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Readiness on Telehealth among Health Care Providers in Southern Isabela Medical Center (SIMC): Basis for Ehealth Advancement

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ABSTRACT: *Telehealth has emerged as a crucial tool in addressing disparities in healthcare access, particularly in geographically fragmented nations like the Philippines. Grounded in the United Nations Sustainable Development Goals—specifically SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 17 (Partnerships for the Goals)—this study investigates telehealth readiness among healthcare providers at Southern Isabela Medical Center (SIMC). Despite the passage of Republic Act No. 11223 aimed at achieving universal health coverage, significant gaps remain, especially in rural areas where technological, organizational, and human factors challenge telehealth adoption. Using a quantitative descriptive-comparative design, this research surveys 270 SIMC healthcare providers across multiple divisions to assess their readiness in five domains: core, technical, learning, societal, and demographic. Findings reveal a well-educated and young workforce, yet issues such as poor connectivity, insufficient training, and patient education persist. The study highlights the need for targeted strategies addressing infrastructural gaps, workforce capacity-building, and ethical considerations to enhance telehealth integration. These insights can contribute to more equitable and resilient healthcare systems, particularly in the post-pandemic context.*

Keywords*: Core readiness, Technical readiness, Learning readiness and Societal readiness, Telehealth*

I. INTRODUCTION

Telehealth has emerged as a vital solution in addressing healthcare access challenges, particularly in geographically fragmented nations like the Philippines, where disparities in healthcare delivery persist between urban centers and remote provinces. Anchored on the United Nations Sustainable Development Goals, notably SDG 3, SDG 9, and SDG 17, this study aligns with global efforts to promote health equity, foster innovation, and build collaborative partnerships in healthcare. Despite national policies such as Republic Act No. 11223 aiming for universal health coverage, gaps remain in the distribution of healthcare provision. One of the solutions is to adopt telehealth innovations effectively. This research specifically focuses on assessing the telehealth readiness in terms of Core readiness, technical readiness, learning readinessand Societal readinessof healthcare providers at Southern Isabela Medical Center (SIMC), examining significant differences and

relationships of the readinessindicators(Core, Technical, Learning and Societal) in the placement of telehealth when grouped according to the respondent's profile. By addressing this gap, the study intends to offer practical strategies to enhance telehealth integration, contributing to more equitable and resilient healthcare systems in the post-pandemic era.

II. LITERATURE REVIEW

The rapid evolution of information and communication technologies (ICT) has transformed various sectors, including healthcare. One of the most notable innovations is telehealth, which leverages ICT to deliver healthcare services across geographical barriers. This literature review examines existing research on telemedicine, focusing on its conceptualization, readiness assessments, and impact across different health systems.

The conceptual framework of Telemedicine: The World Health Organization (WHO) broadly defines telemedicine as the use of information and communication technology (ICT) to deliver healthcare services remotely.This definition highlights the technological aspect of telemedicine but does not delve into the readiness of systems or the outcomes achieved (Ohinmaa, 2010).

Within the context on the Readiness Assessments in Telemedicine:1. Organizational and Technological Readiness: In a survey of Ethiopian health facilities, Musa (2014) applied the STOPE model to assess organizational and technological readiness for telemedicine adoption. The assessment showed that while organizational readiness was adequate, technological readiness needed improvement, indicating a need for phased implementation, infrastructure upgrades, and specific human resource development.2. **Health Provider Readiness:** Kiberu et al. (2019) conducted a cross-sectional survey in Uganda, revealing that readiness levels varied among healthcare providers. Administrators demonstrated higher readiness compared to doctors. The study recommended broader assessments encompassing nurses, allied health professionals, and even public readiness to facilitate comprehensive telemedicine adoption. 3. **Readiness Across Core Domains:** In a related Ugandan study, Kibery et al. (2019) evaluated core readiness, including e-learning, clinical, and technological domains. Although awareness of telemedicine was high (approximately 70%), the study identified weak technological readiness and notable patient barriers, highlighting the need to address these issues to enable successful implementation.

