online learning, the learner can control his own schedule. Self-directed online learning can perform better than traditional face-to-face learning techniques, according to recent research by Peine *et al.* [60].

There are many disadvantages of the e-learning method. Technical problems and a lack of self-discipline are the top issues that respondents in this survey mentioned. This result is in line with other recently released research examining how students felt about taking online classes during the pandemic [61].

Many nations have abolished clinical clerkships. The lack of real patients in a clinical setting also presented a problem for medical institutions, and online learning cannot completely replace it [60]. To some extent, using virtual patients (VPs) could be a solution to this problem. According to their respondents, Gherhes, *et al.* [62] highlighted three primary benefits of e-learning: time efficiency, convenience, and accessibility. However, the respondents felt that the biggest disadvantage of e-learning was the loss of interaction, which was confirmed by those who said they missed talking to their peers.

Unexpectedly, 47% of survey respondents had never participated in any type of online learning prior to the COVID-19 pandemic, which may be the main cause of technical problems being the biggest drawback of e-learning in this study. A reliable internet connection and the required hardware and software are necessities for e-learning [63]. Before and during an online course, the IT department should provide technical support and direction to ensure that both students and lecturers are comfortable using the equipment. The learning process might be hampered by a lack of interaction between students and facilitators as well as by unclear learning objectives [64]. According to Stacey and Gerbic [65], students' levels of self-discipline might grow as they mature, which is consistent with the results of our study.

In our study, we made the assumption that students could expand their knowledge through e-learning to the same extent as through traditional learning, however, the actual results showed a significant difference. Results indicated that e-learning is clearly less effective than traditional methods of learning in terms of improving students' clinical and social skills. E-learning is most effective when used in conjunction with traditional classes to teach clinical skills. Video instruction appears to be superior to text-based materials for

teaching practical skills [66] and it is consistent with Peyton's 4-step skill acquisition strategy [67]. Remote standardized patients (RSPs), who interact with students online, offer an intriguing approach to encouraging social skills. RSPs are able to illustrate a particular clinical scenario while also evaluating the student and giving immediate feedback. The use of RSPs and Skype and their influence on residents' social skills were investigated by Langenau *et al.* [68]. 90% of the participants in their study agreed that this style was successful in teaching communication skills [68].

It's interesting to see that respondents felt they were less active in e-learning than in traditional face-to-face lectures. One of the causes can be that e-learning courses weren't developed with an interactive approach. During the COVID-19 epidemic, just 15% of respondents cited class interaction as an advantage of online learning. E-learning was also rated less favorably by participants and as being less participatory [69]. The level of interaction in online learning can be increased in a variety of ways. Gamification is a novel and fruitful approach in which "game design aspects are employed in non-game circumstances." [70]. Gamification has been demonstrated to be successful in various domains, particularly in education, in a systematic review undertaken by Hamari *et al.* [71]. Through social and collaborative learning, we can also make online learning more interactive. The use of social interaction between students and teachers is permitted when using this method. In an open forum, they might collaborate to exchange concepts and broaden their knowledge. In their study, Bergl *et al.* [72] found that the majority of locals believed Twitter improved their education.

This study provides some interesting results with regard to the relationship between online learning and its impact on psychological well-being in a situation that was very stressful, as is the case with university students during the pandemic. Another objective of our study was to check if any relationships exist between the positive and negative perception of e-learning and student psychological well-being and its six dimensions. We didn't find any significant relationship between positive and negative perceptions of e-learning/face-to-face learning with psychological well-being and its dimension except autonomy. This result demonstrates that students with a negative perception of e-learning have a higher individual capacity to maintain their individuality in different contexts and situations with determination, independence, and personal authority [73]. In line with previous research conducted by Hidayat *et al.* [74], According to Rahmasari *et al.* [75], students are not yet prepared to learn online because of insufficient technology and their preference for in-person interactions with peers and teachers. Another study by Rattelle *et al.* [76] and Weiting [77] examined the relationship between psychological well-being and perceived autonomy. Except for the volitional dimension of autonomy, both studies indicated a positive correlation between perceived autonomy and well-being.

