



STRUCTURAL EQUATION MODEL ON NURSES' CAPACITY MANAGEMENT SYSTEM

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Abstract

Nature and Scope: Nurses' Capacity Management System (NCMS) uses structural equation modeling to improve the planning of the nurse-patient ratio in the Philippines. The study emphasizes the need for local research on the importance of nurses' capacity management to enhance healthcare and ensure patient safety.

Research Method: This cross-sectional descriptive correlational quantitative design investigates the complex relationship between variables within the nursing capacity management system study composed of 206 registered nurses recruited through purposive sampling from 7 secondary and tertiary private hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN) in the Philippines. The analysis includes Exploratory Factor Analysis, Cronbach's Alpha, and Structural Equation Model.

Results: The result shows model fit indices, such as CFI (0.99), TLI (0.98), RMSEA (0.04), and GFI (0.92), that measure the adequacy of the study's model in representing data by examining the connections between variables and showed that the current model ($p = 0.013$) is superior compared to the baseline model. The Patient Acuity System ($\beta = 0.57, p < 0.001$) and Ethical Nursing Care ($\beta = 0.479, p\text{-value} < 0.05$) demonstrate a significant direct effect towards Nurse Capacity Management. All indirect effects have p -values over 0.05, suggesting no significant indirect connections.

Conclusion: Future research should explore additional variables such as commercial metrics and organizational factors. The NCMS model has the potential to enhance nursing practice, administration, research, and education by providing essential skills in patient assessment, ethical care delivery, and capacity management in the Philippines.

Keywords: Nurses' Capacity Management System, Patient Acuity System, Ethical Nursing Care, Person-Centered Care, Structural Equation Model

Introduction

Background of Study

The Nurse Patient Ratio of 1:12, established by the Department of Health [1], needs to be improved in its efforts to facilitate the provision of high-quality nursing care across the nation. This phenomenon is particularly evident in the COVID-19 pandemic, where nurses face an increased demand for more patients, with patient loads ranging from 20 to 50 individuals every 12-hour shift [2]. A scenario of this nature threatens patient safety, anticipated clinical outcomes of high quality, and the overall care experience for both nurses and patients.

Nurses play an essential and enduring function within the healthcare system. Healthcare professionals are crucial to person-centered care, prioritizing empathy, understanding, respect, and responsiveness to individual needs. This approach also aims to optimize resource allocation and usage for maximum efficiency. Nursing practitioners sometimes show a bias for prioritizing physical care over psychological and relational components in their contact with patients, leading to a task-oriented approach that might lead to disruption. Person-centered care is a nursing strategy that emphasizes the basic concepts of compassion, empathy, respect, and responsiveness. The emphasis on attending to bodily well-being may lead to disregarding psychological and interpersonal aspects. To effectively include the critical components of patient-centered care (PCC), nurses must cultivate comprehensive, integrated core care skills and augment their clinical reasoning abilities. The Nurses' Capacity Management System is a technological solution that aims to promote nurse availability, improve operational procedures, and elevate the quality of nursing care. Utilizing technology and data analytics aims to coordinate resources, enhance nurse-to-patient ratios, and maximize the use of nurses' skills. Excessive workloads can detrimentally affect patients' well-being and performance, endangering their safety. The establishment of effective collaboration among governmental entities, healthcare organizations, and nurse administrators is vital to alleviate work burdens and uphold the provision of high-quality healthcare services. Implementing morning shifts has increased many healthcare activities, including self-care practices, medicine dispensation, wound care supervision, and end-of-life care assistance. During their changes, nurses prioritize administrative responsibilities and actively listen to patients.

The study highlights the need for local research on managing workloads effectively for nurses, as it is crucial for improving healthcare services and patient safety. Prioritizing research programs on nurse capacity management, including burden distribution, staffing patterns, and skill mix optimization, can lead to improved patient outcomes and care.

The study proposes the creation of a customized Nurse Capacity Management System (NCMS) using structural equation modeling (SEM) to understand the intricate factors affecting nurses' competencies and personalized care delivery, thereby enhancing their efficiency in providing individualized care. Furthermore, the stakeholders will use the customized nurse's capacity management model to understand the intricate factors affecting nurses' competencies, and it can answer the nurses' needs in individualized care.

The NCMS aims to optimize nurse staffing, improve workflow, and create a nurturing work environment, enabling individualized care and improved patient outcomes. However, understanding the interrelated factors and their influence on nursing is crucial for effective nursing practice.

The Philippines faces a multifaceted healthcare challenge arising from an expanding population, constrained resources, and an ongoing scarcity of nurses. Consequently, it is imperative to implement efficient nurse capacity management to safeguard patient safety and uphold the provision of high-quality care. The country has expressed apprehensions about insufficient

nurse staffing levels, frequently surpassing acceptable nurse-to-patient ratios, which directly affects nursing workload, resulting in stress, exhaustion, and degraded quality of patient care. [50] Staffing models considering patient acuity, hospital dynamics, and nurse skill sets are crucial for optimizing workload distribution. [51] The initiative promotes Nursing Capacity Management, fostering skill development through training, simulation, mentorship, flexible work hours, remuneration, and supportive environments, addressing high turnover rates.

Applying Structural Equation Modeling (SEM) within healthcare organizations holds immense potential to support the implementation of evidence-based policies specifically aimed at maximizing nurses' capabilities and improving patient care outcomes [5]. Bridging the knowledge gap surrounding nurses' capacity management can profoundly impact healthcare policy and practice, ultimately leading to enhanced patient outcomes, increased job satisfaction among nursing professionals, and the establishment of a healthcare system that prioritizes the needs and well-being of patients.

Literature Review

This section reviews relevant literature on nurse capacity management systems and related factors.

Patient Acuity

The assessment of patient acuity plays a pivotal role in evaluating nursing care requirements, as it enables the determination of a patient's overall state, the complexity of care needed, and the potential risk of complications. This information is crucial in making informed decisions regarding staffing levels to ensure adequate supervision.

The acuity of patients on general floors is equivalent to that of step-down units, with an average of 5.6 registered nurse (RN) hours required daily. However, in general wards, the understaffing problem is limited to 50% of actual hours, potentially significantly compromising patient care and causing understaffing difficulties [6]. Patient acuity plays a vital role in determining staffing decisions, as it contributes to various important factors such as nurse satisfaction, cost-effectiveness, and the quality of treatment provided. This intervention aids in the identification of patients who are susceptible to problems, hence mitigating the occurrence of adverse events and improving overall staffing effectiveness [7]. High-acuity patients can induce heightened nursing weariness, which may result in compromised patient care due to the increased likelihood of errors [8]. Using patient acuity tools improves nurse communication and collaboration, boosting communication efficacy within nursing teams and facilitating collaborative efforts in patient care [9].

Patient acuity is pivotal in determining staffing allocations, nurse job satisfaction, cost-efficiency, and care quality, fostering efficient communication and teamwork. The utilization of patient acuity tools has the potential to enhance these outcomes. The selection of a healthcare tool is vital to the patient's demands, the availability of resources, and the preferences of the nursing staff. The patient's condition has an impact on both worker recruitment and care quality. On the other hand, selecting a tool for a given healthcare setting is critical for effective utilization and appropriate treatment.

Nurse Competency

The relevance of nursing competency ensures the delivery of safe and effective patient care. Defining nursing competency is essential for developing educational programs and establishing a framework for ongoing professional growth.

Achieving nursing competency is paramount to effectively carrying out nursing responsibilities and establishing the groundwork for an educational curriculum. Upon acquiring a nursing license, it is imperative to start an ongoing process of professional growth [10]. In Spain, middle nurse managers are equipped with a comprehensive set of 51 essential skills.

These abilities predominantly encompass areas such as communication, leadership, and decision-making. They are pivotal in facilitating effective nurse management and resource allocation within healthcare companies [11].

Nursing managers must effectively distinguish between organizational commitment and professional competence to uphold quality and safety in healthcare. Professional competence and commitment offer sufficient management assistance, conduct impartial evaluations, grant personnel autonomy, ensure their welfare, and augment organizational resources [12]. A capacity model estimates the necessary nursing staff capacity and enhances ward utilization. The bed and staff allocation utilizes historical data about bed occupancy, nurse-patient ratios, and contract hours [13].

Nursing competency comprises a wide range of knowledge, abilities, and capacities, demanding the development of a precise contextual framework to distinguish between intermediate and senior nurse managers in various nations and enhancing nursing competency through educational opportunities, feedback mechanisms, and providing a supportive work environment. It is imperative to customize the strategy based on the specific requirements of individuals or groups. Nursing competency is fundamental in comprehending its essence, and additional research is required to further explore its aspects and improve its effectiveness.

Digital Transformation

The healthcare industry is going through a change toward digitalization. EHRs, telemedicine, and wearable devices make services better, faster, and easier to get, but they also come with problems like money, worker shortages, compatibility, privacy, and security. Effective execution necessitates dedication from all relevant parties, including healthcare professionals, individuals receiving treatment, and decision-makers. These challenges include financial implications, insufficient workforce expertise, compatibility concerns, safeguarding patient confidentiality, and potential hazards to security. The opportunities encompassed in this context pertain to the enhancement of treatment quality, the augmentation of efficiency, the promotion of patient participation, and the advancement of population health. Utilizing electronic health records, task-tracking tools, and data analytics can enhance the effectiveness of staffing decisions, resource allocation, and performance monitoring [52].

Nevertheless, achieving effective implementation necessitates a synchronized endeavor from several entities involved, including healthcare establishments making strategic investments in appropriate technologies, patients displaying a willingness to engage with digital health tools, and legislators establishing a conducive climate that fosters the adoption of digital technologies. The prospective trajectory of digital transformation within the healthcare sector includes the integration and utilization of artificial intelligence (AI), virtual reality (VR), augmented reality (AR), and blockchain technologies. The healthcare industry leverages these advantages.

The quality of care, caregiver support, and operational efficiency have significantly improved because of the usage of digital technology in the healthcare industry—the introduction of electronic health records and health information systems allowed for these developments. However, implementing these principles might be hampered by various issues, including contextual conditions [13].

Incorporating digital monitoring technology into care services is a multifaceted and resource-demanding undertaking that requires healthcare professionals to modify clinical procedures and establish novel pathways for value co-creation. The present state of healthcare is deemed unsustainable, necessitating the incorporation of advanced information technology capabilities into services as a vital component of successful digital transformation [14].

The function of middle management is of utmost importance in facilitating and fostering workplace learning and communication within the healthcare services sector. Adaptive control and learning-oriented leadership principles prioritize integrating learning activities into work processes. Middle managers employ scenario planning and back-casting methodologies to empower stakeholders to acquire knowledge and skills. To achieve successful digitalization, it is imperative that all relevant stakeholders, encompassing employees, middle managers, and top-level executives, engage in collaborative efforts to comprehend uncertainties, anticipate future consequences, and address inconsistencies [15].

