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**STRUCTURAL EMPOWERMENT AND ATTITUDE OF NURSES TOWARD
COMPUTER USE IN A NATIONAL UNIVERSITY HOSPITAL IN THE PHILIPPINES**

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Biographical Sketch

Niño Valentino Denosta Delgado is a highly dedicated and accomplished Registered Nurse with a wealth of experience and expertise spanning over 12 years. Currently serving as a Nurse III and Nurse Trainer at the Division of Nursing Education and Training, University of the Philippines – Philippine General Hospital.

Niño's journey in nursing began in 2016 when he became a staff nurse in Ward One, Department of Medicine, where he provided exemplary care to adult patients with acute and critical medical conditions for five years. During this time, he demonstrated exceptional skills in patient care, unit management, education and training, research, and networking/linkages. Notably, he introduced a structured referral system (ISBAR) in the medical unit, developed a comprehensive patient education and discharge planning program, and actively participated in quality assurance programs and research studies.

In June 2021, Niño took on the role of Nurse Trainer in the Division of Nursing Education and Training, focusing on the Cancer Institute, Department of Ophthalmology and Visual Sciences, Department of Orthopedics, Department of Neurosciences, Rehabilitation Medicine, and Department of Out-Patient Services. In this capacity, he is responsible for the development, implementation, and evaluation of training programs, contributing significantly to the professional development of nursing personnel. His commitment to education extends beyond the hospital, as he serves as an adjunct faculty in undergraduate programs, teaching basic concepts and medical-surgical nursing.

Niño's extensive background includes training in toxicology, chemotherapy, and psychosocial processing. He is a certified Basic Life Support provider, a preceptor for

Intravenous Therapy, and an active member of the Philippine Nurses' Association and Sigma Theta Tau International Honor Society of Nursing. His involvement in specialty training, such as advanced cardiac life support, intravenous therapy, airway management, and infection control practices for COVID-19 patients, showcases his commitment to staying at the forefront of nursing knowledge.

Beyond his clinical and educational roles, Niño is a valuable member of the Quality Improvement and Patient Safety team. He actively contributes to hospital-wide implementations of policies, research initiatives, and innovations. His accomplishments include the creation of nursing documentation templates, participation in the hospital's nursing informatics initiatives, and the facilitation of training programs accredited by the Professional Regulation Commission in the Philippines.

His Bachelor of Science in Nursing was earned in 2009 from the Pamantasan ng Lungsod ng Maynila. As a Registered Nurse, Niño has consistently demonstrated a commitment to excellence in patient care, education, research, and leadership within the dynamic and challenging healthcare environment of the University of the Philippines – Philippine General Hospital.

Acknowledgement

I would like to express my deepest gratitude and appreciation to UP-Philippine General Hospital, an institution that not only provided me with the privilege to pursue my Master of Arts in Nursing but also graciously opened its doors for the conduction of my study. The support and conducive environment offered by UP-PGH have been pivotal in the successful realization of my academic endeavors.

To my fellow nurses at UP-PGH, your dedication to the nursing profession has been an enduring source of inspiration. It is your commitment to excellence that motivated me to undertake this study, with the aim of further enhancing our collective knowledge, skills, and attitude towards the integration of computerization in our field. Your support has been instrumental in this endeavor.

A heartfelt thank you goes to Ward One and the Division of Nursing Education and Training for their unwavering support. Their collaborative spirit and encouragement have been the bedrock upon which the success of my research rests.

I extend my gratitude to Ms. Imari Kate Galvez and Mr. Rustan Paulo Baltazar, graduate students from the UP School of Statistics, whose expertise in statistical analysis significantly elevated the quality of my thesis. Their involvement has been indispensable, and I am truly fortunate to have collaborated with such skilled individuals.

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but have also contributed to my personal and professional growth. I am deeply appreciative of your mentorship.

To my beloved family, your unwavering support has been the cornerstone of my journey. Your sacrifices and encouragement have fueled my determination, and I am profoundly grateful for the strength and inspiration you consistently provide.

Finally, I express my deepest gratitude to our God Almighty Father for His wisdom and the countless blessings He has bestowed upon me. In recognizing that things unfold beautifully and perfectly in His time, I am reminded of the divine orchestration that has led to this moment.

Each of you has played an integral role in the realization of this achievement, and I am profoundly thankful for the collective support that has made this journey both meaningful and fulfilling. From the bottom of my heart, Maraming Salamat po.

Dedication

This study is dedicated to the resilient spirits that dare to dream big, to those who refuse to be confined by the limits set by circumstance and instead, choose to elevate their aspirations to new heights. This study stands as a beacon of inspiration, reminding each individual that the pursuit of one's dreams is not only noble but also entirely attainable. This also serves as a testament to the incredible potential within each of us – a potential waiting to be unleashed through dedication and unyielding commitment.

Furthermore, let us take a moment to express our deepest gratitude and admiration for the unsung heroes of our healthcare system – the diligent and compassionate nurses who dedicate their lives to the well-being of others. Amidst the demanding challenges of providing exceptional care to our beloved patients, these individuals tirelessly strive for excellence. It is to them that I dedicate this research, recognizing their resilience, dedication, and unwavering commitment to the pursuit of knowledge.

In the ever-evolving landscape of healthcare, this study also sheds light on the significance of adapting to technological advancements. It is a call to action for all dedicated nurses who, amidst their hectic schedules, recognize the value of enhancing their proficiency in the use of computers. The commitment to continuous improvement in knowledge, skills, and attitude reflects a profound dedication to the profession and an unwavering belief in the potential for positive change.

Let this study be a source of inspiration and encouragement for all those who find themselves at the intersection of passion and responsibility. May it serve as a catalyst for

a future where the collective efforts of dedicated healthcare professionals materialize into a reality of more effective and efficient patient care. In the face of challenges, let the spirit of this research embolden us to persist, to innovate, and to relentlessly pursue excellence in the pursuit of our dreams and the improvement of our noble profession.

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Abstract

The integration of technological innovations in healthcare is essential for advancing patient care, improving information accessibility, and enhancing inter-professional communication. This transformation, while beneficial, has introduced new responsibilities for nurses, extending beyond traditional patient care to encompass various computer-mediated activities. This shift, however, poses challenges, including limited computer knowledge, time allocation issues, and insufficient training and resources.

This research, employing a descriptive correlational research design, investigates the factors influencing the attitude of nurses towards the use of computers. A purposive sample of 282 registered nurses from a National University Hospital participated in the study. The analysis involved descriptive statistics, Pearson r correlation coefficient, and Analysis of Variance (ANOVA), exploring the interplay between structural empowerment, attitude towards computer use, and demographic variables, such as age, nursing experience, and computer usage duration.

The study conducted at UP – Philippine General Hospital, reveals a moderate level of structural empowerment among nurses, with "opportunities" and "informal power" scoring high. Notably, "resources" received the lowest score, indicating a need for enhanced support. Despite challenges, the majority of nurses exhibited openness to technology, emphasizing the significance of professional growth and peer support. The study unveils a positive attitude towards computer use, with some nurses experiencing cyberphobia. Significantly, a positive and moderate correlation emerged between

structural empowerment and computer use attitude, underlining the pivotal role of an empowering work environment.

Demographic variables such as age, nursing experience, and computer usage duration were found to influence both structural empowerment and attitude towards computer use. The findings emphasize the importance of support, information access, formal power, and resources in shaping nurses' professional growth and job satisfaction. Addressing these dimensions is crucial for effective strategies promoting technology adoption, ultimately enhancing healthcare delivery and patient outcomes.

KEYWORDS: Structural Empowerment, Attitude, Computer use, Demographic variables, Nurses, National University Hospital

Chapter I

THE RESEARCH PROBLEM

Background of the Study

Adopting technological innovations has become imperative for enhancing today's healthcare system. This transformation has significantly improved patient care by improving information accessibility, facilitating seamless data sharing, and accelerating inter-professional communication in healthcare settings. However, using computers created new roles and responsibilities, particularly for nurses. Beyond the conventional gamut of patient care provision, execution of medical directives, and meticulous documentation via Electronic Medical Records (EMR), nurses are increasingly tasked with a range of computer-mediated activities, including but not limited to the formulation of comprehensive reports, critical evaluation of personnel performance, electronic correspondence, and active participation in seminars and training initiatives.

As early as 2018, UP-Philippine General Hospital initiated efforts to improve its operations. Recognizing the need for efficiency and reduced paperwork, the hospital embarked on the development of innovative software solutions. These were designed not only to streamline workflow but also to liberate the dedicated staff from the burden of excessive paperwork. Central to this transformative journey were the nurses, who assumed a pivotal role in the seamless transition from traditional documentation to advanced computerization. Their expertise and deep understanding of the hospital's intricate processes were invaluable in shaping the software's functionalities. With their firsthand experience, they provided invaluable insights, ensuring that the software was

not just a technical solution but a practical and user-friendly asset for the entire hospital staff. Examples are the Registry of Admission and Discharges (RADISH) and the Computerized Audit Records Retrieval and Online Tracking (CARROT); these Electronic Medical Records were used as the computerized system for recording consultations and admissions in the emergency department and hospital inpatient services (Co, 2018). Initially, the objective was to generate statistics on the number of admitted and discharged patients in the hospital until they were developed and merged into one. The RADISH now currently serves as the main EMR of PGH. Another example is the Open Enterprise Resource Planning (OpenERP), where staff can send requests for medications and other needs of inpatients to the pharmacy department online. In addition, there's an Online Consultation Request and Appointment system (OCRA) where appointments for patients' outpatient consultations can be scheduled. And for employees who need copies of their employment records, there's Human Resource Information System (HRIS) where they send their requests virtually. During the COVID-19 pandemic, these systems were further enhanced to minimize physical contact and streamline patient care, and online platforms like Zoom and Google Meet became essential for meetings and training.

Despite the benefits, the sudden transition to computer use posed challenges for some nursing staff. Limited computer knowledge led to difficulty performing tasks, and some spent more time on computers than patient care. The lack of training, resources, and slow internet connectivity compounded these challenges. Recognizing these issues, this study aimed to understand factors affecting the attitude of nurses towards the use of computers and offer solutions to improve computer proficiency.

Attitude emerged as a critical factor in the successful implementation of computerized systems in healthcare. A positive attitude among nurses can drive their enthusiasm, motivation, and willingness to adapt to technological changes. Understanding nurses' attitude allow for the development of effective implementation strategies, especially for those who may be less receptive to computerization.

Kanter's theory suggests that structural empowerment significantly influences how nurses perceive and embrace technology. When nurses operate in a well-organized work setting that provides avenues for professional development, access to essential information, support from colleagues and managers, and available material, time, and financial resources, both formal and informal power dynamics can empower them. This empowerment not only enhances nurses' confidence but also positively shapes their approach to adopting and using technology. Numerous studies underline the favorable outcomes of structural empowerment on nurses' perspectives regarding computer use, underscoring the critical role of fostering an empowering workplace environment.

Moreover, it is essential to recognize demographic variables as potential factors that might intervene, either intensifying or diminishing the effect of structural empowerment on nurses' attitude to computer use. Factors such as age, years of professional experience, and the duration of computer use can serve as mediators, potentially shaping how structural empowerment influences nurses' perspectives on technology adoption. Including demographic variables as intervening factors adds another layer of insight, offering a more comprehensive understanding of the intricate association between structural empowerment and nurses' attitude to computer utilization. This approach enhances the study's robustness and contributes to the development of

customized strategies that support effective technology integration, considering the diverse demographic profiles of nurses.

Statement of the Problem

Nurses are constantly exposed to various changes. The shift from traditional paperwork to the computerization of almost all processes elicits mixed feelings. Most of the time, nurses must adapt to sudden changes of which they have little or no knowledge at all. This may lead to confusion and often resistance to implementing new policies. It is also a fact that not all nurses can adapt to the sudden work transition without knowledge, training, and support. Computer competencies are essential for nurses.

Fostering a work setting that empowers nurses by providing access to opportunities, information, support, resources, and both formal and informal power has the potential to cultivate a constructive stance toward the use of computers among nurses. An organization characterized by structural empowerment is likely to witness enhanced attitude and increased effectiveness in the utilization of technology.

Objectives of the Study

The transition to computerization in healthcare demands that professionals acquire new skills to adapt to the evolving landscape. For nurses to fully harness the benefits of computers, access to six power structures is imperative. Empowering nurses becomes integral to the organizational environment, and administrators play a pivotal role in shaping workplaces that enhance nurses' job performance. However, the success of implementation hinges on the attitude of the intended users toward change, influencing the safety, continuity, and quality of care.

While the effect of structural empowerment on the attitude and behaviors of employees has been acknowledged in various literature, its specific relationship with the attitude of nurses towards the use of computers remains unexplored. This research aims to delve into the connection between structural empowerment and attitude of nurses towards computer use in a tertiary hospital. It also seeks answers to these questions:

1. What is the level of structural empowerment among nurses in a National University Hospital in the Philippines in terms of:
 - i. Opportunities
 - ii. Information
 - iii. Support
 - iv. Resources
 - v. Formal Power
 - vi. Informal Power
2. What is the attitude among nurses toward computer use?
3. Is there a significant relationship between structural empowerment and the attitude of nurses toward computer use?
4. Is there a significant relationship between structural empowerment and the demographic profile of nurses in terms of:
 - i. Age
 - ii. Years of nursing experience
 - iii. Duration of computer use
5. Is there a significant relationship between the attitude towards computer use and the demographic profile of nurses in terms of:

- i. Age
- ii. Years of nursing experience
- iii. Duration of computer use

Significance of the Study

As part of the healthcare system, nurses have always been exposed to changes that are constantly happening. As the hospital transitions to a more efficient type of work by using computers and their different programs and applications, this study hopes to provide additional strategies that could positively influence the attitude of nurses toward the use of computers through access to six power structures of structural empowerment. The outcomes of this study could hold valuable and considerable significance for the following:

Nurses. A move toward computerization can be significantly facilitated if nurses respond to the change positively. The attitude of nurses towards the use of computers are as important as the technology itself; should nurses lack confidence in the utility of the computer system, they are unlikely to utilize it. Therefore, this study will attempt to explore factors affecting their attitude towards computers and how providing a structured environment can help develop a positive attitude towards the use of computers.

Nurse Managers. This study will highlight how vital support is in empowering nurses to perform better in their jobs. Moreover, it will contribute to enhancing job satisfaction among nurses by empowering and bolstering their commitment to the organization. This can be achieved by aligning workplace structures to create a conducive

learning environment for nurses. The results of this research can assist nurse managers in promoting and endorsing interdependence among the staff, fostering effective collaboration, creating a supportive atmosphere for nurses, and cultivating robust relationships with colleagues and healthcare professionals both within and outside the organization.

Nurse Educators. Once the relationship between attitude and structural empowerment has been established, more training and skills enhancement programs can be created to improve nurses' knowledge and skills toward the use of computers. It will be beneficial for nurse educators to incorporate information technologies in their programs and lectures to accommodate nurses' growing needs in using computers in healthcare settings.

Nurse Administrators. The study will highlight the importance of conducting a continuous assessment of nurses' needs, particularly to improve their attitude and increase their knowledge of computer use. This study is also beneficial to let nurse administrators understand how creating a structured environment can facilitate acceptance of change, increase organizational commitment, and provide high-quality patient care, as well as policy development and clear guidelines in support of computerization. Administrative processes prominently feature structural empowerment, playing a pivotal role in enhancing employees' engagement in their interactions, which could lead to improved job satisfaction and performance. To actualize the principles of structural empowerment, administrators can reshape work environments by supplying essential resources, fostering collaborative relationships, and facilitating open communication among staff. If all these things are well-established, nurses no longer

need to worry every time there's a change in the organization that needs to be implemented.

Hospital Administrators. Support and resources are keys to establishing a structured work environment. With PGH being the pioneer in terms of the computerization of documents and other workflows across its different clinical units, it is crucial that hospital administrators provide infrastructures that would support in terms of maintaining and helping improve the information management system of the institution. The results of this study will help hospital administrators realize that procuring more computers and establishing better internet connections are indeed necessary to empower nurses to perform their jobs safely, therefore improving patient care outcomes.

Patients. When nurses are empowered and have a positive attitude towards computer use, patients are assured of quality nursing care. Medical management and plans of care written in the electronic health record can be easily facilitated, thereby preventing risks of committing errors and promoting patient safety. Once nurses maximize the benefits of computer use, they will have more time to attend to their patients, allowing them to address their needs and establish healthy and therapeutic relationships.

Scope and Limitation of the Study

The study focuses on structural empowerment and the attitude of nurses to the use of computers throughout the COVID-19 pandemic. The collection of data was conducted on randomly selected Nurses I to III of a National University Hospital in the Philippines. The primary data source was a close-ended questionnaire given by the

researcher. Data collection commenced for two weeks. Data was collected from staff nurses who filled out the questionnaire completely during the prescribed period.

Chapter II

THEORETICAL BACKGROUND

Review of Literature

The use of technology in healthcare settings shapes how services are provided to patients. Different technological innovations and advancements help ensure that patients are always safe. As indicated by Ta'an et al. (2019), numerous nations are facing challenges in the digitalization of their healthcare systems. The effective deployment of technologies has the potential to generate more responsive and sustainable health systems. When it comes to the work performed by staff, computers make tasks more accessible and more efficient. With the utilization of different online platforms, communications, as well as transactions, become faster. Computers are among the many facets of information, communication, and technology within health care and have supported many aspects of general administration, information management, and clinical practice (Dall & Kipturgo, 2014).

The rapid advancement of technology has prompted hospitals to extend computer usage across various domains. Initially, human resources, finance, and logistics systems underwent computerization. Subsequently, this expansion encompassed clinical communication and the storage of comprehensive patient data, including orders from physicians, results from the laboratory, and computerized care plans created by nurses. The evolution of hospital information systems has brought about substantial changes in nursing practice, as noted by Kaya (2011). Being an integral component of the healthcare

delivery system, nurses, continually navigate the evolving landscape shaped by technology.

In many instances, hospital changes, including the integration of technology, are implemented without sufficient consideration for the sentiments or perspectives of the end-users, often leaving nurses little room for input. This lack of involvement can lead to mixed reactions among nurses, particularly in response to the introduction of computers. According to Kipturgo (2014), nurses' reactions to such changes range from wholehearted support to outright rejection.

In the contemporary healthcare landscape, nurses increasingly rely on computers as potent tools in health information technology, aiming to facilitate quicker communication and elevate the quality of patient care. Notably, nurses have observed several advantages of computer usage, such as the transition from paper documentation to Electronic Health Records (EHR), a reduction in paper storage, and the standardization of care across the healthcare system. The implementation of Electronic Medical Records (EMR) has notably allowed nurses to allocate more time to patient interaction by minimizing the time spent searching through patient charts or coordinating care with other healthcare professionals via paper documentation.

