



TELEHEALTH UTILIZATION, ADAPTIVE CLINICAL PRACTICES, AND WELL-BEING AMONG MULTICULTURAL NURSES IN REMOTE CLINICS IN THE EASTERN REGION OF THE KINGDOM OF SAUDI ARABIA

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ABSTRACT

This study, conducted from May to July 2026, examined telehealth utilization, adaptive clinical practices, and well-being among multicultural nurses working in remote clinics in the Eastern Region of the Kingdom of Saudi Arabia. A sequential explanatory mixed methods design was employed. Quantitative data were obtained from 100 registered nurses through a researcher-developed 45-item questionnaire, followed by an explanatory qualitative strand involving eight (8) purposively selected participants who provided semi-structured written narratives. Descriptive statistics, Pearson product-moment correlation, and thematic analysis were used. Telehealth utilization was high ($M = 4.07$, $SD = 0.81$), while adaptive clinical practices ($M = 4.32$, $SD = 0.73$) and well-being ($M = 4.32$, $SD = 0.77$) were very high. Telehealth utilization was strongly and positively associated with adaptive clinical practices ($r = .791$, $p < .001$) and well-being ($r = .746$, $p < .001$). Five qualitative themes explained the quantitative pattern: telehealth as a catalyst for accessible and efficient remote healthcare delivery; cultural competence as a foundation for effective multicultural practice; challenges in remote and multicultural environments; resilience and well-being amid professional demands; and support systems and self-care. The findings indicate that telehealth functions as an important professional resource in remote healthcare, while cultural competence, adaptability, resilience, and organizational support help sustain effective nursing practice and workforce well-being. The results informed the proposed Telehealth-Enhanced Multicultural Nursing Resilience and Adaptation Program.

Keywords: *telehealth utilization, adaptive clinical practices, well-being, multicultural nurses, remote clinics, Saudi Arabia, mixed methods*

INTRODUCTION

Remote and industrial clinical settings place nurses in circumstances where physician access, specialist support, equipment, and referral options may be limited. In these environments, telehealth can connect frontline nurses with distant clinicians and support consultation, monitoring, communication, and clinical decision-making. The growing role of telemedicine in overcoming geographical barriers and sustaining healthcare access has been emphasized across contemporary digital-health literature (Dorsey & Topol, 2020; Keesara et al., 2020; Monaghesh & Hajizadeh, 2020; World Health Organization, 2021).

The relevance of telehealth is particularly evident in remote healthcare environments, where delayed access to expertise can increase the demands placed on nurses. The literature suggests that telehealth can improve continuity and efficiency of care, although its practical value depends on reliable technological access, integration into clinical workflows, and users' perception that the technology supports patient care (Bashshur et al., 2020; Omboni et al., 2022). In this context, telehealth is not simply a communication platform; it can function as a workplace resource that enables nurses to obtain clinical guidance and manage complex cases despite geographical separation.

Remote nursing also requires continuous clinical adaptation. Nurses may need to prioritize patients, modify care plans according to available resources, make timely decisions, and work with limited physician presence. These demands occur alongside the need to remain emotionally stable, cope with occupational pressures, and stay professionally engaged. Evidence on nurse resilience and well-being indicates that coping resources, supportive work environments, and social support are important to sustained professional functioning (Cooper et al., 2020; Labrague, 2021; Wei et al., 2020).

The Saudi healthcare workforce adds a multicultural dimension to these demands. Nurses from different national and cultural backgrounds frequently work together and care for culturally diverse patients. Multicultural practice can enrich collaboration but can also create language, communication, and expectation-related challenges. Cultural competence and adaptive communication are therefore important to effective teamwork and patient-centered care in diverse settings (Almutairi & McCarthy, 2021). Saudi evidence also points to the growing importance of virtual-health competencies and role adaptation among nurses (Al Baalharith et al., 2024).

Despite expanding literature on telehealth, nursing adaptability, and occupational well-being, these areas are often examined separately or in hospital-based contexts. Evidence remains limited on how telehealth utilization, adaptive clinical practices, and well-being operate together among multicultural nurses in geographically remote and industrial clinical settings. This gap is particularly relevant in the Eastern Region of Saudi Arabia, where remote healthcare delivery, multicultural staffing, and technology-supported consultation intersect. The present study therefore integrated quantitative findings with nurses' narratives to explain how telehealth use is associated with clinical adaptation and well-being in this setting.

