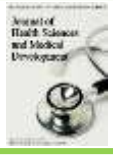
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Technical, Physical, and Academic Challenges in Online Learning

Evidence from Nursing Students in Foundations of Nursing Practice

[1]Cyril B. Romero*, [2]Benilda M. Oliva, [1]Marc Jhames Resoco Temeña, [2]Julie S. Cervas

Corresponding Author: * romerocyrilb@gmail.com

[1] University of Saint Anthony, Camarines Sur, Philippines

[2] Medical Mission Group (MMG) Hospital of Camarines Sur, Philippines

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ABSTRACT

The rapid integration of digital technologies in higher education has transformed teaching and learning, particularly in nursing education, where flexibility and accessibility are essential. This study examined the challenges of online learning and their effects on the academic performance and engagement of BSN 1J students enrolled in NCM 103 (Foundations of Nursing Practice) at the University of Saint Anthony during the Second Semester of School Year 2025–2026. A descriptive-correlational design with an evaluative approach was employed. Forty (40) nursing students were selected through total enumeration sampling. Data were collected using a researcher-developed questionnaire administered via Google Forms and analyzed using frequency counts, percentages, weighted means, and the Chi-Square Test of Independence. The findings revealed challenges related to technical adaptability, internet access and learning devices, physical health barriers, academic engagement, and attitudes toward online learning. Internet connectivity and access to learning devices emerged as the most significant challenges, while headaches, eye strain, and back fatigue were the most common physical health concerns. Students also reported difficulties in time management, maintaining motivation, and active participation, which negatively affected concentration, learning efficiency, academic performance, and engagement. The study concludes that online learning presents multidimensional challenges requiring comprehensive institutional support. Strengthening technological infrastructure, improving access to learning resources,

providing technical assistance, and implementing student-centered support programs are recommended to improve academic performance and engagement among nursing students in online learning environments.

Keywords
Internet Access
Nursing Education
Online Learning
Physical Health Barriers
Student Engagement

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Introduction

The rapid advancement of globalization and Information and Communication Technology (ICT) has significantly transformed educational systems worldwide. Technology-enhanced learning environments have become increasingly important in facilitating access to knowledge, promoting flexibility, and supporting lifelong learning. As digital technologies continue to reshape educational practices, online learning has emerged as one of the most effective approaches to delivering instruction beyond the traditional classroom setting. According to Khodaei et al. [1], distance learning facilitates the global dissemination of information and knowledge while enabling students to engage in more effective self-directed learning. Through online learning, students can determine their own learning schedules, select learning materials according to their needs, and revisit complex topics until they achieve satisfactory understanding. Furthermore, online environments often provide students with a safe and comfortable space to ask questions and participate in learning activities without fear of embarrassment.

Online learning encompasses a broad range of instructional methods delivered through digital technologies. It integrates various multimedia elements, including text, graphics, animations, videos, and audio materials, to support knowledge acquisition and learner engagement. In addition, online learning platforms facilitate collaborative learning experiences through discussion forums, virtual classrooms, and instructor-guided activities, allowing learners to interact with peers and educators regardless of geographical location [2]. Such technological innovations have transformed the traditional teaching and learning process by creating more flexible and accessible educational opportunities.

The significance of online learning became particularly evident during the COVID-19 pandemic, when educational institutions around the world were compelled to shift from face-to-face instruction to virtual learning environments. Online learning became the primary mechanism for ensuring educational continuity and minimizing disruptions to students' academic progress [3],[4]. Dede [5] emphasized that online learning represents a necessary

pedagogical alternative in the era of technological advancement and digital communication. To maximize its effectiveness, educational management practices must continuously innovate and adapt to facilitate meaningful interactions between teachers and students. Through online platforms, instructors can maintain communication and instructional support despite physical separation from their learners [6].

The growing integration of technology into education has also encouraged educational institutions to adopt innovative teaching strategies that align with digital learning requirements. Technology-based teaching and learning methods should be implemented in both schools and universities to support continuous interaction among learners and educators without requiring face-to-face meetings [7]. Educational technologies not only promote accessibility but also enhance learner motivation, engagement, and participation. Consequently, the effective use of digital learning tools has become essential for maintaining the quality of instruction and ensuring that online learning experiences are comparable to traditional classroom environments.