Within the nursing discipline, there is a belief that the utilization of EMR contributes to an improvement in the quality of care. This improvement is expected to manifest through enhanced efficiency and effectiveness in patient care delivery, cost reduction in healthcare, improved nursing workflow, and a reduction in the time dedicated to paper documentation, as noted by Ferencsik (2016). Recognizing nurses' attitude towards

healthcare technology is crucial, as it may play a pivotal role in fostering acceptance and optimizing the inherent potential of new technologies to enhance patient care, as emphasized by Kaye (2017).

Enhancing the empowerment of nurses holds significant advantages for shaping a positive attitude and enhancing organizational effectiveness. The foundational principles of work empowerment find support in Kanter's theory of power and its structure, as highlighted in the works of Rababah (2021) and Zhang et al. (2018). The focus of this discourse is to delve into the impact of structural empowerment on nurses' attitude towards utilizing computer technology.

Structural Empowerment

Structural empowerment encapsulates the social dynamics within a workplace that empower persons to attain their professional objectives via access to opportunities, relevant information, support, and resources. Despite its pivotal role in work engagement, structural empowerment has garnered less attention compared to psychological empowerment, particularly in healthcare settings (Amor et al., 2021).

The foundational framework of work empowerment finds validation in Kanter's theory of power and its organizational structure, as expounded by Zhang et al. (2018). Power, as elucidated by Amor et al. (2021), represents the ability to accomplish tasks and mobilize resources. Stemming from Kanter's Theory of Structural Power in Organizations, the concept of structural empowerment delineates the conditions within the work environment. In an empowered work setting, employees' work activities are elevated (Yang et al., 2013). This theory asserts that conducive work conditions, comprising

opportunities, information, support, and instrumental resources, exert a significant influence on employee attitudes and behaviors toward achieving organizational goals.

Empowering work conditions contribute to heightened work engagement by triggering both intrinsic and extrinsic motivation. Opportunities for development, support, and access to essential resources fulfill fundamental human needs for autonomy, relatedness, and competence. For example, growth opportunities enhance learning and job competence, nurturing intrinsic motivation. Additionally, empowering work conditions facilitate extrinsic motivation by directly aligning with work-related goals (Amor et al., 2021). In well-structured work environments, nurses experience empowerment by having the utmost authority to execute their duties, respond adeptly, and confront organizational challenges (Zhang et al., 2018; Guo et al., 2016). Consequently, nurses exhibit enthusiasm, confidence, strong decision-making capabilities, and autonomy. Kanter's emphasis on providing employees with access to opportunities, information, support, formal and informal power systems, and essential resources enables outstanding achievements. The empowerment of nurses proves advantageous in enhancing their attitude and organizational effectiveness (Zhang et al., 2018).

Kanter delineates six power structures that employees should possess to be perceived as empowered: opportunities for learning and growth, access to information, support, and resources required to achieve goals (Master et al., 2018). Kanter's theory also introduces formal and informal powers, two additional indicators of structural empowerment (Ta'an et al., 2019).

Opportunities to learn and grow - Access to challenging work, new skills, and knowledge are essential elements for professional growth and development (Amor et al., 2021 & Sierra, 2018). This extends to the job conditions that provide employees with opportunities to learn, face challenges, and acquire new knowledge and skills that help them advance and grow (Yang et al., 2013). Empowering nurses with these working conditions enables them to achieve their work goals and objectives (Sierra, 2018). The presence of opportunities to learn and develop within an organization can impact an individual's satisfaction and productivity at work. These opportunities imply the acquisition of new skills, growth, advancement, and the willingness to undertake challenging tasks (Masters et al., 2018). For instance, individuals with more opportunities are likely to be more motivated, innovative, and committed to their work (Heron & Bruk-Lee, 2019). Access to learning and development can significantly advance nurses' careers within the organization (Goedhart et al., 2017). Continuous learning and development opportunities are vital components of structural empowerment, providing nurses with the chance to develop new skills, advance their knowledge, and broaden their horizons within their profession. According to Laschinger et al. (2016), nurses who perceive opportunities for continuous learning and development tend to experience increased job satisfaction and engagement.

Access to information – The second condition for a positive work environment involves having access to information about organizational values, policies, decisions, and changes, as well as the necessary technical expertise for the job (Amor et al., 2021; Sierra, 2018 & Goedhart et al., 2017). Having access to information allows employees to acquire professional knowledge and skills to improve their efficiency (Master et al., 2018).

It also means that employees can access the technical expertise and organizational policies needed to complete their job tasks effectively (Heron & Bruk-Lee, 2019). This access to information provides employees with the opportunity to be informed about administrative decisions, policies, data, goals, and technical expertise and knowledge required to perform well in the workplace (Yang et al., 2013). Access to information is a crucial power structure that provides nurses with the knowledge they need to make informed decisions in their clinical practice. According to Cummings et al. (2018), nurses who have access to relevant and up-to-date information are more likely to feel empowered in their roles.

Support – Colleagues, subordinates, and management can provide valuable feedback, guidance, and assistance to nurses, which can lead to innovation and autonomous decision-making (Amor et al., 2021 & Sierra, 2018). The amount of support that individuals receive from supervisors or coworkers is also an essential factor (Heron & Bruk-Lee, 2019). Master et al. (2018) assert that support is related to the assistance provided by managers, colleagues, and subordinates, which is crucial for nurses to perform their tasks effectively (Goedhart et al., 2017 & Yang et al., 2013). Structural empowerment includes mentorship, teamwork, and collaborative relationships, which provide nurses with a robust support structure. According to Spence Laschinger et al. (2016), nurses who perceive strong support systems have fewer chances to experience burnout and are more likely to feel empowered.

Resources – Equally as important is the proper allocation of resources, which plays a crucial role in ensuring that nurses are equipped with the necessary tools, staffing levels, and equipment required to deliver top-notch patient care. The availability of

resources helps foster nurses' sense of autonomy and effectiveness in their respective roles (Laschinger et al., 2018). Resources refer to the acquisition of temporary assistance, as well as the time necessary to carry out one's duties, both of which are essential in achieving organizational objectives (Amor et al., 2021). Additionally, resources include a nurse's ability to access the supplies, materials, and resources needed to complete their job successfully and reach organizational goals (Heron and Bruk-Lee, 2019; Sierra, 2018). To finish their work and achieve organizational aims, nurses must have access to the necessary time, money, materials, and supplies (Master et al., 2018; Goedhart et al., 2017; Yang et al., 2013).

Formal power – When it comes to the workplace, employees' formal power is heavily influenced by their position in the organization, as noted by Master and colleagues (2018). This is a crucial component of structural empowerment, as it enables nurses to participate in decision-making processes and take on leadership roles. According to Havaei et al. (2018), nursing staff who are involved in making decisions at various levels tend to feel more empowered and satisfied with their job. Additionally, formal power can encompass a range of factors such as rewards, workplace flexibility, and visibility within the institution, as pointed out by Moura et al. (2020). Tan and colleagues (2019) also noted that formal power can include job flexibility and recognition in the work environment.

Informal power – Informal power stems from peer connections and partnerships that actively contribute to achieving organizational objectives (Master et al., 2018). This type of influence is intricately tied to relationships cultivated within the workplace, signifying endorsement from peer networks and professional affiliations (Moura et al., 2020 & Tan et al., 2019). The dynamics of informal power structures become evident

through cooperative relationships and the backing of peers, nurturing a culture characterized by collaborative knowledge-sharing and collective decision-making (Havaei et al., 2019).

Ta'an et al. (2019) propose that heightened levels of structural empowerment arise from access to growth opportunities within the work environment, both formal and informal knowledge, as well as the necessary support from colleagues and managers, along with material, time, and financial resources. Guo et al. (2016) underscore that workplaces become empowering when they furnish the essential information, support, resources, and learning opportunities. The accessibility to such empowering structures is influenced by both formal and informal power dynamics within the organizational framework. Flexible jobs aligned with organizational goals enhance formal power, while informal power thrives on effective relationships with superiors, peers, and subordinates. Creating situations where employees feel empowered yields benefits in terms of improved attitude and increased organizational effectiveness (Guo et al., 2016).

Sierra (2018) aligns her study with Kanter's empowerment theory, emphasizing that workplace attitude and behaviors are shaped by social structures rather than individual predispositions. Empowerment, according to Sierra, revolves around accessing information, support, resources, and opportunities for learning and growth. Heron and Bruk-Lee (2019) affirm the pivotal role of workplace empowerment in organizational success, linking structural empowerment to positive outcomes such as increased job satisfaction and reduced burnout. This signifies that fostering empowerment in the workplace leads to improved employee attitude and behaviors.

Master et al. (2018) incorporate Kanter's theory, asserting that power structures in organizations significantly impact nurses' responses to their work experiences. Structural empowerment, encompassing formal and informal systems, emerges as a critical framework influencing nurses' behavior and attitude more than personal predispositions. Yang et al. (2013) stress the organizational effectiveness derived from empowerment, with empowered nurses demonstrating lower work pressure, reduced burnout, and increased job satisfaction.

Moura et al. (2020) assess the structural empowerment of nurses, finding that access to resources and knowledge correlates with increased empowerment levels. They suggest that nurse managers play a crucial role in enhancing empowerment by providing opportunities for professional growth. Goedhart et al. (2017) define empowerment as the removal of conditions fostering powerlessness, emphasizing that structural empowerment leads to improved work effectiveness. Yang et al. (2013) echo this sentiment, highlighting collaboration and autonomy as key factors contributing to nurses' perception of empowerment.

Rababah et al. (2020) explore the relationship between structural empowerment and the attitude of nurses to computer use, revealing that an empowering work environment positively influences attitude. Their findings underscore the importance of empowering structures in optimizing nurses' attitude towards technology. Another study by Ta'an et al. (2019) establishes a substantial positive association between structural empowerment and the attitude of nurses towards the use of computers, emphasizing the predictive roles of access to opportunity, formal power, and informal power.

Literatures consistently emphasize that structural empowerment, encompassing both formal and informal power structures, plays a vital role in shaping positive workplace outcomes, influencing nurses' attitude, behaviors, and overall job satisfaction. Access to resources, support, and opportunities for growth are key components of empowering structures that contribute to nurses' professional development and the delivery of highest level of patient care.

The Conditions for Work Effectiveness Questionnaire- II (CWEQ-II)

The Conditions for Work Effectiveness Questionnaire-II (CWEQ-II) serves as a dependable instrument for assessing the levels of structural empowerment among nurses. Utilizing the CWEQ-II, nurses' structural empowerment is classified into low, moderate, and high levels (Laschinger et al., 2012).

In instances of low structural empowerment, nurses may encounter shortages in resources, support, and decision-making authority. This deficiency can result in job dissatisfaction, burnout, and suboptimal patient outcomes. Autonomy may be lacking, restricting nurses from making crucial decisions that could enhance patient well-being. Healthcare organizations can tackle this issue by supplementing resources, providing additional support, and granting more decision-making authority to nurses.

At the moderate level of structural empowerment, nurses possess some access to resources, support, and decision-making authority, but limitations persist. These constraints may encompass restricted opportunities for professional development, impeding their capacity to provide the highest quality of care. Nurses in this category may also feel a lack of support from peers and supervisors, contributing to job dissatisfaction.

Healthcare organizations can address this situation by offering additional professional development opportunities and bolstering support for nurses.

In situations of high structural empowerment, nurses enjoy extensive access to resources, support, and decision-making authority. They wield autonomy in making crucial decisions that positively impact patient outcomes, fostering job satisfaction and elevating the quality of patient care. Nurses in this category also benefit from ample professional development opportunities to stay abreast of the latest healthcare practices and technologies. Sustaining this high level of empowerment entails healthcare organizations continually furnishing nurses with the requisite resources, support, and authority.

Attitude of Nurses to Computer Use

Attitude represents an intricate amalgamation of beliefs, values, behaviors, and motivations, encompassing emotions, thoughts, and actions. It constitutes a learned predisposition to consistently respond favorably or unfavorably to a particular subject. An individual's attitude can serve as a predictor of their intention to engage in a behavior related to a specific object of interest (Kaye, 2017 & Kipturgo, 2014). A prime example is the utilization of computers by nurses, where computers are deemed essential for communication and information exchange, prerequisites for acquiring health and nursing information in clinical practice. Computer-based information systems contribute to enhanced decision-making, competencies, and the overall quality of healthcare practice for nurses (Topkaya, 2014). The pivotal role of the attitude of nurses towards the use of computers is evident, with Rababah et al. (2021) highlighting how these attitude act as a

primary barrier, impacting the adoption of computerized systems and hindering potential benefits.

Ta'an et al. (2019) underscored that even seemingly simple skills like computer use can present challenges for healthcare professionals. Hospital executives often implement changes without considering the perspectives of end-users, leading nurses to adopt changes without significant input. While computers are integral to nursing, computer tasks are more intricate than manual ones, often leading to resistance among users and impeding attempts to modernize service delivery. Successful computer system implementation is closely tied to nurses' attitude towards computerization, making it a critical factor (Kaya, 2011).

Jedwab et al.'s (2021) study highlighted motivation as a key determinant of nurses' behavior, impacting their adoption of new technologies like Electronic Medical Records (EMRs). Nurse motivation is influenced by factors such as usability, competence, confidence, digital proficiency, and perceptions regarding EMR systems. The study emphasizes the importance of understanding and addressing individual motivational factors to promote the successful integration of EMRs in nursing practice.

Yontz et al. (2015) and Ferencsik (2016) delved into nurses' attitude towards Electronic Health Records (EHR) and EMR usage, respectively. Both studies underscored the significance of nurses' acceptance and utilization for successful integration. Support, training, and addressing barriers such as system malfunctions were identified as critical factors. Ferencsik's qualitative exploration revealed nurses' experiences transitioning to EMR usage, encompassing doubt, struggle,

accomplishment, and acceptance, highlighting the importance of acknowledging the emotional aspect of technological adoption.

Dall (2014) emphasized the need to understand factors influencing nurses' attitude towards information technology before EHR implementation. This understanding allows for correction of misinformation through strategies like education, communication, and system modifications. Seboka et al. (2020) and Sanqui et al. (2020) explored healthcare providers' attitude towards using information technologies, revealing factors such as computer literacy, training, and personal experience as determinants.

Yilmaz et al. (2015) and Kipturgo et al. (2014) provided insights into nurses' attitude towards computers, emphasizing the positive correlation between computer skills, exposure, and a favorable attitude. Computer literacy emerged as a crucial determinant, and studies by Topkaya et al. (2014) and Kaye (2017) echoed this sentiment, emphasizing the importance of computer skills for positive attitude and successful implementation of healthcare technologies.

Kaya (2011) found that nurses generally held positive attitude towards computers, influenced by age, marital status, education, job title, computer science education, computer experience, and the place of computer use. The study highlighted the significance of creating a positive attitude in nurses to technology, recognizing it as a crucial step for the successful implementation of nursing informatics.

Nurses' attitude towards technology, especially computerization, play a critical role in the successful integration and adoption of healthcare technologies. Addressing factors such as computer literacy, motivation, training, and emotional aspects of technological

adoption is crucial for promoting a positive attitude and ensuring the effective use of technology in nursing practice.

Demographic Profile

The demographic profile of nurses has garnered attention as a potential intervening variable that may mediate the relationship between structural empowerment and the attitude of nurses towards the use of computers. Demographic profiles such as age, years of experience, and duration of computer, can shape nurses' perceptions, preferences, and comfort levels with technology. Exploring how these demographic factors interact with the structural empowerment framework can provide insights into the distinct dynamics that underlie the attitude of nurses towards the use of computers.

Age

Various studies have contrasting discussions about the link between age and structural empowerment. Research conducted by Smith and colleagues (2018) supports the notion that older nurses tend to benefit more from structural empowerment initiatives. As nurses progress in their careers, the accumulation of experience and expertise enhances their capacity to leverage empowerment structures, thus amplifying their job satisfaction and engagement. Moreover, a study by Brown and colleagues (2017) emphasizes the positive association between structural empowerment and older nurses' intent to remain in the profession, highlighting the importance of creating an empowering work environment to retain experienced nursing staff. With the aging nursing workforce, understanding how age interacts with structural empowerment becomes crucial for healthcare organizations. Schubert and colleagues (2021) found that older nurses who perceive higher levels of structural empowerment are more likely to pursue career

development opportunities and take on leadership roles, aligning with their desire for continued professional growth. However, it is important to acknowledge the nuances of empowerment experiences across age groups. For instance, a study by Lee and colleagues (2019) observed that while structural empowerment positively impacts job satisfaction for both younger and older nurses, the specific elements of empowerment that resonate with each group may differ.

On the other hand, an empirical investigation by Johnson et al. (2016) elucidates that age does not exert a substantial impact on nurses' perceptions of structural empowerment. The study underscores that access to decision-making authority, opportunities for skill enhancement, and collaborative work environments, constitutive elements of structural empowerment, hold uniform significance for nurses across age groups. Building on this notion, a longitudinal study by Mitchell and colleagues (2019) contends that age-related stereotypes should not overshadow the fundamental tenets of structural empowerment, as nurses of all ages derive comparable benefits in terms of job satisfaction and engagement from empowerment structures. Furthermore, the findings of Smith's comprehensive meta-analysis (2022) further consolidate the argument that age may not be a decisive factor in determining nurses' experiences of structural empowerment. By analyzing data from a wide range of studies, Smith discerns that while individual variations in empowerment perceptions exist, age alone does not emerge as a significant predictor.

According to Fadel et al. (2019) and Cisnero (2012), age significantly correlates with attitude towards computer use. The study of Kipturgo (2014) provided a statistically significant association between the age of nurses and their attitude. Younger nurses less

than 40 years old had significantly higher attitude scores compared to nurses who belong to the age group 40 years and above. This is similar to the study conducted by Kaya (2011). Her study revealed that nurses aged 25 to 42 have a high attitude score to computer use. A negative correlation was also found between nurses' PATCH Assessment Scale scores and their age. There was a reduced PATCH Assessment scale score as the age of nurses increased. This, therefore, indicates the negative effect of age on the attitude of nurses to computer use (Kaya, 2011). The same result was found in the study by Cisnero (2012). A moderate level of knowledge of ICT was observed in young healthcare providers generally due to their increased familiarity with communications, media, and digital technologies (Cisnero, 2012). These studies, therefore, highlighted that younger nurses are more positively inclined to computer use than older ones (Kipturgo, 2014).