Research Questions

1. What are the levels of telehealth utilization, adaptive clinical practices, and well-being among multicultural nurses working in remote clinics?
2. Is telehealth utilization significantly related to adaptive clinical practices among multicultural nurses?
3. Is telehealth utilization significantly related to well-being among multicultural nurses?
4. How do nurses describe their experiences in using telehealth and adapting to remote multicultural clinical practice in relation to their well-being?

METHODOLOGY

Research Design and Setting

The study employed a sequential explanatory mixed methods design in which the quantitative phase preceded a qualitative explanatory phase. The quantitative strand used a descriptive-correlational design to describe the study variables and test associations between telehealth utilization and the two outcome domains. The qualitative strand was used to explain and contextualize the statistical findings through participants' accounts of telehealth use, multicultural clinical practice, and well-being. The study was conducted in selected remote, industrial, company, and community clinical settings in the Eastern Region of the Kingdom of Saudi Arabia. The institutional provider is not identified in this article to preserve organizational confidentiality.

Participants and Sampling

The quantitative sample consisted of 100 registered nurses selected through convenience sampling. Eligibility required current employment in a remote clinic in the Eastern Region, at least six months of remote healthcare experience, experience with telehealth or telehealth-assisted clinical activities, and voluntary participation. The qualitative strand involved eight (8) participants purposively selected from the quantitative cohort to obtain information-rich accounts relevant to the survey findings. Participants represented a multicultural workforce and multiple types of remote clinical environments.

Research Instrument

Quantitative data were collected using a researcher-developed questionnaire with four parts. Part I obtained demographic information. Parts II-IV contained 45 Likert-type items: 15 on telehealth utilization, 15 on adaptive clinical practices, and 15 on well-being. Telehealth utilization covered accessibility of telehealth resources, frequency of use, and perceived usefulness in clinical decision-making. Adaptive clinical practices covered clinical decision-making flexibility, resource-based care adjustment, and multicultural communication and teamwork adaptability. Well-being covered emotional well-being, occupational coping capacity, and professional functioning and work engagement.

Responses used a five-point scale, with higher scores indicating higher levels of the measured construct.

The questionnaire underwent content validation by three experts representing nursing education, remote clinical practice, and research instrument development. A pilot test was subsequently conducted among nurses with characteristics similar to the target population but excluded from the main sample. Internal consistency was excellent: Cronbach's alpha was .934 for telehealth utilization, .945 for adaptive clinical practices, .941 for well-being, and .940 for the overall 45-item instrument.

Data Gathering and Qualitative Data Generation

The quantitative survey was administered online via Google Forms after obtaining informed consent. For the explanatory qualitative strand, the eight (8) participants were provided open-ended questions through a semi-structured guide aligned with the research objectives and the quantitative findings. Although an interview format had initially been considered, participants provided written narratives, allowing them to reflect on their experiences before responding. Identifying information was minimized, and participant codes were used in the qualitative data set.

Data Analysis and Integration

Frequencies and percentages summarized participant characteristics. Means and standard deviations were used to describe telehealth utilization, adaptive clinical practices, and well-being. Pearson product-moment correlation was used to assess the relationships between telehealth utilization and adaptive clinical practices, as well as between telehealth utilization and well-being. Statistical significance was evaluated at the .05 level. Qualitative narratives were analyzed using thematic analysis through familiarization, coding, initial theme generation, theme review, theme definition, and reporting. Integration occurred during interpretation by comparing quantitative patterns with qualitative themes to identify convergence and explanatory complementarity.

Scope and Limitations

The study was limited to registered nurses working in remote clinical settings in the Eastern Region of Saudi Arabia. The quantitative phase used convenience sampling and relied on self-reported measures, while the qualitative strand used purposively selected narratives. Accordingly, the findings describe the study sample and should not be generalized to all nurses in Saudi Arabia or to urban and tertiary hospital settings. The correlational findings indicate association rather than causation.

