Higher education student perceptions regarding the practice of telemental health services in Kingdom of Saudi Arabia

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ABSTRACT

الأهداف: دراسة تصورات طلبة التعليم العالي فيما يتعلق بممارسة الخدمات الصحية العقلية عن بعد في المملكة العربية السعودية.

المنهجية: وصفيًا مقطعيًا من خلال استطلاع عبر الإنترنت يتم إجراؤه ذاتيًا. تم تعيين العدد المستهدف من الردود على ما لا يقل عن 385 طالبًا من عينة مريحة من الذين التحقوا ببرامج أكاديمية مختلفة في الجامعة المختارة لفصل ربيع 2022م. تم جمع البيانات في شهر مارس 2022م.

النتائج: كان مجتمع العينة 401 إجابة مؤهلة. معظم المشاركين كانوا من الرياض (39.15%)، إناث (66.33%)، غير متزوجين (64.83%) وقت جمع البيانات. لم يستخدم 45.38% من المشاركين أي خدمات صحية عقلية عن بعد في الماضي. علاوة على ذلك، أفاد 34.41% من المشاركين أنهم يفضلون استخدام طرق مختلطة من الخدمات العقلية التي تجمع بين التفاعلات وجهاً لوجه والتفاعلات عن بعد. الخدمات الصحية العقلية التي يمكن تقديمها عن بعد بناءً على تصورات الطلبة كانت الاستشارات (75.81%)، يليها التعليم والتعزيز (64.33%). أفاد ما يقرب من نصف المشاركين أن الإنترنت والثقافة من بين العوامل التي شكلت تصوراتهم عن الصحة العقلية عن بعد في المملكة العربية السعودية، بينما كان العامل الأقل أهمية هو تجاربهم مع مقدمي الخدمات.

الخلاصة: أظهرت الدراسة الحالية أن طلبة التعليم العالي ينظرون إلى الصحة العقلية عن بعد بشكل إيجابي وأنهم على استعداد لاستخدام خدمات الصحة العقلية عن بعد في المستقبل؛ بالإضافة إلى ذلك، كانت أهم التقنيات المتعلقة بالخدمات الصحية العقلية عن بعد هي مؤتمرات الفيديو، والمرئيات السمعية، والهواتف.

Objectives: To study higher education student perceptions regarding the practice of telemental health services in Saudi Arabia.

Methods: The study conducted a cross-sectional descriptive design through an online self-administered survey. The targeted number of responses was set to at least 385 convenience-sample students who were enrolled in different degree programs at the selected university for the Spring 2022 semester. Data collection was done during March 2022.

Results: The sample population was 401 eligible responses. Most respondents Most respondents were from Riyadh (39.15%), females (66.33%), single (64.83%) at the time of data collection. Forty-five percent of participants did not use any telemental health services in the past. Moreover, 34.41% of the participants reported that they preferred to use mixed methods of mental services that combined face-to-face and distanced interactions. Telemental services that can be provided based on students' perceptions were consultations (75.81%), followed by education and promotion (64.33%). Almost half of the participants reported that the internet and culture are among the factors that have shaped their perceptions of telemental health in Saudi Arabia, while the least important factor was their experience with providers.

Conclusion: The current study showed that the higher education students perceived telemental health positively and were willing to use telemental health in the future; in addition, the most essential technologies related to telemental health services were videoconferences, audio-visuals, and telephones.

