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Technostress Among Filipino Nurses in the Kingdom of Bahrain

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Abstract

This study aimed to describe the level of technostress among Filipino nurses in the Kingdom of Bahrain, the frequency of the physical and mental problems encountered due to technostress, the significant relationship of technostress and frequency of the problems encountered as well as the difference of level of technostress when grouped according to demographic profile. The respondents of this study are 35 Filipino nurses in the Kingdom of Bahrain. Based on the findings of this study, the overall level of technostress of Filipino nurses in the Kingdom of Bahrain is moderate. Furthermore, the respondents rarely encounter physical problems while mental problems are never encountered. In addition, there is a direct significant relationship between technostress and the problems encountered by the Filipino nurses. Lastly, there is no significant difference in technostress among Filipino nurses when grouped according to their demographic profile. It is recommended that communities, organizations, and hospitals should offer comprehensive training programs which enhance nurses' digital literacy skills. Hospitals should invest in the latest technology in healthcare and develop user-friendly documentation, manuals, and guides that explain using these different technologies. Additionally, colleges, nursing schools, and policy makers should prioritize the provision of physical and mental health support for nurses.

Keywords: Technostress, Frequency, Physical Problems, Mental Problems

1. Introduction

2. “Save one life, you're a hero. Save a hundred lives, you're a nurse”.

Filipino nurses, like their counterparts worldwide, play a crucial role in patient care, even though patients usually want to see their doctors for their immediate medical concerns, it’s the nurses who have regular contact with patients (Lowerson, 2016). The diverse roles of nurses such as administering medication, monitoring patient conditions, recording medical history and so much more plays a vital role in the healthcare system, contributing to the efficiency and compassionate functioning of the healthcare industry. They are often bombarded with vast amounts of electronic health information since the healthcare industry is constantly evolving; introducing new technologies and software systems, managing and processing patients’ data, medical records, and research findings (Price and Cohen, 2019).

The APA Dictionary of Psychology defined technostress as, “A form of occupational stress that is associated with information and communication technologies such as the Internet, mobile devices, and social media. It is seen in many organizations at all levels, with affected employees becoming anxious or overwhelmed by working in computer-mediated environments in which there is a constant flow of new information.” Nowadays, nurses are required to navigate complex technical interfaces; they may feel

overwhelmed by needing to continuously learn and adapt to the changes, especially without proper support or training. The use of technology in the nursing practice will evidently bring technical challenges that contribute to technostress, impacting their behavior which can lead to low initiative and low energy. Technology can elevate stress for nurses, resulting in physical symptoms like headaches, fatigue, and sleep disturbances (Ahn, 2021).

A two-year study conducted found that different cognitive problems like having trouble concentrating or remembering things and poor decision making come from high IT demands (Sharma, 2023). Nurses interact with lots of medical devices, such as patient monitoring equipment, infusion pumps, and digital communication tools. Problems such as troubleshooting issues, alarm management, and ensuring accurate data collection can be quite demanding and time-consuming for nurses. Dealing with these challenges adds an extra layer of stress to nurses' already demanding work environment.

Nurses need to be at the top of their game at all times since the job they have is a job wherein traumatic situations are common and so they need to be ready to respond quickly to emergencies and other situations that may suddenly arise (Nunnari, n.d.). Technostress can greatly affect the health of nurses which in turn can greatly affect the care they give to their patients.

For these reasons, the researchers chose to expand their knowledge on this topic to further understand the challenges and pressure on specifically Filipino nurses face in relation to technology.

Addressing these issues allowed healthcare organizations to create a more supportive environment that values nurses' well-being by identifying the specific challenges that Filipino nurses face not only in Bahrain but all around the world.

The importance of technology is no secret these days. It has made its way into everyone's lives and has somehow become something that people can't live without. This is also true when it comes to the workplace, specifically in the healthcare sector. Its advantages have certainly been evident in healthcare since it has provided the healthcare community tools that can help improve patient care. An example would be for the use of the Electronic Health Records (EHRs). With the use of EHRs there can be easy access to the complete medical histories of patients to help make informed decisions (Joseph, 2023). Although there are pros to using technology in the workplace, its disadvantages cannot simply be ignored especially to the people who are using them, one of which are nurses.