Digital leadership is a strategy framework that combines three distinct leadership styles to cultivate and promote innovation within organizational contexts. This process entails facilitating teams in exploring ideas that generate value through digital transformations and designing and implementing IT solutions. It also involves promoting reflective dialogues and making well-informed judgments regarding the transition to regular business operations. Implementing this method is of utmost importance for organizations to sustain their competitiveness and successfully address the changing demands of clients and technological improvements [16].

Integrating complicated digital technology is a significant aspect of nursing, underscoring its significance in nursing studies. The influence of technology on health and well-being surpasses the scope of early nursing theories. The Actor-Network Theory (ANT) and Lens for Digital Nursing (LDN) frameworks provide valuable insights into the dynamics of human interactions with non-human entities within digital nursing. Additional empirical investigation explores the composition of nursing collectives, the manifestation of care within the digital domain, and patient involvement with digital technology. This endeavor will contribute to the progression of nursing scholarships and enhance comprehension of digital nursing practices [17].

Digital technology integration in healthcare has enhanced care delivery, caregiver assistance, and organizational efficiency: tailored tactics, stakeholder interaction, and a learning-oriented atmosphere successful implementation. Middle management is critical in encouraging workplace learning and communication. For firms to remain competitive, digital leadership is vital. Digital nursing dynamics and the nursing profession require additional study and theoretical frameworks. Context-aware strategies, stakeholder involvement, and learning-oriented leadership are necessary to realize the full potential of digital transformation in healthcare.

Ethical Nursing Care

Nursing is essential to the healthcare sector, necessitating ethical decision-making principles when caring for patients across various age groups and medical circumstances. Care ethics, including patient liberty, beneficence, justice, confidentiality, and self-care, are critical but should be addressed, which can be bad for patients and nurses. Further investigation is warranted to delve into workload, care ethics, the delicate equilibrium between autonomy and beneficence, preserving secrecy, and the significance of self-care in the context of ethical nursing practice.

The complex nature of nursing assignments may give rise to ethical quandaries, jeopardizing patient-centered care and maintaining professional integrity. Integrating personal values and ethics into nursing administration can be facilitated by applying a care ethics framework. This method enables the cultivation of empathetic behaviors and comprehensive comprehension of mundane occurrences, mitigating depersonalization. Implementing proactive leadership strategies in

tackling challenges such as time pressures and care rationing can result in balanced workloads and enhanced job satisfaction [18].

Moral dilemmas manifest when nurses strive to deliver exceptional healthcare and ensure patient contentment. Establishing exact parameters facilitates enhancing nurses' competencies while acknowledging shared obligations within the collective is of utmost importance. Adopting an ethical framework by long-term care nurses addresses difficulties within these particular care contexts [19].

Providing high-quality therapy for registered nurses is a constraint on resources and the dynamic nature of healthcare environments. The current corporate model undermines the significance of professional skills and ethical responsibilities, resulting in conflicts and moral quandaries. To effectively tackle these difficulties, it is imperative to raise awareness, optimize the working conditions, and enhance nurses' comprehension of their professional milieu [20].

Ethical nursing care includes observing the nursing code of ethics, tailored to accommodate cultural and situational circumstances. Providing personalized patient care and reliable and empathetic services while adhering to set benchmarks is essential to ensure a safe and proficient practice [21].

The presence of ethical sensitivity holds significant importance in the context of nursing decision-making and the overall welfare of patients. Nursing professionals must augment their moral consciousness and comprehend the ethical aspects involved. Recognizing and effectively resolving issues is of utmost importance, necessitating a shared recognition and comprehension of these dimensions [22].

The ethical dilemmas arising from the intricacy of nursing assignments can impact patient-centered care and adherence to professional ethics. The utilization of a care ethics framework can facilitate the promotion of empathy and foster interprofessional partnerships. Effective leadership and proactive strategies are necessary to effectively manage issues linked to workload-related. Nursing practitioners must develop standards for delivering high-quality care and enhance their ethical awareness, all while upholding their commitment to moral ideals within the healthcare field.

Person-Centered Care

Person-centered care (PCC) is a prominent healthcare paradigm that emphasizes providing customized care, active involvement of patients, and promoting holistic well-being. Nurses are vital in delivering person-centered care (PCC), yet there are inherent difficulties in effectively integrating psychosocial and relational competencies with physical care delivery. The importance of proficient execution within hospital settings directly impacts patient satisfaction and health results. Incorporating various factors, including family, significant individuals, context, prevention, promotion, and preferences, is a crucial aspect of the American Association of Colleges of Nursing's [3] framework.

Patient-centeredness and involvement are imperative for nurses to focus on psychosocial and relational care in conjunction with physical care. The fundamental principles of Person-Centered Care (PCC) acknowledge patients as distinct individuals with diverse and complex needs. Providing person-centered essential care remains complex, as nurses have difficulty effectively integrating the physical, relational, and psychological aspects. It is vital to prioritize amalgamating fundamental care and cultivating clinical reasoning skills [4]. Carefully observing patient cues and effectively managing disruptions play a significant role in establishing a setting conducive to individualized care. The authors underscore the significance of diligent observation of patient lines and the reduction of frequent disruptions in delivering care genuinely oriented toward the patient [23].

Person-centered care encompasses various dimensions in nursing care and is a topic of considerable complexity and varied nature. Even so, implementing this concept in real-world scenarios continues to provide difficulties because of the absence of well-defined protocols and a widely acknowledged definition. The philosophical underpinnings of PCC examination of measurement procedures and outcomes promote a standardized and complete approach to healthcare across many levels [24].

Person-centered care (PCC) prioritizes the placement of patients at the core of healthcare delivery. It recognizes and appreciates their capabilities—the significance of utilizing patients' narratives and healthcare documentation to augment communication between patients and healthcare professionals. The authors suggest that patient-centered care (PCC) exhibits a more substantial alignment with the relational ethics framework than the biological model. Primarily due to its emphasis on fostering collaboration and cooperation between patients and healthcare practitioners [25].

The importance of patient engagement in the context of Person-Centered Care (PCC) lies in its ability to foster acceptance of alternative health views and active involvement in developing individualized health plans. Healthcare professionals are crucial in promoting patient engagement by employing effective communication strategies and actively listening to patients. This intervention enhances patient empowerment, increases self-efficacy, and optimizes medication management. A notable emphasis is on the reciprocal relationship between patient engagement and the successful implementation of person-centered care, focusing on the significance of effective communication and active listening skills [26].

Healthcare providers play an essential part in person-centered care by displaying empathy and personalizing care plans to each patient's specific requirements, resulting in improved health outcomes. For PCC to work, people must be trained and skilled enough to focus on patient-centered communication, providing accessible care, and making personal care plans. This paper discusses the problems and possibilities of putting Person-Centered Care (PCC) into place [27].

In patient-centered care, nurses incorporate psychosocial and relational competencies with physical care. PCC's ethical underpinnings and collaborative ethos play a pivotal role in ensuring the provision of care of the highest caliber. Nevertheless, it is necessary to acknowledge and confront obstacles, such as establishing unambiguous directives and providing suitable instruction to ensure the successful execution of the proposed measures. Additional investigation is required to cultivate a healthcare system that prioritizes the needs and preferences of patients.

Nurses' Capacity Management

Nurses play a vital role within the healthcare system, delivering care that is both safe and of a high quality. Nurse supervisors must address their workload, job satisfaction, and emotional well-being concerns. Using evidence-based procedures, advocating for legislation, and establishing a professional growth-oriented work environment through various strategies to improve nurses' competency is critical. These strategies encompass augmenting the number of staff members, showing a working design that promotes a supportive environment, enhancing job satisfaction through opportunities for professional growth, and campaigning for policies to mitigate the nursing shortage. Regular feedback on performance, fostering a safety culture, and allocating resources towards education and training are also vital. Through the implementation of these measures, nurse managers may effectively ensure that nurses possess the requisite capacity to deliver care that is both safe and of high quality to patients.

Several mediating factors, such as nurse workload, job satisfaction, and emotional exhaustion, can influence the quality of nursing care. The authors propose that nurse managers should consider implementing several strategies to enhance nurses'

workload, job satisfaction, and emotional fatigue. These strategies include evaluating staffing and resource adequacy, offering flexible work schedules, providing wage increments, and improving work surroundings [28]. A significant association exists between the degree of patient autonomy and the equivalent workload of nurses. The authors propose that nurse managers formulate methods to enhance patients' autonomy while concurrently diminishing their reliance on nurses [29].

There is a negative relationship between nurse workload and job design. The authors propose that nurse managers adopt tactics to enhance nurses' work design, including providing increased autonomy, training opportunities, and support [30]. The scarcity of nurses poses a significant issue to healthcare systems. The authors propose that implementing various methods by governments and healthcare organizations would benefit attracting and retaining nurses. These efforts may include augmenting earnings, improving working conditions, and expanding educational possibilities [31]. The nurse staffing ratio in hospitals located in the state of Illinois needs to be higher. Hospitals should augment their nursing workforce to enhance the standard of care and mitigate potential patient damage—the effects of decreased nurse staffing ratios on patient outcomes. The findings imply that adherence to prescribed ratios, such as those outlined in the Safe Patient Limits Act, can reduce mortality rates and healthcare expenditures [32].

The literature on nurses' capacity management emphasizes the nursing profession's difficulties, such as workload, job satisfaction, emotional well-being, and staffing shortages. Nurse managers play an essential role in addressing these concerns by instituting solutions such as staffing levels, flexible work schedules, and building a supportive work atmosphere. Continuous assessment and management of nurses' capability is critical in the developing healthcare landscape for safe, effective, and high-quality care.

Complex Adaptive Theory and Person-Centered Care

The nursing leadership theory, known as human-centered leadership in healthcare, plays a vital role in promoting the development of innovative, adaptable, and patient-focused teams in response to the growing complexity of the healthcare industry. Derived from a constructivist process, this theory enables leaders to effectively navigate structure, process, and outcomes [43].

Complexity science, an emerging discipline within systems thinking, aims to comprehend the intricate interconnections of complex systems. It promotes a comprehensive approach to patient care, encompassing the broader context and anticipating unforeseen possibilities. The principles align with skilled nursing practice and have the potential to transform healthcare organizations by making processes more efficient, fostering a supportive work environment, and increasing job satisfaction. Complex Adaptive Systems (CAS) theory, a fundamental principle of complexity science, plays a crucial role in this approach [44].

Complex adaptive systems (CASs) offer a valuable framework for scrutinizing interconnected relationships. CAS is an alternative patient-centric model that embraces a holistic approach to chronic care. By deciphering relationships, behavioral patterns, and adaptive mechanisms, we can inform healthcare systems and policies to enhance service excellence and the quality of care for chronic disease populations [45].

The benefits of complexity theory, such as adaptation, self-organization, non-linear interactions, and historical context, are crucial in minimizing neglected nursing care. Utilizing the complex adaptive systems approach may prove advantageous for nurse managers in equipping nurses for unpredictable clinical scenarios, ultimately leading to decreased missed care.

