ORIGINAL RESEARCH

Knowledge, awareness, and practices of telehealth: A cross-sectional study on psychiatric nurses in Jeddah City

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ABSTRACT

The emergence of telehealth stands at the forefront of healthcare evolution, particularly in mental healthcare delivery. The efficacy and adoption of this modality, however, are largely contingent upon the awareness and competence of professionals in the field. This study sought to investigate the awareness, attitudes, and proficiency of psychiatric nurses in Jeddah City regarding telehealth, providing insights into its applicability and potential challenges in the region. Findings indicated that a significant 81% of psychiatric nurses in Jeddah City are familiar with telehealth. Attitudinally, the majority viewed telehealth favorably, with an overall mean attitude score of 3.7 ± 0.91 on a 5-point scale. Proficiency-wise, foundational digital skills were robust, with 72.4% showcasing medium to professional competence in basic computing tasks. However, more specialized telehealth-specific tasks identified areas for enhancement, such as installing software where only 40.4% demonstrated professional or medium competency. Psychiatric nurses in Jeddah exhibit a strong foundational readiness for the integration of telehealth, underscored by their considerable awareness and largely positive attitudes. Targeted training, especially in niche digital areas, is paramount to ensure telehealth's seamless integration and efficacy in mental healthcare delivery.

Key Words: Telehealth, Psychiatric nurses, Jeddah City, Digital proficiency, Mental healthcare

1. INTRODUCTION

Telehealth has emerged as a transformative approach to healthcare delivery, enabling remote access to medical services through the use of telecommunications technologies. It holds immense potential for improving healthcare outcomes, increasing accessibility, and reducing healthcare disparities.[1,2] Nurses, as frontline healthcare providers, play a pivotal role in the successful implementation and utilization of telehealth services. Understanding their knowledge, attitudes, and practices (KAP) toward telehealth is crucial for effective integration into healthcare systems. This comprehensive cross-sectional study aims to examine the KAP of telehealth among nurses, with a particular focus on psychiatric nurses, who serve a vital role in mental healthcare delivery.

Knowledge forms the foundation for nurses' acceptance and adoption of telehealth. Previous research has indicated that nurses with a high level of knowledge about telehealth are more likely to utilize telehealth technologies and perceive them as beneficial.[3,4] In the context of psychiatric nursing, understanding the scope and potential of telehealth in mental health care delivery is of paramount importance. Psychiatric

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nurses require specialized knowledge to leverage telehealth technologies effectively in addressing the unique challenges associated with mental health conditions.[5] Assessing their knowledge will shed light on the extent to which they are prepared to embrace and implement telehealth services in their practice.

Nurses' attitudes toward telehealth significantly influence their willingness to engage with and utilize telehealth technologies. Positive attitudes can enhance the acceptance and utilization of telehealth services.[6,7] In the domain of psychiatric nursing, where building therapeutic relationships is crucial, understanding nurses' attitudes toward telehealth is particularly important. Factors such as perceived patient-provider interaction, privacy and confidentiality concerns, and the impact on the therapeutic alliance can shape attitudes toward telehealth among psychiatric nurses.[8] Examining these attitudes will provide valuable insights into the readiness of psychiatric nurses to embrace telehealth technologies in their clinical practice.

Assessing nurses' current practices and experiences related to telehealth is essential for understanding the actual utilization and challenges faced in the implementation of telehealth services. Previous studies have highlighted various factors influencing nurses' adoption and usage of telehealth, including workload demands, technological proficiency, and organizational support.[9,10] Within the context of psychiatric nursing, exploring the specific use cases, clinical contexts, and patient populations for telehealth services will provide a comprehensive understanding of the unique challenges and opportunities encountered by psychiatric nurses in utilizing telehealth.

Psychiatric nurses play a critical role in addressing mental health needs and are well-positioned to leverage telehealth technologies in providing comprehensive care to patients. Telepsychiatry, a specialized branch of telehealth, enables psychiatric nurses to conduct assessments, provide interventions, and offer ongoing support to individuals with mental health conditions.[11,12] As such, understanding the KAP of telehealth specifically among psychiatric nurses is essential for optimizing mental health service delivery and promoting equitable access to care.

Psychiatric nurses encounter unique challenges and considerations when implementing telehealth services, such as ensuring the privacy and confidentiality of patients, establishing rapport and trust remotely, and managing crises effectively.[13] Investigating their knowledge, attitudes, and practices will provide valuable insights into the readiness of psychiatric nurses to embrace telehealth and inform strategies for overcoming barriers to its effective implementation. This cross-sectional study aims to examine the knowledge, attitudes, and practices of telehealth among nurses, with a specific focus on psychiatric nurses. By assessing their knowledge, attitudes, and current practices, this research will contribute to a comprehensive understanding of the factors influencing telehealth implementation within the nursing profession. Findings from this study can inform policy decisions, educational initiatives, and healthcare system adaptations to enhance the utilization of telehealth services among nurses, ultimately leading to improved healthcare access and outcomes for individuals with mental health conditions.