Years of Nursing Experience

The intricate relationship between structural empowerment and the accumulation of nursing experience has become a focal point in scholarly discussions, unveiling the nuanced dynamics influencing nurses' engagement and satisfaction within healthcare institutions. Rooted in the understanding that structural empowerment involves elements like decision-making authority and resource accessibility, recent investigations challenge the assumption of a linear connection between structural empowerment and years of nursing experience. Thompson et al.'s (2017) study revealed that, although seasoned nurses generally reported heightened levels of structural empowerment, the impact tended to plateau beyond a certain threshold. This suggests that while experienced nurses appreciate empowerment structures, its effects may plateau as they approach the

zenith of their careers, underscoring the necessity for organizations to tailor empowerment strategies accordingly. Bennett et al.'s (2020) work similarly underscores the contextual factors, such as organizational climate and leadership support, that can modulate the relationship between structural empowerment and years of nursing experience, influencing job satisfaction and intent to stay among experienced nurses.

Numerous investigations have delved into the intricate dynamics between structural empowerment and nurses' years of experience. For instance, Jirwe et al. (2016) discovered that nurses with extensive experience were more likely to perceive structural empowerment in their work environment, correlating with elevated job satisfaction and reduced turnover intentions. Van Bogaert et al.'s (2016) study echoed these findings, establishing a positive association between structural empowerment, job satisfaction, and work engagement, particularly among nurses with considerable working experience.

Furthermore, the impact of nursing experience on the nexus with structural empowerment extends beyond individual attributes, encompassing the broader professional landscape. In a longitudinal exploration by Chang et al. (2019), it surfaced that the influence of structural empowerment on nurses' job satisfaction intensifies over time, emphasizing the heightened significance of empowerment as nurses amass experience. This aligns with Lin's meta-analysis (2021), synthesizing evidence across studies to affirm a positive correlation between years of nursing experience and the relationship with structural empowerment.

Examining the attitude of nurses towards the use of computers, Fadel et al. (2019), Kipturgo (2014), and Kaya (2011) all link a positive attitude to computer use with years of

work experience. Fadel et al. (2019) identified levels of training and work experience as factors influencing attitude towards computer use. Kipturgo (2014) discerned that registered nurses exhibited a more favorable attitude compared to student nurses, primarily attributed to their knowledge and skills in Information Technology. Similarly, Kaya (2011) emphasized a positive correlation between the duration of employment in healthcare and nurses' positive attitude towards computers.

Duration of Computer Use

The exploration of the relationship between structural empowerment and nurses' duration of computer utilization has gained prominence in the era of healthcare digitization. As healthcare systems increasingly integrate technological solutions into their practices, nurses' interaction with computers becomes pivotal. A study by Jackson and colleagues (2018) delves into this intersection by highlighting that nurses who engage with computers extensively often perceive higher levels of structural empowerment. The authors suggest that computer use enhances nurses' access to information, communication channels, and decision-making platforms, thereby aligning with the core tenets of structural empowerment. Similarly, the research conducted by Smith and Johnson (2021) underscores that nurses who have a prolonged history of computer use tend to be more adept at navigating digital interfaces, which can translate into a heightened sense of control over their work processes, contributing to their overall empowerment.

The literature also acknowledges potential challenges in this relationship. A study by Williams and Brown (2017) presents a nuanced perspective by noting that while computer use can empower nurses by streamlining tasks and providing access to

resources, excessive reliance on technology may lead to reduced face-to-face interactions with patients and colleagues. This suggests that while computer use can augment structural empowerment, its implications should be carefully evaluated to ensure that it does not inadvertently compromise certain aspects of nurses' professional roles.

The main demographic indicator and the most influential factor in nurses' positive attitude towards computer use is increased computer experience (Fadel et al., 2019 & Kipturgo, 2014). The study of Kipturgo (2014) pointed out that longer exposure to computer use develops a positive attitude compared to shorter or non-exposure. In the same way, nurses with at least three years of exposure to computers have more positive attitude than nurses with shorter durations of exposure. The study also revealed that extended usage of computers could enhance the skill levels of users, thereby leading to a positive attitude. The same outcome was found in the study of Kaya (2011), wherein nurses with five or more years of computer experience obtained the highest mean PATCH Assessment Scale scores. A decline in the score was observed as the duration of experience with computers decreased. The association between PATCH Assessment Scale scores and duration of computer use indicated the positive effect of experience with computers on attitude towards computers (Kaya, 2011). Finally, Rababah et al (2021) emphasized that the more experienced nurses have in computer use, the more positive attitude they develop toward using technology.

Overall, the correlation between structural empowerment and nurses' attitude to computer utilization emerges as a robust association, as evidenced by the investigations conducted by Rababah et al. (2020) and Ta'an et al. (2019). Nurses operating within environments that afford favorable conditions, disseminate valuable information, allocate

sufficient resources, and provide robust support are poised to actualize their professional aspirations. This finding aligns with Kanter's assertion, positing that organizational structures exert a significant influence on nurses' attitude and behaviors.

The enhancement of empowering structures necessitates the provision of opportunities for skill development and the augmentation of professional knowledge, specifically tailored to harness the advantages of computerization for the advancement of healthcare quality, thereby affording more dedicated time for the utilization of information technologies. Nurse managers, cognizant of this paradigm, are called upon to heighten support mechanisms by furnishing explicit directives to nurses and delivering constructive feedback on performance, with a focused emphasis on areas ripe for improvement. The research underscores the pivotal role of structural empowerment in cultivating positive attitudes among nurses. Conversely, variables such as age, work experience, and the duration of exposure to computer usage emerge as influential factors, potentially exerting a substantial impact on nurses' predisposition toward computer utilization.

Synthesis

Structural empowerment and the attitude of nurses towards the use of computers has attracted scholarly attention due to their potential implications for effective technology integration in healthcare settings. Structural empowerment, characterized by access to information, resources, opportunity, support, and formal and informal power, plays a noteworthy role in shaping nurses' perceptions and behaviors (Master et al., 2018 & Ta'an et al., 2019). Recent research has revealed a noteworthy relationship between these

constructs. For instance, a study by Roberts and associates (2017) found a positive correlation between nurses' perceptions of structural empowerment and their attitude towards computer use. The authors argue that structural empowerment can positively influence nurses' comfort and engagement with technology. Additionally, research conducted by Liu and colleagues (2020) supports this link by demonstrating that nurses who perceive higher levels of structural empowerment are more likely to exhibit a positive attitude towards computer use, possibly due to their enhanced sense of control and influence over their work processes.

However, it is essential to consider the mediating role of demographic variables. Studies by Miller et al. (2019), Fadel et al. (2019), and Kipturgo (2014) reveal that demographic factors, such as age, years of experience, and duration of computer use can moderate the relationship between structural empowerment and the attitude of nurses towards the use of computers. These suggest that while structural empowerment is a crucial factor, demographic variables must be acknowledged as potential intervening variables that can either amplify or attenuate the influence of empowerment on nurses' attitude towards technology.

In conclusion, the literatures underscore the complex interplay between structural empowerment and the attitude of nurses towards the use of computers, emphasizing the need to account for demographic factors in understanding and fostering technology adoption in the nursing practice.

Theoretical Framework

This study will be grounded in Kanter's Theory of Structural Empowerment, which defines power as the capacity to mobilize information, resources, and support for effective organizational action. Structural empowerment, as per the theory, pertains to how employees perceive their access to these organizational structures within their work environments (Laschinger, 2012). Kanter's theory underscores the significance of organizing the work environment to enhance job satisfaction and boost the effectiveness of nurses. Employees operating in empowering environments exhibit improved attitude and greater success in their tasks. In well-structured work environments, nurses feel empowered, enjoying the utmost authority to carry out their responsibilities (Zhang et al., 2018).

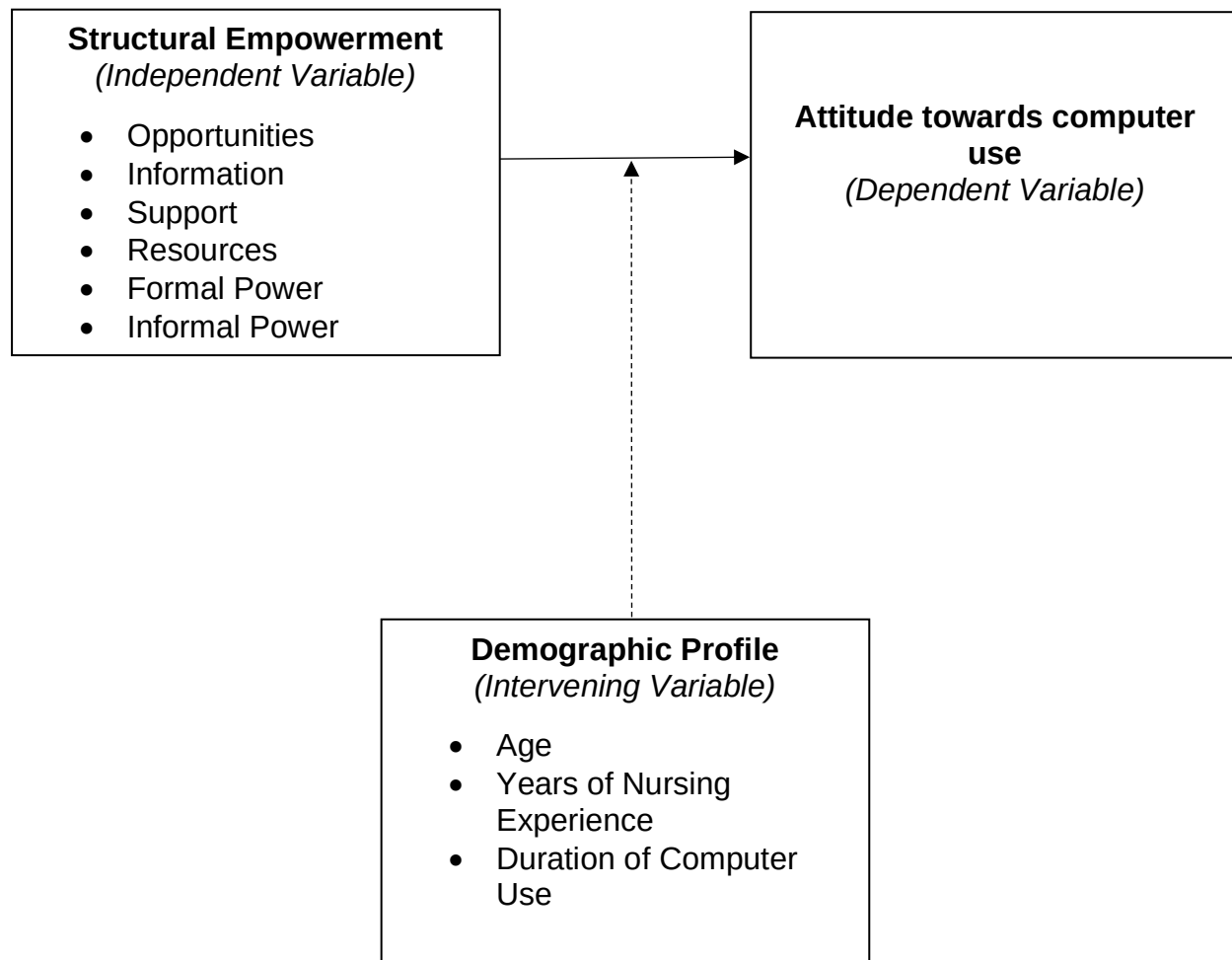
Structuring the work environment implies ensuring that nurses have access to six key power structures: opportunities for learning and growth, information accessibility, support systems, available resources, and both formal and informal power. Providing access to these structures not only facilitates nurses in achieving remarkable accomplishments but also contributes to fostering a positive attitude, particularly toward the utilization of computers (Rababah et al., 2021 & Zhang et al., 2018).

Conceptual Framework

Proficiency in computers has been seen to be important in healthcare settings. Being one of the largest and most prominent of the healthcare team, nurses should be equipped with the proper knowledge and skills necessary to facilitate the use of computers efficiently. Therefore, understanding their attitude is essential to improve their

skills and maximize the benefits of computers in the workplace. Since there is a diverse group of nurses working in the hospital, nurse leaders should create a common ground that would address all the needs and concerns of nurses regarding computer use. As shown in Figure 1, empowering nurses by creating a structured environment through providing access to six power structures: opportunities to learn and grow, access to information, support, resources, and formal and informal power is a good way of improving their attitude to computer use. If nurses are provided access to these power structures, they are more likely to see and appreciate the benefits of using computers; therefore, they will be more empowered to use them in their work. Hence, this study intends to find out the influence of structural empowerment, which serves as the independent variable, on the attitude of nurses toward the use of computers, identified as the dependent variable. Lastly, the study will explore the relationship of the intervening variable, the demographic profiles of nurses to structural empowerment, and the attitude of nurses toward the use of computers.

Figure 1. Conceptual framework of the study.



Operational Definition of Terms

Attitude - set of nurses' emotions, beliefs, and behaviors toward computer use.

Computer Use – any work done using a computer e.g., the use of RADISH, OpenERP, OCRA, and HRIS

Formal Power - distinctive job attributes encompassing characteristics like flexibility, adaptability, creativity, discretionary decision-making, visibility, and alignment with the organizational purpose and objectives.

Informal Power - cultivating social connections and nurturing the development of communication and information channels within sponsors, peers, subordinates, and cross-functional groups.

Information - The formal and informal knowledge essential for workplace effectiveness, encompassing technical expertise needed for job accomplishment and a comprehension of organizational policies and decisions.

Nurses – staff nurses (NI to NIII) with at least three months of work experience

Opportunity - the potential for progression and advancement within the organization coupled with the chance to enhance one's knowledge and skills.

Resources - one's capacity to obtain the financial resources, materials, time, and supplies essential for carrying out the work.

Structural Empowerment - the degree to which nurses possess entry to opportunities, information, support, resources, and both formal and informal influence within their work environments.

Support - entails obtaining feedback and guidance from colleagues, subordinates, and superiors.

Hypothesis

The study aims to discover the influence of structural empowerment on the attitude of nurses toward computer use, hence the following hypotheses:

H₁: There is a significant relationship between structural empowerment and the attitude of nurses towards the use of computers.

H₂: There is a significant relationship between structural empowerment and the demographic profile of nurses.

H₃: There is a significant relationship between attitude towards computer use and the demographic profile of nurses.

Chapter III

RESEARCH METHODOLOGY

Research Design

The research design called descriptive correlational is a popular method used in research to discover the relationships between variables. In this study, the focus was on examining the connection between structural empowerment and the attitude of nurses to computer utilization. It is worth noting that this research design does not involve the manipulation of independent variables, making it ideal for studies that aim to describe relationships among variables.

Additionally, the study sought to determine whether demographic profiles like age, years of nursing experience, and duration of computer use had any significant relationship to structural empowerment and the attitude of nurses towards the use of computers. By using such a research design, the study was able to describe the interrelationships between these variables without invoking a causal explanation.

According to Polit and Beck (2017), this research design is particularly useful when examining the relationships between variables. It allows researchers to observe the variables as they occur naturally, without external influences. This approach ensures that the study's findings are reliable and valid, making it a preferred method for researchers. Overall, the use of descriptive correlational research design in this study was appropriate and effective in achieving its set objectives.

Sampling Technique

The study utilized a purposive sampling technique in selecting the participants for the study. Purposive sampling is a type of non-probability or non-random sampling in which the researcher selects certain subjects or elements to be included in the study based on his knowledge of the population (Grey et al., 2017 & Polit & Beck, 2017). Participants of the study will be nurses who qualify based on the inclusion and exclusion criteria set by the researcher.

A total of 282 registered nurses served as the study's sample size out of 1057 nurses (Nurse I, II, & III) as the total population. The sample size was calculated using Raosoft Online Sample Size Calculator with a confidence level of 95% and a margin of error of 5% (Raosoft, 2011). The following inclusion criteria were applied for this study:

1. Registered nurses with direct patient care (Nurse I, II, & III);
2. With permanent or contractual employment status;
3. Currently working in their area of assignment for at least three months to ensure familiarity with their work environment

Exclusion criteria on the other hand include the following:

1. Nurses without informed consent;
2. Nurses who were unable to fill out the questionnaire completely;
3. Nurses with less than 3 months tenure of service in their current area of assignment;
4. Nurses classified as job order;
5. Nurse Managers (Nurse IV, VI, & VII)

Study Setting

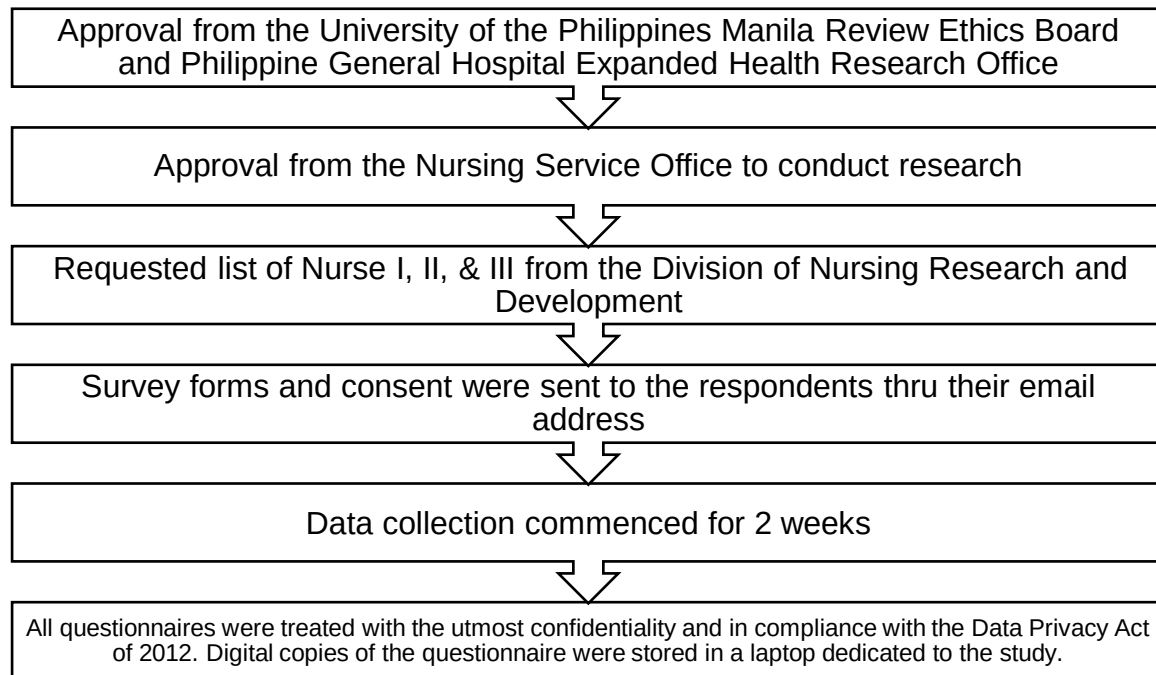
The study was undertaken within the nursing units of a National University Hospital, recognized as the exclusive national referral center for tertiary care, offering direct and high-quality patient services to over 600,000 individuals annually. This hospital boasts a total of 1500 beds and encompasses 19 clinical departments, including Family and Community Medicine, Anesthesiology, Internal Medicine, Surgery, Neurosciences, Pediatrics, Otorhinolaryngology-Head & Neck Surgery, Ophthalmology, Orthopedics, Rehabilitation Medicine, Psychiatry, Radiology, Pathology, Emergency Medicine, Obstetrics & Gynecology, and Dermatology. It holds ISO certification, a recognition bestowed by the Anglo-Japanese American (AJA) Registrars for meeting globally acknowledged standards in quality management systems.