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The emergency crisis of the Coronavirus disease (COVID-19) pandemic affected more than 220 million people around the globe and led to 4.5 million deaths, resulting in changes in many daily life routines and practices.[1] The pandemic also highlighted the

power of technology as a creative solution and tool to reduce the impact of the pandemic in many different aspects. In the health care sector, electronic health (E-health) practices have expanded extremely due to the pandemic.[2]

Telehealth services may include teleconferences, teleconsultations, teleassessments, teletreatments, telefollow-ups, and more.[3] The COVID-19 pandemic exposed the increased demand for health care services within many communities; for example, coping with the virus and maintaining the management of health care services were stress-provoking to health care providers, patients, and the general population, and research indicates that infected patients struggled with a high level of stress due to fear, uncertainty, financial stress, and limited in-person interaction.[4]

Additionally, the precautionary instructions developed by the Saudi Ministry of Health (MOH) restricted the movement of and established a curfew for the public, causing people to struggle with frustration, confusion, distraction, depression, anxiety, hopelessness, and posttraumatic stress disorder.[4] People with pre-existing mental health conditions were extremely more affected since they are more sensitive to stress than the general population.

The pandemic made the treatment of people with mental health conditions a challenging situation by restricting their treatment; patients who need ongoing assessment and treatment faced barriers to access to mental health services during the pandemic for many reasons, such as COVID-19 risk of infection, which caused their treatments to be considered less effective by patients of health care workers.[4]

The demands of finding alternative methods to deliver mental health care are increasingly necessary to fill the gaps in the health care system. Such an alternative is telemental health services, which adopt the use of information and communication technologies to provide mental health care remotely.[5]

Even fewer studies have been conducted on students' perceptions of telemental health in Saudi Arabia, the willingness to use such services among higher education students, and the preferred technologies to use to access such services. Hence, this research aims to study higher education student perceptions regarding the practice of telemental health services among students enrolled in different academic degree programs at a selected

university in Saudi Arabia. The sample consists of enrolled students from different majors, which allows the incorporation of different perspectives.

Methods. The current study conducted a cross-sectional descriptive design through an online self-administered survey that was released to students through email invitations in March 2022. The selected university has almost equal percentages of males and females enrolled students at different academic levels. All enrolled students were invited to participate in the study. The targeted number of responses was set to at least 385 convenience-sample students who were enrolled in different degree programs at the selected university for the Spring 2022 semester. Active enrolled students for Spring 2022 semester were included in the study, while individuals who are not students were excluded.

The questionnaire was developed based on a literature review, expert opinions, and key measurements of study terms. Participating in the online survey was voluntary, and respondents were given the option to participate in either Arabic or English; they were also informed of the aim of the study and the anonymity of their responses given that no identified personal data was being collected.

In addition, for privacy and confidentiality, the data collected were secured as a softcopy with a passcode to which only investigators had access. The questionnaire comprised the following information: 2 screening questions, 6 demographic questions, 2 telemental health services questions, 7 questions related to students' perceptions of telemental health services, and one question about the factors associated with developed perceptions.

The responses were recorded, validated, and analysed using appropriate statistical software (Microsoft Excel version 16.54). The descriptive data are presented in tables and figures that contain frequencies and percentages, as well as associations between different variables and preferences for using chi-square with a statistical significance set at the $\alpha=0.05$ level.

The ethics approval application was submitted to the Saudi Electronic University Ethics Committee for review and approval, as the study complies with the World Medical Association Declaration of Helsinki and acquired ethical approval on March 11, 2022, with reference ID#SEUREC-CAF21136.

Results. The total number of responses was 443. Forty-two responses were excluded because they did not meet the inclusion criteria, leading to 401 eligible responses, as presented in **Table 1**. Respondents came

Table 1 - Demographic data (N=401).

Categories	n	(%)
Gender		
Female	266	(66.33)
Male	135	(33.66)
Age		
18-25	204	(50.87)
26-35	136	(33.91)
36-45	54	(13.46)
46-55	7	(1.74)
Marital status		
Single	260	(64.83)
Married with kids	92	(22.94)
Married with no kids	28	(6.98)
Divorced	21	(5.23)
Cities		
Riyadh	157	(39.15)
Jeddah	71	(17.70)
Dammam	116	(28.92)
Abha	18	(4.48)
Madinah	12	(2.99)
Qassim	4	(0.99)
Tabuk	3	(0.74)
Jazan	4	(0.99)
Al-Ahsa	10	(2.49)
Najran	4	(0.99)
Hail	2	(0.49)
Academic degree		
Diploma	14	(3.49)
Bachelor	386	(96.25)
Post-graduate	1	(0.24)
Colleges		
Administrative and Financial Sciences	137	(34.16)
Health Sciences	93	(23.19)
Computing and Informatics	73	(18.20)
Science and Theoretical Studies	98	(24.43)

Table 2 - Advantages and challenges of tele-mental health in Saudi Arabia (N=401).