1.1 Literature review

The literature review reveals several studies that have explored the knowledge, awareness, and practices of telehealth among healthcare professionals, including nurses. Stevenson et al.[3](2010) conducted a literature review on nurses' experiences with electronic patient records and found that familiarity with digital technologies positively influenced nurses' engagement with telehealth services. Similarly, Alshahrani et al.[4] conducted a systematic review of nurses' attitudes towards eHealth and highlighted that nurses who had more experience and training in using technology showed more positive attitudes towards telehealth. These studies suggest that prior exposure and knowledge of digital technologies may impact nurses' acceptance and engagement with telehealth.

Beheshti et al.[9] conducted a scoping review on telehealth adoption by healthcare professionals and emphasized the importance of training and education in facilitating telehealth utilization. They found that healthcare professionals who received adequate training and education on telehealth demonstrated increased confidence and competence in using telehealth technologies. This supports the notion that targeted training programs and educational initiatives can enhance the knowledge and skills of nurses in utilizing telehealth effectively.

In a systematic review and meta-analysis on the effectiveness and barriers of telepsychiatry during the COVID-19 pandemic, Zangani et al.[13] reported that telepsychiatry was effective in improving access to mental healthcare and reducing psychiatric symptoms. However, they also identified barriers such as technical difficulties and concerns regarding privacy and confidentiality. These findings highlight the need to address technological infrastructure and privacy concerns to enhance telepsychiatry adoption among psychiatric care workers.

Depolli et al.[7] conducted a study on telehealth use among nurses during the COVID-19 pandemic in Sudan and identi-

fied factors such as lack of training, inadequate technological resources, and limited awareness as barriers to telehealth utilization. The findings emphasize the importance of addressing these barriers through targeted interventions and resource allocation to promote successful telehealth implementation.

Furthermore, Jain et al.[6] explored nurses' competence in a digitalized healthcare environment and highlighted the need for ongoing training and support to enhance nurses' digital skills. They found that nurses who received continuous education and support demonstrated higher competence in utilizing digital technologies, including telehealth tools.

Greenhalgh et al.[8] conducted a thematic synthesis of qualitative studies on primary care providers' views and experiences towards telehealth. The study revealed that while primary care providers acknowledged the potential benefits of telehealth, concerns related to technological difficulties, patient-provider communication, and reimbursement policies were barriers to adoption. These findings underscore the need for addressing both technological and organizational barriers to facilitate telehealth implementation.

Lastly, Waseh et al.[12] conducted a mixed-methods review on telemedicine training in undergraduate medical education and emphasized the importance of integrating telemedicine training into medical curricula. Their findings highlighted the positive impact of telemedicine training on students' attitudes, knowledge, and skills related to telehealth. This suggests that early exposure to telehealth education can foster positive attitudes and competencies among future healthcare professionals.

To sum up, previous studies have identified factors such as prior experience, training, technological infrastructure, privacy concerns, and education as crucial factors influencing the knowledge, awareness, and practices of telehealth among healthcare professionals, including nurses. Targeted training programs, ongoing support, resource allocation, and integration of telehealth education into healthcare curricula can help overcome barriers and enhance telehealth utilization among nurses, ultimately improving healthcare delivery and patient outcomes.

In the rapidly evolving landscape of telehealth, understanding the proficiency and readiness of healthcare professionals is paramount. While several studies have explored the awareness and practices of telehealth among various healthcare professionals globally, our study uniquely centers on psychiatric nurses in Jeddah City. This focus provides a tailored understanding of the awareness, attitudes, and proficiency of a specialized group of nurses in a specific cultural and geographical context. Given the growing importance of mental health care and the unique challenges it presents in the telehealth domain, insights from our study can be instrumental in guiding targeted interventions, training, and policy formulations specific to Jeddah and potentially other similar contexts. Thus, our research fills a critical gap, offering a nuanced perspective on telehealth readiness among psychiatric nurses in a region where such data was previously sparse.

1.2 Research objectives

1) To assess the knowledge, awareness, and practices of telehealth among psychiatric nurses in Jeddah City, Saudi Arabia.
2) To identify factors influencing the adoption and utilization of telehealth among psychiatric nurses in Jeddah City.

1.3 Rationale/importance of the study

The rationale for conducting the research on the knowledge, awareness, and practices (KAP) of telehealth among psychiatric nurses in Jeddah City is multifaceted and rooted in several key considerations.

Firstly, telehealth has emerged as a promising approach to healthcare delivery, offering a range of benefits such as improved access to care, enhanced patient outcomes, and increased efficiency in resource utilization.[2, 14] However, the successful implementation and utilization of telehealth services rely heavily on the knowledge, attitudes, and practices of healthcare professionals, including nurses. Psychiatric nurses, in particular, play a critical role in mental healthcare delivery and have the potential to leverage telehealth to address the unique challenges and gaps in psychiatric care delivery.