Adopting new approaches to investigate neglected healthcare tasks could significantly influence the capacity of nursing personnel to deliver high-quality and inventive healthcare within the contemporary healthcare system [46].

The healthcare sector's burgeoning complexity necessitates the adoption of innovative leadership approaches. The integration of complex adaptive theory (CAT) and person-centered care (PCC) provides valuable conceptual frameworks for nursing leadership. CAT emphasizes understanding intricate systems, fostering adaptable teams, and tailoring care to maximize patient outcomes. PCC principles, such as holistic understanding, empathy, and collaborative decision-making, guide the implementation of nursing care. By merging CAT and PCC concepts, nursing leadership can drive significant positive changes, enabling teams to better meet patient needs, adapt to evolving healthcare trends, and deliver individualized, high-quality care.

Complex Adaptive Theory and Nurses' Capacity Management

In healthcare, highly complex departments demand a balance between staff autonomy and performance orientation to foster innovation. Healthcare leaders should establish guidelines that empower staff autonomy while aligning individual efforts with departmental goals. Healthcare providers are inherently driven to innovate to enhance patient care and improve overall performance. However, healthcare innovation is often fueled by necessity rather than external incentives, requiring a strong alignment with departmental goals and a commitment to success. By identifying current challenges and implementing concrete solutions to improve patient care, healthcare organizations can spark significant innovation. Hospitals should provide clear direction regarding the desired type of innovation, allocate dedicated time and resources, and actively encourage successful implementations to cultivate a culture of innovation [47].

The nursing profession is an intricate adaptive system (CAS), distinguished by its ability to adapt, self-organize, and exhibit emergence. Nurses adapt their care strategies in response to patient feedback and medical knowledge to address patients' needs and the requirements of healthcare systems. Furthermore, they demonstrate self-organization, working together and overseeing care provision in unforeseeable circumstances. Nursing practice promotes the development of collective intelligence, where the knowledge and expertise of individual nurses come together to create innovative solutions. Complexity science offers a framework for comprehending the intricate mechanisms supporting nursing profession, allowing insights into resilience, innovation, and ongoing enhancement. By adopting complexity science, nursing can improve patient care, cultivate a resilient workforce, and encourage innovative approaches to nursing education. Future nurses can cultivate critical thinking, adaptability, and a systems perspective by integrating principles from complexity science [48].

Healthcare teams operating within the complex adaptive healthcare system are pivotal in delivering high-quality patient care. By embracing complexity science and understanding healthcare teams as CAS, we can better appreciate their intricate dynamics and the emergent properties that shape their effectiveness. This knowledge empowers us to enhance team education, improve team practice, and guide future research, ultimately contributing to improved patient outcomes and a more resilient healthcare system [49].

Healthcare organizations must balance granting autonomy and ensuring performance to cultivate innovation. Nurses, as an adaptable system, modify care strategies in response to patient feedback and medical expertise. Complexity science offers a structured approach to comprehending the mechanisms of nursing, facilitating a deeper understanding of resilience and innovation. Integrating complex science principles can help future nurses develop critical thinking skills and a systems perspective. Healthcare teams have a crucial role in providing exceptional patient care. Comprehending healthcare teams

such as Complex Systems (CAS) enhances understanding of their dynamics and emergent properties, thereby improving team education and research. This ultimately leads to better patient outcomes and a more resilient healthcare system.

Theoretical Framework

The metaparadigm of nursing by Jacqueline Fawcett serves as a foundational framework that guides both the practice and study of nursing. It encompasses four essential concepts: person, environment, health, and nursing. The individual, family, and community are integral to nursing care [33]. The emphasis on person-centered care recognizes the need to customize nursing interventions to meet everyone's needs and preferences. This approach respects people's experiences, values, and objectives as crucial factors in effectively managing their capacity [34].

This study investigates capacity management within a patient-centered paradigm, considering the physical, social, cultural, and economic factors influencing each person's health.

It recognizes the complex relationship between the activities of nurses and the larger healthcare context. The investigation conducted in this paper examines the management of capacity in nursing settings, considering the environmental idea of the metaparadigm. It recognizes that capacity management is affected by various elements, including workload, organizational culture, and support systems.

The concept of health is comprehensive and goes beyond the mere absence of illness. It incorporates various dimensions, including physical, mental, and social well-being. The prioritization of person-centered capacity management suggests a comprehensive comprehension of health that extends beyond the mere fulfillment of tasks. The study recognizes the importance of emphasizing the well-being and autonomy of nurses and patients. Effective capacity management makes a big difference in the nursing staff's general health, leading to better patient care.

This study examines how nurses handle their capacity, showing their importance to healthcare services. Nursing includes art and science, a therapeutic connection, good communication, and personalized care, all improving health and wellness. These elements are considered essential components of the nursing idea within the metaparadigm. The study enhances the comprehension of the intricate aspects of nursing practice by advocating for person-centered capacity management.

The Digital Transformation theory developed by Rozzano Locsin underscores the significance of technology in augmenting the competencies of nurses and enhancing the provision of healthcare services. The process of digital transformation encompasses the assimilation of novel technologies into the realm of nursing practice to maximize desired results. The concept of digital fluency, as proposed by Locsin, pertains to the proficiency of nurses in effectively employing technology within their professional practice [42]. This encompasses various aspects, such as the utilization of electronic health records and telemedicine platforms in their routine work. By cultivating digital literacy, healthcare institutions have the potential to enhance the effectiveness, precision, and individualization of patient care.

Locsin's theory of Digital Transformation, which is integrated into this study, further suggests that healthcare organizations can enhance the efficiency of nursing resources by adopting digital solutions for recruitment, scheduling, and performance management. This methodology guarantees the appropriate allocation of nurses with the necessary expertise to specific locations and timeframes, consequently augmenting the quality of nursing practice and advancing healthcare outcomes.



Figure 1. Person-Centered Nursing Framework by McCormack and McCance

As developed by McCormack and McCance, the Person-Centered Nursing Framework emphasizes a comprehensive approach to nursing care, with a central focus on the individual [35]. The statement recognizes each patient's individual experiences and values, thereby providing nurses with guidance to customize treatment plans accordingly. The framework has three parts: the person, the healthcare worker, and the care setting. Care choices are each person's values, preferences, and experiences, and nurses' knowledge ensures proper care.

The Person-Centered Nursing Framework is a comprehensive and structured methodology aimed at comprehending and advancing the provision of patient-centered care. Engaging patients in conversations regarding their needs, preferences, and objectives is significant. This study aims to enhance patient satisfaction and promote adherence to care plans by implementing capacity management measures. The recognition that the performance of efficient capacity management extends beyond merely evaluating patients' clinical conditions, encompassing an assessment of their psychological well-being, availability of social support, and individual resources. The framework additionally underscores the significance of nurses in promoting person-centered care, emphasizing their abilities, communication, and empathy in shaping patients' encounters.

Additionally, the research underscores the significance of organizational elements, including leadership and teamwork, in managing capacity. These characteristics contribute to establishing a conducive atmosphere that fosters patient-centered care. The framework facilitates the implementation of evidence-based practice, and the discoveries can guide nurses in developing person-centered capacity management strategies substantiated by solid evidence.

This research explores the concept of capacity management through a lens that prioritizes the needs and preferences of individuals, with a particular focus on personalized care, the skills and abilities of nurses, and the influence of environmental circumstances. The framework could enhance nursing practices, improving patient outcomes and satisfaction. Integrating person-centered approaches is of utmost importance in the evolving field of nursing, as it provides customized, respectful, and personalized care.

This research examines the capacity management of nurses within the healthcare sector, with a specific emphasis on the various aspects that influence their capability to deliver care around the needs of patients. The Complex Adaptive Theory, as posited by John Holland, examines dynamic interactions among nurses, patients, and healthcare environments. This theoretical framework, grounded in complex science and chaos theory, places significant emphasis on agents that can adapt and acquire knowledge through their interactions [36]. This paper elucidates how intricate systems, such as healthcare

environments, manifest self-organization, emergence, and non-linear behaviors. Within the nursing field, this theoretical framework offers a complete perspective for comprehending the dynamic interactions among nurses, patients, and healthcare systems. Consequently, it augments nurses' ability to manage their responsibilities and obligations effectively.

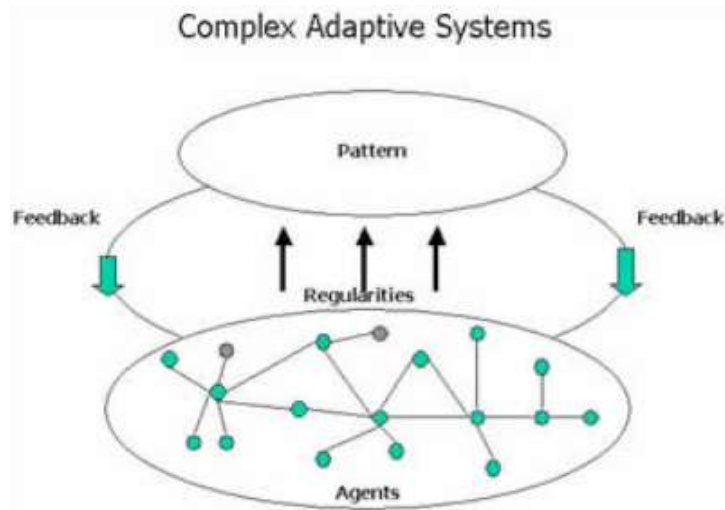


Figure 2. Complex Adaptive Theory by Holland

This study examines the function of person-centered nurses in capacity management, specifically focusing on the Complex Adaptive Theory. Nurses, as dynamic entities within the healthcare system, engage in interactions with patients, colleagues, and technology, resulting in behavioral patterns that influence the quality of patient care. The approach places significant emphasis on forming person-centered care, whereby nurses modify their behaviors following individual patients' specific requirements and preferences. The research also emphasizes the intricate dynamics of intricate systems, wherein variables such as workload, communication, and resource availability. The idea places significant emphasis on self-organization and adaptation, whereby nurses continuously modify their practices in response to their own experiences and the dynamic nature of the healthcare landscape. The study additionally emphasizes the existence of feedback loops within intricate systems, wherein nurses' encounters and engagements with patients shape their approach to capacity management, consequently impacting patient outcomes. The comprehension highlights the necessity for a sophisticated strategy in enhancing the administration of nurses' capacity.

Holland's Complex Adaptive Theory presents a comprehensive conceptual framework for comprehending the management of nurses' capability within the healthcare system. This study elucidates the influence of emergent behaviors, non-linear dynamics, self-organization, and feedback loops on the interactions between nurses and patients and the resultant impact on the overall quality of care provided. This viewpoint facilitates the formulation of approaches to bolster nurses' ability to manage resources effectively and boost the provision of patient-centered care, which is essential for a comprehensive comprehension of healthcare administration.