Data Collection

As presented in Figure 2, after receiving approval from the University of the Philippines Manila Review Ethics Board, Philippine General Hospital Expanded Health Research Office, and the Nursing Service through the Deputy Director for Nursing, the researcher sought assistance from the Division of Nursing Research and Development for the list of Nurse I, II, & III and their respective email addresses. Due to the restrictions caused by the COVID-19 pandemic, the respondents were invited through various online platforms such as email and online messaging applications. A link was then provided to all participants, which allowed them to access the questionnaires created using a Google Form. The first part was acquiring consent from the respondents before proceeding to the next parts of the questionnaire. The nurses who agreed to be part of the study were then

given access to the questionnaire. The data collection was conducted for two weeks, and only the questionnaires that were completely filled out were used for the study.

Figure 2. Data collection procedure.



Research Instrument

For this research, a questionnaire was formulated using Google Form and distributed to all participants. Approval had been obtained from the original authors for the adapted tools utilized. The questionnaire encompassed three sections. The initial section aimed to collect demographic information from the respondents, including age, gender, marital status, designation, educational level, years of nursing experience, duration of computer use, and area of assignment.

In the second section, the evaluation of structural empowerment utilized the Conditions for Work Effectiveness Questionnaire-II (CWEQ-II). Crafted and validated by Laschinger et al. (2012), this questionnaire aligns with Kanter's Theory of Structural Empowerment, as noted in the works of Ta'an et al. (2019) and Laschinger et al. (2012). CWEQ-II consists of 19 items distributed across six subscales—opportunity, information, resources, support, formal power, and informal power—each rated on a 5-point Likert scale. The Cronbach's α values for these subscales were 0.81, 0.80, 0.89, 0.84, 0.69, and 0.67, respectively, while the overall scale's Cronbach's α was 0.89 (Laschinger et al., 2012). The total structural empowerment score was calculated by summing the scores from these subscales.

Scoring and Interpretation

A comprehensive measure of empowerment can be derived by aggregating the scores from all six subscales, resulting in an overall empowerment score. The scoring system ranges from 6 to 30, with higher scores indicating more robust perceptions of operating within an empowered work environment. Specifically, scores falling within the range of 6 to 13 characterize low levels of empowerment, while scores between 14 and 22 denote moderate levels. High levels of empowerment are reflected in scores ranging from 23 to 30 (Laschinger et al., 2012).

However, for this study, distinct scoring and interpretation criteria will be applied to each subscale to provide a more nuanced understanding.

Opportunity:

The subscale mean score is calculated by summing the individual item scores and then computing the average. The scoring scale for these means spans from 1 to 5. In this

framework, scores falling within the range of 1 to 2.33 signify low levels of opportunity, while scores ranging from 2.34 to 3.67 indicate moderate levels. High levels of opportunity are represented by scores falling between 3.68 and 5. This scoring system allows for a nuanced assessment of opportunity levels within the context of the study.

Resources:

The calculation of a subscale mean score involves the summation and averaging of individual items. Within the scoring spectrum of 1 to 5, scores ranging from 1 to 2.33 are indicative of low levels of resources, while scores between 2.34 and 3.67 suggest moderate levels. High levels of resources are denoted by scores falling within the range of 3.68 to 5. This scoring framework provides a nuanced depiction of resource levels as evaluated within the context of the study.

Information:

The determination of a subscale mean score involves the summation and averaging of individual items. Within the scoring spectrum of 1 to 5, scores ranging from 1 to 2.33 indicate low levels of information, while scores falling between 2.34 and 3.67 signify moderate levels. High levels of information are represented by scores within the range of 3.68 to 5. This scoring paradigm offers a nuanced perspective on the levels of information as assessed within the context of the study.

Support:

The computation of a subscale mean score involves the summation and averaging of individual items, falling within the score range of 1 to 5. Specifically, scores ranging from 1 to 2.33 denote low levels of support, while those falling between 2.34 and 3.67 signify moderate levels. High levels of support are indicated by scores within the range of

3.68 to 5. This scoring structure provides a nuanced understanding of support levels as evaluated within the context of the study.

Job Activities Scale (Formal Power):

The computation of a scale mean score involves summing and averaging the individual items within a score range of 1 to 5. Specifically, scores falling between 1 to 2.33 characterize low levels of formal power, while those ranging from 2.34 to 3.67 indicate moderate levels. High levels of formal power are represented by scores within the range of 3.68 to 5. This scoring framework provides a nuanced assessment of formal power levels as examined within the context of the study.

Organization Relationships Scale (Informal Power):

The calculation of a scale mean score involves summing and averaging the items within a score range of 1 to 5. Specifically, scores falling between 1 to 2.33 characterize low levels of informal power, while those ranging from 2.34 to 3.67 indicate moderate levels. High levels of informal power are represented by scores within the range of 3.68 to 5. This scoring framework offers a nuanced evaluation of informal power levels as investigated within the context of the study.

In the third section, the third version of the Pretest for Attitude towards Computers in Healthcare (PATCH) was used. Developed by Kaminski (2021), this tool is designed to gauge nurses' attitude toward computers in healthcare settings, as highlighted in the work of Rababah et al. (2021). The internal consistency of the PATCH, as indicated by a Cronbach's α coefficient of 0.92, attested to its reliability (Rababah et al., 2021). This instrument comprises a 50-item scale, with responses rated on a five-point Likert scale,

ranging from "Agree Strongly = 1" to "Disagree Strongly = 5". The scale encompasses 25 positively worded items and an equal number of negatively worded ones.

Scoring and Interpretation

To derive the cumulative PATCH score, positive item scores undergo conversion according to the following scheme: 1 is transformed to 2, 2 to 1.5, 3 to 1, 4 to 0.5, and 5 to 0. Conversely, for negatively worded items, the conversion is as follows: 1 becomes 0, 2 is converted to 0.5, 3 to 1, 4 to 1.5, and 5 to 2. The total PATCH score is subsequently computed as the summation of these converted scores. The potential range of total scores on the PATCH scale spans from 0 to 100, and the interpretation is delineated into six distinct categories:

- a. 0 to 17 points:** Manifestation of Cyberphobia is evident. Individuals are in the early stages of familiarizing themselves with computer basics or applications. There might be a sense of ambivalence or anxiety regarding the use of computers in healthcare. Those in this stage may welcome assistance in acquiring fundamental computer skills.
- b. 18 to 34 points:** Suggests a degree of discomfort in utilizing computers. Possesses rudimentary knowledge of computer basics and applications. Uncertain about the utility of computers in healthcare.
- c. 35 to 52 points:** Demonstrates a moderate level of comfort in computer usage. Possesses fundamental knowledge of computers and applications. Shows some limitations in awareness regarding the applications of computer technology in healthcare.

- d. 53 to 69 points:** Experiences ease with user-friendly computer applications. Recognizes the utility of computers across various settings. Maintains a realistic perspective on the current capabilities of computers in healthcare.
- e. 70 to 86 points:** Displays confidence in using a diverse range of computer programs. Views computers as instrumental in societal development. Holds an enthusiastic perspective on the potential of computer use in healthcare.
- f. 87 to 100 points:** Demonstrates a high level of confidence in utilizing a diverse array of computer programs. Recognizes computers as pivotal for societal progress. Maintains an enthusiastic outlook on the potential of computer use in enhancing healthcare.

Data Analysis and Interpretation

Table 1.

Matrix Table for Data Analysis

Research Question	Variables to Measure	Level of Measurement	Statistical Treatment
1. What is the level of structural empowerment among nurses in a tertiary university hospital in Metro Manila in terms of: a. Opportunities b. Information c. Support d. Resources e. Formal Power f. Informal Power	Overall structural empowerment Structural empowerment subscale	Interval	Descriptive Statistics • Frequency • Percentage • Mean • Standard Deviation

Research Question	Variables to Measure	Level of Measurement	Statistical Treatment
2. What is the attitude among nurses toward computer use?	Attitude	Interval	Descriptive Statistics • Frequency • Percentage • Mean • Standard Deviation
3. Is there a significant relationship between structural empowerment and the attitude of nurses toward computer use?	Correlation between structural empowerment and attitude	Interval	Pearson r correlation coefficient
4. Is there a significant relationship between structural empowerment and the demographic profile of nurses in terms of: - Age - Years of nursing experience - Duration of computer use	Correlation between structural empowerment and demographic profile	Structural empowerment – interval Demographic profile - ratio	• Pearson r correlation coefficient (Age) • ANOVA (Years of nursing experience and Duration of computer use)
5. Is there a significant relationship between the attitude towards computer use and the demographic profile of nurses in terms of: - Age - Years of nursing experience - Duration of computer use	Correlation between attitude and demographic profile	Attitude – interval Demographic profile - ratio	• Pearson r correlation coefficient (Age) • ANOVA (Years of nursing experience and Duration of computer use)

The table above delineates the statistical methodologies applied in this study. The initial segment of the questionnaire underwent analysis through descriptive statistics, wherein data was organized and presented in tabular form using the simple percentage analysis tool. Descriptive statistics aim to summarize and arrange data for easy comprehension, without attempting to make inferences from the sample to the entire population, focusing on characterizing the data within the sample (Polit & Beck, 2017).

To probe the relationship between structural empowerment and the attitude of nurses to the use of computers, the Pearson r correlation coefficient was employed. This coefficient is calculated when dealing with variables measured on an interval or ratio scale (Polit & Beck, 2017). Similarly, this statistical treatment was used to explore the correlation between structural empowerment, attitude toward the use of computers, and demographic factors, specifically age.

Pearson's correlation coefficient, signified as Pearson r , is a widely utilized statistical measure that assesses the linear relationship between two continuous variables. It gauges both the strength and direction of the association, with values ranging from -1 (indicating a perfect negative correlation) to 1 (indicating a perfect positive correlation), and 0 signifying no linear relationship. The closer the value of r is to 1, the stronger the association between the variables (Freedman et al., 2007).

Table 2.

Correlation coefficient value and direction and strength of correlation

Correlation Coefficient Value	Direction and Strength of Correlation
-1	Perfectly negative
-0.8	Strongly negative
-0.5	Moderately negative
-0.2	Weakly negative
0	No association
0.2	Weakly positive
0.5	Moderately positive
0.8	Strongly positive
1	Perfectly positive

On the other hand, since there were continuous (actual CWEQ-II and PATCH scores) and categorical types of data (years of nursing experience and duration of computer use), Analysis of Variance (ANOVA) was utilized to find out the association between the structural empowerment, attitude to computer use and the demographic profiles particularly the years of nursing experience, and duration of computer use among nurses. Analysis of Variance (ANOVA) is a fundamental statistical technique employed to assess the equality of means across multiple groups or treatments, making it particularly valuable in experimental and research settings. ANOVA allows researchers to determine whether observed variations in the dependent variable are statistically significant and attributable to differences between groups or simply the result of random chance. This method partitions the overall variability in the data into two components: variance between groups and variance within groups, with the F-statistic serving as the test statistic. By comparing this statistic to critical values or p-values, researchers can ascertain whether there are significant differences in the group means (Field, 2018).

Data Management

All questionnaires were treated with the utmost confidentiality and in compliance with the Data Privacy Act of 2012. Digital copies of the questionnaire were stored in computers dedicated to the study. Forms and relevant output were filed and kept, and only the author of the study was granted access to these. All papers related to the study will be shredded after three years, while all digital copies will be permanently deleted after five years.

Ethical Considerations

This research underwent scrutiny by the hospital's Expanded Hospital Research Office for approval. The involvement of staff nurses in this study was entirely voluntary, and by completing the questionnaire, participants provided explicit consent for the utilization of their data in this study. Their confidentiality and anonymity were diligently maintained, and they were explicitly informed of their right to withdraw from the study at any point. Comprehensive consent forms were furnished prior to the initiation of data collection. Participants incurred no anticipated expenses.

It was strongly emphasized that the information shared would be handled with utmost privacy, and individual responses would not be disclosed to anyone not associated with this study. The collected data will be exclusively used to explore the correlation between structural empowerment and the attitude of nurses towards computer use at a National University Hospital in the Philippines.

Chapter IV

RESULTS AND DISCUSSIONS

Results

This chapter outlines the result of the descriptive correlational study conducted among nurses in a National University Hospital in the Philippines. Through the utilization of an online-based self-administered questionnaire, this study sought to describe the relationship between structural empowerment and the attitude of nurses towards the use of computers. Moreover, this study also determined if the demographic profile, specifically the age, years of nursing experience, and duration of computer use, has a significant relationship to structural empowerment and nurses' attitude to computer use.

Demographic Profile

Table 3.

Demographic Profile of PGH Nurses in the study (n = 282)

Characteristics	Frequency	Percentage
Age		
21-25	9	3.19%
26-30	34	12.06%
31-35	79	28.01%
36-40	36	12.77%
41-45	30	10.64%
46-50	42	14.89%
51-55	48	17.02%
56-60	4	1.42%
Gender		
Male	67	23.76%
Female	215	76.24%
Years in Service		
> 3 months	21	7.45%

Characteristics	Frequency	Percentage
1-3 years	68	24.11%
3-5 years	21	7.45%
> 5 years	172	60.99%
Duration of Computer Use		
< 1 year	19	6.74%
1-3 years	85	30.14%
3-5 years	23	8.16%
> 5 years	155	54.96%
Designation		
Nurse I	16	5.67%
Nurse II	212	75.18%
Nurse III	54	19.15%

Table 3 summarizes the demographic profiles of the participants. The age distribution of the respondents spans from 21 to 60 years old. Notably, the largest segment of PGH nurses falls within the 31-35 age range, constituting 28.01% of the total population. Conversely, the lowest representation, at 1.42% of the population, is found within the 56-60 age bracket. The average age of the respondents is 40 years old. When it comes to gender distribution, a predominant proportion, specifically 76.24%, is comprised of female PGH nurses, while their male counterparts constitute 23.76% of the surveyed population. Regarding the duration of their service, the majority, at 60.99%, have been engaged in nursing for over 5 years. Subsequently, 24.11% of the nurses possess a service tenure ranging from 1 to 3 years, with 7.45% each for those with less than 3 months and 3 to 5 years of experience. Looking at the duration of computer usage, a significant portion, amounting to 54.96%, has used computers for more than 5 years. Notably, 30.14% have an experience of 1-3 years in computer usage, while 8.16% have a duration of 3 to 5 years. A smaller subset, encompassing 6.74% of respondents,

indicates a computer usage duration of less than 1 year. Lastly, most of the participants were Nurse II which comprises 75.18% of the participants' population.

Level of Structural Empowerment

Table 4.

Structural Empowerment of PGH Nurses in the study (n = 282)

Structural Empowerment	Mean	Standard Deviation
Overall	22.10	4.11
Subscales		
Opportunity	4.53	0.62
Information	3.53	0.95
Support	3.48	1.02
Resources	3.26	1.01
Formal Power	3.44	1.02
Informal Power	3.86	0.72

The study aimed to investigate the level of structural empowerment among nurses in a tertiary university hospital in Metro Manila, specifically focusing on six dimensions: opportunities, information, support, resources, formal power, and informal power.

Table 4 provides the overall mean and standard deviation for structural empowerment as well as each six subscales. The study's findings reveal that the overall structural empowerment mean score among PGH nurses is 22.10. This result indicates a moderate level of empowerment among these nurses. This moderate level aligns with the outcomes observed in previous studies by Moura et al. (2020) and Rababah et al. (2020), suggesting that nurses within this healthcare setting generally have a certain degree of authority and responsibility within their roles. The standard deviation of 4.11 on

the other hand indicates that some nurses may experience significantly higher levels of structural empowerment, while others may have considerably lower levels. This variability highlights the diversity in the extent to which nurses feel empowered within the organizational structure.

Within the context of moderate structural empowerment, nurses typically possess a level of influence in clinical decision-making, engage in interprofessional collaboration, and actively contribute their insights to policy and protocol development (Laschinger et al., 2014). Such empowerment tends to enhance job satisfaction and overall engagement among nurses. They perceive their work environment as supportive and conducive to their professional growth, which, in turn, can result in higher retention rates and reduced instances of burnout among nursing staff. Ultimately, this benefits patient care, creating a more positive healthcare ecosystem.

Moreover, moderate structural empowerment fosters a culture of open communication and shared decision-making within healthcare teams. Nurses are encouraged to voice their opinions and actively participate in discussions. This collaborative environment values the expertise of each team member, leading to improved patient outcomes and enhanced safety (Cummings et al., 2018).

However, it's important to note that even within this moderate level of structural empowerment, nurses may encounter certain limitations. For instance, they might still have limited access to professional development opportunities, potentially hindering their capacity to provide the highest quality of care. Additionally, nurses in this category may

experience a lack of support from colleagues and supervisors, resulting in job dissatisfaction (Laschinger et al., 2012).

Opportunity

Table 5.

Opportunity Subscale

Subscale	Mean	Standard Deviation
Opportunity	4.53	0.62
Question: How much of each kind of opportunity do you have in your present job?		
Challenging Work	4.58	0.74
The chance to gain new skills and knowledge on the job	4.51	0.75
Tasks that use all of your own skills and knowledge	4.50	0.77

Examining each subscale of structural empowerment, the mean score for opportunities was 4.53. This was the highest among the six subscales. This suggests that PGH nurses perceive a relatively high level of opportunities available to them within the hospital setting. A standard deviation of 0.62 suggests that there is very little variation or dispersion in the levels of opportunity perceived by nurses in the dataset. In other words, most nurses in the sample have relatively similar perceptions of the opportunities available within the organizational structure. The low standard deviation indicates a high degree of consistency in how nurses perceive their chances for advancement, professional growth, or skill development within the workplace. The same result was also found in the study of Moura et al. (2020), where the opportunity dimension obtained the most significant value. Opportunities play a crucial role in shaping nurses' professional growth, job satisfaction, and overall effectiveness. Sierra (2018) and Yang et al. (2013)

suggest that a workplace that provides more learning, challenges, knowledge, and skills for employees to advance and develop are empowered to accomplish their work. Moreover, the opportunity to learn and grow within an organization can influence an individual's satisfaction and productivity at work. By providing avenues for professional growth, career advancement, skill enhancement, decision-making participation, and innovation, organizations empower nurses to excel in their roles, provide high-quality patient care, and contribute to the advancement of the nursing profession.