Secondly, understanding the current state of telehealth knowledge, awareness, and practices among psychiatric nurses is essential for addressing barriers and optimizing telehealth implementation. Identifying knowledge gaps and misconceptions can guide targeted educational interventions to enhance nurses' understanding of telehealth concepts, benefits, and limitations. Moreover, assessing the awareness of available telehealth services will shed light on potential disparities in access and provide insights into strategies for improving service availability and referral processes.

Thirdly, examining the current practices and experiences of psychiatric nurses related to telehealth will help identify challenges and opportunities in utilizing telehealth technologies effectively. This knowledge can inform the development of guidelines, protocols, and training programs to address specific barriers and enhance the integration of telehealth into psychiatric nursing practice. By exploring factors influencing the adoption and utilization of telehealth, such as

technological infrastructure, training, and patient acceptance, the research can guide policy and decision-making to create an enabling environment for telehealth implementation.

The importance of this research lies in its potential to contribute to the advancement of psychiatric nursing practice and the optimization of telehealth services in Jeddah City. By addressing knowledge gaps, improving awareness, and addressing barriers, the research outcomes can enhance the competence and confidence of psychiatric nurses in utilizing telehealth technologies. This, in turn, can lead to improved access to mental healthcare services, increased patient satisfaction, and better patient outcomes. The findings and recommendations from this study can inform policy decisions, educational initiatives, and healthcare system adaptations to support the effective integration of telehealth services in psychiatric nursing practice, ultimately benefiting both healthcare providers and patients in Jeddah City.

2. METHOD

2.1 Research design

A descriptive cross-sectional study.

2.2 Study area and target population

The study was conducted in Erada and Mental Health Complex in Jeddah City, Saudi Arabia. Erada and Mental Health Complex is a prominent healthcare facility that specializes in mental health services, making it an appropriate setting to examine the knowledge, awareness, and practices of telehealth among psychiatric nurses.

The target population for this study comprises psychiatric nurses working at Erada and Mental Health Complex. This includes registered nurses, advanced practice nurses, and nurse practitioners who are directly involved in providing mental health care services to patients. The population size of psychiatric nurses in this setting is approximately 300 individuals.

By focusing on the specific healthcare facility and the target population of psychiatric nurses at Erada and Mental Health Complex, the research will provide valuable insights into the knowledge, awareness, and practices of telehealth in the context of psychiatric nursing in Jeddah City. The findings will be directly applicable to the unique challenges and opportunities faced by psychiatric nurses in this setting, allowing for targeted interventions and improvements in telehealth utilization to enhance mental health care services.

2.3 Sample size and sampling technique

To determine the appropriate sample size for this study, a power analysis was conducted using hypothetical assumptions. Assuming a two-group comparison design, a moderate effect size of Cohen's d = 0.5 was considered, along with a significance level (alpha) of 0.05 and a desired statistical power of 0.80. Using statistical software, the power analysis calculation estimated a sample size of approximately 64 participants per group. Therefore, a total sample size of 128 participants would be required to detect a moderate effect size with the desired power and significance level. However, to avoid any technical problems such as dropout or incomplete data sheets, another 20% will be added. Thus, the final sample size was calculated to be 154 psychiatric nurses. However, a sample of 253 participants were recruited in this study.

The sampling technique to be employed in this study will be convenience sampling. Convenience sampling is chosen due to its practicality and feasibility in accessing the target population of psychiatric nurses at Erada and Mental Health Complex in Jeddah City. Given the limited resources and time constraints, convenience sampling allows for the selection of participants based on their convenient availability and accessibility.

In this study, potential participants were approached and invited to participate based on their availability and willingness to take part in the research. This sampling technique acknowledges that the sample may not be fully representative of the entire population of psychiatric nurses but provides a practical approach to gathering data from a subset of nurses who are easily accessible within the study setting.

2.4 Recruitment process

The recruitment process for this study involved several steps to identify and invite potential participants from the target population of psychiatric nurses at Erada and Mental Health Complex in Jeddah City. First, ethical approval was obtained from the relevant institutional review board, ensuring that the study adheres to ethical guidelines. Next, a list of psychiatric nurses working at the healthcare facility was obtained, serving as the initial pool of potential participants. The research team then approached potential participants individually or through department heads, explaining the purpose and procedures of the study and providing an information sheet and consent forms. Participants had the opportunity to ask questions and make an informed decision regarding their voluntary participation. Emphasis was placed on the confidentiality and anonymity of their responses, assuring them that their participation wouldn't have any negative consequences. Once participants decided to participate, they were asked to sign an informed consent form, and data collection activities, such as administering questionnaires or conducting interviews, would commence as per the approved study protocol.

Throughout the recruitment process, clear communication, respect for autonomy, and adherence to ethical guidelines will be maintained. The research team ensured that participants understood their rights and had the freedom to withdraw from the study at any time without repercussions. The collected data was treated with strict confidentiality, and findings were reported in aggregate form to protect participants' identities. This systematic and ethical recruitment process aimed to engage participants from the target population of psychiatric nurses at Erada and Mental Health Complex in Jeddah City, facilitating their informed and voluntary participation in the study.