Conceptual Framework

The conceptual framework of this study is firmly grounded in the Theory of Metaparadigm in Nursing by Fawcett, the Person-Centered Nursing Care Framework by McCormack, and the Nurse Capacity Management System influenced by

Complex Adaptive Theory. These well-established theories provide a robust foundation for comprehending the intricate relationships between the study variables and constructing a rigorous structural equation model (SEM).

Fawcett's Theory of Metaparadigm in Nursing (1999) delineates four fundamental concepts in nursing: person, environment, health, and nursing. These concepts are mutually dependent and offer a structure for comprehending the intricate connections among nurses, patients, and the environment. The study represents the concept of a person through the latent variable of patient acuity, which denotes the patient's level of care requirement. The latent variable of digital transformation represents the environment, specifically the utilization of technology in nursing care. The latent variable of ethical nursing represents the concept of health, encompassing the ethical principles that govern nursing practice. The nursing concept is encapsulated by the latent variable of nurse competency, which encompasses the knowledge, skills, and attitudes possessed by nurses.

The Person-Centered Nursing Care (PCC) model developed by McCormack in 1997 is a comprehensive framework for delivering nursing care that is tailored to the specific requirements of each patient while also promoting respect and responsiveness. The PCC model operates under the premise that patients possess expertise in their healthcare and that nurses should collaborate with patients to jointly determine the course of their care.

The Nurse capacity management system (NCM) is a crucial latent variable in this study, acknowledged as a strategic approach to cultivating and retaining essential skills and knowledge among nurses. Its goal is to elevate patient care by nurturing exceptional performance. Complex adaptive theory (CAT) serves as a valuable framework for NCM systems, illuminating the adaptability of complex systems, such as healthcare organizations, to ever-changing demands. CAT delves into the intricacies of nursing work, the challenges of managing nursing staff, and the significance of adopting an NCM system capable of adapting to the dynamic healthcare landscape.

This study further proposes a structural model that investigates the mediating effect of person-centered nursing care (PCC) on the relationship between patient acuity (PAS), nurse competency (NsC), digital transformation (DT), ethical nursing care (ENC), and the effectiveness of the nursing capacity management system (CMS).

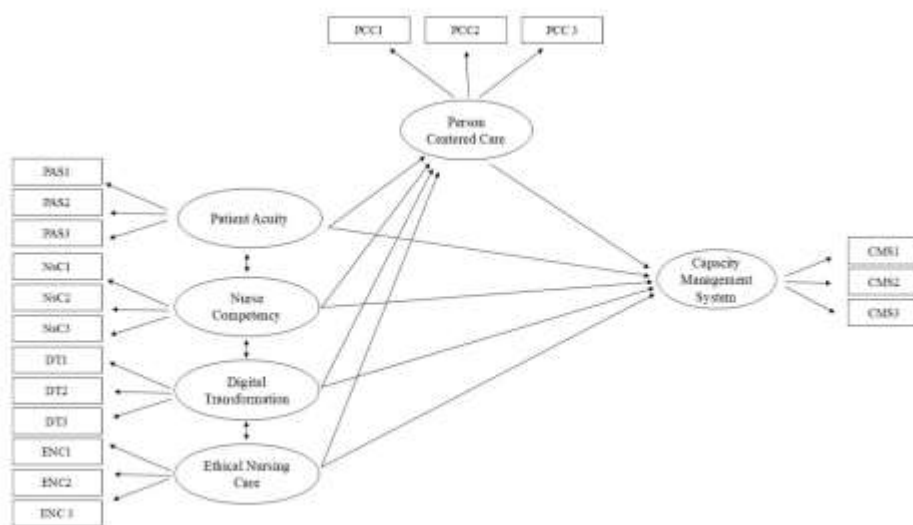


Figure 3. Conceptual Framework of Structural Equation Model Nurse Capacity Management System

Statement of the Problem

Using a structural modeling approach, the study aimed to investigate the direct and indirect relationship of variables influencing person-centered nurses' capacity management. The primary research questions are:

1. What is the participants' level of patient acuity system, nurse competency, digital transformation, and ethical nursing care?
2. What is the participants' level of person-centered care?
3. What is the participants' level of nurses' capacity management?
4. What is the interrelationship between the factors and Nurses' Capacity Management?
5. What model that best fits Nurses' Capacity Management?

Null Hypotheses

H₀₁: There is no significant relationship between exogenous and endogenous variables.

H₀₂: There is no model that best fits the Nurses' Capacity Management.

Method

Design

The research used a cross-sectional descriptive correlational quantitative design [78] to investigate the complex relationship between variables within the nursing capacity management system, offering essential insights into its present condition.

This study utilized a cross-sectional research approach and quantitatively investigated the correlation between person-centered care principles, nurses' capacity management, and structural elements within healthcare environments. The cross-sectional methodology involved collecting data from a varied and representative sample of nurses, enabling the examination of convergent factors. The correlational aspect of the study aimed to identify probable patterns and linkages, thus showing potential causal links or predictive relationships. The results of this study had the potential to enhance the capacity management methods nurses utilized, therefore resulting in improved patient outcomes and enhanced delivery of healthcare services.

Study Site

This section discusses the rationale for choosing secondary and tertiary private hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), Philippines, as the focus of this dissertation. The selection carefully considers essential variables.

The healthcare system in the Philippines, namely in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), needed help in effectively managing the capacity of nursing staff. The effective allocation of time and talent played a critical role in delivering patient-centered care of exceptional quality. The primary objective of this research was to establish a person-centered capacity management system for nurses at secondary and tertiary private hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN). Efficient nurse capacity management was crucial for the success of hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), given the heterogeneous healthcare landscape encompassing both public and commercial healthcare facilities. The significance of this study resided in its potential to augment healthcare delivery in the region through the augmentation of nurse staffing and allocation tactics, hence contributing to the improvement of healthcare delivery in the region.

This dissertation aimed to develop a comprehensive framework for a capacity management system that prioritized individual patients in private secondary and tertiary hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), Philippines. As of October 4, 2023, the Department of Health (DOH) National Health Facility Registry (NHFR) reported that there were 62 registered hospitals in Region XI (Davao Region) and 77 registered hospitals in Region XII (SOCCSKSARGEN). This research specifically concentrated on healthcare institutions that catered to a wide range of patients and offered diverse medical services. By examining capacity management within the context of person-centered care, this study sought to contribute valuable insights to the field. The study further investigated the resource limitations, workforce concerns, and unique obstacles these hospitals faced in contrast to urban environments. The objective was to analyze how capacity management practices influenced the delivery of patient-centered care.

The availability of data and the inclusion of study participants were essential components in the field of research. Secondary and tertiary private hospitals, due to their size and community-oriented approach, frequently exhibited greater accessibility. The organized administrative frameworks in place enabled the collection of data and promoted collaboration with nursing personnel.

The primary focus of this study pertained to private hospitals operating at the secondary and tertiary levels within Region XI (Davao Region) and Region XII (SOCCSKSARGEN) in the Philippines. However, the implications and insights derived from this research had broader global applicability. This study examined the problems and options associated with enhancing capacity management and person-centered care in healthcare organizations operating within resource-constrained environments. The study additionally underscored the need to adhere to ethical standards, as private hospitals frequently included research governance frameworks and review boards, which upheld the rigor and integrity of research.

Participants

The study used purposive sampling. The population for this study consisted of Staff Nurses from selected secondary and tertiary private hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN). The inclusion criteria for this study consisted of participants who met the following criteria: holder of a valid license as a registered nurse and with a minimum of 6 months of current experience assigned in the clinical wards. The exclusion criteria encompassed participants who declined to participate in this study, nurses with less than 6 months of current clinical experience, and nurses assigned to specialized units such as the Emergency Room, Operating Room, Delivery Room, Dialysis Units, and Intensive Care Units. Eligible participants were recruited through the research coordinators of participating hospitals.

Participant recruitment adhered to the inclusion criteria. While a research coordinator, a key informant designated by consenting hospitals, recommended eligible participants, the researcher retained sole discretion in selecting participants based on their eligibility as determined by the criteria.

Purposive sampling was employed to deliberately select nurses with significant expertise in nursing capacity management to investigate a person-centered nurses' capacity management system. This methodology ensured a thorough understanding of the system's intricacies, but it was susceptible to various biases, and there was a limitation on its generalizability. Therefore, it was crucial to thoroughly validate research findings by utilizing a wide range of data sources and employing various analytical methodologies. The effective use of purposive sampling could have yielded significant insights into the proposed capacity management paradigm.

The sample size for this study was determined using a combination of the rule of thumb of 10 participants per parameter in the structural equation model (SEM) and the minimum sample size recommendation of 200 (Hair et al., 2010). Based on this, a sample size of 180 was deemed sufficient for the pilot study (exploratory factor analysis) conducted in hospitals outside Region XI (Davao Region) and Region XII (SOCCSKSARGEN), which shared the same inclusion and exclusion criteria for factor analysis for 18 parameters, which served as a preliminary step in developing the SEM. The SEM stage (confirmatory factory analysis and path analysis) was conducted on a sample of 200 participants from hospitals within Region XI (Davao Region) and Region XII (SOCCSKSARGEN).

Data Measures

A survey questionnaire was the primary research tool for gathering data for the current study. A modified survey tool measured each latent variable and collected the data for this investigation. The questionnaire aimed to determine which structural model would be most appropriate for the Person-Centered Nurses' Capacity Management System at the Secondary and Tertiary Hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), Philippines.

Data gathering included the development of two-part questionnaires. Each survey consisted of inquiries related to the study's latent variables. The first part of the questionnaire concentrated on obtaining demographic data from the participants, while the second part examined the study's latent variables.

The questionnaire consisted of two different parts. In part I, the demographic profile of the participants was assessed based on several indicators, including sex, age, highest educational attainment, hospital level, and marital status. In Part II, the study measured the latent variables of the research, which encompassed the levels of patient acuity, nurse competency, digital transformation, ethical nursing care, person-centered care, and capacity management system.

The researcher submitted the questionnaire to the validators and ethics panel to obtain input, generate ideas, make any revisions, and enhance its quality. As part of the content analysis, three experts were engaged to evaluate the contents of the tool. These experts assessed the contents based on clarity, objectivity, and concise criteria. All recommendations were duly considered. The reliability test utilized Cronbach's Alpha.

The survey questions consisted of statements designed to objectively evaluate the participant's perception of the latent variables, including patient acuity, nurse competency, digital transformation, ethical nursing care, person-centered care, and capacity management system. The degree of influence was determined using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The data will be collected and analyzed utilizing the specified parameters.