Items	Advantages	Challenges	I don't know
		(%)	
Security	(44.6)	(37.4)	(18.0)
Culture	(43.1)	(42.6)	(14.2)
Legality	(44.9)	(31.2)	(23.9)
Accessibility	(56.6)	(29.9)	(13.5)
Privacy	(53.1)	(32.4)	(14.5)
Quality of services	(42.6)	(38.4)	(19.0)
Trust	(39.9)	(44.4)	(15.7)
Qualifications of healthcare providers	(41.9)	(37.2)	(20.9)
Technology	(61.6)	(27.4)	(11.0)
Conveniency	(64.6)	(21.7)	(13.7)
Affordability	(32.7)	(50.6)	(16.7)
Regulations	(43.9)	31.2	(24.9)

Table 3 - The association between age and students' preference of using tele-mental health services (N=401).

Age	Preference to use tele-mental health services		
	Maybe (n=154)	No (n=93)	Yes (n=154)
		n (%)	
18-25	79 (19.70)	63 (15.71)	62 (15.46)
26-35	56 (13.96)	21 (5.23)	59 (14.71)
36-45	15 (3.74)	8 (1.99)	31 (7.73)
46-55	4 (0.99)	1 (0.24)	2 (0.49)
P-value of overall chi-square fit value		0.0009244	

from 11 different cities across Saudi Arabia: Riyadh, Jeddah, Dammam, Abha, Madinah, Qassim, Tabuk, Jazan, Al-Ahsa, Najran, and Hail.

The majority of respondents ranged between Riyadh (39.15%) and Dammam (28.93%), were from the College of Administrative and Financial Sciences (34.16%), and were aged between 18 and 25 years old (50.87%). There was a high response rate from the female participants (66.33%) compared to (33.66%) males. A total of 64.83% of the respondents were single at the time of data collection, 22.94% were married with children, 6.98% were married without children, and 5.23% were divorced.

As many as 45.38% of participants indicated that they had not used any telemental health services in the past, 42.89% responded that they did not know what telemental health is, 6.73% said they had used telemental health services in the past, and 20 (4.98%) said they might have previously used telemental health services.

Moreover, 34.41% of the participants reported that they preferred to use mixed methods of mental services that combined face-to-face and distanced interactions, 28.67% preferred face-to-face mental health services, 19.70% preferred virtual or distanced mental health services, and only 17.20% stated that it did not matter.