2.5 Inclusion and exclusion criteria

2.5.1 *Inclusion criteria*

1) Psychiatric Nurses at Erada and Mental Health Complex in Jeddah City.
2) Currently employed at Erada and Mental Health Complex.
3) Willingness to participate and provide informed consent.

2.5.2 *Exclusion criteria*

1) Non-psychiatric nurses.
2) Non-employees at Erada and Mental Health Complex.
3) Inability to provide informed consent.

2.6 Tools and procedures

The data for this study was collected using two tools: Tool I, a socio-demographic characteristics sheet, and Tool II, the AKAS questionnaire.

Tool I: Socio-demographic characteristics sheet: This tool gathered information on the socio-demographic characteristics of the participants, including age, gender, profession, and scientific degree. It also included general questions related to telemedicine experience and other relevant factors. The socio-demographic characteristics sheet provided contextual information about the participants and helped establish a profile of the sample.

Tool II: AKAS Questionnaire: The AKAS questionnaire, originally designed by Zayapragassarazan and Kumar[15] and modified by the researchers to align with the cultural context and recent literature reviews, consists of four dimensions: awareness, knowledge, attitude, and skills related to telemedicine.

1) Awareness Dimension: This dimension assesses the participants' awareness of telemedicine, consisting of 10 items that measure the extent to which the participants are aware of telemedicine. Responses are measured on a 3-point scale: 1 = do not know, 2 = have heard of it, and 3 = know about it.
2) Knowledge Dimension: This dimension evaluated the participants' knowledge of telemedicine, comprising 8 items that measure their understanding of telemedicine concepts. Responses are measured on a 2-point scale: 1 = yes and 2 = no.
3) Attitude Dimension: This dimension explores the participants' attitudes toward telemedicine and consists of 11 items. Participants will respond on a 5-point scale: 1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, and 5 = strongly disagree.
4) Skills Dimension: This dimension assesses the participants' skills related to telemedicine and includes 12 items. Responses are measured on a 4-point scale: 1 = unskilled, 2 = learner, 3 = average, and 4 = expert.

The original AKAS questionnaire, designed by Zayapragassarazan and Kumar,[15] has demonstrated robust psychometric properties in prior research. Specifically, the original tool showcased a Cronbach's alpha of 0.82, indicative of its high internal consistency. For the purposes of our study, certain modifications were made to the AKAS questionnaire to ensure its alignment with the cultural nuances of Jeddah City and to resonate with the latest advancements in telemedicine. These modifications mainly involved rephrasing certain items for cultural appropriateness and adding a few items based on recent literature. Following these changes, the modified questionnaire underwent a pilot testing phase with a small group of psychiatric nurses in Jeddah to check for clarity and appropriateness. Feedback from this pilot phase was incorporated, ensuring that the modified tool still retained its initial rigor. Additionally, the internal consistency of our modified version was assessed, resulting in a Cronbach's alpha of 0.86, further underscoring the reliability of our adapted instrument.

The AKAS questionnaire, adapted to the cultural context and reviewed literature, provided valuable insights into the participants' awareness, knowledge, attitudes, and skills regarding telemedicine. The questionnaire's multidimensional nature allows for a comprehensive assessment of the participant's perceptions and experiences related to telemedicine in the field of mental health care.

2.7 Data analysis plan

The collected data were analyzed using SPSS (Statistical Package for the Social Sciences) software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarized the socio-demographic characteristics and responses to the socio-demographic characteristics sheet. Descriptive analysis was also conducted for the AKAS questionnaire dimensions. The results were interpreted and discussed, considering the research objectives, relevant literature, and implications for psychiatric nursing practice, education, and future research.

3. Results

A thorough investigation of the telehealth practices used by psychiatric nurses in Jeddah City with a sample size of 235 people yielded interesting trends and preferences. The participants had an average professional tenure of about 7.1 years (SD = 3.3), with the majority of them being in their early 30s (M = 32 years, SD = 6.3). The gender distribution was interestingly balanced, with women comprising a slight majority at 55% (n = 130) as opposed to men, who made up the remaining 45% (n = 105).

These nurses had a range of educational backgrounds, but the majority (55%, n = 130) had bachelor's degrees. The next group, those with Master's degrees, came in at 21% (n = 50). The prevalence of diplomas and Ph.D.s was lower, at 17% (n = 40) and 7% (n = 15), respectively.

Over four-fifths (81%, n = 190) of the nurses indicated acquaintance with telehealth, which is an admirably high level of awareness. The fact that nearly half of those surveyed (45%, n = 105) reported having access to telehealth services at work suggests that a workplace effort is being made to incorporate technology into healthcare. Additionally, 75% of the sample (n = 175) demonstrated a proactive attitude by agreeing to participate in telehealth training sessions.

In-depth analysis of telehealth use revealed that remote counseling was by far the most popular application, used by an astounding 76% (n = 80) of users. This was far more than the next contender, Continuing Medical Education, which was utilized by only 19% (n = 20).

Different technological platforms were used for telehealth. 38% (n = 90) of nurses reported using their mobile phones for remote mental health care, making them the tool of choice. Indicating the variety of ways telehealth can be approached, social media applications (21%, n = 50) and specific medical applications (19%, n = 45) were further included in the mix.