Information

Table 6.

Information Subscale

Subscale	Mean	Standard Deviation
Information	3.53	0.95
Question: How much access to information do you have in your present job?		
The current state of the hospital	3.64	1.06
The values of top management	3.54	1.01
The goals of top management	3.41	1.15

Access to information got a mean score of 3.53. This indicates moderate variability in how nurses perceive the availability of access to information. A standard deviation of 0.95, on the other hand, indicates a moderate level of variation in the nurses' perceptions regarding the access and availability of information within the organizational structure and suggests that there is a notable degree of diversity in how nurses perceive the adequacy and transparency of information dissemination within the workplace. Access to information as a subscale of structural empowerment within the nursing context signifies

the pivotal role of readily available and relevant information in enhancing nurses' professional efficacy and patient care outcomes. This aspect encompasses the provision of timely, accurate, and comprehensive data pertaining to clinical guidelines, evidence-based practices, and institutional policies. Access to information is a fundamental power structure that equips nurses with the knowledge necessary for making informed decisions in their clinical practice. Cummings et al. (2018) underscore that nurses who can access relevant and up-to-date information are more likely to feel empowered in their roles.

Support

Table 7.

Support Subscale

Subscale	Mean	Standard Deviation
Support	3.48	1.02
Question: How much access to support do you have in your present job?		
Specific information about things you do well	3.56	1.09
Specific comments about things you could improve	3.33	1.19
Helpful hints or problem-solving advice	3.57	1.01

Meanwhile, the mean score for support was 3.48. This indicates a moderate level of support within the work environment. Additionally, 1.02 as the standard deviation indicates a relatively moderate level of variation in how nurses perceive the support provided within the organizational structure. This suggests that there is a notable diversity in nurses' perceptions regarding the level of support they receive. Support is significant in nurturing nurses' professional growth, job satisfaction, and well-being by creating an environment conducive to open communication, skill development, and mutual

assistance. Various researchers such as Amor et al. (2021), Sierra (2018), Heron and Bruk-Lee (2019), Master et al. (2018), Goedhart et al. (2017), and Yang et al. (2013) have emphasized the significance of support in terms of the guidance and leadership provided by superiors, peers, and associates. This encompassing support structure includes elements like mentorship, teamwork, and collaborative relationships, with studies by Spence Laschinger et al. (2016) showcasing that nurses perceiving robust support systems experience reduced burnout and heightened empowerment. Lastly, greater job satisfaction is achieved when professionals receive more feedback and guidance from their leaders and superiors.

Resources

Table 8.

Resources Subscale

Subscale	Mean	Standard Deviation
Resources	3.26	1.01
Question: How much access to resources do you have in your present job?		
Time available to do necessary paper/computer work	3.15	1.06
Time available to accomplish job requirements	3.34	1.10
Acquiring temporary help when needed	3.30	1.12

The subscale that got the lowest mean score was resources. The mean score was 3.26. While this is interpreted as a moderate level, this low mean score indicates that nurses may perceive a need for more resources to carry out their tasks effectively. The standard deviation of 1.01 implies that there is noticeable diversity in nurses' perceptions regarding the resources provided to them. Some nurses may feel that the resources

available are plentiful and sufficient for their needs, while others might perceive limitations or disparities in resource allocation. The availability of resources contributes to nurses' perceived autonomy and effectiveness in their roles (Laschinger et al., 2018). This subscale got the lowest mean, which may be due to the resources that the institution currently has. Resources, as a subscale of structural empowerment among nurses, encompass the tangible and intangible support elements that enable effective patient care and professional growth. Tangible resources encompass adequate staffing, modern equipment, and appropriate facilities that facilitate the delivery of safe and efficient care. Intangible resources involve access to mentorship, educational opportunities, and a supportive work environment that fosters learning and collaboration. Nurses who have access to these resources are better equipped to provide high-quality care, develop their skills, and feel valued within their roles. Moura et al. (2020) emphasized that nurses tend to be more empowered at work if they have resources and equipment available to provide assistance.

Formal Power

Table 9.

Formal Power Subscale

Subscale	Mean	Standard Deviation
Formal Power	3.44	1.02
Question: In my work setting/job:		
The rewards for innovation on the job are	3.29	1.03
The amount of flexibility in my job is	3.56	1.22
The amount of visibility of my work-related activities within the institution is	3.48	1.17

The mean score for formal power was 3.44. Formal power got the second lowest mean score among the six subscales of structural empowerment even though it is within the moderate level range. A standard deviation of 1.02 also indicates that there is noticeable diversity in nurses' perceptions regarding their formal decision-making authority and influence within the workplace. The result implies that nurses feel they may not have enough level of authority and decision-making ability within the hospital's formal structure. The study by Havaei et al. (2018) stresses that nurses engaged in decision-making across levels report heightened job satisfaction and empowerment. Furthermore, formal power encompasses rewards, work flexibility, and visibility in institutional activities (Moura et al., 2020), as described by Tan et al. (2019), who characterizes it as entailing job flexibility and recognition within the work environment. Formal power within structural empowerment highlights the importance of nurses' roles in shaping organizational processes and outcomes, both through decision-making at various levels and recognition for their contributions.

Informal Power

Table 10.

Informal Power Subscale

Subscale	Mean	Standard Deviation
Informal Power	3.86	0.72
Question: How much opportunity do you have for these activities in your present job:		
Collaborating on patient care with physicians	4.29	0.82
Being sought out by peers for help with problems	4.07	0.77
Being sought out by managers for help with problems	3.43	1.10

Subscale	Mean	Standard Deviation
Seeking out ideas from professionals other than physicians, e.g., physiotherapists, occupational therapists, dieticians	3.65	1.01

The mean score for informal power, on the other hand, was 3.86, the second highest among the six subscales. The standard deviation of 0.72 reveals a relatively low level of variation in how nurses perceive their informal influence and power within the organizational structure. This suggests a high perception of informal power among nurses. This means that nurses feel empowered if relationships are established within the work environment. This encompasses support from peer networking and professional associations (Moura et al., 2020 & Tan et al., 2019). Informal power allows nurses to lead discussions, influence decisions, and advocate for patients based on the trust they have established among their peers. Recognizing the role of informal power in nursing underscores the importance of building strong professional relationships ultimately contributing to a more harmonious and effective healthcare team. The result of the study highlights that collaborative relationships and peer support, fostering a culture of shared knowledge and decision-making are vital in an organization (Havaei et al., 2019).

Attitude among PGH Nurses toward Computer Use

Table 11.

Mean Score of Attitude of PGH Nurses to Computer Use (n = 282)

Attitude	Mean	Standard Deviation
Overall	62.87	22.07
Category		
Cyberphobia	16.87	0.77

Attitude	Mean	Standard Deviation
Uneasiness	29.50	0.00
Moderate Comfort	48.90	4.62
Comfortable	63.05	4.55
Confident	76.04	5.04
Very Confident	93.15	3.65

The mean score of PGH nurses' attitude to computer use was also obtained in this study. The mean score on the PATCH scale was 62.87. This denotes that nurses possess a sense of ease when utilizing user-friendly computer applications, comprehend the utility of computers across diverse contexts, and hold a realistic perspective on the current capabilities of computers in healthcare (Kaminski, 2021). A standard deviation of 22.07 indicates a significant amount of variability in how nurses perceive and approach the use of computers in their work. This large variability in attitude signifies a diverse range of experiences and perspectives among nurses regarding the integration of computers into their workflow. The average score indicates that nurses have a sense of ease when interacting with user-friendly computer applications. The result of the study is a clear indicator that nurses are not only open to technology but also perceive it as a valuable tool that can enhance their practice.

On the other hand, looking at the different categories, cyberphobia, which refers to the fear of computers or technology, has a mean attitude score at 16.87. On the other end of the spectrum, very confident individuals have a mean score of 93.15, indicating their high level of comfort with technology.

Table 12.

Frequency Distribution of Attitude of PGH Nurses to Computer Use (n = 282)

Attitude	Frequency	Percentage
Cyberphobia	27	9.57%
Uneasiness	24	8.51%
Moderate Comfort	15	5.32%
Comfortable	85	30.14%
Confident	101	35.82%
Very Confident	30	10.64%

The analysis of PATCH scores' frequency distribution, as shown in Table 12, provides a comprehensive categorization of nurses' attitude to computer use. Notably, a significant percentage of nurses (35.82%) exhibit a high level of confidence in employing various computer programs. This suggests that a substantial portion of the nursing workforce possesses the skills and willingness to engage with a range of technological tools. Furthermore, a considerable proportion of nurses (30.14%) express comfort in using user-friendly computer applications. This sentiment reflects a positive inclination toward technology when it is designed to be accessible and intuitive. This aspect is particularly significant in healthcare, where user-friendly interfaces can support efficient and effective practice. Sanqui et al. (2020) conducted a study indicating that healthcare providers with a high level of computer knowledge exhibited a positive attitude towards using computers in their work. Similarly, Yilmaz et al. (2015) found that nurses' attitude towards computers were positive when they felt comfortable using them. Topkaya et al. (2014) further supported this notion, revealing that nurses generally displayed a positive

attitude towards computers, contingent on good computer literacy and awareness of their efficacy in healthcare. The studies collectively emphasize that computer literacy is the most significant factor influencing healthcare professionals' attitude towards computer use in healthcare settings.

The presence of a group of nurses (10.64%) who hold a profound belief in their capacity to learn computer skills is noteworthy. This indicates a growth-oriented mindset, suggesting that nurses are motivated to adapt and acquire new skills as technology continues to evolve.

Conversely, a smaller percentage of nurses express indications of cyberphobia (9.57%), uneasiness (8.51%), and moderate comfort (5.32%). These underscore the potential challenges that could arise in technology adoption, necessitating targeted interventions to address barriers and concerns.

Structural Empowerment and Attitude of PGH Nurses toward Computer Use

Table 13.

Correlation between Structural Empowerment and PATCH Scores of Nurses

<i>r</i>	<i>p-value</i>
0.521845463	0.0000000000

Table 13 shows structural empowerment and PATCH scores of nurses' correlation with each other. The analysis yielded a Pearson correlation coefficient of $r = 0.52$ and a p -value of 0.00 ($P < 0.05$) between structural empowerment and the attitude of nurses towards the use of computers. This indicates a significant, positive, and moderate

correlation between the two variables (Polit & Beck, 2017). The positive and moderate correlation between structural empowerment and the attitude of nurses towards the use of computers elucidates the pivotal role of an empowering environment in shaping technological inclinations. The convergence of structural empowerment's multifaceted dimensions and nurses' positive attitude towards computer use underscore a significant pathway for harnessing technology's potential to enhance healthcare delivery, ultimately culminating in improved patient outcomes. Structural empowerment serves as an underpinning factor that propels nurses' willingness to engage with computer systems effectively. The result of the study is similar to the studies conducted by Rababah et al. (2020) and Ta'an et al. (2019).

The pivotal role of nurses' attitude in acquiring adeptness in computerized systems became evident (Rababah et al. 2020). Investigating the intricate interplay among structural empowerment and attitude towards computer use, the study illuminated that cultivating an empowering work environment was significant in fostering a positive outlook towards computers among nurses. This observation aligns with Kanter's conceptualization of structural empowerment, which pivots on the notion of employees' perceived access to diverse structural aspects in their work context. Crucially, the availability of six distinct structural components emerged as key contributors to heightened structural empowerment, subsequently manifesting as improved attitude and enhanced work performance among nurses. On the other hand, Ta'an et al. (2020) and Yang et al. (2013) further substantiated this correlation, revealing that nurses' favorable attitude towards computer use were positively correlated with their experiences of structural empowerment. The result of the study collectively underscores the significant

influence of an empowering work environment on promoting a positive attitude towards computer use.

Demographic Profile

Table 14.

Correlation between Structural Empowerment and Attitude of Nurses to Computer Use to Age (n = 282)

Variable	r	p-value
Structural Empowerment	-0.069531069	0.241969817
PATCH Scores	-0.536424282	0.000000000

Age

Table 14 summarizes the correlation between structural empowerment and attitude towards computer use to the age of nurses. The result of the study provided a Pearson correlation coefficient of -0.070, which suggests a very weak negative correlation (Polit & Beck, 2017). The p-value, on the other hand, is 0.24 is greater than the used significance level of 0.05; therefore, it can be inferred that age of PGH nurses, is not a significant factor in structural empowerment. This is the opposite of what Spence Laschinger et al., (2015), Smith et al., (2018), Brown et al., (2017), Schubert et al., (2021), and Lee et al., (2019) have included in their studies about the significance of structural empowerment in relation to the age of nurses. Within the realm of nursing literature, a noteworthy discourse has emerged challenging the conventional assumption that age significantly influences the relationship with structural empowerment among nurses. Age as an insignificant factor in structural empowerment was cited in the meta-analysis of

Smith (2020). According to the study, age may not be a decisive factor in determining nurses' experiences of structural empowerment, and, therefore, does not emerge as a significant predictor. This perspective has significant implications for nursing management, as it urges organizations to adopt a holistic approach to fostering structural empowerment that transcends age-related categorizations. The result of the study underscores a compelling narrative that challenges the prevailing assumption of age-based differences in the relationship between structural empowerment and nurses, thereby shifting the focus towards broader contextual and organizational factors.

Looking at the correlation between the attitude and age of nurses. The study resulted in a negative, and moderate correlation (-0.54), indicating that older nurses might exhibit a less favorable attitude compared to their younger counterparts. It was also found that the age of nurses had a p-value of 0.00 ($p\text{-value} < 0.05$) and is a significant factor in the attitude towards computer use. Taking a closer look at the demographic profile, nurses whose age is 35 and below are confident and comfortable in using computers therefore yielding a PATCH score of 35 and above. The higher scores translate to a positive attitude towards computer use. In contrast, some nurses whose age is 46 and above are categorized as cyberphobic (7.45%) or have a PATCH score between 0-17, which indicate a less positive attitude towards computer use.

The result of the study is similar to the research conducted by Fadel et al. (2019) and Cisnero (2012) that emphasized the significant relationship between age and the attitude of nurses towards the use of computers. Kipturgo (2014) demonstrated a statistically significant connection between nurses' age and their attitude, revealing that nurses below 40 years old exhibited notably higher attitude scores compared to those

aged 40 and above. This trend aligns with Kaya's (2011) study, which indicated that nurses aged 25 to 42 displayed a more favorable attitude towards computer use. Conversely, a negative correlation between nurses' age and PATCH Assessment Scale scores was identified, as higher ages correlated with lower scores, signifying the adverse impact of age on computer use attitude (Kaya, 2011). Corresponding findings were evident in Cisnero's (2012) research. Collectively, these studies highlight that younger nurses tend to hold a more positive attitude towards computer use compared to their older counterparts (Kipturgo, 2014).

Years of Nursing Experience

The study found a significant relationship between structural empowerment and work experience among PGH nurses. The statistical analysis revealed a f-value of 0.004 ($p\text{-value} < 0.05$) and is therefore significant. A study by Jirwe et al. (2016) found that nurses with more years of experience were more likely to perceive structural empowerment in their work environment. Similarly, a study by Van Bogaert et al. (2016) found that structural empowerment was positively associated with nurses' job satisfaction and work engagement, particularly for those with more years of working experience. The result of this study was evident when examining the demographic profile of PGH nurses. Nurses who are more than 5 years in service have a moderate to high level of structural empowerment. Additionally, the study by Chang and colleagues (2019) revealed that the effect of structural empowerment on nurses' increased over time, suggesting that empowerment becomes particularly salient for nurses as they accumulate experience. The result of the study is further strengthened by findings from Lin's meta-analysis (2021),

which synthesized evidence from various studies to demonstrate a positive association between years of nursing experience and the relationship with structural empowerment.

A significant relationship was also found between nurses' attitude to computer use and their years of nursing experience. The statistical analysis yielded a f-value of 0.000 ($p\text{-value} < 0.05$) and is therefore significant. The result of the study coincides with the research conducted by Fadel et al. in 2019, as well as the studies by Kipturgo in 2014 and Kaya in 2011. All established a connection between the favorable disposition of nurses toward using computers and their years of professional experience. Fadel et al. (2019) pinpointed that years of experience played a role in influencing nurses' attitude towards computer utilization. The demographic profile of PGH nurses showed that those with years of nursing experience between 3 to 5 years have better attitude towards computer use as evidenced by their high PATCH scores compared to those nurses with less than 3 years of nursing work experience. Kipturgo (2014) observed that registered nurses exhibited a more positive outlook compared to student nurses, primarily due to their proficiency in Information Technology, which resulted from their knowledge and skills. Additionally, Kaya (2011) uncovered that nurses with longer tenures displayed a more positive attitude towards computers.

Duration of Computer Use

The study found a significant relationship between structural empowerment and nurses' duration of computer use. The statistical analysis resulted in a f-value of 0.009 ($p\text{-value} < 0.05$) and is therefore significant. Analyzing the demographic profile, most nurses whose duration of computer use is 1 – 3 years have high level of structural empowerment.

According to Jackson et al., nurses who extensively use computers tend to perceive higher levels of structural empowerment. Similarly, Smith and Johnson's study in 2021 supports this idea. They found that nurses with a history of prolonged computer use are more skilled at navigating digital interfaces, which can lead to a greater sense of control over their work processes. This increased proficiency with computers contributes to the nurses' overall empowerment. These studies emphasize the fact that computer use allows for more efficient communication, access to information, and greater autonomy in completing tasks; thus, nurses who have a longer duration of computer use are more proficient in using technology and may be more likely to seek out new opportunities for learning and growth within their organization.