When asked about services that could be provided through telemental health for certain situations, the answers varied; most of the participants (75.81%) agreed upon receiving consultations, followed by education and promotion (64.33%), while the services least agreed upon were surgeries (2.49%). Furthermore, 2.24% of the respondents reported that no mental health services should be provided through teleservices.
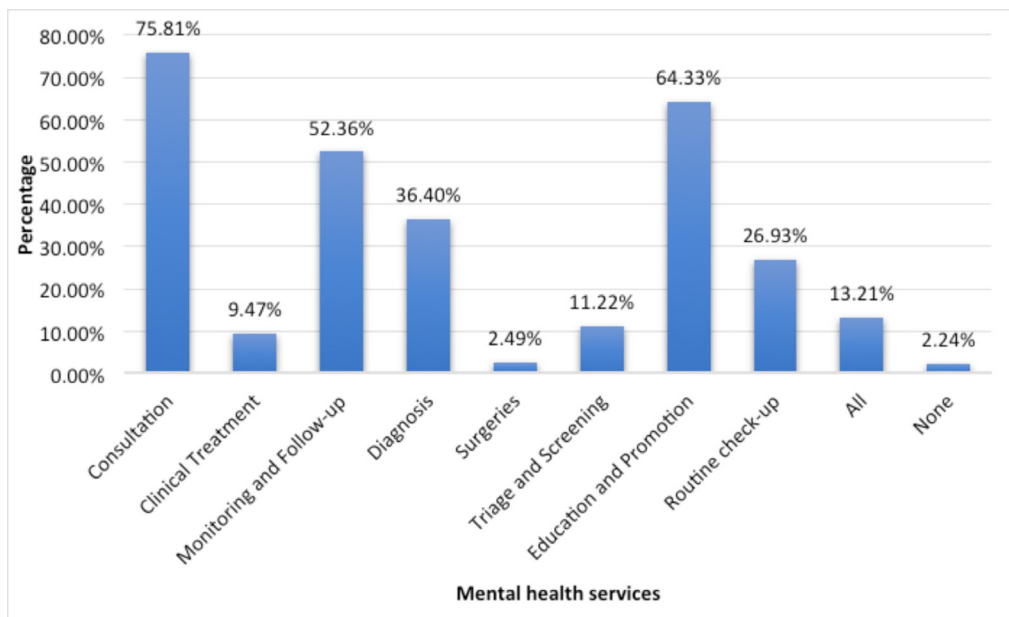
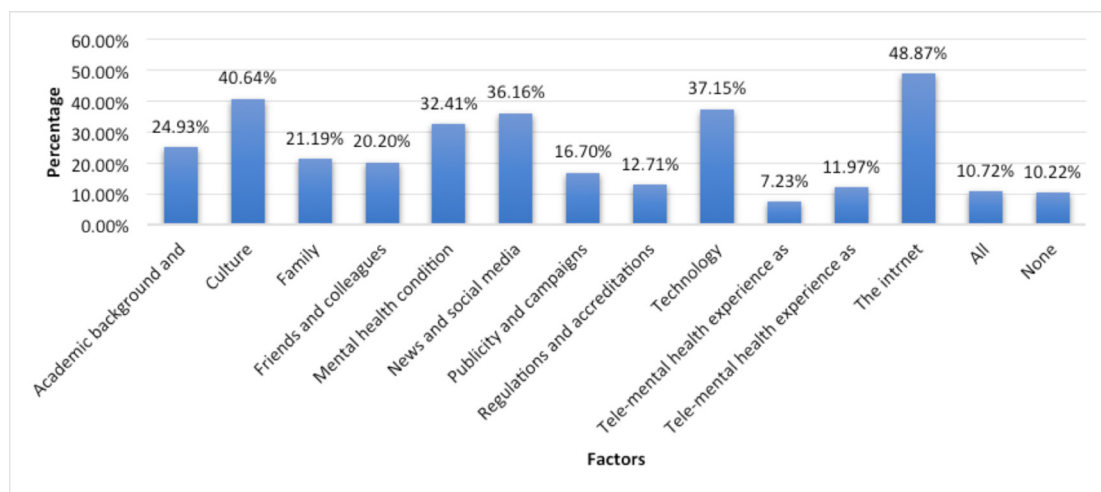**Figure 1 -** Students' perceptions on mental services that can be provided virtually (N=401)

Figure 2 - Factors that may shaped students' perceptions of tele-mental health services in Saudi Arabia (N=401)

Figure 1 shows the students' perceptions of mental services that can be provided virtually.

When asked about the medium of telemental health delivery, more than half of the participants (57.10%) responded for videoconference, with 41.14% in favour of audiovisual programs, followed by 38.65% for audiocalls through the telephone, 36.15% for social media, 31.6% for all services, and 29.17% for messaging programs.

Furthermore, a quarter of the participants agreed on video messages, with 102 (25.43%) responses; texting,

with 76 (18.95%) responses; and websites, with 74 (18.45%) responses. Last, participants agreed that the least preferred approach for delivering telemental health services was animated programs, with 59 (14.71%) responses, while approximately 7 respondents (1.74%) replied that none of the mentioned approaches should deliver telemental services.