Relative on the **Telemedicine Outcomes and Impact: 1. Mental Health Interventions:** A systematic review by Wang et al. (2019) analyzed telehealth interventions for mental health, revealing high patient satisfaction and cost-effectiveness. However, the authors called for further investigations into long-term outcomes and scalability to strengthen the evidence base. 2. **Application Across Specialties:** Smith et al. (2019) conducted a systematic review to evaluate telemedicine applications, noting a marked increase in studies, particularly in telerehabilitation and tele-diabetes management. Despite these advances, the study identified gaps in specialty-specific evaluations and recommended more rigorous research designs to assess effectiveness across diverse medical disciplines. 3. **Chronic Disease Management:** Brown et al. (2020) reviewed studies on telehealth in chronic disease management, with positive findings in conditions such as hypertension and rheumatoid arthritis. The mixed results led the authors to call for comprehensive research on cost-effectiveness and optimal interventions.

These reviewed literature underscores the growing interest in telemedicine and its potential to transform healthcare delivery. While there is strong conceptual backing and evidence of positive patient outcomes, challenges remain, particularly regarding technological readiness, workforce training, and comprehensive specialty-specific evaluations. Addressing these challenges through phased implementation, infrastructure development, and robust research can pave the way for sustainable and scalable telemedicine adoption.

III. RESEARCH METHODOLOGY

Research Design

This study adopted a quantitative descriptive-comparative research design**.** It aims to describe the characteristics of healthcare providers at Southern Isabela Medical Center (SIMC) and compare these across divisions to identify significant differences. This approach focuses on analyzing similarities and variations without establishing causality (Leedy et al., 2014). Furthermore, inferential statistics was utilized to extend the findings to the larger population (Trochim et al., 2008).The combined use of descriptive and normative survey methods will capture both factual data and respondent attitudes (Babbie, 2016).

Locale of the Study

The study was conducted at Southern Isabela Medical Center (SIMC) in Santiago City, Isabela. SIMC is a Level 3, 350-bed referral hospital serving the provinces of Isabela, Quirino, Nueva Vizcaya, Ifugao, and Mountain Province. Established in 1974 and upgraded in 2018 through Republic Act No. 11082, SIMC continues to expand its services and infrastructure, including its eight-story Emergency Complex and teleconsultation programs launched in 2023.

Respondents of the Study

Respondents include permanent healthcare providers from SIMC's five main divisions: Medical, Ancillary, Nursing, HOPPS, and Finance. A random sampling method was employed, and the sample size was determined using Raosoft with a 95% confidence level and a 5% margin of error.The respondents of the study were plantilla employees from various divisions within the institution. A carefully chosen sample of 270 employees, drawn from a total population of 905, selected to ensure balanced representation.The Nursing Division contributed the largest share with 104 respondents (38.67%), followed by the Ancillary Division with 67 (24.86%), and the Medical Division with 59 (21.87%). The HOPPS Division provided 24 respondents (8.84%), while the Finance Division contributed 16 (5.74%). This distribution ensured that key divisions were fairly representedto capture diverse employee perspectives.

Data Gathering Instrument

A structured questionnaire adapted from Khoja et al. (2007) served as the main data collection tool. The survey is divided into: Part 1**:** Demographic Profile (age, sex, education, employment status, and length of service) Part 2**:** Core Readiness (awareness, technology comfort, planning, and willingness) Part 3**:** Technical Readiness (ICT speed, support, availability, and access) Part 4**:** Learning Readiness (training and involvement) Part 5**:** Societal Readiness (collaboration, policies, and sociocultural considerations). This study utilized a 4-point Likert Scale (1 = Strongly Disagree to 4 = Strongly Agree) in measuring responses.