On the other hand, the study also found a significant relationship between the attitude of PGH nurses and their duration of computer use. The statistical analysis resulted in a f-value of 0.007 ($p\text{-value} < 0.05$) and is therefore significant. Nurses who have been using computers for more than a year have higher PATCH scores, an indication of a positive attitude towards computer use. The duration of computer use is a significant factor in the attitude of nurses towards computer use. Nurses who have been using computers for a longer period of time tend to have a more positive attitude towards computer use. This is because they have had more experience with the technology and are more comfortable with its use. According to the studies of Fadel et al. (2019) and Kipturgo (2014), the main demographic indicator and the most influential factor in nurses' positive attitude towards computer use is increased computer experience. The study of Kipturgo (2014) pointed out that longer exposure to computer use develops a positive attitude compared to shorter or non-exposure. In the same way, nurses with at least three

years of exposure to computers are likely to have more positive attitude than those with shorter durations of exposure.

Other demographic profiles of nurses, such as gender, marital status, designation, educational level, and area of assignment, were not found to have a significant relationship between structural empowerment and the attitude of nurses toward the use of computers and, therefore, not part of the discussion.

Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The concepts of structural empowerment and the attitude of nurses to computer use play pivotal roles in the delivery of high-quality healthcare services. In recent times, there has been a growing recognition of their significance within the healthcare environment. A structurally empowered workplace has been linked to fostering a positive attitude towards computer use, thereby contributing to heightened efficiency, accuracy among nursing staff, and ultimately, improved patient outcomes. Demographic variables, including age, years of nursing experience, and the duration of computer use, have emerged as influential factors affecting both structural empowerment and nurses' attitude towards the use of computers. Investigating these factors is crucial for devising effective strategies to encourage computer utilization among nurses, thereby enhancing patient outcomes and elevating the overall quality of healthcare delivery.

The research conducted among nurses at UP – Philippine General Hospital aimed to investigate the potential association between structural empowerment and the attitude of nurses towards the use of computers, while also exploring the influence of demographic variables such as age, years of nursing experience, and duration of computer use.

The majority of nurses at PGH fell within the 31-35 age range, with females making up the predominant gender group. Most nurses had over 5 years of nursing experience.

It is also worth noting that a significant portion had extensive computer usage experience, indicating openness to technology.

The study found a moderate level of structural empowerment among nurses. Among the six power structures of structural empowerment, "opportunities" and "informal power" got the highest scores and were categorized as high level, indicating the importance of professional growth and peer support. The rest of the subscales were categorized as moderate level. "Resources" received the lowest score, suggesting a need for more tangible and intangible support elements. This finding highlights the need for hospitals to provide more resources and support to nurses to empower them to perform their duties more effectively.

The study also evaluated the attitude of nurses towards the use of computers, revealing that a significant percentage had a positive attitude, while a smaller portion exhibited cyberphobia or uneasiness. A significant, positive, and moderate correlation was found between structural empowerment and the attitude of nurses to computer utilization. This finding underscores the role of an empowering work environment in promoting technology adoption. Furthermore, years of nursing experience, as well as the duration of computer use, were found to have a significant relationship to both structural empowerment and attitude towards the use of computers, highlighting the importance of experience and longer exposure to computers in shaping nurses' empowerment and attitude. Age was also found to have a significant but negative and moderate correlation to the attitude of nurses when it comes to the use of computers. Interestingly, age was not found to be a significant factor in structural empowerment.

Conclusion

The study's findings indicate a positive and moderate relationship between structural empowerment and attitude of nurses toward the use of computers. PGH nurses have a moderate level of structural empowerment, with opportunities and informal power being the highest-rated subscales of structural empowerment. The findings also stresses the value of support, access to information, formal power, and resources in shaping nurses' professional growth and job satisfaction. These dimensions play a crucial role in fostering a positive work environment and empowering nurses to excel in their roles. Furthermore, the study reveals that nurses have a generally positive attitude towards the use of computers, with a significant percentage feeling confident and comfortable using various computer programs. The duration of computer use and years of nursing experience were found to be significant factors influencing both structural empowerment and the attitude of nurses toward the use of computers. Age was found to have a negative and moderate relationship to the attitude of nurses towards the use of computers.

Recommendations

Research findings provided a significant relationship between structural empowerment and the attitude of nurses towards computer utilization. Strengthening this connection can lead to a positive effect on nurses' job satisfaction, engagement, and their ability to effectively leverage technology for improved patient care. To strengthen this relationship, it's essential to involve various stakeholders, thus the following recommendations:

For Nurses

1. **Continued Education and Training:** Actively participate in ongoing training programs and workshops focused on improving computer literacy and digital skills. Take advantage of learning opportunities to become more proficient in using healthcare technology effectively.
2. **Peer Support and Collaboration:** Collaborate with colleagues to share experiences and knowledge related to computer use. Establish peer support networks to troubleshoot issues and exchange best practices for integrating technology into daily nursing tasks.
3. **Embrace Technology:** Embrace a positive attitude towards technology as a tool for enhancing patient care. Recognize the potential benefits of technology in improving efficiency, accuracy, and patient outcomes.

For Nurse Managers

1. **Create a Supportive Environment:** Foster an organizational culture that supports nurses in their use of technology. Encourage open communication and provide resources to help nurses overcome any barriers they face when using computers.
2. **Allocate Resources:** Ensure that nurses have enough allocation of resources, including time, training, and equipment, to effectively utilize technology in their practice.

3. **Lead by Example:** Set a positive example by actively using technology in your role as a nurse manager. Demonstrating your comfort and proficiency with technology can inspire your team to follow suit.

For Nurse Educators

1. **Continued Training and Education:** Offer ongoing training and educational opportunities for nurses to enhance their computer skills. Ensure that these programs are accessible and tailored to nurses at different experience levels. Encourage nurses to participate in workshops, webinars, and certification programs that focus on healthcare technology and digital tools.
2. **Integration of Technology in Workflows:** Integrate technology seamlessly into nurses' daily workflows. Collaborate with IT departments and healthcare administrators to identify and implement user-friendly computer applications and systems. Streamlining technology usage can reduce resistance and make nurses more comfortable with digital tools.
3. **Mentorship Programs:** Establish mentorship programs where experienced nurses (especially those with a positive attitude towards technology) can guide and support their less experienced colleagues. Peer support can be highly effective in helping nurses overcome any apprehension or challenges they may face when using technology.

For Nurse Administrators

1. **Leadership Support:** Champion the use of technology and emphasize its importance in delivering high-quality patient care as well as provide an avenue to develop the agility of nurses towards change. When leaders openly endorse technology, it can motivate and inspire nurses to embrace it.
2. **Empowerment Initiatives:** Extend structural empowerment initiatives to include aspects related to technology. Encourage nurses to actively partake in decision-making processes regarding the selection and implementation of technology solutions. This involvement can empower nurses and make them feel more invested in the adoption of technology.
3. **Monitoring and Evaluation:** Establish a system to monitor the progress of nurses in adopting technology and their evolving attitude. Regularly assess the impact of structural empowerment initiatives on the attitude of nurses towards the utilization of computers and make adjustments as needed.

For Hospital Administrators:

1. **User-Friendly Interfaces:** Continuously assess and improve the user-friendliness of computer applications and interfaces used in healthcare settings. Invest in technologies with intuitive designs that require minimal training.

2. **Data Security and Privacy:** Ensure that nurses receive thorough training on data security and patient privacy regulations. Emphasize the importance of maintaining patient confidentiality while using technology and provide resources for nurses to report any concerns.
3. **Recognition and Rewards:** Recognize and reward nurses who excel in utilizing technology effectively to enhance patient care. Acknowledge their contributions and use their success stories as examples to inspire others.

By implementing these recommendations, UP - Philippine General Hospital can create an environment that not only empowers nurses in their roles but also fosters a positive and confident attitude towards technology. This, in turn, can lead to improved patient care, enhanced job satisfaction, and greater overall effectiveness in healthcare delivery.

Recommendations for Future Research

To improve future research on the link between structural empowerment and the attitude of nurses towards the use of computers, consider the following recommendations:

1. Expand the sample size and diversity of healthcare settings. While this study focused on a specific tertiary university hospital in Metro Manila, future research could include a broader range of healthcare facilities, such as community hospitals, clinics, and long-term care facilities. This would offer a more thorough insight of how structural empowerment and attitude towards technology vary across different healthcare environments.

2. Explore cultural contrasts in the relationship between structural empowerment and technology attitude. Conduct comparative studies to determine how cultural factors may influence nurses' perceptions of empowerment and technology adoption.
3. Analyze additional organizational factors that may influence nurses' attitude towards technology. Factors such as leadership styles, organizational culture, and support from IT departments can play a significant role in shaping nurses' technology-related attitude.
4. Investigate the long-term impact of structural empowerment on nurses' career trajectories and job satisfaction. Assess whether nurses who are empowered and have positive technology attitude are more likely to pursue leadership roles or engage in research related to healthcare technology.
5. Explore the connection between nurses' empowerment, technology attitude, and patient outcomes. Investigate whether nurses who feel empowered and have positive attitude towards technology contribute to improved patient care quality, safety, and satisfaction.

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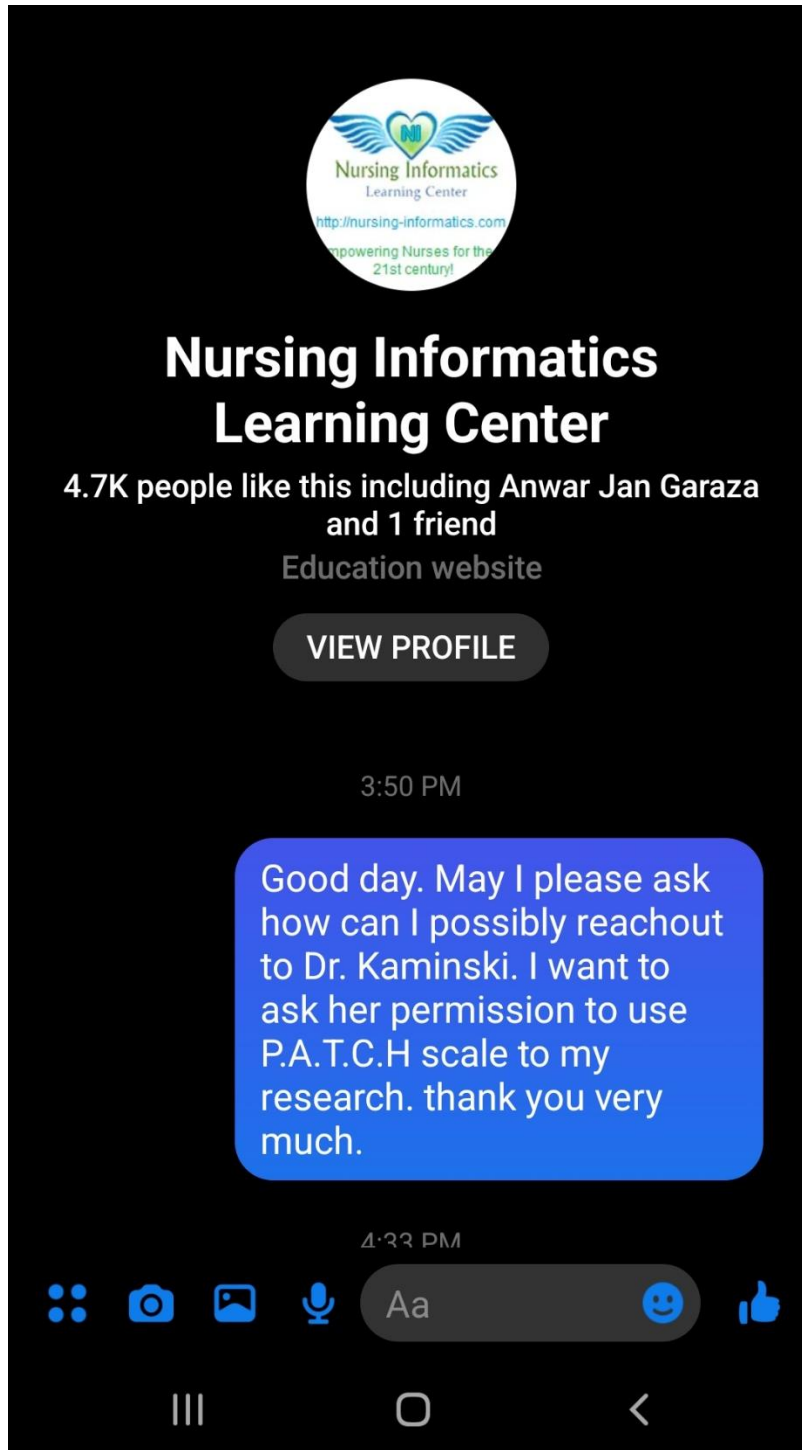
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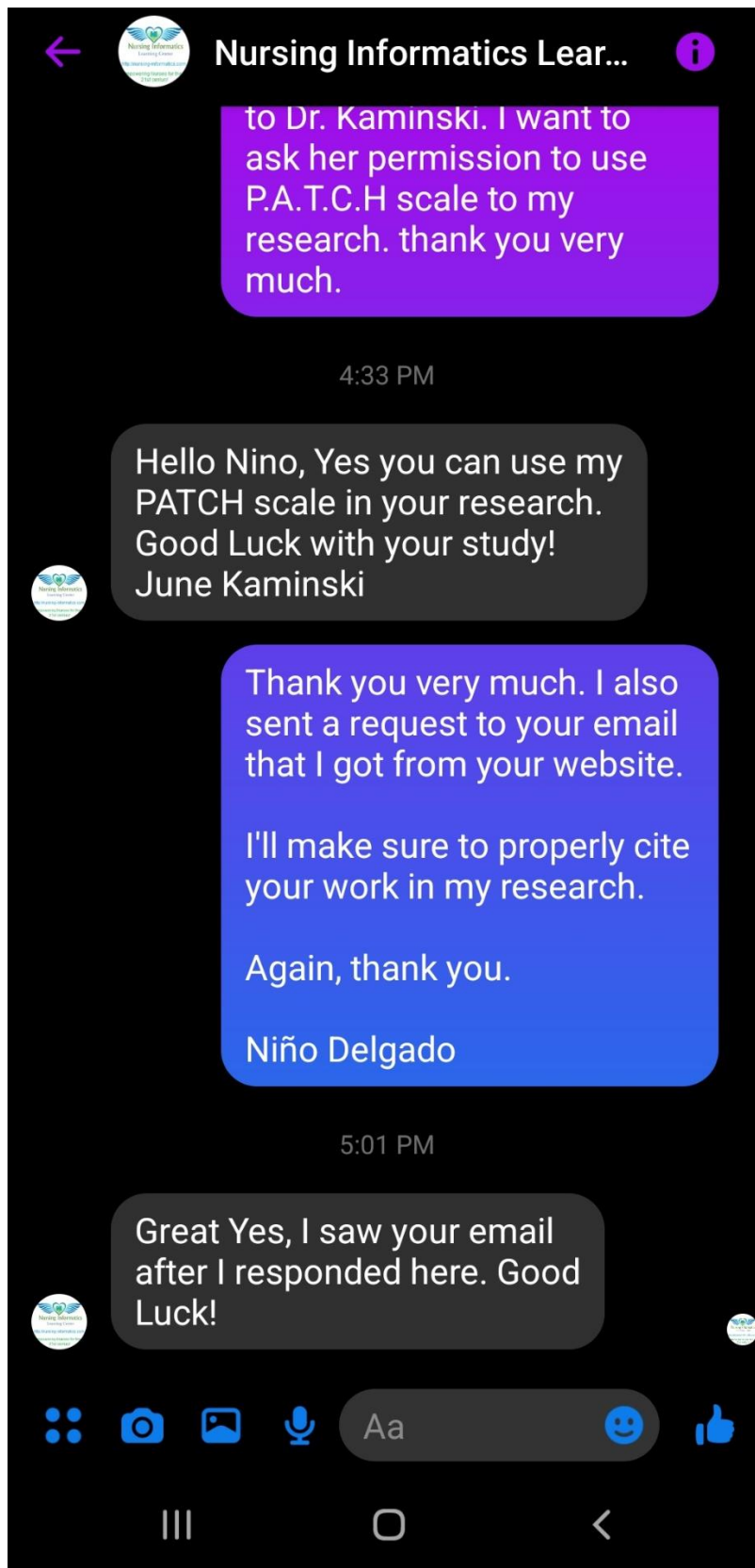
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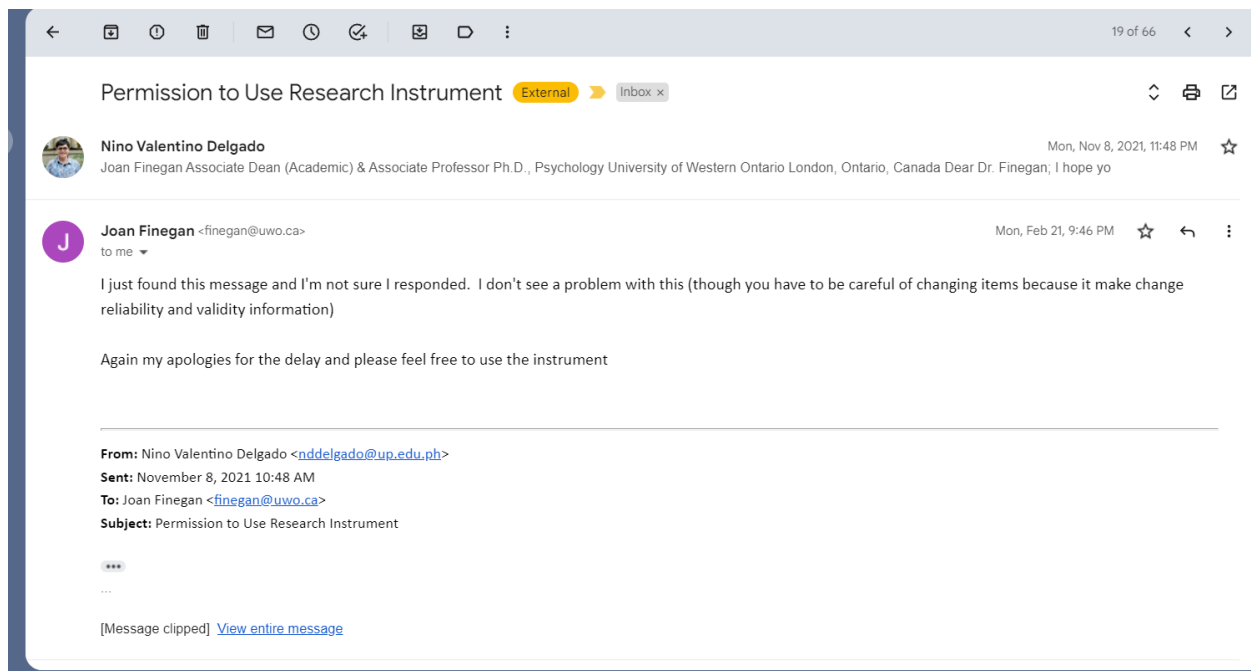
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APPENDICES

Appendix A. Permission to Adapt Tools







Appendix B. Information and Consent to Participate in Research

Introduction

I, Niño Valentino D. Delgado, Master of Art in Nursing Major in Nursing Administration student from the University of the Philippines Open University is conducting a research study entitled: **“Structural Empowerment and Attitude of Nurses towards Computer Use in a National University Hospital in the Philippines.”** I am inviting you to participate in this study. This research serves as a requirement for the subject N-300 – Thesis for my Master of Arts in Nursing.