Several nurses spoke out in favor of telehealth's numerous advantages. Its time-saving qualities were praised by a sizeable 68% (n = 160), while 55% (n = 130) highlighted the ease of access. In addition, 47% (n = 110) of the participants acknowledged the potential advantages of telehealth to lessen the stigma associated with mental health.

Regardless of the positive outlook, there are still difficulties with telehealth. For 42% (n = 50), poor internet connectivity was their top concern. In addition, 21% (n = 25) and 30% (n = 35) of the respondents, respectively, expressed worries about security and the necessity of particular devices.

In terms of therapeutic preferences via telehealth, Behavioral Cognitive therapy was the standout choice, preferred by 30% (n = 70), closely followed by Behavioral Dialectic therapy at 21% (n = 50).

Table 1. Sociodemographic profile and telehealth practices among psychiatric nurses in Jeddah City

Variable	F (%)
Age (M ± SD)	32.0 ± 6.3
Gender	
Male	105 (45)
Female	130 (55)
Educational Qualification	
Diploma	40 (17)
Bachelor	130 (55)
Master	50 (21)
Ph.D.	15 (7)
Years of Experience (M ± SD)	7.1 ± 3.3
Awareness of Telehealth	
Yes	190 (81)
No	45 (19)
Presence of Telehealth Units in the Workplace	
Yes	105 (45)
No	130 (55)
Purpose of Using Telehealth	
Remote counselling	80 (76)
Continuing Medical Education	20 (19)
Other	5 (5)
Willingness to Attend Training on Telehealth	
Yes	175 (75)
No	60 (25)
Means of Providing Mental Health Care Services Remotely	
Mobile phone	90 (38)
Landline phone	20 (9)
Social media application	50 (21)
Medical application	45 (19)
E-mail	20 (9)
Other	10 (4)
Benefits of Providing Mental Health Services Remotely	
Time-saving	160 (68)
Reduce effort	80 (34)
Cut costs	40 (17)
Reduce stigma	110 (47)
Easy access	130 (55)
Reducing contact in epidemics	100 (43)
Other	15 (6)
Reasons for Using Remote Mental Health Services	
Distance	120 (51)
Remote areas	85 (36)
Difficulty moving patients	60 (26)
Travel	55 (23)
Emergency cases	90 (38)
Avoid stigma	75 (32)
Reasons for Not Using Telehealth	
Weak internet	50 (42)
Security concerns	35 (30)
Need for specific devices	25 (21)
Privacy concerns	10 (9)
Confidentiality concerns	20 (17)
Unauthorized recordings	15 (13)
Unsuitable for emergencies	10 (9)
Lack of familiarity	5 (4)
Preference for Specific Treatments Using Telehealth	
No	60 (26)
Behavioral Cognitive	70 (30)
Behavioral Dialectic	50 (21)
Acceptance and Commitment	45 (1)
Other	10 (4)

An evaluation made up of various statements revealed that

the level of knowledge regarding telehealth services among psychiatric nurses in Jeddah City varied. Recognizing that "Telehealth is part of health education technology," which received a mean score of 2.7 (SD = 0.4), had the greatest resonance among the participants. With a mean score of 2.6 (SD = 0.5), the belief that "Telehealth services can be used effectively in health services" came in second.

According to the third-placed statement about confrontation and interaction through telehealth, which had a score of 2.5 (SD = 0.6), nurses believed that telehealth could reduce the distance between patients and medical professionals. The effectiveness of "continuing health education programs through telehealth" and "Telehealth services being the latest development in healthcare" both received scores of 2.4, with the latter getting a slightly lower standard deviation (SD = 0.5). A mean score of 2.3 (SD = 0.6) indicated that telehealth was applicable in remote location scenarios. A score of 2.2 (SD = 0.5) was given to a variety of telehealth applications, including those used in prisons, on military bases, with the disabled, and in times of emergency.

The statement's equating of telehealth and e-health, which were ranked eighth at 2.1 (SD = 0.5), required some clarification. With a score of 2.0 (SD = 0.6), telehealth's potential to increase educational outreach received the lowest level of support. Overall, Jeddah's psychiatric nurses demonstrated a moderate level of awareness about telehealth services, scoring 2.36 (SD = 0.55), indicating a good understanding as well as room for improved educational interventions.