RESULTS

Participant Characteristics

The sample was predominantly male (90%) and experienced: 64% reported more than 10 years of nursing experience. Filipino nurses comprised 58% of the sample,

followed by Indian (26%), Pakistani (10%), and Egyptian (6%) nurses. The largest age group was 36-40 years (41%). Industrial clinics were the most common work setting (46%), followed by remote community clinics (35%).

Table 1. Participant Profile (N = 100)

Characteristic	Distribution
Age	26-30: 18%; 31-35: 29%; 36-40: 41%; 41-45: 3%; 46-50: 1%; 51-55: 8%
Gender	Male: 90%; Female: 10%
Nationality	Filipino: 58%; Indian: 26%; Pakistani: 10%; Egyptian: 6%
Nursing experience	4-6 years: 19%; 7-10 years: 17%; >10 years: 64%
Remote clinical setting	Industrial: 46%; Remote community: 35%; Company: 9%; Multiple settings: 10%

Levels of Telehealth Utilization, Adaptive Clinical Practices, and Well-Being

Overall telehealth utilization was high ($M = 4.07$, $SD = 0.81$). Accessibility of telehealth resources and perceived usefulness in clinical decision-making were both very high, whereas frequency of telehealth use was high and comparatively lower. Adaptive clinical practices were very high overall ($M = 4.32$, $SD = 0.73$), led by multicultural communication and teamwork adaptability. Well-being was likewise very high ($M = 4.32$, $SD = 0.77$), with professional functioning and work engagement receiving the highest dimension mean.

Table 2. Summary of Study Variables (N = 100)

Variable	Dimension	M	SD	Interpretation
Telehealth utilization	Accessibility of telehealth resources	4.24	0.89	Very High
	Frequency of telehealth use	3.75	1.05	High
	Perceived usefulness in clinical decision-making	4.21	0.91	Very High
	Overall	4.07	0.81	High
Adaptive clinical practices	Clinical decision-making flexibility	4.22	0.85	Very High
	Resource-based care adjustment	4.39	0.79	Very High
	Multicultural communication and teamwork adaptability	4.40	0.78	Very High
	Overall	4.32	0.73	Very High
Well-being	Emotional well-being	4.27	0.75	Very High
	Occupational coping capacity	4.31	0.78	Very High
	Professional functioning and work engagement	4.37	0.77	Very High
	Overall	4.32	0.77	Very High

Interpretation: 4.21-5.00 = Very High; 3.41-4.20 = High; 2.61-3.40 = Moderate; 1.81-2.60 = Low; 1.00-1.80 = Very Low.

Relationships Between Telehealth Utilization and Study Outcomes

Telehealth utilization showed a strong positive relationship with adaptive clinical practices ($r = .791$, $p < .001$) and a strong positive relationship with well-being ($r = .746$, $p < .001$). Thus, higher reported telehealth utilization was associated with stronger reported adaptability and higher reported well-being in this sample.

Table 3. Correlations Between Telehealth Utilization and Study Outcomes (N = 100)

Relationship	r	p	Interpretation
Telehealth utilization - Adaptive clinical practices	.791	< .001	Strong positive; significant
Telehealth utilization - Well-being	.746	< .001	Strong positive; significant

Pearson product-moment correlation; two-tailed. Correlation does not establish causation.

Qualitative Findings

Five themes emerged from the written narratives of the eight (8) qualitative participants. Together, they explained why telehealth was viewed as useful in remote practice while also showing that technology alone was insufficient: cultural competence, adaptability, resilience, organizational support, and self-care shaped how nurses translated telehealth access into effective practice and sustained well-being.

Table 4. Qualitative Themes and Explanatory Meaning

Theme	Explanatory Meaning
1. Telehealth as a Catalyst for Accessible and Efficient Remote Healthcare Delivery	Telehealth supported timely physician communication, continuity of care, patient monitoring, and decision-making despite geographical distance.
2. Cultural Competence as a Foundation for Effective Multicultural Clinical Practice	Respectful communication, active listening, cultural sensitivity, and adaptability enabled collaboration with culturally diverse patients and teams.
3. Navigating Challenges in Remote and Multicultural Healthcare Environments	Unstable connectivity, equipment or system difficulties, limited remote physical assessment, language barriers, cultural misunderstandings, and workload demands complicated care.
4. Resilience and Well-Being Amid Professional Demands	Remote practice generated professional fulfillment and confidence but also stress, fatigue, and emotional exhaustion, requiring resilience and adaptive coping.
5. The Role of Support Systems and Self-Care in Sustaining Well-Being	Colleague and supervisor support, family and peer support, training, exercise, rest, mindfulness, and work-life balance helped participants sustain functioning and well-being.