Data Gathering Procedure

The data gathering procedure for this study proceeds through a systematic series of steps to ensure methodological rigor. Initially, the research proposal will be submitted for critique and evaluation, followed by necessary revisions and the securing of required permissions from relevant authorities. Once approved, the respondents will be identified and selected through random sampling techniques to ensure representativeness. Informed consent forms will then be distributed, ensuring that participation is both voluntary and ethically sound. The questionnaire was administered at SIMC, after which data collection and retrieval took place. The gathered data were carefully organized, analyzed, and interpreted in alignment with the study's objectives. To uphold academic integrity, the manuscript undergone thorough review, editing, and plagiarism checking before submission for presentation and publication. Ethical compliance was strictly observed by adhering to the provisions of the Data Privacy Act of 2012, ensuring that respondent confidentiality was maintained throughout the process.

Statistical Analysis

For the statistical analysis, both descriptive and inferential methods were employed using Excel and SPSS version 21. Demographic profiles and central tendencies were described using frequency, percentage, mean, and weighted mean. Inferential statistical methods, including the ANOVA, f-Value, T-Value ^ P-Value were employed to evaluate significant differences and relationships variations across variables. Specifically, the mean and weighted mean summarized central tendencies, percentage distribution profile the respondents demographically and ANOVA was used to assess variations across the dimensions of readiness explored in the study.

IV. RESULTS AND DISCUSSION

Table 1: Frequency distribution of the Demographic Profile of the respondents (n=270)

Indicators	Frequency	Percentage
Age:		
21-30 years old	51	18.9
31-40 years old	152	56.3
41-50 years old	46	17.0
51-60 years old	21	7.8
Sex:		
Male	100	37.0
Female	170	63.0
Educational Attainment		
High School Graduate	6	22.0
College Graduate	157	58.1
Vocational	9	3.3
Post Graduate Studies	98	36.4
Length of Service		
1-3 years	170	63.0
4-6 years	2	0.80
More than 6 years	98	36.2

Table 1 presents the frequency distribution on the demographic profile of the 270 respondents in this study. Most respondents (56.3%) are within the age range of 31–40 years old, indicating a relatively young and potentially tech-savvy workforce, which may influence their readiness to adopt telehealth services. In terms of sex, females dominate the healthcare workforce with 63.0%, reflecting the common gender distribution trend in the healthcare sector. Most of the respondents are college graduates (58.1%), while a significant number (36.4%) have pursued postgraduate studies, suggesting a well-educated group capable of adapting to digital innovations in health care. Regarding length of service, a large proportion (63.0%) have 1–3 years of experience, indicating that many are relatively new to the profession, which could imply a higher adaptability to new technologies such as telehealth.

These demographic factors provide valuable insights that can serve as a foundation in crafting appropriate strategies for effective eHealth adoption in SIMC.

Table 2: Problems encountered

ITEMS	Frequency Count	Rank

1. Poor telephone connection / internet connectivity.	252	2
2. Application of telemedicine/telehealth is hard (less likely) for older patients.	136	5
3. Difficulties in accessing telemedicine services.	96	8
4. Need to provide training to healthcare workers in using telemedicine.	222	3
5. Need to educate patients so that they can be aware of healthcare solutions.	262	1
6. Guidelines to address ethical and legal barriers.	76	10
7. Patient's identity should first be confirmed.	76	10
8. Patient Consent should be gained and recorded.	84	9
9. Verification of charges and payment coverage.	102	7
10. Data confidentiality, security and transparency.	136	5
11. Time lag and poor audio-visual quality due to insufficient bandwidth.	120	5
12. Difficulty to perform virtually and remotely (Physical exam, Diagnosis. Prescription and Consultation).	114	6
13. Funds/finance, resource and support to the healthcare systems in establishing telemedicine/telehealth.	102	6
14. Major limitation of the use of these mobile-based applications is the safety of the patient's data.	114	6
15. May not be appropriate for certain disorders that impair the patient's ability to use the technology.	138	4

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Table 2 demonstrates the problems encountered in the utilization and implementation of Tele-health as perceived by 270 respondents. Based on the frequency count among the top three items were Need to educate patients so that they can be aware of healthcare solutions (Freq.262) as ranked 1; Need to provide training to healthcare workers in using telemedicine (Freq.222) and Poor telephone connection / internet connectivity (Freq. 252) as respectively ranked second and third.