Likert-Type Scale Data Interpretation Matrix

Score	Scale	Interpretation	Description
5	4.50-5.00	<ul style="list-style-type: none"> • Patient acuity is at the desired level for effective care. • Digital transformation in nursing is at an advanced and effective stage. • Nurses possess the highest level of competency. • Nursing care is highly ethical. • Participants strongly believe that care is highly person-centered. • Nurses' Capacity Management principles are effectively implemented. 	<ul style="list-style-type: none"> • Very High

4	3.40-4.49	<ul style="list-style-type: none"> • Patient acuity is generally at an appropriate level. • Digital transformation in nursing is progressing well. • Nurses generally have a good level of competency. • Nursing care is generally ethical. • Care is generally person-centered. • Nurses' Capacity Management principles are generally well-implemented. 	• High
3	2.60-3.39	<ul style="list-style-type: none"> • Participants have a neutral stance or need clarification about the level of patient acuity, digital transformation, nurse competency, ethical nursing care, person-centered care, and capacity management system. 	• Moderate
2	1.80-2.59	<ul style="list-style-type: none"> • Participants disagree with the current level and state of patient acuity, digital transformation, nurse competency, ethical nursing care, person-centered care, and Nurses' Capacity Management. 	• Low
1	1.00-1.79	<ul style="list-style-type: none"> • Patient acuity is not at an acceptable level for optimal care. 	• Very Low

The survey was administered to nurses working in private secondary and tertiary hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN), Philippines. The researcher used Google Forms and Google Drive to safeguard the data's confidentiality and preserve the participants' privacy.

Data Collection Procedure

The data collection process is a crucial component in the successful completion of a dissertation, as it contributes to producing a high-quality document that effectively addresses the study goals and objectives while remaining consistent with the research title and content. The process involves collecting, measuring, and analyzing data on variables for research purposes, utilizing established and proven procedures.

Pre-Data Collection

1. The preparatory phases for the research involved outlining the study objectives and presenting accurate data and citations within the paper's contents.
2. Developed and edited questionnaires that are in line with the latent variables of the research.
3. The questionnaire was converted into a digital format using Google Forms in accordance with the research methodology.
4. Once the manuscript has been finalized, it was submitted to the RPIC for the purpose of verifying the accuracy and originality of the data. This verification process involved the use of plagiarism checker platforms. Only after this validation was the paper presented to the technical experts.
5. The document was presented to technical experts or assigned professionals for the purpose of reviewing its content and providing constructive feedback that might offer valuable insights into the research.

6. All errors identified by the experts were addressed through revisions, and the underlying research will be reevaluated to determine which aspects require modifications in accordance with the experts' recommendations.
7. The researcher drafted a formal request seeking approval from the Hospital Administrator of various secondary and tertiary healthcare facilities located in the Region XI (Davao Region) and Region XII (SOCCSKSARGEN) of the Philippines.
8. The manuscript was submitted to the research ethics committee of the SPC.

During Data Collection

9. Upon obtaining approval from the San Pedro College - Research Ethics Committee which monitors the progress of the study, the researcher proceeded to organize a pre-research orientation session with the hospitals that have expressed their desire to participate in the study. This was provided with an overview of the study's history and purpose. This also included discussion of its impact on the organization, especially on issues like stigma, cultural traditions, and involvement in decisions.
10. To address potential concerns raised by the research findings, we engaged in open and transparent communication through town hall meetings if requested. The researcher actively promoted cultural sensitivity and empowered stakeholders by involving them in the decision-making process. This collaborative approach helped mitigate negative impacts and ensured the research benefits the organization.
11. The hospital administration designated a research coordinator to collaborate with the researcher with the following task: key informant to provide eligible participants from the participating hospital who met the study's inclusion criteria after informed consent was obtained, assisted in the researcher in the pre-data collection orientation for the participants, documentation of compliance to informed consent and data collection.
12. The potential participants were identified by the research coordinators duly designated by the hospital administrator based on purposive sampling based on the inclusion criteria.
13. The potential participants got formal invitations via the hospital research coordinators. The invitation comprised a formal letter that presented details regarding the nature of the study and the specific characteristics sought in potential participants. It explicitly stated that the individuals picked are chosen based on these criteria. The distribution of invitations was facilitated through electronic means, specifically by email or popular social media platforms like Facebook Messenger through the hospital research coordinators. These invitations included a formal letter of invitation, which was presented utilizing the Google Forms platform. The researchers within the jurisdiction collected fundamental data to facilitate the provision of informed consent. The requisite information needed pertains to the email address for communication during the procedure.
14. The researcher intended to facilitate an online orientation session to provide an overview and explanation of the study's purpose and objectives. The participants received a Google form link that includes information on the survey's background, which aimed to clarify the purpose of the study. In the event of unforeseen technical difficulties, a contingency plan was implemented to transmit the surveys using the messaging platform.
15. The participants were then provided with a consent form via Google Form that was explained to them by the research coordinators of the respective hospitals or the researcher.
16. Emails and virtual meetings were used to answer queries from the participants.

17. Upon obtaining participants' consent, the coded survey questionnaire was distributed to them using Google Forms with the objective of collecting their responses.
18. The electronic google forms surveys completed by the participants was saved in a dedicated google drive, which was exclusively controlled and secured by the researchers. The research mentor will have a copy of the information for the backup file.
19. To ensure the privacy and confidentiality of participants, informed consent forms with names and signatures, and coded survey questionnaires are stored securely and accessed only by the researchers, research mentor and designated research coordinators.

Post-Data Collection

20. The data analysis process, encompassing activities such as data collection, tabulation, analysis, and interpretation, were undertaken.
21. The researcher did the composition of the final manuscript and prepared for the final presentation.
22. The completed manuscript was presented to the technical panel for an extensive review and in-depth analysis of the research findings.
23. The participating hospitals will receive a copy of the study results and will have the right to share them with the organization, particularly the study participants.
24. The findings of the research will be published in a reputable and peer-reviewed journal or platform. The researcher will also be presenting in research forums and scientific conventions locally.
25. All raw data and other sensitive information collected from participants will be securely deleted within 6 months of the research publication. This includes deleting the data from Google Drive and the researcher's personal computer.

Ethical Considerations

The researcher, as a future PhD in Nursing, consistently recognized and appreciated the ethical considerations pertaining to the safety and well-being of the study participants throughout the course of this research investigation. For the duration of the research project, the researcher benefited from the guidance of a qualified mentor assigned by San Pedro College. This mentorship ensured the project adhered to best practices and college guidelines. For each participating hospital, the researcher worked with the designated research coordinator. To show appreciation for their time and effort, the research coordinator received a non-monetary token of thanks, as detailed in the pre-data collection information.

Privacy and Confidentiality. Ensuring the protection of an individual's personal information was a legal and ethical responsibility that researchers were obligated to uphold. The researcher ensured the preservation of participants' anonymity and confidentiality by employing measures to conceal their true identities throughout the data collection, analysis, and reporting of the study.

Minimization of Risk. The researcher ensured the study's objectivity as an independent primary investigator. The researcher was affiliated with Metro Pacific Health, a network of hospitals participating in this study, but did not have direct influence over the participants which may have affected the outcome. The researcher furnished comprehensive details inside the protocol to about the research's design and its underlying objectives. The researcher ensured that the participants were not exposed to any risk or injury, were protected from possible negative consequences, and excluded any sensitive questions from the collected data. The inquiry solely concentrated on the variables encompassed within this study.

Validity and Reliability. The modified questionnaire was distributed to the validators affiliated with San Pedro College to assess and confirm the questionnaire's content validity. Subsequently, the questionnaire was distributed to selected private hospitals within the province. It was necessary to establish the validity of the study before beginning with the actual data gathering.

Data Analysis

The comprehensive examination of categorical and scale data held significant importance in gaining insights into the various aspects that impact nurse capacity management systems. The analysis determined the demographic characteristics of nurses as well as the major elements inside the model. The provided data was utilized to conduct cov-SEM (covariance-based structural equation modeling). This robust statistical technique allows for the simultaneous examination of multiple relationships among observed and latent variables. This approach enabled us to identify the key factors that influence nurse capacity management systems and to assess the strength of these relationships.

The descriptive analysis of this study aimed to elucidate the demographic and institutional characteristics of the nursing workforce by employing frequency and percentage analyses of categorical variables, including gender, marital status, highest degree of education, and hospital level. By examining the distribution and composition of these variables, we were able to identify potential gender disparities and explore possible associations between marital status and nursing positions. Additionally, analyzing the highest level of education achieved by nursing personnel provided valuable insights into their qualifications and informed potential training and development needs. Moreover, differentiating healthcare institutions and their impact on nursing practices through hospital-level analysis shed light on the varying contexts in which nurses operate. The variables of Age and Years of Service were crucial for understanding the demographic characteristics and seniority levels within the nursing workforce. Analyzing the mean and standard deviation of Age provided valuable statistical insights into the central tendency and variability of nurses' ages. Similarly, examining Years of Service sheds light on the distribution of experience among nurses, enabling a comprehensive assessment of their expertise. These variables played a pivotal role in workforce planning, recruitment strategies, and professional development initiatives.

This study explored latent variables, which are abstract concepts that cannot be directly measured but can be deduced from observable indicators. The key variables under scrutiny in this investigation included Patient Acuity, Digital Transformation, Nurse Competency, Ethical Nursing Care, and Person-Centered Care. Examining these hidden variables through descriptive analysis revealed the underlying patterns and trends, offering valuable insights into their significance in capacity management systems.

Before conducting SEM, factor analysis was done during the pilot testing to ensure validity and reliability of the instrument development. Content analysis with subject matter experts was conducted to ensure the relevance of the content of the instrument. After content validation, the instrument underwent construct validation and reliability analysis through Psychometric Analysis. A sufficiently large sample was selected. The sample size was determined using a 10:1 ratio, as suggested by Nunally (1978). During the pilot testing, the study utilized factor analysis, employing Exploratory Factors Analysis (EFA) as the extraction method. This effectively identified the most influential variables that contributed to the explanation of variance within the dataset. The process aided in the classification of latent variables into separate elements, hence offering a deeper understanding of the underlying framework of the Nurses' Capacity Management System.

The chi-square test assessed the instrument's significance in relation to the concept, while eigenvalues indicated the validity of the groups. The fine-tuning process involved the utilization of orthogonal rotation and varimax. The findings from Exploratory Factor Analysis (EFA) led to developing a structural model for the Nurses' Capacity Management System.

This model identified crucial factors and their interrelationships, ultimately improving the effectiveness of the capacity management system.

The instrument's reliability was assessed using Cronbach's alpha coefficient. It is a commonly employed metric for assessing the internal consistency dependability of latent variables inside a research instrument, which was utilized in this study for the purpose of evaluating reliability. A Cronbach's alpha coefficient that was high, usually over 0.70, signifies a robust correlation among the indicators inside a latent variable, exhibiting internal consistency. The finding suggested that the items were valid measures of the desired construct and could be considered credible indicators of the latent variables. A dependable measurement model holds significant importance within the context of structural equation modeling (SEM), as it directly impacts the precision of parameter estimations, model fit indices, and the integrity of the findings derived from the analysis.