Integrated Findings

The qualitative findings converged with the quantitative results. High telehealth accessibility and perceived usefulness were explained by narratives describing real-time

physician communication and improved continuity of care. Very high adaptive clinical practices were reflected in accounts of flexible care, resource management, multicultural communication, and teamwork. Very high well-being coexisted with reports of fatigue and stress, indicating that positive well-being did not imply the absence of occupational demands; rather, participants described maintaining professional functioning through resilience, support systems, and self-care. The qualitative strand therefore contextualized the strong positive associations observed between telehealth utilization and both adaptability and well-being.

DISCUSSION

The high level of telehealth utilization indicates that technology-supported care is an established component of remote nursing practice in the study setting. Accessibility and perceived usefulness were rated more strongly than frequency of routine use, suggesting that nurses valued telehealth particularly when clinical conditions required physician consultation, complex-case support, or rapid access to expertise. This pattern is consistent with literature describing telehealth as a means of reducing geographical barriers, sustaining continuity of care, and supporting communication when in-person services are constrained (Dorsey & Topol, 2020; Monaghesh & Hajizadeh, 2020; Omboni et al., 2022).

The very high level of adaptive clinical practices underscores the demands of remote nursing. Multicultural communication and teamwork adaptability had the highest mean, followed closely by resource-based care adjustment. The qualitative narratives showed that nurses adjusted communication styles, respected cultural differences, prioritized patients, and modified care according to resource availability. These findings align with evidence that cultural competence is central to safe and collaborative practice in culturally diverse healthcare environments (Almutairi & McCarthy, 2021).

Well-being was also very high, particularly professional functioning and work engagement. This finding should be interpreted alongside the qualitative accounts of stress, fatigue, and emotional exhaustion. Participants did not describe an absence of workplace strain; instead, they described coping through personal resilience, peer and supervisory support, family support, self-care, and continued learning. This is consistent with literature linking resilience and social or organizational resources with stronger psychological functioning and sustained engagement among healthcare workers (Cooper et al., 2020; Labrague, 2021; Wei et al., 2020).

The strong positive association between telehealth utilization and adaptive clinical practices suggests that nurses who reported greater access to and use of telehealth also reported stronger capacity to adjust care, use available resources, and function within multicultural teams. Telehealth may provide opportunities for consultation, information exchange, and decision support that complement adaptive nursing practice. This interpretation is compatible with evidence that digital health tools can facilitate

communication and healthcare coordination, but the correlational design does not establish that telehealth caused the observed adaptive practices (Keesara et al., 2020).

Telehealth utilization was also strongly associated with well-being. Participants explained this relationship in practical terms: timely access to physicians and clinical guidance could reduce uncertainty and support professional confidence, whereas technical failures and communication difficulties could create additional stress. The coexistence of these benefits and demands suggests that telehealth can function as a resource when infrastructure, workflow integration, and organizational support are adequate. This finding is consistent with literature emphasizing that supportive resources and coping capacity help healthcare workers maintain well-being under demanding conditions (Labrague, 2021; Khatatbeh et al., 2022).

The qualitative themes provide the central contribution of the mixed methods integration. Technology was beneficial, but its effectiveness was embedded in a broader system of cultural competence, professional adaptability, resilience, teamwork, and self-care. Remote healthcare programs should therefore avoid treating telehealth implementation as a purely technical intervention. Investments in connectivity and platforms should be accompanied by training in virtual clinical workflows, multicultural communication, adaptive decision-making, and workforce well-being.

These findings are context-specific. The convenience sample, self-report measures, regional setting, and cross-sectional correlational analysis limit generalizability and causal interpretation. Nevertheless, convergence between the survey patterns and qualitative narratives strengthens the practical interpretation that telehealth, adaptability, and well-being are interrelated aspects of nursing practice in the sampled remote multicultural settings.