Recognizing the importance of digital education, the Commission on Higher Education (CHED) actively supports the implementation of online learning in higher education institutions. Through initiatives such as the PHL CHED Connect Platforms, students are provided with free access to learning materials and educational resources while institutions are encouraged to collaborate in delivering quality education. Furthermore, CHED has established policies and guidelines that support flexible learning systems, including online, offline, and blended learning approaches, as outlined in CMO No. 4, s. 2029 (Guidelines on the Implementation of Flexible Learning). These initiatives demonstrate the growing institutional commitment to integrating technology into higher education and ensuring equitable access to learning opportunities.

Within the field of nursing education, online learning presents both opportunities and challenges. Nursing is a highly demanding discipline that requires students to develop a strong foundation of theoretical knowledge alongside practical clinical competencies. Online learning platforms provide nursing students with flexible access to educational resources, interactive learning materials, and communication channels that support continuous learning. Research suggests that online learning can positively influence nursing education by enhancing knowledge acquisition, improving confidence, and supporting skill development. Moreover, online platforms facilitate communication between students and instructors, thereby contributing to more engaging learning experiences.

Online learning generally operates through two primary modes: synchronous and asynchronous learning. Synchronous learning enables real-time interaction between instructors and students through technologies such as video conferencing, audio conferencing,

and internet-based chats. In contrast, asynchronous learning allows students to access instructional materials at their own pace through recorded lectures, emails, discussion boards, and other delayed communication tools. Both approaches offer distinct advantages; however, their effectiveness often depends on students' technological readiness, access to digital resources, and ability to adapt to online learning environments.

In this study, online learning is defined as the teaching and learning process conducted through digital platforms such as WhatsApp, Zoom, and Google Classroom. It includes not only live online instruction but also assignments, assessments, and learning activities delivered electronically. As noted by Ratheeswari [8], the utilization of Information and Communications Technology has become an indispensable component of modern education, providing opportunities to enhance teaching effectiveness and learner engagement.

Despite the numerous advantages associated with online learning, students continue to encounter various challenges that may hinder their academic success. These challenges may include technical adaptability issues, inadequate internet connectivity, limited access to digital devices, physical health concerns arising from prolonged screen exposure, reduced academic engagement, and negative attitudes toward online learning. Such challenges can be particularly significant among nursing students, whose academic programs require active participation, practical application of knowledge, and continuous interaction with instructors.

Given these concerns, the present study investigates the challenges of online learning encountered by BSN 1J students enrolled in NCM 103 (Foundations of Nursing Practice) at the University of Saint Anthony during the second semester of School Year 2025–2026. Specifically, the study examines how these challenges influence students' academic performance and engagement. By identifying the factors that affect students' online learning experiences, the study seeks to generate evidence-based intervention measures that can improve learning effectiveness, strengthen student participation, and enhance overall educational outcomes. The findings are expected to contribute to the development of more responsive online learning strategies, support nursing educators in improving instructional practices, and provide guidance for administrators in strengthening digital learning environments in higher education.

Material and Methods

A. Research Design

This study employed a quantitative descriptive-correlational research design with an evaluative component. The descriptive approach was used to identify and describe the respondents' demographic characteristics and the challenges they encountered in online learning. Specifically, the study examined five dimensions of online learning challenges:

technical adaptability, internet access and equipment, physical health barriers, academic engagement, and attitudes toward online learning.

The correlational component was used to determine whether significant relationships existed between the respondents' demographic profile and the challenges they experienced in online learning. Furthermore, the evaluative aspect assessed the repercussions of these challenges on students' academic performance and engagement. This design was considered appropriate because it enabled the systematic collection, analysis, interpretation, and evaluation of quantitative data related to online learning experiences among nursing students.

B. Participants and Sampling

The participants of the study consisted of forty (40) Bachelor of Science in Nursing (BSN) 1J students enrolled in NCM 103 (Foundations of Nursing Practice) at the College of Health Care Education, University of Saint Anthony, during the second semester of the 2025–2026 academic year.

A total enumeration sampling technique was employed, whereby all members of the target population were included in the study. This approach was selected because the population was relatively small, accessible, and clearly defined. By including all eligible students, the study minimized sampling bias and ensured complete representation of the target group.