The Structural Equation Model (SEM) was a statistical technique that allowed us to assess both the direct and indirect relationships between variables and quantify the strength of these relationships [5]. This dissertation further aimed to capture latent variables, and structural modeling facilitated the analysis of causal relationships. This approach allowed this study to examine intricate interconnections between latent variables, rendering it well-suited for investigating the dynamics of healthcare systems. Additionally, it aided in the identification of mediation effects, facilitating a more comprehensive comprehension of the interrelationships among various factors. This analysis would have offered valuable insights into the most influential variables and the routes by which they exerted their effects. This methodology provided a comprehensive structure for comprehending the interaction of latent variables in person-centered nurses' capacity management systems, enhancing patient care and increasing the efficiency of healthcare systems.

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To evaluate the dependability and accuracy of the measurement model, we performed Pearson correlation coefficients and multiple regression analyses. The Pearson correlation coefficients were employed to quantify the magnitude of the relationships between observed variables and their corresponding latent constructs. The predictive ability of the observed variables to explain the latent constructs was assessed using multiple regression analyses.

To assess the overall fit of the structural model, confirmatory factor analysis (CFA) was performed. CFA provided a goodness-of-fit index (GFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). These indices provided information on how well the model fits the data.

All the information and data collected were thoroughly investigated and reviewed using JASP 0.18.3.0, renowned as the Statistical Package of the Social Sciences. The researchers conducted data analysis and interpretation. It provided an accurate representation of the data entered.

Results

The study included 206 registered nurses from 7 secondary-level and tertiary-level private hospitals in Region XI (Davao Region) and Region XII (SOCCSKSARGEN).

Table 1

Profile of participants' level of patient acuity system, nurse competency, digital transformation, and ethical nursing care

Variables	Mean	SD	Description
Patient Acuity System	3.8	0.8	High
Nursing Competency	4.3	0.6	High
Ethical Nursing Care	4.3	0.6	High
Digital Transformation	4.2	0.7	High

The participants' level of nursing competency was 4.3 (SD=0.6), and ethical nursing care 4.3(SD=0.6) was the highest mean, as shown in Table 1. Furthermore, the participant's perception of the patient acuity system 3.8 (SD=0.8) got the lowest mean with some variation in the responses.

Table 2

Profile of participants' level of person-centered care.

Variables	Mean	SD	Description
Person-Centered Care	4.4	0.7	High

The participants perceived a high level of 4.4(SD=0.7) person-centered care with moderate variability. The participants recognized that person-centered care principles should be well-implemented in their respective hospitals.

Table 3

Profile of participants' level of capacity management system.

Variables	Mean	SD	Description
Nurses' Capacity Management	3.9	0.8	High

The participants perceived a high level of 3.9 (SD=0.8) nurse capacity management with moderate variability. It is implied that the nurse's capacity management system is well-implemented.

Table 4

The interrelationship between the factors and capacity management system

Variables	Standardized Coefficient (β)	Standard Error (SE)	CR	p-value	Remarks
PAS - NsC	0.47	0.06	5.0	< .001	Significant
PAS - ENC	0.53	0.07	5.9	< .001	Significant
PAS-DT	0.47	0.07	5.4	< .001	Significant
NsC-ENC	0.85	0.07	6.9	< .001	Significant
NsC-DT	0.62	0.06	6.0	< .001	Significant
ENC-DT	0.77	0.08	7.6	< .001	Significant
Direct Effect					
PAS - NCM	0.57	0.07	7.7	<0.001	Significant
NsC- NCM	-0.08	0.17	-0.6	0.56	Not Significant
ENC - NCM	0.55	0.26	2.1	<0.05	Significant
DT - NCM	-0.14	0.09	-1.5	0.14	Not Significant
PAS - PCC	-0.01	0.16	-0.31	0.75	Not Significant
ENC - PCC	0.90	0.06	-0.23	0.82	Not Significant
PCC- NCM	-0.01	0.08	11.8	<0.01	Significant

Indirect Effect

PAS*PCC - NCM	0.0007	0.003	0.19	0.85	Not Significant
ENC*PCC - NCM	-0.04	0.12	-0.31	0.75	Not Significant
Total Effect					
PAS - NCM	0.57	0.07	6.1	< 0.001	Significant
ENC - NCM	0.50	0.18	2.8	< 0.01	Significant

The result shown in Table 4 indicates that patient acuity level strongly correlated with nursing competency ($\beta = 0.47$, $p < 0.001$), ethical nursing care ($\beta = 0.53$, $p < 0.001$), and digital transformation ($\beta = 0.47$, $p < 0.001$). Higher acuity levels require more excellent nursing proficiency and consideration of ethical factors while suggesting that digital tools can improve advanced patient care. Furthermore, nursing competency has shown a significant relationship between ethical nursing care ($\beta = 0.85$) and digital transformation ($\beta = 0.63$) with $p < 0.001$, respectively. This result indicates that effective utilization of digital technology can enhance nursing competency in care delivery.

The Patient Acuity System ($\beta = 0.57$, $p < 0.001$) and Ethical Nursing Care ($\beta = 0.479$, p -value < 0.05) demonstrate a significant effect on Nurse Capacity Management. This result indicates that the Nurse Capacity Management System is positively impacted when patient acuity rises, and ethical nursing care is provided. Person-centered Care ($\beta = -0.001$, $p < 0.001$) shows a significant influence towards Nurse Capacity Management. The indirect effects have p -values over 0.05, suggesting no significant indirect connections. This result shows that Person-Centered Care does not significantly mediate the connections between the independent variables and the Nurse Capacity Management System. The total effect of the Patient Acuity System ($\beta = 0.575$, $p < 0.001$) and Ethical Nursing Care ($\beta = 0.472$, $p < 0.05$) towards Nurse Capacity Management stays significant, suggesting that the direct impact is the main factor in the relationship. Ethical Nursing Care: The overall impact is 0.472, a bit below the direct impact, showing a slight indirect effect illustrated in Figure 4.

Table 5
Best Model Fit of Nurse Capacity Management

	Baseline test				Difference test			
	AIC	BIC	χ^2	df	p-value	$\Delta\chi^2$	Δdf	p
Model 1	7839.3	8062.3	159.5	122	0.013	159.5	122	0.013
Fit Indices	Comparative Fit Index (CFI)	Tucker-Lewis Index (TLI)	Root mean square error of approximation (RMSEA)	Goodness of fit index (GFI)				
Result	0.99	0.98	0.04	0.92				

Note: $R^2=0.64$

The chi-square test in the baseline evaluation measures the model's fit to the data. A result with a p -value greater than 0.05 suggests a satisfactory fit. In this instance, the chi-square statistic is 157.104 with 120 degrees of freedom, leading to a p -value of 0.013. This result indicates differences between observed and model-predicted covariance matrices, but the model still offers a decent fit despite not being flawless. The difference test assesses how much the current model has improved compared to a baseline model, typically a null model. If the p -value is less than 0.05, the current model ($p = 0.013$) is superior to the baseline model.

The result shows model fit indices, such as CFI, TLI, RMSEA, and GFI, that measure the adequacy of the study's model in representing data by examining the connections between variables. A CFI (0.99) and TLI (0.98) indicate excellent fits, whereas an RMSEA (0.04) and a GFI (0.92) suggest satisfactory fits. Requirements for a suitable match consist of CFI and TLI scores exceeding 0.95, RMSEA scores under 0.05, and GFI scores surpassing 0.90. According to these measurements, the model shows a good fit [65] to the data. The R^2 value of 0.64 shows that 64% of the variance in Nurses' Capacity Management can be explained by the current model.

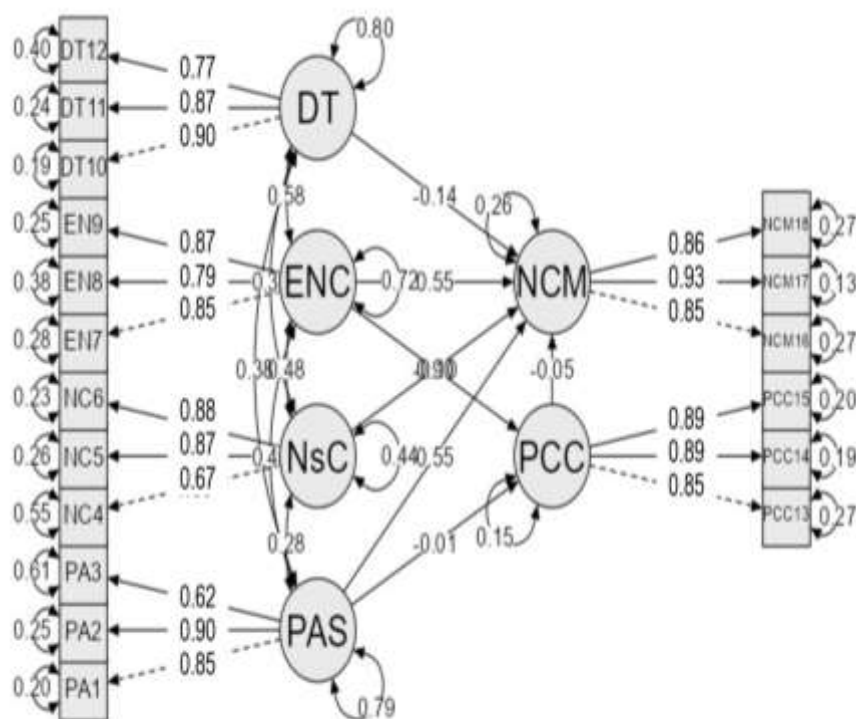


Figure 4. Structural Equation Model: Nurses' Capacity Management System

The result of the study shows the importance of nursing competency, ethical considerations, and digital technology in effectively managing patient care, particularly as patient acuity increases. While person-centered care's mediating role was not significant, the direct impact of patient acuity and ethical nursing care on nurse capacity management underscores their critical importance in improving healthcare delivery.

The relevance of these findings towards the current healthcare context both in the Philippines and globally is that the patient acuity system as a key driver to a higher competency among nurses, structured ethical nursing care framework, and effective use of technology impact nursing capacity in the delivery high quality care. The observed interconnectedness of these variables has shown a direct impact on nurse capacity management, which shows efficiency when patient acuity arises, and ethical nursing care is prioritized. These key findings will lead to a more structured approach toward nurse capacity management in hospitals in the Philippines and globally.

Discussion

The majority of the 206 participants of the study, are female nurses, aged 32 years old on average, were single BSN graduates with 5 years of experience working at private tertiary hospitals in Regions XI and XII.

Prior conducting SEM, validity and reliability, an exploratory factor analysis (EFA) and reliability testing, were conducted for the instrument to 200 Nurses outside Region Xi and Region XII. EFA, using varimax rotation [69], identified six distinct constructs: nurse capacity management, person-centered care, patient acuity system, digital transformation, ethical nursing practice, and nurse competency. These constructs (eigenvalues >1) explained 64.1% of the variance. The 18 indicators (factor loadings > 0.5) contribute meaningfully to their respective constructs.