Conclusions

1. Multicultural nurses in the sampled remote clinics reported high telehealth utilization and very high adaptive clinical practices and well-being. Telehealth was particularly strong in accessibility and perceived usefulness, while routine frequency of use was comparatively lower.
2. Telehealth utilization was strongly and positively associated with adaptive clinical practices ($r = .791$, $p < .001$), indicating that higher reported telehealth utilization occurred alongside greater reported clinical flexibility, resource-based adjustment, and multicultural teamwork adaptability.
3. Telehealth utilization was strongly and positively associated with well-being ($r = .746$, $p < .001$), indicating that higher reported utilization occurred alongside stronger emotional well-being, occupational coping, and professional functioning. The findings remain associative rather than causal.

4. Nurses' narratives showed that effective remote practice depended on more than technology. Cultural competence, resilience, teamwork, organizational support, and self-care helped nurses navigate technological, communication, workload, and geographical challenges while sustaining patient care and professional functioning.

Recommendations

Remote healthcare organizations should strengthen telehealth infrastructure, particularly by improving reliable connectivity, equipment availability, technical support, and the integration of telehealth into clinical workflows. Periodic competency training should address virtual consultation, remote patient monitoring, digital documentation, and the use of telehealth during complex cases and emergencies.

Nursing administrators should pair technological training with multicultural communication, teamwork, adaptive clinical decision-making, and resource-management development. Well-being initiatives should include peer and supervisory support, stress-management resources, opportunities for continuing professional development, and practical support for self-care and work-life balance.

The findings support implementation and evaluation of the proposed Telehealth-Enhanced Multicultural Nursing Resilience and Adaptation Program (TMNRAP), which integrates telehealth competency enhancement, adaptive clinical practice development, multicultural communication and teamwork training, resilience and well-being activities, mentorship, and continuous professional development.

Future studies should include larger and more diverse samples, multiple regions and healthcare providers, probability-based sampling where feasible, and longitudinal or intervention designs. Further work should also examine additional relationships and predictors not reported in the present article and test whether improvements in telehealth systems and training produce measurable changes in clinical adaptation and workforce well-being.

Table 5. Proposed TMNRAP Components

Component	Illustrative Activities	Expected Focus
Telehealth competency enhancement	Workshops on platforms, virtual consultation, digital documentation, remote monitoring	Improved confidence and technology-assisted care
Adaptive clinical practice development	Case simulations and clinical decision-making exercises	Greater flexibility and resource-based care adjustment
Multicultural communication and teamwork	Cultural competence and communication training	Improved collaboration in diverse teams
Resilience and well-being	Stress management, coping skills, wellness activities	Stronger coping capacity and well-being
Organizational support and mentorship	Peer support, mentoring, leadership coaching	Stronger professional support and engagement
Continuous professional development	Periodic learning sessions and telehealth updates	Sustained competency development

Compliance with Ethical Standards

Ethical principles were observed to protect participants' rights, dignity, privacy, and welfare. Participation was voluntary, and informed consent was obtained before data collection. Quantitative consent information was incorporated into the online survey, and qualitative participants were informed of the purpose and procedures before providing narratives. Participants could decline to answer questions or withdraw without penalty. Personally identifying information was minimized, qualitative participants were coded, and electronic data were maintained in password-protected files for academic and research use. Data privacy and confidentiality procedures were applied throughout collection, processing, storage, analysis, and reporting. Artificial intelligence-assisted tools were used only as supplementary aids for language refinement, grammatical checking, organization, and presentation of the manuscript; they were not used to fabricate participants, generate survey responses, alter participant responses, or create empirical findings. AI-assisted outputs were reviewed and verified by the researcher, who retained responsibility for the accuracy, interpretation, integrity, and final content of the work.

Acknowledgments

The researcher expresses appreciation to the nurses who voluntarily participated in the study and to the academic and professional experts who contributed to the validation and refinement of the research instrument.

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APA Citation:

Castillon, R. G. L. E. (2026). TELEHEALTH UTILIZATION, ADAPTIVE CLINICAL PRACTICES, AND WELL-BEING AMONG MULTICULTURAL NURSES IN REMOTE CLINICS IN THE EASTERN REGION OF THE KINGDOM OF SAUDI ARABIA. *Ignatian International Journal for Multidisciplinary Research*, 4(9), 1551–1561. <https://doi.org/10.5281/zenodo.22874418>

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