C. Research Instrument

Data were collected using a researcher-developed questionnaire designed to assess the challenges of online learning and their repercussions on students' academic performance and engagement. The instrument was developed based on an extensive review of related literature, scholarly articles, and previous studies concerning online learning in higher education.

The questionnaire consisted of three sections. The first section gathered demographic information, including age, sex, and religion. The second section measured the challenges encountered in online learning across five dimensions: technical adaptability, internet access and equipment, physical health barriers, academic engagement, and attitudes toward online learning. The third section examined the perceived effects of these challenges on academic performance and student engagement.

The instrument primarily consisted of closed-ended questions and five-point Likert-scale items. This format facilitated efficient data collection, standardized responses, and quantitative analysis of students' perceptions and experiences. The questionnaire was designed to ensure clarity, relevance, and alignment with the objectives of the study.

D. Instrument Development and Validation

The questionnaire was developed following a comprehensive review of relevant books, journal articles, and previous empirical studies. Particular attention was given to ensuring that the items adequately reflected the study variables and research objectives. Questions were

arranged logically, beginning with demographic items, followed by online learning experiences and challenges, thereby enhancing respondent comfort and maintaining engagement throughout the survey.

To establish content validity, the questionnaire underwent expert review by faculty members and educators knowledgeable in nursing education and educational research. Recommendations provided during the review process were incorporated to improve item clarity, relevance, and comprehensiveness. The final version of the instrument was subsequently administered to the target respondents.

E. Data Collection Procedure

Data collection was conducted through Google Forms. Before administration, respondents were informed of the purpose of the study and provided with clear instructions regarding questionnaire completion. Participation was voluntary, and respondents were encouraged to answer all items honestly and objectively.

The online survey link was distributed directly to the respondents. The use of Google Forms facilitated efficient data collection, accessibility, and immediate recording of responses. All forty (40) respondents completed the questionnaire, resulting in a 100% response and retrieval rate. The collected data were subsequently organized, coded, tabulated, and prepared for statistical analysis.

F. Data Analysis

The collected data were analyzed using descriptive and inferential statistical techniques.

1. Frequency and Percentage

   Frequency counts and percentages were used to describe the demographic profile of the respondents and summarize response distributions. Frequencies represented the number of respondents selecting a particular response category, while percentages indicated the relative proportion of responses within the sample.

2. Weighted Mean

   Weighted mean analysis was employed to determine the extent to which respondents experienced challenges in online learning across the identified dimensions. The weighted mean scores were interpreted using a five-point Likert scale (Table 1).

Table 1. A five-point Likert scale

Scale	Mean Range	Verbal Interpretation
5	4.20–5.00	Always
4	3.40–4.19	Often
3	2.60–3.39	Sometimes
2	1.80–2.59	Rarely
1	1.00–1.79	Never

The weighted mean enabled the researcher to quantify respondents' perceptions and identify the most prominent challenges associated with online learning.

3. Chi-Square Test of Independence

The Chi-Square Test of Independence was utilized to determine whether significant relationships existed between the respondents' demographic characteristics (age, sex, and religion) and the challenges encountered in online learning. This statistical technique is appropriate for examining associations between categorical variables and determining whether observed relationships are statistically significant.

All statistical analyses were conducted using an appropriate significance level of 0.05. The results were interpreted to determine whether the null hypothesis should be accepted or rejected and to identify the extent to which demographic characteristics were associated with online learning challenges.

G. Ethical Considerations

Ethical principles were observed throughout the study. Participation was voluntary, and respondents were informed about the objectives of the research prior to data collection. Confidentiality and anonymity of the participants were maintained by ensuring that individual responses were used solely for research purposes and reported only in aggregated form. Respondents were assured that their participation or non-participation would not affect their academic standing, and all collected data were treated with strict confidentiality.

Results

Table 2 presents the socio-demographic characteristics of the respondents. Most participants were aged 17–19 years (67.5%), indicating that the sample was predominantly composed of late adolescents. Female students constituted 70% of the respondents, reflecting the female-dominated nature of nursing education. In terms of religion, the majority were Roman Catholic (85%), suggesting a relatively homogeneous religious background among the participants.