Data adequacy for EFA was confirmed by a significant Bartlett's test of sphericity ($\chi^2 = 2670$, $df = 153$, $p < .001$) and a high Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO = 0.92). This indicates sufficient inter-variable correlations and suitability for EFA [69]. The instrument demonstrated strong internal consistency and reliable estimation (Cronbach's alpha of 0.939 (95% CI 0.92-0.95)) [70]. These results confirm the instrument's dependability and consistent measurement of the intended constructs.

The study found that the participants perceived the appropriate distribution of patient assignment, considering high level patient acuity system 3.8 (SD=0.8). Nursing competence is at a high level of 4.3 (SD=0.6), suggesting that patients felt well cared for by qualified nurses. These findings confirm a recent study on the effect of Nursing Care Delivery Models on Registered Outcomes that underscores the critical role of staffing, resources, hospital involvement, and nursing foundation in determining nurse outcomes, highlighting the need for targeted interventions to improve these factors [53]. The participants for this study acknowledge that for higher acuity illnesses, nursing competency is vital and calls for advanced knowledge including medication administration and assessment tools. For patients with highly dependent conditions, advanced competent nurses produce better patient outcomes.

In their interactions with patients, families, and colleagues, the participants proved a high level of ethical nursing care 4.3 (SD=0.6). Nurses' ethical dilemmas reflect the intricate interplay of professional values, standardized care, and workload [54]. Ethical nursing care, characterized by morally sound decision-making and respectful patient treatment, is essential for navigating the complex ethical dilemmas in healthcare. This study underscores the significance of ethical principles in guiding nursing practice.

Participants found a high level of digital transformation 4.2 (SD=0.7) valuable for streamlining daily tasks and accessing essential health information, leading to improved outcomes and progress in their respective hospitals. A study on the development of a nursing assignment tool using workload acuity scores demonstrated that electronic workload scores and conventional ratios accurately decide nursing staffing needs, leading to improved patient safety, staff satisfaction, and resource allocation [55]. Technology's inclusion in healthcare increases patient outcomes and efficiency.

The study findings suggest that most participants perceive their hospitals as effectively implementing the specified variables derived from Fawcett's metaparadigm in nursing which this study anchored on. This result underscores the critical role of well-prepared nurses in delivering high-quality, ethical care, particularly in complex patient scenarios. Healthcare organizations can enhance patient outcomes and foster a more sustainable nursing workforce by investing in nurse education and digital transformation that support acuity management.

The participants responded that the nursing care provided is person-centered 4.4 (SD=0.7) and delivered with empathy. This result is consistently shown in the study on individuality in the care of hospitalized people, who found a direct correlation between a nurse's skill level and their ability to deliver personalized, person-centered care, further confirms these findings [56]. This finding further shows that empathetic nursing care significantly improves patient outcomes and is essential for person-centered care.

Nurses' Capacity Management has been implemented on a high level of 3.9 (SD=0.8) in the hospitals in Region XI and Region XII, manifested by the support provided by respective hospital administrations towards nursing compliments, proper skill mix, and patient contact hours. Unlike the recent Australian study [57], nurses' perceptions of inadequate staffing, poor skill mix, and excessive workload directly impact patient care. This result highlights the imperative of continuously evaluating and adjusting nursing practices to ensure the best patient care and nurse satisfaction within hospital settings. Moreover, prioritizing capacity management is crucial for delivering personalized care through effective resource allocation and workload optimization.

Patient acuity, nursing competency, ethical care, and digital transformation shown in Table 4 demonstrate a statistically significant interrelationship. Higher acuity patients need competent nurses for safe care, ethical decisions, and addressing complex dilemmas effectively [6, 66]. Digital transformation can enhance the delivery of care by improving efficiency through technology. This further shows that investing in nursing training in digitalization is crucial for providing high-quality care. Moreover, the study underscores the importance of ethical nursing care, using digital technology to enhance patient well-being while prioritizing privacy and confidentiality. A critical review [58] on the impact of technology on nursing practice proved that technological advancements like electronic health records, clinical decision support systems, and real-time patient data can significantly enhance patient outcomes, operational efficiency, and care quality in nursing practice. These innovations have been shown to reduce hospital re-admissions and mortality rates. To improve patient outcomes through proper nurses' capacity management, these variables must show strong relationships. Digital transformation improves nursing competency through information access and communication but requires digital literacy. However, it is important to be well informed with ethical issues like data privacy and bias need nurses' advocacy for responsible technology use [67, 68].

The significant direct effect between Patient Acuity Systems, Ethical Nursing Care, and Nurse Capacity Management Systems, as shown in this study, reflected similar findings in a structural equation model study [63], highlighting the critical link between inadequate nurse staffing and compromised patient care quality. Effective nurse staffing and evidence-based clinical practice, including Patient Acuity Systems, are crucial for best patient outcomes and staff satisfaction. Earlier research [59] supports these findings, emphasizing the importance of individualized care and effective workload management for adult inpatients with complex needs. Nurses' prioritization should be guided by urgency and clinical relevance. In today's healthcare, inadequate staffing worsens moral dilemmas and emotional exhaustion among nurses. Higher patient-to-nurse ratios correlate with personal and client-related burnout, job dissatisfaction, and greater intentions to leave the profession [71]. Ethical nursing care is crucial for effective capacity management and equitable resource allocation. A scoping review [60] found that ethical nursing requires decision-making at all levels of healthcare. While prioritizing patient care is essential, overemphasizing it can lead to ethical dilemmas and potentially compromise patient outcomes. The ethical implications of nurse staffing based on patient acuity, emphasizing beneficence, non-maleficence, and justice, suggesting care ethics, interprofessional relationships, and proactive leadership for improved nurse work environments [18]. This study underscores the critical role of ethical nursing practices in effective capacity management.

Person-Centered Care shows a significant influence towards Nurses' Capacity Management in this study. This result implied that adequate nursing levels are vital for successful person-centered care, enabling nurses to dedicate time to patient needs, fostering strong relationships and teamwork, and promoting patient involvement in care decisions [61, 72]. A descriptive-correlational study supports the result with the significant effect of nurse burnout on patient experience, emphasizing the

correlation between high burnout levels due to workload and staffing and decreased patient safety management. [73]. Sufficient staffing is crucial for nurses to deliver high-quality, patient-focused care. High workloads and insufficient staffing adversely affect patient safety and experience.

However, Nursing Competency and Digital Transformation have no significant direct effect on Nurse Capacity Management. The result is similar in to a scoping review [74] that shows that although various technology interventions, including cognitive care, communication, and assistive technologies, are categorized into digital solutions, the impact on nursing workload in rural areas varies. This finding needs careful choice and further evaluation of specific use of technology. Digital transformation has not fully integrated into healthcare settings, needing extra research to investigate its benefits and challenges. In another cross-sectional study of 311 nurses in central Iran, though workload significantly influenced the quality of nursing care through implicit rationing, job satisfaction, and emotional exhaustion, direct workload-care relationships were not significant [28]. However, the study suggested that nurse managers should prioritize these factors to enhance nursing care quality. However, a similar structural equation model contradicts this result, showing suitable fitness figures for predicting causal relationships between nurses' communication ability, workload, self-efficacy, and nursing performance [75]. While technology interventions show promise, their impact on nursing competency remains unclear, especially in specific areas where there are limited resources. Digital transformation in healthcare especially for nursing is a work in progress, its impact on nurse workload and care quality still varies. Nurses value technology but face usability barriers; collaborative development is needed for adoption [76].

Person-centered care does not indirectly influence the relationship between Patient Acuity System, Ethical Nursing Care, Nursing Competency, and Digital Transformation in the context of Nurses' Capacity Management in this study. Contrary to the findings of a South Korean study [62] which showed a strong correlation between these similar variables and Person-Centered Nursing, this result suggests this dynamic may not be universally applicable. A cross-sectional study in Malaysia has a slightly similar finding, assessed healthcare providers' person-centered practices and showed that a supportive care environment partially mediates the relationship between prerequisites and care processes, highlighting the need for value alignment and cultural transformation [77]. These findings emphasize the need for a nuanced, context-specific approach to implementing person-centered care, acknowledging its indirect yet vital role in improving patient outcomes and enhancing the nursing profession.

The hypothesized model demonstrates a generally good fit to the data. CFI, TLI, and RMSEA all fall within acceptable ranges, indicating that the model provides a reasonable representation of the relationships between the variables. However, further evaluation as part of refining the model for this research suggests model specifications through several modifications and enhancements to improve its fit and explanatory power.

The decision is grounded in McCormack's theory that emphasizes person-centered care and holistic approaches, highlighting strong nurse-patient relationships. This theoretical framework is essential for understanding nursing capacity and improving patient outcomes, as it incorporates factors like patient complexity and nursing experience. By basing the best-fit model on McCormack's theory, we enhance its reliability and comprehensibility. This foundation provides valuable insights into optimizing care delivery, ultimately contributing to enhanced patient outcomes in the healthcare system.

The chi-square difference test revealed a non-significant difference between the hypothesized model and the current model ($\chi^2 = 159.51$, $df = 122$, $p < .01$; $\Delta\chi^2 = 2.41$, $\Delta df = 2$, $p = .30$). This indicates that current model, with two fewer parameters, does not significantly worsen the model fit compared to the hypothesized model. Information criteria (AIC, BIC, and SSABIC) consistently favored the current model, which exhibited lower values, suggesting that the current model provides

a more parsimonious and better-fitting representation of the data. Most fit indices (CFI, TLI, RMSEA) demonstrated comparable performance for both models, with values generally falling within acceptable ranges. However, the Parsimony Normed Fit Index (PNFI) slightly favored current model, indicating a better fit for a given level of model complexity.

The current model's strength lies in its integration of key nursing frameworks: Fawcett's metaparadigm provides a holistic understanding of the person, environment, health, and nursing; McCormack's person-centered care emphasizes individual needs and preferences; and Holland's Complex Adaptive Theory acknowledges the dynamic and ever-changing nature of healthcare systems, therefore considered as the best fit model. This integrated approach can enhance patient outcomes by fostering individualized care plans that adapt to complex and evolving situations.

The study introduces the Nurse Capacity Management System (NCMS) as a critical instrument for improving healthcare delivery. NCMS effectively balances nursing resources and workload, ensures individualized patient care based on acuity, and promotes ethical nursing practices. By integrating digital transformation, NCMS facilitates the maintenance of nursing competency, upholds ethical standards, and ultimately enhances patient outcomes and overall healthcare quality. This study highlights the interconnectedness of the nursing metaparadigm's core concepts, particularly emphasizing the centrality of patients within the healthcare context. Findings underscore the critical role of patient acuity in shaping the quality of nursing care, aligning with Locsin's perspective on technology's potential to enhance healthcare delivery. The study supports a person-centered nursing framework by prioritizing patient-centered care and ethical considerations. The research also aligns with complex adaptive theory, recognizing the intricate relationships within healthcare systems. Implications for nurse capacity management suggest that improving resource allocation through effective patient acuity management and digital tools can improve patient outcomes and increase staff satisfaction. Continuous assessment and adaptation of strategies are essential to ensure ongoing alignment with these principles.