Table 2. Awareness of psychiatric nurses about various aspects of telehealth services in Jeddah City

No.	Statement	(M ± SD)	Rank
1	Telehealth services can be used effectively in health services	2.6 ± 0.5	2
2	Telehealth services are the latest development in the field of healthcare	2.4 ± 0.6	4
3	Telehealth is part of health education technology	2.7 ± 0.4	1
4	Telehealth and e-health are synonymous terms	2.1 ± 0.5	8
5	Confrontation and interaction between patient and healthcare provider can be applied through telehealth	2.5 ± 0.6	3
6	Telehealth can be used in the case of spatial remoteness	2.3 ± 0.6	6
7	Continuing health education programs can be implemented effectively and at a lower cost through telehealth	2.4 ± 0.5	5
8	Telehealth can be used for battlefield injuries, in prisons, for the disabled, and during medical and prosthetic calamities	2.2 ± 0.5	7
9	Telehealth helps provide education to a wider group of teachers and students	2.0 ± 0.6	9
	Total	2.36 ± 0.55	Moderate

Several important conclusions were drawn from an evaluation of the Jeddah City psychiatric nurses' proficiency in telehealth. 80.9% of respondents (n = 190) agreed that telehealth is a great way to spread health information and services, and 76.6% of respondents (n = 180) agreed that it is useful for managing medications. 63.8% (n = 150) of the respondents were in favor of using telehealth to enable complete patient consultations. The capabilities of telehealth go even further, with a larger group, 74.5% (n = 175), acknowledging the possibilities for patient monitoring and 53.2% (n = 125) agreeing that patients may be investigated immediately. Additionally, 70.2% (n = 165) of respondents agreed with the contemporary strategy of maintaining electronic medical records through telehealth. 66% (n = 155) of those who acknowledged the legitimacy of health services offered online agreed with its veracity. Notably, 85.1% (n = 200) of respondents strongly agreed that telehealth could help mental health services reach people in remote areas. The data creates a vivid picture of the deeper comprehension and fields for improvement for these professionals in the field of telehealth when interpreted against the background of the scoring metric, which encompasses high (75%-100%), moderate (50%-74%), and poor (0-49%) knowledge levels according to correct responses.

Several important observations were made during an assessment of the views held by psychiatric nurses in Jeddah City regarding various aspects of telehealth services. With a mean score of 4.6 $\pm$ 0.7, the majority of nurses strongly agreed that having a working knowledge of computers and ICT applications in the health domain is essential for health professionals. This idea was closely followed by the notion that telehealth promotes professional collaboration, improving the standard of healthcare (M = 4.4 $\pm$ 0.6). A notable focus was also placed on the potential personal advantages that medical professionals might derive from comprehending the

capabilities of telehealth, which received a mean score of 4.0 ± 0.9. Additionally, the idea that patients should be encouraged to access medical information via emails and websites to improve their awareness of their health received a mean rating of 4.1 ± 0.8.

Table 3. Knowledge levels of psychiatric nurses on key aspects of telehealth in Jeddah City

No.	Statement	Yes	No
1	Telehealth is one of the best ways to provide health information and services	190 (80.9)	45 (19.1)
2	Patients can be managed with medication through telehealth	180 (76.6)	55 (23.4)
3	Full direct patient consultation is possible through telehealth	150 (63.8)	85 (36.2)
4	Patients can be examined through telehealth	125 (53.2)	110 (46.8)
5	Patients can be monitored through telehealth services	175 (74.5)	60 (25.5)
6	An electronic medical record can be maintained to register patients through telehealth	165 (70.2)	70 (29.8)
7	Health services provided through the Internet are recognized services	155 (66)	80 (34)
8	Mental health services can be provided remotely	200 (85.1)	35 (14.9)

The claim that "health for all" can be easily realized through telehealth received a score of 3.5 ± 1.0 on the middle scale of attitudes. A related statement that focused on how simple it is for the general public to access health services through telehealth and its potential advantages for the general population's health received a mean score of 3.4 ± 1.0. A mean score of 3.7 ± 1.0 indicated that nurses would be willing to participate in telehealth courses if they were offered within the hospital.

More conservative viewpoints were seen at the other end of the spectrum. The hypothesis that the use of ICT in healthcare could result in budget cuts received a score of 3.2 ± 1.1. With a mean score of 2.8 ± 1.2, there was tepid support for the idea that telehealth implementation might potentially increase the cadre of healthcare professionals. Last but not least, telehealth's potential to expand healthcare access while focusing on preventive care received a score of 3.3 ± 1.1.

Taking into account the categorical divisions of attitudes based on the scores—ranging from negative (1.00-2.33) and neutral (2.34-3.67) to positive (3.68-5.00)—the collective attitude of Jeddah's psychiatric nurses towards telehealth emerges as positive, with an overall mean score of 3.7 ± 0.91.

Table 4. Attitudes of psychiatric nurses towards various aspects of telehealth services in Jeddah City

No.	Statement	(M±SD)	Rank
1	Knowing more about computers and ICT applications in the health field is a must for health professionals	4.6 ± 0.7	1
2	Telehealth encourages teamwork among health professionals which leads to quality healthcare	4.4 ± 0.6	2
3	The application of ICT in healthcare services reduces the budget	3.2 ± 1.1	8
4	Health for all can be easily achieved through telehealth	3.5 ± 1.0	6
5	Health professionals can personally benefit from being more informed about what telehealth can do	4.0 ± 0.9	4
6	I would take telehealth courses if they were available at the hospital	3.7 ± 1.0	5
7	Patients should be encouraged to access informational medical services through emails and websites so that they become better aware of their health status.	4.1 ± 0.8	3
8	Telehealth is characterized by easy public access to health services, information, and advice, which helps the health of the population in the future	3.4 ± 1.0	7
9	The use of telehealth will lead to an increase in the number of health workers	2.8 ± 1.2	10
10	The use of telehealth can increase the distribution of health care and focus more on prevention	3.3 ± 1.1	9
	Total	3.7 ± 0.91	positive

A wide range of skills and acquaintance arose from a thorough analysis of the proficiency levels associated with telehealth digital practices among psychiatric nurses in Jeddah City.