Table 2. Socio-Demographic Profile of the Respondents

Profile		Frequency	Percentage (%)
Age	17–19 years old	27	67.5
	20–22 years old	12	30.0
	23–25 years old	0	0.0
	26 years old and above	2	5.0
Sex	Female	28	70.0
	Male	12	30.0
Religion	Roman Catholic	34	85.0
	Iglesia ni Cristo	1	2.5
	Seventh-day Adventist	1	2.5
	Born Again Christian	4	10.0
	Total	40	100.0

Table 3 shows that respondents generally agreed that technical adaptability posed challenges in online learning (Mode = 3). Difficulties were most evident in using

communication technologies and adapting to online platforms. Although computer literacy and technical support were available, students still experienced adjustment challenges. The findings suggest a continuing need for technological orientation, training, and support to improve students' confidence and effectiveness in digital learning environments.

Table 3. Technical Adaptability of Online Learning

Indicator	Often	Sometimes	Rarely	Never	Mode	Interpretation
Comfort with technology using online platforms	15	22	3	0	3	Agree
Use of communication tools and technologies	17	21	2	0	3	Agree
Computer literacy	13	21	5	1	3	Agree
Technical support	10	26	4	0	3	Agree
Offline access to course materials	12	24	4	0	3	Agree
Overall	**62**	**114**	**18**	**1**	**3**	**Agree**

Table 4 reveals that internet access and equipment represented significant challenges for students, with an overall interpretation of Strongly Agree (Mode = 4). Cellphones emerged as the primary device used for online learning, indicating a heavy reliance on mobile technology. Reliable internet access remained a critical concern, affecting students' participation, communication, and completion of academic tasks in online classes.

Table 4. Internet Access and Equipment

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Mode	Interpretation
Tablets	10	16	7	7	3	Agree
Computers	10	10	14	6	3	Agree
Laptop	17	13	6	4	3	Agree
Cellphone	29	8	2	1	4	Strongly Agree
Reliable Internet Access	12	20	7	1	3	Agree
Overall	**78**	**67**	**18**	**19**	**4**	**Strongly Agree**

Table 5 indicates that physical health barriers were commonly experienced by the respondents. Headaches and back fatigue were the most frequently reported concerns, both receiving a Strongly Agree interpretation. Eye strain and auditory difficulties were also evident among students. These findings suggest that prolonged exposure to digital devices may negatively affect students' physical well-being and potentially reduce learning efficiency and engagement.

Table 5. Physical Health Barriers

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Mode	Interpretation
Eye Strain	10	22	5	3	3	Agree
Back Fatigue	17	16	5	2	4	Strongly Agree
Headache	18	14	7	2	4	Strongly Agree
Auditory Difficulties	7	16	10	7	3	Agree
Overall	**52**	**68**	**27**	**14**	**4**	**Agree**

Table 6 demonstrates that academic engagement was influenced by several challenges, with an overall interpretation of Agree (Mode = 3). Time management received the highest level of agreement, indicating difficulties in balancing academic requirements with personal and household responsibilities. Students also faced challenges related to communication and resource utilization, suggesting that maintaining consistent engagement in online learning requires substantial self-regulation and support.

Table 6. Academic Engagement

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Mode	Interpretation
Take ownership of learning	13	23	4	3	3	Agree
Manage time	10	28	2	0	3	Agree
Utilize available resources	12	24	4	0	3	Agree
Effective online communication	10	25	5	0	3	Agree
Provide alternative materials	12	25	3	0	3	Agree
Overall	**57**	**122**	**21**	**3**	**3**	**Agree**

Table 7 shows that respondents generally agreed that their attitudes toward online learning were shaped by motivation, self-discipline, and interaction with instructors and peers. Self-discipline and motivation emerged as the strongest factors influencing attitudes. Despite demonstrating willingness to participate, students reported challenges associated with distractions, limited interaction, and maintaining sustained interest and focus in virtual learning environments.

Table 7. Attitude Toward Online Learning

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Mode	Interpretation
Avoidance of distractions	9	18	12	1	3	Agree
Engagement with instructors and peers	11	21	8	0	3	Agree
Active participation in online discussions	12	21	7	0	3	Agree
Self-discipline and motivation	16	20	4	0	3	Agree
Makes learning interesting	15	19	5	1	3	Agree
Overall	**63**	**99**	**36**	**2**	**3**	**Agree**

Discussions

The findings of this study provide important insights into the challenges encountered by nursing students in online learning and their implications for academic performance and student engagement. The results revealed that most respondents were aged 17–19 years, female, and Roman Catholic. These demographic characteristics are consistent with the typical profile of nursing students in the Philippines, where female enrollment continues to dominate nursing programs. Similar findings were reported by Labrague et al. [9], who noted that

nursing education in the Philippines remains largely female-oriented, with demographic factors influencing students' coping strategies, learning behaviors, and responses to academic stress. The predominance of young adult learners in this study also reflects the findings of Baticulon et al. [10], who identified that students in health-related programs experienced considerable difficulties adapting to online learning environments during the COVID-19 pandemic.