When asked about the infrastructure required to deliver telemental health services, 62.09% of the respondents indicated that the internet was required, along with 49.87% who stated smartphones were

necessary. In addition, 37.40% of the participant agreed that laptops or computers were needed, 25% stated that cameras were needed, and 3.74% reported that landlines were necessary. Finally, 2.99% stated that none of the aforementioned technologies were needed, while 33.91% stated that all the aforementioned technologies were needed.

Regarding participants' perceptions that health care workers who are specially trained to provide face-to-face mental health services are capable of providing distanced mental health services, 41.64% of participants agreed, 35.91% reported that the workers might be capable of delivering online services, 17.20% did not know, and 5.23% did not agree.

Furthermore, when asked about Saudi Arabia's infrastructure preparedness to operate telemental health services, 64.33% of the participants agreed, 25.18% stated they do not know, and 10.47% disagreed.

Moreover, most of the participants agreed that convenience and technology are considered an advantage regarding telemental health in Saudi Arabia. Almost half of the participants agreed upon affordability and trust being challenges. **Table 2** shows the descriptive numbers of students' perceptions of the advantages and disadvantages of using telemental health in Saudi Arabia.

Almost half of the participants reported that the internet and culture are among the factors that have shaped their perceptions of telemental health in Saudi Arabia, while the least important factor was their experience with providers. **Figure 2** shows the factors that may have shaped students' perceptions of telemental health services in Saudi Arabia.

When asked about their preference for using telemental health if they faced any mental health problems, 38.40% of the participants preferred to use it, another 38.40% said maybe, and 23.19% said they would not prefer to use it.

Finally, **Table 3** represents the association between age and students' preference for using telemental health services after conducting chi-square tests. No association was found between the variables and students' preferences for using telemental health services except for the significant association between age and students' preferences for using telemental health services at the α=0.05 level.

Discussion. It was found that almost half of the respondents had not used any telemental health services in the past; only a few reported using such services either presently or in the past. Additionally, many reported that they did not know what telemental health is. These

results are reasonable since a survey study in the US among college students that aimed to explore students' experience of telemental health resources reported that only 10.1-13% of the participants had previously used telemental health services.[6]

Regarding their preference, many respondents preferred to use mixed methods of mental service that combined face-to-face and distanced interactions, followed by the preference to use face-to-face mental health services over telemental health services. Only a few respondents stated that the format did not matter to them. These results can be justified by the fact that the literature on college students' preferences for traditional or telemental health services is mixed with a preponderance of studies suggesting that students still tend to prefer face-to-face mental health care.[7]

Additionally, most of the respondents agreed upon services that can be provided in-distance, namely, consultation, education and promotion, while the least service agreed upon were surgeries; only a few said that none of the mental services should be provided through teleservices. These results are expected since telemental health has been in use for over half a century. For instance, in the US, the first program of live interactive videoconferencing was held in 1959 at the University of Nebraska, where it was used for education, research, consultation, and treatment. Additionally, there is a strong evidence base that suggests that telehealth is a better form of practice compared with traditional in-person consultation for certain patient groups.[8] Moreover, participants across a variety of telemental health studies consistently describe a high level of satisfaction with their experience; this includes psychoeducation and mindfulness video sessions.[7]

Furthermore, more than half of the respondents agreed on using videoconferences to deliver telemental services, followed by agreement to use audiovisual programs. This result conflicts with other research that has been conducted among college students, which has found that 93% said they would prefer face-to-face therapy rather than videoconferencing or other virtual counselling.[7]

Moreover, the respondents identified animated programs as the least agreed upon approach to delivering telemental health. However, the results of a study aimed at evaluating an animation training program (Kognito) used as a telemental health intervention to promote suicide prevention awareness at West Virginia University showed that Kognito appears to be an effective online tool for large-scale training and provides the necessary assistance.[9]