In this study, we also found significant relationships between traditional face-to-face learning and autonomy, personal growth, and positive relations with others. The result recommends that students with a positive perception of face-to-

face learning also have high scores on autonomy, personal growth, and positive relations with others. These findings are similar to those of other studies [78, 79].

The students felt that the online learning environment had a detrimental impact on their personal and academic growth. They were concerned that they would struggle to finish their coursework and that they wouldn't be able to appear for their exams on time. Adesina and Orija [80], in contrast to our findings, discovered that students believed online learning offered five main advantages: career growth, scheduling flexibility, self-paced learning, a broader global viewpoint, and skill development.

CONCLUSION

This article discusses a current and very important topic, focusing on the analysis of students' learning and psychological well-being during the transitional period from traditional face-to-face to e-learning during the period of the COVID-19 pandemic. The effects of online education during the COVID-19 pandemic on students' well-being were analyzed. The authors' general perspective has been confirmed, and our findings corroborate those of Bali and Liu [81] and Platt, Raile, and Yu [82], showing that students have clear perceptions of online education, and consider it essential for their career success but they have rated traditional way of teaching is much better than e-learning.

All aspects of teaching and learning in higher education have changed as a result of the usage of the e-learning technique. Students have faced many problems and differences in perception due to the transfer of content from traditional teaching to online teaching [83]. Some students believe online learning is ineffective since there is little interaction between students, faculty members, and other classmates and more interaction with technology. To improve their teaching and learning methods, higher education institutions should review the input from their students [84].

This study demonstrated the value of e-learning as a teaching strategy. Our research participants believed that e-learning is well acceptable and useful for advancing knowledge. Clinical and social skills development should also be prioritized in addition to knowledge acquisition. Students should be able to interact with the materials and receive feedback as part of e-learning, which should focus on more than just content delivery. A well-planned strategy and a more proactive approach are needed to integrate online learning into the curriculum successfully.

The COVID-19 pandemic and its associated consequences will persistently affect college students' mental well-being. Mental health services must be delivered to combat the mental instability of the students. In addition, Universities and colleges should create an environment that will foster mental health awareness among King Faisal University students. It is crucial to develop healthy policies and health promotion initiatives at the university that stress building healthy living, working, and learning environments for students and staff, especially when tailored to the specific physical and mental health challenges identified in this study.

LIMITATION

This study has several limitations. The respondents came from King Faisal University, and most of them (56%) were female students. However, the sample is representative, but most students who showed interest in participating in this study are females. A wider institutional range would provide a more complex picture of the perceptions of young people studying in the Saudi Arabia university system with regard to online teaching and learning. This study was limited to only one university and did not analyze, by comparison, the perceptions of young people studying in other Universities. An evaluation of the teachers' impressions of the same research questions would reveal the perspectives of several groups who played distinct roles within the same process but shared similar objectives. Another drawback is the evolving pandemic because it is uncertain how quickly infections will start to fall. Given the existing issues with online learning and the long-term losses in terms of students' knowledge and skills in accordance with the demands of the job market, education is one of the industries that will be most immediately impacted. Research is required to determine predictability models to anticipate future responses to online learning, optimize the benefits of online learning, and effectively handle the inherent drawbacks from a personal and emotional standpoint.

AUTHORS' CONTRIBUTIONS

All authors contributed to the paper. Conceptualization, Seema Irshad; Formal analysis, Seema Irshad; Investigation, Seema Irshad; Methodology, Seema Irshad; Supervision, Osama Al-Saeed; Validation, Osama Al-Saeed, and Nurjahan Begum; Visualization, Nurjahan Begum; Writing – review & editing, Nurjahan Begum.

LIST OF ABBREVIATIONS

- UNDP** = United Nations Development Programme
PWB = Psychological Well-being

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Ethics Committee of King Faisal University (KFU-REC-2022-JAN-EA000384, data of approval 18 January 2022).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were following the ethical standards of institutional and/or research committees and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all subjects involved in the study.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in the [seemakfu/Seemairshad] at <https://zenodo.org/badge/624984513.svg>.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Declared none.

APPENDIX

1) Students' perception of online learning during the COVID-19 pandemic.

2) Psychological Well-being (18 items)

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