One of the major findings of the study was that students experienced challenges related to technical adaptability. Respondents reported difficulties in using online platforms, communication tools, and technological applications required for learning activities. These findings support the work of Toquero [11], who emphasized that both students and educators encountered challenges due to limited technological preparedness and inadequate digital competencies. Similarly, Adnan and Anwar [12] found that many university students struggled to adjust to virtual learning environments because of insufficient technological knowledge and unfamiliarity with online systems. The present findings also align with Fabito et al. [13], who reported that students experienced difficulties navigating online learning platforms and communicating effectively with instructors during remote learning implementation. Recent studies further suggest that digital literacy and technology self-efficacy significantly influence students' engagement and participation in online education [14],[15]. Therefore, technical adaptability remains a critical factor affecting the effectiveness of online learning among nursing students.

Internet access and availability of learning devices emerged as one of the most significant challenges experienced by respondents. The majority strongly agreed that internet connectivity and access to gadgets greatly influenced their learning experiences. Cellphones were identified as the most frequently used device for online learning. This finding reflects the realities of many students in developing countries where access to laptops and desktop computers remains limited. Rotas and Cahapay [16] similarly reported that poor internet connectivity and inadequate learning resources were among the most common barriers encountered by university students during remote learning. Likewise, Baticulon et al. [10] identified unstable internet access and financial limitations as major obstacles affecting students' participation in online education. Barrot et al. [17] further concluded that technological limitations negatively impacted students' academic performance and learning satisfaction. More recent evidence suggests that students' online learning outcomes are strongly associated with access to reliable digital infrastructure and technological resources [18]. These findings indicate that equitable access to internet services and educational technologies remains essential for successful online learning implementation.

The study also revealed that online learning contributed to various physical health barriers among students. Respondents commonly reported headaches, back fatigue, eye strain, and auditory difficulties. These findings indicate that prolonged exposure to digital devices and extended screen time may adversely affect students' physical well-being. Cleofas and Rocha [19] reported similar findings, showing that prolonged online learning exposure contributed to physical fatigue, stress, and health-related concerns among students. Dayagbil et al. [20] likewise found that excessive gadget use during online classes resulted in physical exhaustion and discomfort. Research on digital screen exposure has consistently shown that extended screen time contributes to headaches, eye strain, musculoskeletal pain, and reduced concentration [21]. Such health concerns may diminish students' motivation and capacity to actively participate in learning activities, thereby affecting their academic performance.

Academic engagement was another area significantly affected by online learning challenges. Students reported difficulties in managing time, participating actively in discussions, utilizing available learning resources, and maintaining effective communication with instructors and classmates. Time management emerged as one of the most prominent concerns among respondents. These findings are consistent with Baticulon et al. [10], who found that distractions at home, competing responsibilities, and lack of conducive learning environments reduced students' engagement in online learning. Pastor [22] similarly observed that maintaining active participation in virtual classes was difficult due to environmental distractions and increased academic workload. Recent studies also emphasize that engagement in online learning is influenced by students' self-regulation skills, motivation, and learning environment conditions [18],[23],[24]. When engagement declines, students are more likely to experience lower academic achievement and reduced learning satisfaction.

Attitudes toward online learning were likewise influenced by self-discipline, motivation, interaction with peers and instructors, and the ability to avoid distractions. Although respondents generally demonstrated willingness to participate in online classes, sustaining motivation and maintaining focus remained challenging. These findings support the observations of Rotas and Cahapay [16], who noted that lack of interaction and environmental distractions negatively affected students' attitudes toward online learning. Getenet et al. [14] further argued that positive attitudes toward digital technology and higher levels of self-efficacy contribute significantly to online learning engagement. Students who perceive online learning as engaging and supportive are more likely to remain motivated and achieve positive learning outcomes.