Regarding the respondents' perceptions regarding the requirements of the technological infrastructure,

more than half of respondents reported that the internet and smartphones are required to successfully deliver telemental health services. This result is expected. In a study conducted at Taif University between the 1st of November 2018 and the end of February 2019, 90.84% of the 546 respondents reported using a smartphone.[10] Additionally, in the US, more than 90% of students report daily internet usage, and approximately 86% of college students use a smartphone regularly.[11,12]

Likewise, many of our respondents agreed that health care workers who specialize in providing face-to-face mental health services are capable or may be capable of providing telemental health services, while only a few said they either do not know or do not agree that such individuals are capable of doing so. However, there is no strong evidence about health care workers' capability yet. It is worth mentioning that in a study of graduate medical education regarding the training of telemental health services in residency programs, it was mentioned that such training is not a requirement of the accrediting bodies for the residency programs. However, 79% of the respondents strongly agreed that telemental health is an important aspect of training, yet only approximately 20% reported that they had the opportunity to learn about it.[13]

Moreover, many of the respondents said they preferred to use telemental health services if they faced any mental health problems, while others said they might use it, and a few said they did not prefer it. These results are acceptable since a survey study conducted among college students reported that 75% of the respondents had a great willingness to seek help online, while 63% prefer to receive face-to-face help for emotional problems.[7]

However, there are other survey studies that convey contrasting outcomes; for instance, in a survey conducted among college students, 68% of the respondents said they would prefer to speak face-to-face about their mental health concerns.[6] The difference in the students' willingness to utilize and try telemental health services in these studies is due to several factors that correlate with openness to telemental health services, such as previous traditional treatment, the severity of the mental health condition, type of telemental health intervention, the purpose of the service, the level of social support, and gender.[7]

In addition, most of the respondents stated that convenience and technology are treated as advantages regarding telemental health in Saudi Arabia. This can be supported by the fact that many studies acknowledge convenience as one of the first advantages of the telemental health service. A literature review found that

students view telemental health services as convenient and flexible and a way to overcome some structural barriers; the availability of technology in Saudi Arabia, as mentioned earlier, is considered an advantage that can support the abovementioned results. Additionally, it is worth noting that some studies have highlighted limited access to technology, with internet access being seen as a potential drawback of telemental health services.[7]

Likewise, half of the respondents recognized that affordability is a challenge, followed by trust. Nonetheless, affordability is considered one of the main goals of providing telemental health services and telehealth in general. However, it has been determined that telemental programs vary in regarding costs. Some programs are more expensive than traditional in-person mental services.[14]

The trustworthiness of the telemental health service is viewed as a challenge that is reasonable since the literature has reported that students are less likely to disclose personal information online; specifically, 64% of participants reported that they would disclose less information online compared to traditional face-to-face meetings, and they suggested that different online platforms providing telemental health services might have varying levels of perceived trustworthiness.[7]

Concerning the factors that shaped the respondents' perceptions in Saudi Arabia, we found that almost half of the respondents admitted that the internet and culture are among the highest factors that shaped their perceptions; this outcomes are supported by an evidence that the internet can cause acute and sustained changes in cognition, and brain changes.[15] Additionally, perceptual processes are influenced by culture.[16] It is worth mentioning that the participants from the selected university depend on blended learning, which heavily depends on technology and has an influence on their culture. Last, the least influential factor was their experiences with providers; this is understandable since the participants were students.

The current study can be interpreted as the important input of a large population of the Saudi community, namely, higher education students. This research may interest health care decision-makers, health care providers, program developers, researchers, mental health patients, and health policy-makers. However, the results of this study might be affected by some limitations, such as recall bias, limited access to research, and time constraints. Future research could further examine the effect and impact of using telemental health among higher education students.

Conclusion. The results of the study showed that the participants perceived telemental health positively

and were willing to use telemental health in the future; in addition, the most essential technologies related to telemental health services were videoconferences, audio-visuals, and telephones.

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