Purpose of the Study

This study aims to understand the significant relationship of structural empowerment to the attitude of nurses towards computer use.

Importance

As part of the healthcare system, nurses have always been exposed to changes that are constantly happening. As the hospital transition to a more efficient type of work by using computers and their different programs and applications, this study hopes to provide additional strategies that could positively influence the attitude of nurses toward computer use through access to six power structures of structural empowerment.

Voluntary Participation

Your participation in this research is voluntary. Completing the questionnaire implies that you consent to participate in the study. If you refuse to join or decide to withdraw your consent, you may do so at any time without incurring any penalties.

Methods of Data Collection

A total of 282 registered nurses working in the different clinical nursing units will be recruited as respondents in the study for a two-week period duration. There are screening questions you need to answer first to determine if you are eligible to be part of this study. This study is a descriptive-correlational type of research. Data will be obtained from an online-based self-administered questionnaire. Participation is voluntary, and you may

withdraw anytime if you wish too. You will be asked to answer a three-part questionnaire namely (1) Demographic Profile, (2) Conditions for Work Effectiveness Questionnaire-II, and (3) P.A.T.C.H. Assessment Scale v.3 (Pretest for Attitude Toward Computers in Healthcare). The entire questionnaire can be answered in 10-15 minutes. You can answer it at your convenient time. You will be given one week to complete the survey upon the receipt of the questionnaire.

Benefits

There is no direct benefit in participating in the study. However, the findings will provide preliminary information on the significant relationship between structural empowerment and the attitude of nurses toward computer use. There will be no monetary compensation to the respondents in this research. However, a small token will be given.

Risks

Participation in the study will incur minimal undue physical, psychological, legal, or economic risks. Participants will be advised that they are free not to answer questions in the event that they feel to be uncomfortable with, or deem to be too personal or sensitive, or experience fatigue or discomfort. Respondents who completed the survey will be given a simple token as a form of appreciation.

Confidentiality and Anonymity

The study protocol adheres to the provisions of the Data Privacy Act of 2012 which protects the human right to privacy and safeguards individual information sharing and communication. Personal information such as name and contact information will be kept confidential. Other irrelevant personal information to the study such as birthday and home address will not be elicited. The primary investigator is the only one who has access to the Google forms which are password-protected. Encoded data which are encrypted will be stored in a password-secured personal computer. Any printed data related to the study will be shredded five years after the study has been presented and published. Should the study be published, no identifying information from the participant will be provided. In case of any breach of confidentiality, UP Manila Review Ethics Board will be notified.

Sharing of Study Results

You can have access to the study findings thru the Faculty of Management and Development Studies, University of the Philippines - Open University. The results and findings of the study may be presented in various oral and poster presentations should the primary investigator wish to join nursing conferences and other scientific meetings. Likewise, the study will also be submitted to peer-reviewed journals for publication. Rest assured that the results to be presented will not include the personal information of the respondents.

Who To Contact

If you have any questions regarding the conduct of the study, you may contact the investigator through the following contact details:

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Appendix C. Questionnaire

Part I: Demographic Profile

Instruction: Kindly provide the most appropriate response to each question.

Age:

Sex:

- ☐ Male
- ☐ Female

Designation:

- ☐ Nurse I
- ☐ Nurse II
- ☐ Nurse III

Years of Service in your current area:

- ☐ > 3 months
- ☐ 1-3 years
- ☐ 3-5 years
- ☐ > 5 years

Duration of Computer Use:

- ☐ < 1 year
- ☐ 1-3 years
- ☐ 3-5 years
- ☐ > 5 years

Part II: Conditions for Work Effectiveness Questionnaire - II

Instruction: Each indicator is to be rated using a five-point Likert scale. Choose the response that best reflects your attitude toward each statement.

How much of each kind of opportunity do you have in your present job?

	1 = None	2	3 = Some	4			5 = A Lot	
1. Challenging work					1	2	3	4 5
2. The chance to gain new skills and knowledge on the job					1	2	3	4 5
3. Tasks that use all of your own skills and knowledge					1	2	3	4 5

How much access to information do you have in your present job?

1 = No Knowledge	2	3 = Some Knowledge	4	5 = Know A Lot
1. The current state of the hospital			1	2 3 4 5
2. The values of top management			1	2 3 4 5
3. The goals of top management			1	2 3 4 5

How much access to support do you have in your present job?

1 = None	2	3 = Some	4	5 = A Lot
1. Specific information about things you do well			1	2 3 4 5
2. Specific comments about things you could improve			1	2 3 4 5
3. Helpful hints or problem-solving advice			1	2 3 4 5

How much access to resources do you have in your present job?

1 = None	2	3 = Some	4	5 = A Lot
1. Time available to do the necessary paperwork			1	2 3 4 5
2. Time available to accomplish job requirements			1	2 3 4 5
3. Acquiring temporary help when needed			1	2 3 4 5

**In my work setting/job:
(JAS)**

1 = None	2	3 = Some	4	5 = A Lot
1. the rewards for innovation on the job are			1	2 3 4 5
2. the amount of flexibility in my job is			1	2 3 4 5
3. the amount of visibility of my work-related activities within the institution is			1	2 3 4 5

**How many opportunities do you have for these activities in your present job:
(ORS)**

1 = None	2	3 = Some	4	5 = A Lot
1. Collaborating on patient care with physicians			1	2 3 4 5
2. Being sought out by peers for help with problems			1	2 3 4 5
3. Being sought out by managers for help with problems			1	2 3 4 5
4. Seeking out ideas from professionals other than physicians, e.g., physiotherapists, occupational therapists, dieticians			1	2 3 4 5

GLOBAL EMPOWERMENT**How much of each kind of opportunity do you have in your present job?**

1 = Strongly Disagree	2	3	4	5 = Strongly Agree
1. Overall, my current work environment empowers me to accomplish my work in an effective manner			1	2 3 4 5

2. Overall, I consider my workplace to be an empowering environment 1 2 3 4 5

Part III: P.A.T.C.H. Assessment Scale v.3 (Pretest for Attitude Toward Computers in Healthcare)

Instruction: Each indicator is to be rated using a five-point Likert scale. Put a check to the response that best reflects your attitude toward each statement.

Scale:

1. **Agree Strongly**
2. **Agree**
3. **Not Certain**
4. **Disagree**
5. **Disagree Strongly**

Statements	1 – Strongly Agree	2 – Agree	3 – Not Certain	4 – Disagree	5 – Disagree Strongly
1. The computer is a powerful enabling tool.					
2. In healthcare, computers could save a lot of paperwork.					
3. Machines and I don't mix.					
4. I feel I am a skilled typist.					
5. I feel alarmed when I think of using a computer.					
6. I have excellent finger dexterity.					
7. I regularly use a computer at home.					
8. I would love to be a proficient user of computers.					
9. Bedside computers will irritate patients.					
10. I will never feel relaxed about using a computer.					
11. Computers can help me to be creative.					
12. I would enjoy learning coursework using a computer program.					
13. Computers are frustrating to use.					
14. Listening to people using computer jargon intimidates me.					
15. Computers will someday put health professionals out of a job.					
16. I am in control when I use a computer.					
17. I relate well to technology and machines.					
18. I feel confident that I can master using a computer.					

19. I can let my creativity flow when writing using a computer.					
20. Computers in healthcare will create more work for nurses.					
21. Computers can be great problem-solving tools.					
22. Computers are too complicated for me to learn well.					
23. Computers are impersonal and dehumanizing.					
24. The future promise of computers in healthcare excites me.					
25. I feel restless and confused when I think of using a computer.					
26. I don't intend to own a home computer.					
27. I feel a computer course in nursing is totally unnecessary.					
28. People who like computers are introverted and antisocial.					
29. I know more about computers than most faculty or administrators do.					
30. Working with computers is boring and tedious.					
31. I can easily master the content of a computer lesson.					
32. I feel ambivalent about computers and technology.					
33. Computers are everywhere, it is natural for them to use in healthcare.					
34. I like to use the Internet to research health and nursing information.					
35. It takes longer to chart on the computer than on paper.					
36. I enjoy using technology to communicate with colleagues (email, etc.)					
37. Computers help me to keep up to date with nursing issues, knowledge, and research.					
38. Computers are just another object that takes me away from my patients.					
39. I resent the thought of having to use computers in my nursing practice.					
40. Using technology in practice interferes with my ability to be caring to my patients.					
41. Patients should not look for health and illness information on the Internet.					

42. Social media tools enrich health care professional communication and collaboration.					
43. I use health care apps on my cellphone or SMART phone.					
44. Nursing-related online groups, forums, and email discussion lists are a waste of time.					
45. Electronic charting restricts how nurses record patient care.					
46. Personalized Electronic Health Records streamline access to information and interdisciplinary communication about patients.					
47. Online support groups are a waste of time and have no value for patients.					
48. Computers are great tools for patient education.					
49. Handwritten charting is much more complete than electronic documentation.					
50. Nurses should be involved in the planning of national Electronic Health Records.					

Appendix D. Thesis Proposal Approval



UNIVERSITY OF THE PHILIPPINES OPEN UNIVERSITY

FACULTY OF MANAGEMENT AND DEVELOPMENT STUDIES

16 September 2022

DR. JOANE V. SERRANO

Dean, Faculty of Management and Development Studies University of
the Philippines Open University
Los Baños, Laguna

Through PROPER CHANNELS

Dear Dean Serrano:

We have the honor to inform you that the undersigned served in the oral examination of MR. NIÑO VALENTINO DELGADO/NA candidate who presented his thesis proposal with the final title "*Structural Empowerment and Attitude of Nurses Toward Computer Use in a National University Hospital in the Philippines*" on 2, June, 2022, 10:00am via Zoom and voted as follows:

PANEL MEMBERS	FOR APPROVAL	FOR DISAPPROVAL
ASST. PROF. QUEENIE R. RIDULME Adviser	_____	_____
MR. FRITZ GERALD JABONETE Critic	_____	_____
MS. MARIA RITA V. TAMSE Member	_____	_____
MS. LEONA PAULA L. MACALINTAL Member	_____	_____
MS. GRACE RIEGO DE DIOS Member	_____	_____

Committee's Decision:
Additional Remark/s: Approved with minor revisions.

(✓) PASSED

() FAILED

Very truly yours,

ASST. PROF. QUEENIE R. RIDULME
Adviser

ASST. PROF. RIA VALERIE D. CABANES
Program Chair, MAN

Appendix E. Certificate of Registration



UNIVERSITY OF THE PHILIPPINES MANILA
Research Grants Administration Office
G/F Room 111 National Institutes of Health Building, UP Manila, 623 Pedro Gil St., Ermita,
Manila 1000, Philippines
Tel: (632) 85672054 • Email: rgao@post.upm.edu.ph

CERTIFICATE OF REGISTRATION	
Research Title	<i>Structural Empowerment and Attitude of Nurses toward Computer Use in a National University Hospital in the Philippines</i>
Principal Investigator	Niño Valentino D. Delgado, RN
Co-investigator(s)	Queenie Roxas-Ridulme, RN, MAN
Status at Time of Registration	Proposal
Date of Registration	22-Sep-2022
RGAO Reference No.	RGAO-2022-0999 Note: For ease of identification, please use this assigned RGAO Reference Number for all communications with RGAO that is related to this research.
This is to certify that the abovementioned research is registered with the Research Grants Administration Office for records purposes. However, this does not equal to nor guarantee technical and/or ethics review approval. MARK ANTHONY S. SANDOVAL, MD Head, Research Grants Administration Office Office of the Vice Chancellor for Research, UP Manila	

Appendix F. Request for UPMREB Certification of Exemption from Ethical Review

UPMREB FORM4(Q)2019: REQUEST FOR UPMREB CERTIFICATION OF EXEMPTION FROM ETHICAL REVIEW
03/11/2021



University of the Philippines Manila
RESEARCH ETHICS BOARD
Room 126, National Institutes of Health, UP Manila
623 Pedro Gil Street, Ermita, 1000 Manila
Telephone: +63 2 8526-4346; Email: upmreb@post.upm.edu.ph

REQUEST FOR UPMREB CERTIFICATION OF EXEMPTION FROM ETHICAL REVIEW

The University of the Philippines Manila Research Ethics Board UPMREB Review Panel 1 has processed your request for *EXEMPTION FROM ETHICAL REVIEW* for the following study protocol and related documents which has been reviewed with resulting panel conditions and considerations:

UPMREB CODE: UPMREB 2022-0514-EX
SUBMISSION DATE: 03 October 2022
STUDY PROTOCOL TITLE: Structural Empowerment and Attitude of Nurses Toward Computer Use in a National University Hospital in the Philippines
PRINCIPAL INVESTIGATOR: Niño Valentino Delgado, RN
SPONSOR/FUNDING AGENCY: Investigator
DATE OF ACTION: 05 October 2022
JUSTIFICATION FOR THIS CERTIFICATION: This protocol is qualified for exemption from ethics review based on the NEGHRR 2017 on page 39 section 3.1.2.2. Research that only includes interactions involving survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if the following criteria are met: 3.1.2.2.1. There will be no disclosure of the human participants' responses outside the research that could reasonably place the participants at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation; and 3.1.2.2.2. The information obtained is recorded by the investigator in such a manner that the identity of the human participant cannot readily be ascertained, directly or through identifiers linked to the participant.

Document/s included in the review on which this certification was based: - Study Protocol Version 1 submitted 03 October 2022; - Information and Consent to Participate in Research Version 1 submitted 03 October 2022; - Diagrammatic Workflow.
Composition of Team on Record: - Composition of Research Team on Record: - Niño Valentino Delgado, RN as principal investigator; - Queenie Ridulme, RN as co-investigator;

RESPONSIBILITIES OF PRINCIPAL INVESTIGATOR WHILE STUDY IS IN PROGRESS:

1. Continuing compliance with the exemption criteria of the National Ethical Guidelines for Health and Health-Related Research 2017 in the duration of the study;
2. No substantial changes in research design, methodology and subject population from the protocol submitted for exemption. Modifications that significantly affect previous risk-benefit assessment or qualification for exemption may be submitted as new protocol for initial review.
3. Notice of termination of the study using 3(C)2012: Final Report Form

All further queries regarding this request may be forwarded to the undersigned through upmreb@post.upm.edu.ph or telephone number

CECILIA A. JIMENO, MD

Chair, UPMREB Review Panel 1

Appendix G. UPMREB Acknowledgement Letter

UPMREB FORM 2(K)2012: ACKNOWLEDGEMENT LETTER (29/07/2019)



University of the Philippines Manila
RESEARCH ETHICS BOARD

Room 126, National Institutes of Health, UP Manila
623 Pedro Gil Street, Ermita, 1000 Manila
Telephone: +63 2 8526-4346; Email: upmreb@post.upm.edu.ph

03/10/2022

MR., NIÑO VALENTINO, DELGADO
Principal Investigator
UP - Philippine General Hospital
2609-C Jesus St. Brgy. 836 Pandacan, Manila 1011

Re: UPMREB 2022-0514-EX
Structural Empowerment and Attitude of Nurses Toward Computer Use in a National University
Hospital in the Philippines

Dear MR. DELGADO:

We would like to inform you that your study protocol has been received by the UP Manila Research Ethics Board (UPMREB) and has been classified for Exempted review. Your study has been assigned study protocol code UPMREB 2022-0514-EX, which should be used for all communication to the UPMREB Panel 1 related to this study.

Should you have any questions or clarifications regarding the above, please contact the undersigned through the UPMREB Panel 1 Secretariat at (02) 8522 2684 or upmreb@post.upm.edu.ph. You may monitor the status of this submission at <http://reb.upm.edu.ph>.

This is a UPMREB secretariat-generated notification via ireb.upm.edu.ph and does not need a signatory.

Acknowledgment Delgado (UPMREB 2022-0514-EX)

Appendix H. Upcoming Research Notice

PGH Form No. Q-631001
REV. 01; EFF. 31 May 2019



PHILIPPINE GENERAL HOSPITAL
The National University Hospital
University of the Philippines Manila
Nursing Services
Division of Nursing Research and Development
Taft Avenue, Manila
ISO 9001 Certified

UPCOMING RESEARCH NOTICE

To:	Affiliate Group ☐ UPCN ☐ PLM ☐ SPCM ☐ APCN ☐ Others, please specify: <u>UPOU</u>	Date: 10 October 2022
For your information, a nursing study will be conducted on: Area : _____ Study Title : <u>Structural Empowerment and attitude of nurses toward computer use in a national university hospital in the Philippines</u> Study Duration/Number of Samples : <u>Three months/ 282 participants</u> Investigator/s : <u>Nino Valentino Delgado, Queenie Roxas- Ridulme</u> *This form must be presented to the area Chief Nurse prior to the conduct of the study The proposal was approved by the UPMREB. The proponent must be in complete uniform /or wear school ID (if no prescribed uniform) during data collection, must strictly comply with the number of samples, area/s to cover and study duration. Please do not hesitate to call/report to the DNRD at local 5309 for any question / non-compliance of the investigator/s. Thank you for your support and cooperation. <u>MARIA CECILIA E. PUNZALAN, MA, RN</u> Nurse VII		

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Taft Avenue, 1000 Manila • (632) 5548400 local 5309 • pgh-dnrd@up.edu.ph

PGH Form No. Q-631001
REV. 01; EFF. 31 May 2019



PHILIPPINE GENERAL HOSPITAL
The National University Hospital
University of the Philippines Manila
Nursing Services
Division of Nursing Research and Development
Taft Avenue, Manila
ISO 9001 Certified

UPCOMING RESEARCH NOTICE

To:	Affiliate Group ☐ UPCN ☐ PLM ☐ SPCM ☐ APCN ☐ Others, please specify: <u>UPOU</u>	Date: 10 October 2022
For your information, a nursing study will be conducted on: Area : _____ Study Title : <u>Structural Empowerment and attitude of nurses toward computer use in a national university hospital in the Philippines</u> Study Duration/Number of Samples : <u>Three months/ 282 participants</u> Investigator/s : <u>Nino Valentino Delgado, Queenie Roxas- Ridulme</u> *This form must be presented to the area Chief Nurse prior to the conduct of the study The proposal was approved by the UPMREB. The proponent must be in complete uniform /or wear school ID (if no prescribed uniform) during data collection, must strictly comply with the number of samples, area/s to cover and study duration. Please do not hesitate to call/report to the DNRD at local 5309 for any question / non-compliance of the investigator/s. Thank you for your support and cooperation. <u>MARIA CECILIA E. PUNZALAN, MA, RN</u> Nurse VII		

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Appendix I. Statistical Analysis

STRUCTURAL EMPOWERMENT AND ATTITUDE OF NURSES TOWARD COMPUTER USE IN A NATIONAL UNIVERSITY HOSPITAL IN THE PHILIPPINES

Findings and Recommendations

Rustan Paulo Baltazar

Imari Kate Galvez

UP School of Statistics

	Desired output	Methodology/Analysis	Remarks
1	Structural empowerment level / score (mean of all) Descriptive on observed values from respondents (frequency, mean, standard deviation)	CWEQ II scores Descriptive stats & charts	May be interpreted as is; defer to manual Average of all individual CWEQ scores
2	Computer use attitude Descriptive on observed values from (frequency, mean, standard deviation)	PATCH Descriptive stats & charts	May be interpreted as is; defer to manual
3	Descriptive statistics on the demographics (age, work experience, computer use duration) At least: frequency, mean and standard deviation	Descriptive stats & charts	
4	Correlation between S.E. and PATCH ➤ SE scores to PATCH scores	Conducted both Pearson and spearman. Scatterplot	
5	Correlation between S.E. and each of the main demographics info: age, experience, and computer use ➤ SE to age ➤ SE to work experience ➤ SE to computer use	• Pearson (for age) • ANOVA and chi-square (for experience and computer use)	A one-way ANOVA analysis is used to compare means of more than two groups, while a chi-square test is used to explore the relationship between two categorical variables.