An essential understanding of computers and the internet was discovered to be common among those surveyed when fundamental computing skills were examined. Only a small percentage (6.4%) claimed to be illiterate in this field. A combined 72.4% had medium to professional competency, demonstrating a strong background in this important subject. In a similar vein nearly 68.1% demonstrated medium to professional capacity when delivering emails with attached files.

Paying attention was also drawn to the field of document digital transformation. The vast majority leaned towards intermediate skills when scanning documents and photos, with 57.4% evenly divided between the medium and professional categories. The crucial telehealth tool of video conferencing showed an increased even distribution, with the majority of nurses (59.6%) displaying medium to advanced skills.

Only 55.3% of digital photography, a crucial component of telehealth for visually documenting patient conditions, was done by people with medium to high levels of skill. With 72.4% of respondents having medium to professional capabilities, accessing and searching for medical sites—essential for staying current on medical advancements—showed a strong proficiency.

Interactive platforms were also scrutinized. While tasks like downloading and uploading web pages and images showed a more balanced profile, with over half (51%) in the medium to professional spectrum, electronic discussion forums saw a slight decline in high proficiency levels at 44.7%. 65% of nursing professionals demonstrated intermediate to advanced skills when performing platform-specific tasks like using Microsoft and Zoom. Nevertheless, less expertise was found for tasks that are more specialized like installing and uninstalling software and configuring webcams, with only 40.4% and 36.2% of those tasks falling into the professional or medium categories, respectively. Online chatting came in particular, with an outstanding 82.9% demonstrating medium to professional proficiency, suggesting a wider social integration of this communication method.

Overall, the results indicate that while there is room for enhancement in some specialized areas, the psychiatric nurses of Jeddah City have been mostly skilled in the medium to professional digital proficiencies necessary for telehealth.

Table 5. Proficiency levels in telehealth digital practices and skills among psychiatric nurses in Jeddah City

No.	Statement	Illiterate	Beginner	Medium	Professional
1	Knowledge of computers and the Internet	15 (6.4%)	50 (21.3%)	100 (42.6%)	70 (29.8%)
2	Use email messages with file attachments	20 (8.5%)	55 (23.4%)	90 (38.3%)	70 (29.8%)
3	Scan documents and photos	30 (12.8%)	70 (29.8%)	80 (34.0%)	55 (23.4%)
4	video conferencing	35 (14.9%)	60 (25.5%)	75 (31.9%)	65 (27.7%)
5	digital photography	40 (17.0%)	65 (27.7%)	70 (29.8%)	60 (25.5%)
6	Access and search for a medical site	20 (8.5%)	45 (19.1%)	85 (36.2%)	85 (36.2%)
7	Participate in electronic discussion forums	50 (21.3%)	80 (34.0%)	70 (29.8%)	35 (14.9%)
8	Download and upload web pages and images	45 (19.1%)	70 (29.8%)	75 (31.9%)	45 (19.1%)
9	Install and uninstall the program	60 (25.5%)	80 (34.0%)	60 (25.5%)	35 (14.9%)
10	Use relevant platforms such as Microsoft and Zoom	25 (10.6%)	55 (23.4%)	85 (36.2%)	70 (29.8%)
11	Set up webcams	70 (29.8%)	80 (34.0%)	50 (21.3%)	35 (14.9%)
12	Chat Online	10 (4.3%)	30 (12.8%)	80 (34.0%)	115 (48.9%)

4. DISCUSSION

Several important conclusions were drawn from a thorough investigation of the telehealth practices used by psychiatric nurses in Jeddah City. This discussion aims to present these results, compare them to earlier research, and to analyze the implications.

Individuals in their early 30s made up the bulk of the sample. Considering that they could have begun their careers as digital transformation began to take hold in the healthcare industry, this age group represents the emerging nexus of technology and healthcare. There was a slight female majority and a fairly balanced distribution of the genders. The ratio reflects a wider movement towards equitable representation in the medical field.

The global trend in nursing education can be seen in the dominance of Bachelor's degrees, subsequently followed by

Master's degrees. Nevertheless, the presence of individuals with degrees, particularly Ph.Ds, highlights the academic diversity in Jeddah's profession.

The level of participant knowledge about telehealth was commendably high. This high level of awareness suggests that organizations or governing bodies have made a concerted effort to spread information about telehealth, reflecting developments in healthcare around the world. It is noteworthy that almost half of the participants had a telehealth unit at their place of employment only serves to highlight how far along telehealth integration has come. The majority's willingness to participate in telehealth training highlights this proclivity for telehealth even more.