Furthermore, this table illustrates the frequency counts ranging from 76 to 262 as rated upon by the 270 respondents which are relevant problems encountered on the level of core, technical, learning and societal readiness as problems encountered in the utilization and implementation of Tele-health. This underscore the multifaceted challenges experienced on the levels of core readiness, technical readiness, learning readiness, and societal readiness, reflecting the comprehensive nature of the issues faced in Telehealth implementation.

Table 3: Summary of Significant Difference in Respondents' Level of Readiness When Grouped According to Their Profile Variables using ANOVA (p-value)

Profile Variable	Groupings	Mean Readiness Score	Statistical Test Used	p-value	Interpretation
Age	21–30	3.15	ANOVA	0.042	Significant Difference
	31–40	3.19			
	41–50	3.21			
	51–60	3.08			
Sex	Male	3.12	Independent t-test	0.087	No Significant Difference
	Female	3.20			
Educational Attainment	High School Graduate	3.00	ANOVA	0.018	Significant Difference
	Vocational	3.10			

	College Graduate	3.22			
	Post Graduate	3.26			
Length of Service	1–3 years	3.16	ANOVA	0.046	Significant Difference
	4–6 years	3.20			
	More than 6 years	3.23			

Table 3indicates that respondents' overall readiness levels for eHealth/telehealth significantly differ based on age, educational attainment, and length of service. Specifically, readiness tends to increase with age up to the 41–50 group before slightly declining in the oldest group (51–60). Higher educational attainment correlates with greater readiness, with postgraduate respondents showing the highest mean scores. Similarly, the length of service is positively associated with readiness, as those with more than six years of service report the highest readiness levels. In contrast, no significant difference in readiness was found between male and female respondents, suggesting that gender does not play a significant role in influencing readiness in this context.

These findings suggest that targeted strategies focusing on younger staff, those with lower educational attainment, and employees with shorter tenure may be beneficial in enhancing overall readiness for eHealth adoption.

Table 4: Test of Significant Difference in the Respondents' Level of Readiness based on the Readiness Dimensions When Grouped According to Their Demographic Profile using F-value, T-Value & P-Value

Profile Variables	**Readiness Dimensions**	**F-value / t-value**	**p-value**	**Interpretation**
Age	Core Readiness	2.78	0.042	**Significant**
	Technical Readiness	3.12	0.027	**Significant**
	Learning Readiness	1.89	0.115	Not Significant
	Societal Readiness	2.43	0.058	Not Significant
Sex	Core Readiness	1.35	0.177	Not Significant
	Technical Readiness	0.98	0.327	Not Significant
	Learning Readiness	1.20	0.233	Not Significant
	Societal Readiness	1.46	0.146	Not Significant
Educational Attainment	Core Readiness	4.15	0.008	**Significant**
	Technical Readiness	3.67	0.014	**Significant**
	Learning Readiness	2.74	0.048	**Significant**
	Societal Readiness	3.01	0.031	**Significant**
Length of Service	Core Readiness	3.96	0.010	**Significant**
	Technical Readiness	3.23	0.024	**Significant**
	Learning Readiness	3.54	0.019	**Significant**
	Societal Readiness	2.90	0.038	**Significant**

Table 4 reveals that respondents' levels of readiness across different dimensions are significantly influenced by certain demographic factors. Age shows a significant effect on core readiness and technical readiness, indicating that readiness in these areas varies across age groups; while learning and societal readiness are not significantly affected by age. Educational attainment significantly impacts all four readiness

dimensions—core, technical, learning, and societal—highlighting the strong role of education in shaping overall preparedness for eHealth initiatives. Similarly, length of service significantly influences readiness across all dimensions, suggesting that employees with longer tenure tend to have higher readiness levels. In contrast, sex does not significantly affect readiness in any dimension, indicating gender parity in perceptions of readiness.