This study's limitations include the sample size and sampling method that leads to potential biases associated with self-reported nurse data. It would also be best if the study locale expanded beyond the country's two regions. To enhance understanding, future research should explore more variables such as commercial metrics (e.g., personnel cost, manpower workforce ratio, patient experience scores) and organizational factors (e.g., hospital culture, leadership styles, workload distribution systems). The study acknowledges the importance of digital transformation, but it did not go deeply into the challenges and constraints associated with technology implementation. Future research should investigate strategies to overcome these barriers and improve the use of technology in nurse capacity management.

Conclusion

The study's findings lead to the following conclusions:

1. The findings of this study show a high level of perceived nursing competency and ethical nursing care among the participants. These results suggest a strong foundation in nursing as a professional practice and a commitment to ethical principles within the nursing cohort. Conversely, participant perception of the patient acuity system showed the lowest mean score, indicating potential areas for improvement and refinement in the current system.
2. The participants indicate a high level of perceived person-centered care implementation with moderate variability. This suggests that, on average, participants believe person-centered care principles are well implemented. However, the moderate standard deviation suggests some divergence in individual perceptions, highlighting areas where implementation may be perceived differently.

3. The participant's perceived nurse capacity management principles to be well-implemented offers valuable insights into the current state of healthcare delivery. This high mean score suggests a consensus among participants regarding the effective application of these principles. However, some variability in individual perceptions indicates that while most participants agree on the positive implementation, there are differing viewpoints or experiences. This variability could stem from diverse roles within the healthcare setting, varying levels of experience, or differences in exposure to specific management practices.

4. This study reveals significant direct relationships between patient acuity, nursing competency, ethical care, digital transformation, and nurse capacity management. The positive correlations between patient acuity and nursing competency, ethical nursing care, and digital transformation underscore the crucial role of skilled nurses, ethical considerations, and technological integration in managing increasingly complex patient needs. Notably, the relationship between nursing competency and ethical care and digital transformation highlights the synergistic potential of technology to enhance nursing practice and ethical nursing care. The significant impact of the Patient Acuity System and Ethical Nursing Care on Nurse Capacity Management emphasizes the importance of accurate patient assessment and ethical principles in effective resource allocation. While person-centered care was hypothesized as a mediator, the non-significant indirect effects suggest that the relationships between the independent variables and nurse capacity management are primarily direct. This finding reinforces the primary influence of patient acuity and ethical considerations on optimizing nurse capacity. Despite a slight indirect effect observed with ethical nursing care, the direct impact remains dominant.

5. The chi-square test suggests a statistically significant difference between the observed and model-implied covariance matrices, showing a less-than-perfect fit; this sensitivity to sample size often leads to the rejection of otherwise reasonable models. More importantly, comparative fit indices prove a strong model fit. The high CFI and TLI strongly support the model's ability to account for the observed variance. Furthermore, the low RMSEA indicates a good approximation in the population. The GFI, while slightly lower than the other indices, still surpasses the threshold, suggesting an acceptable fit. This study has successfully developed a Nurse Capacity Management System (NCMS) model that provides a robust framework for improving nursing resources and operational efficiency.

Recommendations

This section will discuss the recommendation of this study for different stakeholders in the fields of Nursing Practice, Nursing Administration, Nursing Research, and Nursing Education.

1. **Nursing Practice.** This study highlights the potential of the Nursing Capacity Management System (NCMS) to transform nursing practice. The NCMS framework prioritizes two key elements: the implementation of Patient Acuity Systems for effective capacity management and the consistent delivery of ethical, empathetic nursing care. Integrating these elements into daily patient-nurse ratios is expected to optimize resource allocation, improve patient outcomes, and ensure every patient receives humanistic care.

2. **Nursing Administration.** Effective patient care and resource management depend on nurse administrators' thorough understanding of patient acuity. Utilizing standardized patient acuity classification systems enhances patient outcomes, efficiency, and resource allocation. These systems also support empathetic care, a cornerstone of ethical nursing practice. Nurse managers should integrate patient acuity data into resource allocation strategies to meet individual patient needs. The Nursing Capacity Management System (NCMS) can further facilitate continuous quality improvement by developing

software or utility models that automate capacity and ensure high-quality nursing care. Emphasizing empathy as a core value within nursing services reinforces its importance in daily practice.

3. **Nursing Research.** Future research could consider increasing the sample size and using a randomized sampling method to have more generalized findings and improve biases. A mixed-methods approach, such as explanatory sequential or convergent parallel design, to explore other variables that could improve the NCMS model. This would allow for a more in-depth exploration of its effectiveness. Additionally, the current model could be integrated into a broader study comparing its performance to other factors like commercial variables and existing nurse-patient ratio metrics. A nationwide investigation could also be valuable in re-emphasizing the significance of person-centered care, a variable that did not have statistical significance in this study. The NCMS holds significant potential for future research. For instance, researchers can explore the impact of DOH-mandated nurse-patient ratios on healthcare outcomes by using the NCMS to decide the best ratios based on current conditions. Such findings could inform policy decisions, influence nursing education curricula, and contribute to a more patient-centered and ethically sound healthcare system.

4. **Nursing Education.** Nursing Colleges and Universities should integrate the Nurses' Capacity Management System (NCMS) into the Bachelor of Science in Nursing (BSN) curriculum, particularly in higher-level courses. This early exposure to NCMS will equip future nurses with essential skills in patient acuity assessment, ethical care delivery, and effective capacity management. Empathy, a core value in nursing education, aligns with the principles of NCMS, fostering compassionate and efficient patient care.

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BIOGRAPHICAL SKETCH OF THE AUTHOR



Leo Francis L. Silva, RN, MAN

With a steadfast commitment to enhancing patient experience as the cornerstone of sustainable healthcare, this individual stands out as one of the dynamic Nurse Leaders in the city. The conventional approach to Nursing Leadership is complemented by a suite of key achievements that have significantly improved the operational landscape of nursing services. Notably, he has spearheaded the renovation of critical hospital areas, including the Operating Room and Wound Care Clinic. He has been instrumental in the design and management of workflow and infrastructure. His innovative initiatives, such as the Introduction of Revenue Management into the Nursing Services' agenda and leading the approval of crucial healthcare packages, underscore his strategic vision. Furthermore, his dedication to patient care is evident through establishing protocols and systems that streamline patient admission and orientation processes. His leader's role in the hospital's International Accreditation and Government Licensing is a testament to his significant contribution to the institution's standards of excellence. His academic prowess is equally impressive, with ongoing doctoral studies in nursing and Certification as Lean Six Sigma Yellow Belt. A portrait of a visionary nurse leader whose influence extends beyond the hospital walls into the broader realms of healthcare education and administration.

The researcher has had various roles in the nursing field, including as a part-time graduate school instructor at Davao Doctors College since June 2014. He mainly taught subjects like Bioethical Issues in Nursing and Nursing Management. Currently, he is Chief Revenue Officer at Davao Doctors Hospital, after serving as Assistant Director for nursing and pharmacy units and Assistant Nursing Director at the same hospital from 2016 to 2024. He was also Admitting and Customer Care Manager/CSR Coordinator at the hospital from 2013-2016, overseeing daily operations and social development activities.

Between September 2011 and April 2013, he worked as the Fund Development Coordinator at SOS Children's Village Davao, managing fund development projects and promoting them in the community. He taught various nursing courses as a Nurse Clinical Instructor III at Davao Doctors College from 2008-2011. He also worked as a surgical ICU nurse at Yemen German Hospital from July 2007 to July 2008.



SAMUEL F. MIGALLOS, PhD, RN

Dr. Sam completed his Bachelor of Science in Tourism degree from the University of the Philippines-Asian Institute of Tourism, Diliman, Quezon City. He graduated Summa cum Laude with a Bachelor of Science in Nursing at the Family Clinic College of Nursing, Manila. His Master of Arts in Nursing and Doctor of Philosophy in Nursing were earned at San Pedro College-Graduate School in Davao City, where he graduated Meritus (Cum Laude).

He worked as a Volunteer Nurse at the Heart Station, Endoscopy Room, and Operating Room of the Alexian Brothers Health and Wellness Center in Davao City. He was a staff nurse at the Surgical Unit of San Pedro Hospital. Pursuing a career in the academe, he was hired as a Clinical Instructor at the Faculty of Nursing in San Pedro College, Davao City. Later on, he was promoted to the position of Nursing Coordinator, Assistant Director of the Office of Student Affairs, Director of Research and Publication Office, and faculty of the Graduate School. He was a Visiting Scholar at Mae Fah Luang University in Chiang Rai, Thailand, in 2019, where he taught Nursing courses at the College of Nursing. He was the Project Leader of the Collaboration Research of Ateneo de Davao University, Davao Medical School Foundation, Inc., and San Pedro College. He was appointed as the Program Coordinator of the Master's and Ph.D. in Nursing and Master in Hospital Administration programs of SPC Graduate School (now the School of Nursing Graduate School). He was also an online professor of Nursing at Mae Fah Luang University, Chiang Rai, teaching nursing students from Thailand and Bhutan during the Covid-19 pandemic.

Some of his research works include Systematic Desensitization Program for Students in Psychiatric Nursing, Filipino Nurses Caring for People with Diverse Nationalities, An Exploratory Case Study on the Common Illnesses of People Living along the Davao River, Profiling the San Pedro College Health Center Clients: Basis for Policy Intervention, and Perspectives of Barangay Health Workers (BHWs) on their Roles, Enablers, and Challenges in Maternal, Newborn, Child Health, and Nutrition. His international journal publications include Multiple Risky Behavior of Adolescents: A Convergent Mixed-Method in Eubios Journal of Asian and International Bioethics (EJAIB) (Volume 31, Issue 2) in February 2021, Graduate Tracer Study for the 12 Academic Programs in the Graduate School of San Pedro College, Davao City, Philippines in the Asian Journal of Education and Social Studies (AJESS) (Volume 35, Issue 1) on November 8, 2022, The ALS-IEC Theory and Its Effect on Persons Living with Human Immunodeficiency Virus in the Asian Journal of Advanced Research and Reports (AJARR) (Volume 16, Issue 12) on November 25, 2022, The Study of Muslim Culture: Basis for Culturally Congruent Nursing Education in the ASEAN Journal of Religion, Education, and Society (AJORES) on April 1, 2023, Predictors of Positive Parenting among Parents of Adolescents in Northern Thailand in the Philippine Journal of Nursing (PJN) (Volume 92, Issue 2) on July 1, 2023, and New Normal Era: Blended Learning Experience from the Lens of Student Nurses in the International Journal for Multidisciplinary Research (IJFMR) (Volume 5, Issue 6) in November-December 2023.

Dr. Migallos was a keynote speaker, panel discussant, research reviewer, and facilitator at the Mae Fah Luang University, Chiang Rai, Thailand MFIU 2023 Conference last December 28-29, 2023 entitled: “Innovative Solutions for Global Aging and Dementia in the Digital Era: Nursing and Multidisciplinary Perspectives.”