The most common telehealth application today is remote counseling. This finding is consistent with research by Hartasanchez et al.,[16] which highlighted the rising use of remote shared decision-making through telehealth, particularly in psychiatric settings. Such procedures not only provide flexibility to doctors and patients, but also take various logistical challenges into account.

Additionally, Leochico et al.[17] discuss the new difficulties associated with telerehabilitation in developing nations, highlighting the value and adaptability of telehealth in various contexts. The agreement between our findings and earlier studies highlights the growing significance of telehealth in contemporary psychiatric care.

Considering the prevalence and accessibility of smartphones, it is unsurprising that mobile phones are the main telehealth tool. Their dominance, which was followed by social media and specialty medical apps, highlights the adaptability of contemporary technology in the provision of healthcare.

All participants agreed that telehealth has many advantages, with the majority highlighting how convenient it is to use and how much time it can save. Parallel to our findings, there has been global support for the idea that telehealth has the potential to lessen the stigma attached to mental health, a belief rooted in long-standing societal attitudes. Nobleza et al.,[18] for instance, highlighted how telehealth is becoming more and more popular, particularly among students studying to become doctors and other health professionals. Additionally highlighting the transformative role telehealth plays across various medical disciplines, Hamilton et al.[19] highlighted the high levels of patient satisfaction in the context of radiation oncology. The conclusion drawn from these studies and our findings emphasizes the importance of utilizing telehealth to demystify and de-stigmatize conversations about mental health.

Despite the promising aspects of telehealth, participants emphasized a number of barriers, particularly problems with erratic internet connectivity and cybersecurity worries, which reflect more general global issues. The robustness of internet infrastructure and cybersecurity protocols directly influences the efficacy and dependability of telehealth. Zhuravlev and Blagoveshchenskaya[20] drew attention to the crucial lessons learned from the COVID-19 era, highlighting the state of telemedicine today and the pressing need for upgrades to the digital infrastructure. Alawida et al.[21] provided an in-depth analysis of the cybersecurity issues that have emerged as a result of the pandemic, echoing these sentiments. Additionally, Benda et al.[22] emphasized the importance of broadband internet access as a key factor in determining health. Collectively, these studies highlight the necessity of addressing systemic issues in order to fully utilize telehealth solutions.

The preference for evidence-based therapeutic interventions, which are gaining popularity across the globe due to their efficacy, is indicated by the preference for behavioral cognitive therapy and behavioral dialectic therapy.

The evaluation highlighted the nurses' understanding of telehealth as a crucial component of health education technology. This is in line with widespread opinions about how technology and education are merging in healthcare. Nonetheless are some differences between telehealth and e-health that point to a more nuanced comprehension of and areas where additional training might be helpful.

The proficiency rates showed a positive environment. The acceptance of telehealth for a variety of functions, including the management of medications, patient consultations, and the dissemination of health information, highlights its perceived usefulness. Given that geographic barriers have historically hampered healthcare delivery, the overwhelmingly positive response to telehealth's ability to overcome them is especially noteworthy.

The general acceptance of telehealth, along with the emphasis on the value of technological competence and the collaborative potential of telehealth, reflects the global trend towards incorporating technology in healthcare. The inherent difficulties in fusing conventional healthcare models with contemporary technological solutions are reflected in some conservative viewpoints on budget cuts and workforce expansion.

The thorough evaluation of digital proficiencies also reveals a promising environment. The broad base of knowledge in fundamental computing operations lays a strong foundation. The disparity in skill levels across different tasks, however, points to areas that could benefit from focused training to increase the effectiveness of telehealth.

In the end, the results from the psychiatric nurses in Jeddah City are consistent with global telehealth trends, showing both the promise of this modality and areas for improvement. High awareness, positive attitudes, and a range of proficiencies point to a healthcare environment that is conducive to the growing popularity of telehealth, provided that specific problems are addressed.

5. Conclusion

An analysis of Jeddah City's psychiatric nurses' telehealth practices reveals a strong propensity for embracing digital healthcare modalities. The healthcare system in Jeddah is well-positioned for effective implementation and development of telehealth services thanks to this optimistic attitude as well as high awareness and recognition of the numerous advantages of telehealth. However, the issues raised must be quickly resolved, especially those related to cybersecurity and internet connectivity. It is advised that institutions upgrade their technological set-up, make significant investments in cybersecurity defenses, and launch focused training initiatives. Through such initiatives, the potential of telehealth will be fully realized and all patients will continue to have access to effective, efficient, and secure psychiatric care.

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Authors contributions

Naif AlOmari and Mahir AlEnzi were responsible for the conception and design of the study, as well as revising the manuscript critically for important intellectual content. Abdulaziz AlZahrani spearheaded the data collection, while Salman AlZahrani took the lead in drafting the manuscript. Maha AlEnzi provided critical revisions to the draft. Turki AlAsmari played a significant role in data interpretation and contributed to the manuscript revision. All authors read and approved the final manuscript. It is noteworthy to mention that Naif AlOmari and Mahir AlEnzi contributed equally to this work, reflecting a joint effort in the initial phases of the study.

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