These findings emphasize the importance of tailoring eHealth readiness interventions to address differences related to age, education, and tenure, while recognizing that gender may not be a critical factor in this context.

Discussions of the Findings:

The findings of this study confirm the significant role of demographic factors influencing telehealth readiness, consistent with global research emphasizing the importance of workforce characteristics (Musa, 2014; Kiberu et al., 2019). Younger healthcare workers (aged 21–40) exhibited higher readiness levels, mirroring patterns of greater receptivity seen in other studies (Musa, 2014). Similar trends were found in those with 4–6 years of service, possibly reflecting their mid-level leadership roles (Kiberu et al., 2019). Educational attainment emerged as a critical factor, with postgraduate degree holders demonstrating the highest readiness, supporting assertions by Smith et al. (2019) and Jones et al. (2020) that readiness is influenced by both education and professional backgrounds. Although no significant gender differences were observed, contrasting slightly with Kiberu et al. (2019), the findings suggest possible progress in inclusivity and access. Strong societal readiness points to the effectiveness of supportive policies and equitable ICT access (Wang et al., 2019). However, challenges such as infrastructure gaps, digital literacy, and training remain, reinforcing the need for human-centered strategies to advance eHealth readiness (Kamsu-Foguem, 2014; Muttitt et al., 2004; Garcia-Martinez et al., 2021).

V. CONCLUSION

Summing up, this study aimed to examine the demographic profile and assess the eHealth readiness of healthcare providers at Southern Isabela Medical Center (SIMC) as a foundation for telehealth adoption. The findings indicate that a considerable proportion of the workforce is composed of individuals aged 31–40 years, female, and highly educated, with the majority possessing college or postgraduate qualifications. Most respondents have 1–3 years of professional experience, suggesting a workforce that is both adaptable and receptive to digital health innovations. Although eHealth readiness was notably positive, especially among older, more experienced, and highly educated individuals, significant challenges remain. These include limited patient education on telehealth, inadequate training opportunities for healthcare workers, and infrastructural deficiencies such as unreliable internet connectivity. It is important to address these factors for the implementation of telehealth services within the institution.

This study concludes that the healthcare providers at SIMC demonstrate a promising foundation for telehealth adoption, characterized by a predominantly young, female, and well-educated workforce with a short tenure. eHealth readiness is broadly positive across core, technical, learning, and societal dimensions, with particularly highlevels of preparedness observed among older, more experienced, and highly educated staff. However, ongoing challenges related to training opportunities, infrastructure, and patient engagement need to be systematically addressed. The minimal variation in readiness between genders suggests that interventions should focus more on enhancing readiness among younger, less educated, and newer staff to ensure a consistent and equitable adoption of eHealth practices.

Based on the study's findings, several recommendations are made to improve eHealth readiness and support telehealth implementation at SIMC. It is essential to develop and deliver targeted training programs that consider staff demographics, providing basic digital skills for less-experienced employees and advanced eHealth training for more senior personnel. Institutions should offer lifelong learning to support continuous professional development, especially for older staff with limited training access. Investments in robust ICT infrastructure and connectivity are necessary to address technical challenges and improve service delivery. Strategies to

engage and educate patients about telehealth should be prioritized, incorporating culturally sensitive and user-friendly platforms. It is suggested to begin implementation with departments that show higher readiness levels, allowing for ongoing feedback and iterative improvements. Additionally, leveraging the diverse competencies within the workforce through role specialization and introducing incentive-based programs can foster motivation and excellence in eHealth adoption. Regular eHealth readiness assessments should monitor progress, guide policy, and align with workforce needs. Future research should evaluate the long-term outcomes of these strategies and consider replicating the study in other healthcare institutions to validate and enrich the findings.

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