6	Correlation between PATCH and each of the main demographics ➤ PATCH to age ➤ PATCH to work experience ➤ PATCH to computer use	• Pearson (for age) • ANOVA and chi-square (for experience and computer use)	A one-way ANOVA analysis is used to compare means of more than two groups, while a chi-square test is used to explore the relationship between two categorical variables.
---	--	---	--

Results of Analysis

1. Structural Empowerment level / score

Average of all individual CWEQ scores (based on manual's interpretation): 22.075

Based on the CWEQ Manual, scores ranging from 14 to 22 implies moderate levels of empowerment, while 23 to 30 implies high levels of empowerment.

2. Computer Use Attitude

Average of all PATCH scores of respondents (based on manual's interpretation/conversion of scores): 62.97

Overall, the organization's nurses "feels comfortable using user-friendly computer applications. Aware of the usefulness of computers in a variety of settings. Has a realistic view of current computer capabilities in healthcare."

3. Descriptive statistics on the demographics and sample interpretations

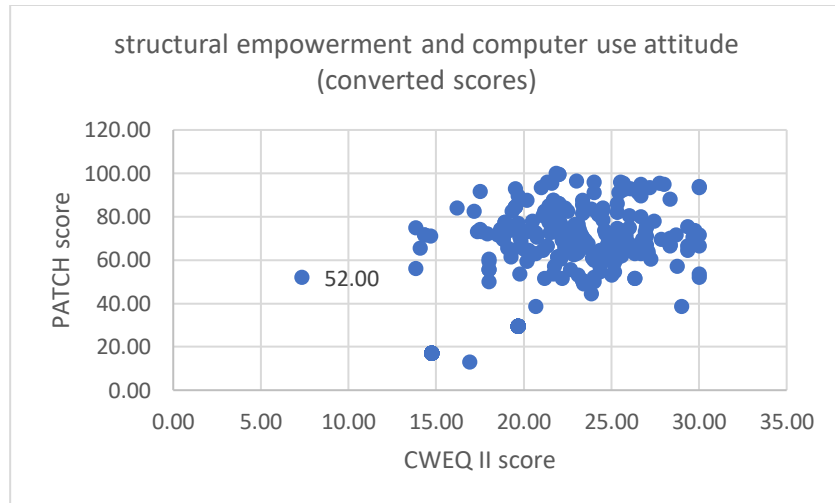
Please refer to the excel file (Tab: DescriptiveStatsPlots). Note that the descriptive statistics, including charts, are based on the dataset given wherein the total number of observations is 282.

SWKEWEDNESS IS DEPENDENT ON THE TYPE OF SAMPLING THAT WAS USED.

4. Correlation between S.E. and PATCH scores

- Based on a quick browsing of related literature, Pearson's was used in similar studies conducted.
 - A study of the relationship between nurses' experience, structural empowerment, and attitudes toward computer use (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8488848/>)
 - Relationship between Structural Empowerment, Work Engagement, and Job Satisfaction among Nursing Staff at Zagazig University Hospitals (https://znj.journals.ekb.eg/article_38631_1c78a48afa32f4ae5d49b8e9ec7eb69c.pdf)
 - The Role of Structural Empowerment in Predicting Computer Use among Jordanian Nurses: A Cross-Sectional Study (https://www.researchgate.net/publication/346271964_The_Role_of_Structural_Empowerment_in_Predicting_Computer_Use_among_Jordanian_Nurses_A_Cross-Sectional_Study)
- Likert scale is generally ordinal hence the attempt to get the correlation through Spearman Rank. However, in cases where there are many individual responses, the original Likert items begin to take on the properties that resemble an interval data.
- Similar with number 3, computation is based on given dataset (i.e., 282 observations).
- Strength of correlation is roughly based on available literature:
 - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6107969/#:~:text=Zero%20means%20there%20is%20no,%2C%20and%200%20to%20%E2%88%921.>

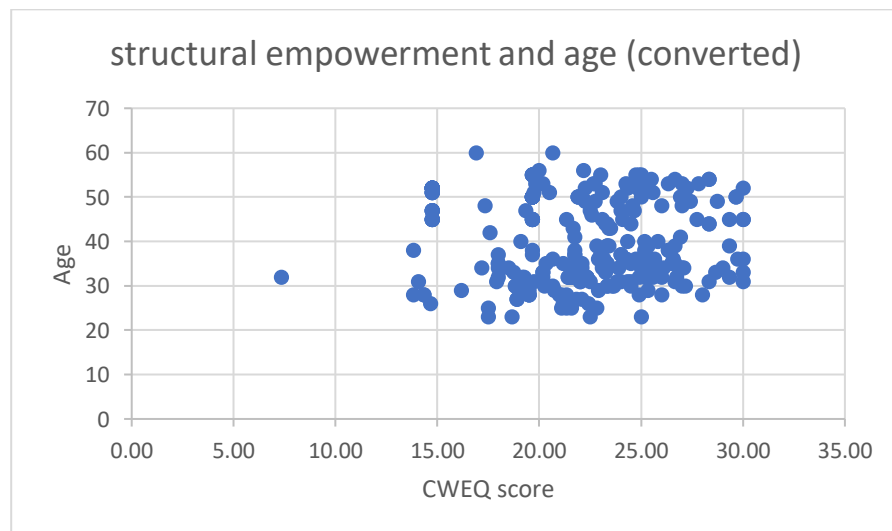
	correlation	t-stat	p-value (df = 283)	Interpretation	strength
Pearson R	0.521845463	10.29119274	0.0000000000	positive; significant	moderate
Spearman Rank	0.348335001	6.251427948	0.000000000149	positive; significant	weak



5. Correlation between structural empowerment and: (i) age; (ii) work experience; and (iii). Computer use duration.

i. Structural empowerment and age (n = 282)

	correlation	t-stat	p-value (df = 281)	interpretation	strength
Structural empowerment (converted)	-0.069531069	1.172531407	0.241969817	negative; not significant	very weak



ii. **Structural empowerment and work experience**
Available actual scores and categories e.g., low, moderate, high

Actual CWEQ scores – continuous data

CWEQ interpretation - categorical

Work experience – categorical

Available raw score (anova)

Risk of Loss of information – ANOVA

Two methods used:

As noted during the discussion, these results were derived using R Studio. However, these can also be done through excel, with possible slight differences on the figures but findings/interpretation are likely the same.

- a) One-way ANOVA test - if the actual CWEQ scores will be used for structural empowerment (continuous vis-à-vis categorical variable); and
- ANOVA – used to investigate whether quantitative dependent variable changes at each level, according to one or more categorical independent variables. Typically used to investigate variations or different levels of the independent variable have a measurable effect on the dependent variable.
 - One-way ANOVA test was used since there is only one independent variable (i.e., work experience)
 - Y (dependent) – CWEQ scores; X (independent) – work experience

```
> summary(se.exp.aov)
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
factor(se_patch\$experience)	3	219	73.06	4.534	0.00403 **
Residuals	278	4480	16.11		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Results interpretations:

- F value - test statistic from F test. the larger the f value, the more likely it is that the variation caused by the independent variable (“work experience”) is real and not due to chance.
- Pr (>F) - p-value of the f-stat; shows how likely it is that the f-value calculated from the test would have occurred if the null hypothesis of

no difference among group means were true (i.e., if p-value is < 0.05 = significant)

- Simple interpretation: experience is significant to structural empowerment
- Note: We provided a sample interpretation for this item but left the other items for the researcher's interpretation. Please feel free to reach out for any clarifications.

b) chi-square test if the categories for the CWEQ scores will be used for structural empowerment (i.e., categorical vis-à-vis categorical)

Frequency table:

Total Observations in Table: 282

se_patch\$se_int	se_patch\$experience				Row Total
	> 3 months	> 5 years	1-3 years	3-5 years	
high	12	65	36	12	125
	0.778	1.538	0.959	0.778	
	0.096	0.520	0.288	0.096	0.443
	0.571	0.380	0.522	0.571	
	0.043	0.230	0.128	0.043	
low	0	2	1	0	3
	0.223	0.018	0.096	0.223	
	0.000	0.667	0.333	0.000	0.011
	0.000	0.012	0.014	0.000	
	0.000	0.007	0.004	0.000	
moderate	9	104	32	9	154
	0.531	1.207	0.856	0.531	
	0.058	0.675	0.208	0.058	0.546
	0.429	0.608	0.464	0.429	
	0.032	0.369	0.113	0.032	
Column Total	21	171	69	21	282
	0.074	0.606	0.245	0.074	

Pearson's Chi-squared test

```
data: se.exp_tb  
X-squared = 7.7404, df = 6, p-value = 0.2577
```

- Null hypothesis: the variables are independent / not related
- Pearson's chi-squared test of independence is used to determine whether two categorical variables are independent in a given population. Independence here means that the relative frequencies of one variable are the same over all levels of another variable.
- Interpretation: p-value is less than or equal to 0.05 = reject null hypothesis. Since p-value is 0.2577, we cannot reject null hypothesis (i.e., cannot reject that categorical variables are independent / no relation)
- **Interpretation: structural empowerment and work experience are independent**
- Note: We provided a sample interpretation for this item but left the other items for the researcher's interpretation. Please feel free to reach out for any clarifications.

iii. Structural empowerment and computer use duration

Two methods used:

a) ANOVA (CWEQ actual scores vis-à-vis computer use duration categories)

- Null hypothesis: no difference among group means

```
> summary(se.compuse.aov)  
              Df Sum Sq Mean Sq F value    Pr(>F)      
factor(se_patch$comp_use)  3      193    64.48    3.978 0.00846 **  
Residuals                278     4506    16.21            
---  
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

b) chi-squared test (CWEQ scores categories vis-à-vis computer use duration categories)

Frequency table:

Total Observations in Table: 282

		se_patch\$comp_use			
se_patch\$se_int		< 1 year	> 5 years	1-3 years	3-5 years
high		10	54	49	12
		0.296	3.148	3.403	0.320
		0.080	0.432	0.392	0.096
		0.526	0.348	0.576	0.522
		0.035	0.191	0.174	0.043
low		0	1	2	0
		0.202	0.255	1.328	0.245
		0.000	0.333	0.667	0.000
		0.000	0.006	0.024	0.000
		0.000	0.004	0.007	0.000
moderate		9	100	34	11
		0.182	2.785	3.322	0.194
		0.058	0.649	0.221	0.071
		0.474	0.645	0.400	0.478
		0.032	0.355	0.121	0.039
Column Total		19	155	85	23
		0.067	0.550	0.301	0.082

Pearson's Chi-squared test

data: se.compose_tb

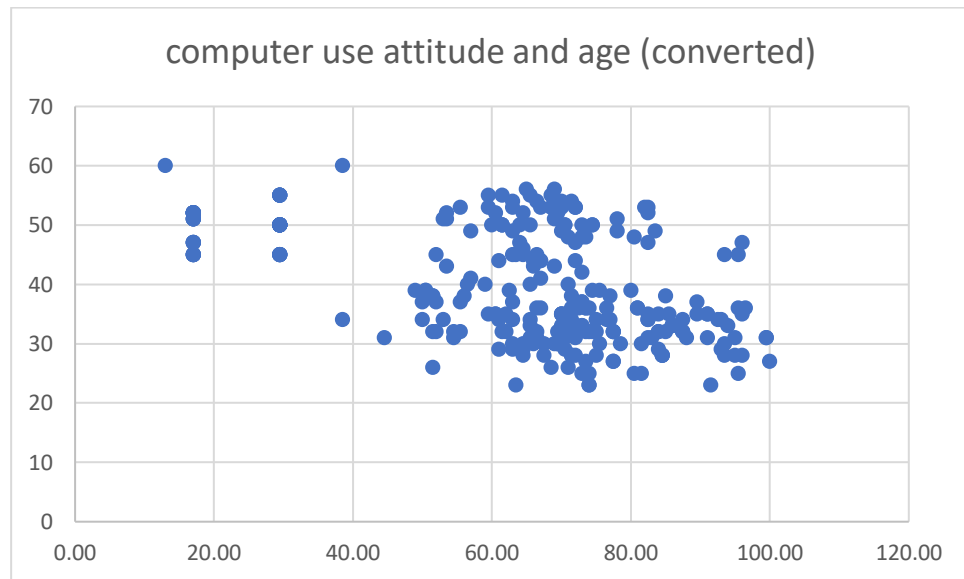
X-squared = 15.679, df = 6, p-value = 0.01558

6. Correlation between computer use attitude (PATCH) and: (i) age; (ii) work experience; and (iii) computer use duration

i. PATCH and age

	correlation	t-stat	p-value (df = 283)	interpretation	strengt h

PATCH (converted)	- 0.53642428 2	10.6926592 1	0.00000000 0	negative; significant	moderat e
----------------------	----------------------	-----------------	-----------------	--------------------------	--------------



ii. PATCH and work experience

- Actual PATCH scores
- PATCH scores interpretation
- Work experience (> 3months, 1-3 years, 3-5 years, > 5 years)

a. ANOVA

```
> summary(patch.exp.aov)
              Df Sum Sq Mean Sq F value    Pr(>F)
factor(se_patch$experience)  3  13541      4514   10.14 2.32e-06 ***
Residuals                  278 123701      445
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

b. chi-square

Frequency table:

se_patch\$patch_int	se_patch\$experience				Row Total
	> 3 months	> 5 years	1-3 years	3-5 years	
comfortable	13	45	19	8	85
	7.029	0.830	0.155	0.441	
	0.153	0.529	0.224	0.094	0.301
	0.619	0.263	0.275	0.381	
confident	0.046	0.160	0.067	0.028	
	4	60	29	8	101
	1.649	0.025	0.744	0.030	
	0.040	0.594	0.287	0.079	0.358
cyberphobia	0.190	0.351	0.420	0.381	
	0.014	0.213	0.103	0.028	
	0	27	0	0	27
	2.011	6.899	6.606	2.011	
moderate	0.000	1.000	0.000	0.000	0.096
	0.000	0.158	0.000	0.000	
	0.000	0.096	0.000	0.000	
	2	3	10	0	15
uneasy	0.698	4.085	10.917	1.117	
	0.133	0.200	0.667	0.000	0.053
	0.095	0.018	0.145	0.000	
	0.007	0.011	0.035	0.000	
very confident	0	24	0	0	24
	1.787	6.132	5.872	1.787	
	0.000	1.000	0.000	0.000	0.085
	0.000	0.140	0.000	0.000	
Column Total	0.000	0.085	0.000	0.000	
	2	12	11	5	30
	0.025	2.107	1.824	3.425	
	0.067	0.400	0.367	0.167	0.106
Column Total	0.095	0.070	0.159	0.238	
	0.007	0.043	0.039	0.018	
	21	171	69	21	282
	0.074	0.606	0.245	0.074	

Pearson's Chi-squared test

data: patch.exp_tb

X-squared = 68.207, df = 15, p-value = 9.303e-09

iii. PATCH and computer use duration

a. ANOVA

```
> summary(patch.compuse.aov)
              Df Sum Sq Mean Sq F value    Pr(>F)
factor(se_patch$comp_use)  3   5879   1959.8    4.147 0.00675 **
Residuals                278 131363    472.5
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

b. chi-square
Frequency table:

se_patch\$patch_int	se_patch\$comp_use				Row Total
	< 1 year	> 5 years	1-3 years	3-5 years	
comfortable	11	27	38	9	85
	4.855	8.324	5.982	0.617	
	0.129	0.318	0.447	0.106	0.301
	0.579	0.174	0.447	0.391	
	0.039	0.096	0.135	0.032	
confident	4	53	32	12	101
	1.156	0.114	0.080	1.718	
	0.040	0.525	0.317	0.119	0.358
	0.211	0.342	0.376	0.522	
	0.014	0.188	0.113	0.043	
cyberphobia	1	26	0	0	27
	0.369	8.392	8.138	2.202	
	0.037	0.963	0.000	0.000	0.096
	0.053	0.168	0.000	0.000	
	0.004	0.092	0.000	0.000	
moderate	3	3	9	0	15
	3.916	3.336	4.437	1.223	
	0.200	0.200	0.600	0.000	0.053
	0.158	0.019	0.106	0.000	
	0.011	0.011	0.032	0.000	
uneasy	0	24	0	0	24
	1.617	8.856	7.234	1.957	
	0.000	1.000	0.000	0.000	0.085
	0.000	0.155	0.000	0.000	
	0.000	0.085	0.000	0.000	
very confident	0	22	6	2	30
	2.021	1.842	1.024	0.082	
	0.000	0.733	0.200	0.067	0.106
	0.000	0.142	0.071	0.087	
	0.000	0.078	0.021	0.007	
Column Total	19	155	85	23	282
	0.067	0.550	0.301	0.082	

Pearson's Chi-squared test

```
data: patch.compuse_tb
X-squared = 79.491, df = 15, p-value = 8.654e-11
```