Overall, the study confirms that the challenges encountered in online learning have substantial repercussions on students' academic performance and engagement. Technical difficulties, unstable internet access, physical health concerns, and motivational barriers

collectively hinder students' concentration, participation, and learning efficiency. These findings are supported by Baticulon et al. [10], Toquero [11], and Fabito et al. [13], all of whom emphasized the multidimensional nature of online learning challenges. Contemporary research also indicates that institutional support, technological readiness, and learner-centered strategies play critical roles in promoting engagement and academic success in digital learning environments [15],[24].

Given these findings, higher education institutions must strengthen support mechanisms that address both technological and psychosocial challenges experienced by students. Providing reliable digital infrastructure, flexible learning resources, technical assistance, health and wellness programs, and student-centered instructional strategies may help improve learning experiences and academic outcomes. For nursing education in particular, strengthening online learning systems is essential to ensure that students remain academically engaged while developing the competencies necessary for future professional practice. The proposed intervention measures may therefore contribute to creating a more inclusive, supportive, and effective online learning environment for nursing students.

Conclusion

This study examined the challenges of online learning and their repercussions on the academic performance and student engagement of BSN 1J students enrolled in NCM 103 (Foundations of Nursing Practice) at the University of Saint Anthony during the Second Semester of School Year 2025–2026. The findings revealed that the respondents were predominantly female, aged 17–19 years, and Roman Catholic. Students generally experienced challenges related to technical adaptability, internet access and equipment, physical health barriers, academic engagement, and attitudes toward online learning.

Among the identified challenges, internet connectivity and access to learning devices emerged as the most significant concerns, with cellular phones serving as the primary learning tool for most students. Respondents also reported physical health issues such as headaches, back fatigue, and eye strain resulting from prolonged exposure to digital devices. Furthermore, difficulties in time management, maintaining engagement, and sustaining motivation affected students' participation in online learning activities.

The study concludes that online learning challenges have notable repercussions on students' academic performance and engagement. Technical difficulties, limited technological resources, and health-related concerns can reduce learning efficiency, concentration, and participation. Therefore, higher education institutions should strengthen technological support systems, provide accessible learning resources, and implement student-centered intervention programs that promote well-being, engagement, and academic success. Such

measures are essential for improving the quality and effectiveness of online learning in nursing education.

Conflict of Interest

The authors declare no conflict of interest.

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Authors



Cyril B. Romero, RN, RM, MAN, Ph.D. is a Professor at the Graduate School of the University of Saint Anthony, Philippines, and former Dean of its College of Nursing. She serves as Editor-in-Chief of the *Peer-Reviewed Journal of Health Science and Medical Development (HESMED)*, Indonesia. Her academic interests include nursing education, healthcare management, medical research, and curriculum development. She has extensive experience in higher education leadership, research supervision, and scholarly publication. (email: romerocyrilb@gmail.com).



Benilda M. Oliva, RN, MAN earned her Master of Arts in Nursing degree in 2024. She serves as a part-time Clinical Instructor at the University of Saint Anthony and is currently the Chief Nurse of the Medical Mission Group Hospital and Health Services Cooperative of Camarines Sur. Previously, she worked as a Hemodialysis Head Nurse. Her professional interests include clinical nursing practice, nursing education, patient care management, and community health services. (email: olivabenilda@gmail.com).



Marc Jhames Resoco Temeña, RN, MAN is a faculty member of the College of Healthcare Education at the University of Saint Anthony, Iriga City, Philippines. He is actively involved in teaching, research, and student mentoring in nursing and healthcare-related programs. His areas of interest include nursing education, clinical practice, healthcare innovation, and student development. He is committed to advancing quality nursing education and fostering evidence-based practice among future healthcare professionals. (email: marcjhamesresocotemena@gmail.com).



Julie S. Cervas, RN, MAN currently serves as Administrative Officer of the Medical Mission Group (MMG) Hospital of Camarines Sur. She previously held positions as Training Officer and Officer-in-Charge Chief Nurse within the same institution. In addition, she is a Clinical Instructor at the University of Saint Anthony, where she contributes to the preparation of future nursing professionals. Her interests include healthcare administration, nursing leadership, staff development, and clinical education. (email: cervasjulie024@gmail.com).