This section explored (a) technostress; (b) demographic profiles associated with technostress; and (c) problems encountered in the workplace that come from technostress.

Technostress and its Causes

Technostress refers to the stress and negative psychological reactions experienced by individuals resulting in their interaction with information and communication technologies (ICT) (Bondanini et al., 2020). It is important to understand the various causes and factors that contribute to technostress.

A. Techno-insecurity. Technology is designed to improve employee productivity but often pushes staff too far as they feel the weight of increased expectations on their performance. The pace of technological advancements can stress individuals as they need to constantly adapt to new technologies (Sjödin et al., 2018). Which will make
B. employees feel insecure or uncertain about their ability to meet the heightened expectations.
C. Role Ambiguity. Bell (2020) defines role ambiguity as, "A situation caused by uncertain expectations and responsibilities in the performance of a particular role". It can contribute to burnout by creating a sense of frustration, inefficiency, and a lack of fulfillment in one's work. These factors can erode them

of their job satisfaction, increase stress levels, and ultimately lead to emotional exhaustion and disengagement from work.

D. Techno-Complexity. Another factor is inadequate technological skills that contribute to technostress, where an individual lacks the necessary skills, knowledge and competencies to effectively use technology, it can lead to frustration and anxiety (Atanasoff and Venable, 2017).
E. Techno-Overload. One of the two main stressors from the use of ICTs is information overload (La Torre et al., 2018). The constant stream of emails, notifications, and data can be both a blessing and a burden. Trying to process and manage the overwhelming volume of information can become a challenge, leading to feelings of being overwhelmed.
F. Techno-Invasion. Introducing new technologies or changing acclimated systems can also disrupt established routines and workflows (Atanasoff and Venable, 2017). Adjusting to these changes, learning new procedures, and integrating technology into daily work can be challenging and stressful.

Recognizing these causes of technostress is important for creating a human- centered approach to technology in the workplace. By understanding the challenges individuals face and implementing strategies to support their well-being, organizations can foster a healthier and more positive technological environment.

Demographic Profile

Age. A study by Golz et al. (2021) showed that older healthcare workers experience higher levels of technostress, and are less confident about their ability to effectively navigate and utilize digital technologies. It is found that older workers experience higher levels of techno-complexity, techno-invasion, and techno- uncertainty but not for techno-overload, techno-insecurity or the overall score for technostress when compared with younger groups (Roux and Botha, 2021). Another study also found that technostress is significant for older workers over 60, and all its components are significant aspects with possible negative impacts on their well-being (Nimrod, 2017).

In contrast, a study done by Hauk et al. (2019) disclosed that age is negatively related to technology-related strain since older workers used less technology compared to younger workers and have greater competence in handling stressors.

Gender. Studies further explored whether gender influences the experience of technostress in healthcare settings, with some suggesting that women experience higher levels of technostress compared to their male counterparts (Ariapooran and Abdolmaleki, 2023) which indicates that most techno-stressors are significantly associated with the female gender and their degree-level education (La Torre et al., 2020). However, a study done by Jena and Mahanti (2014) revealed that male academicians experience more technostress than female academicians.

Other studies report women are subjected to higher levels of techno-complexity and techno-uncertainty, while men are said to feel greater effects of techno-overload and techno-invasion (Marchiori et al., 2018). According to Cai et al. (2017) these differences stem from various factors such as differences in technology-related self- efficacy, attitudes towards technology, and societal expectations regarding gender roles and technology use.

Years of Service. Research conducted in this area has indicated that nurses who served longer periods of time in the healthcare industry may encounter higher levels of technostress (Quinn, 2022). Firstly, nurses with more years of service have likely seen significant advancements in technology and changes in healthcare practices (Barchielli et al., 2021). Adjusting to the changes can be difficult and confusing, often

heightening their levels of stress. Secondly, nurses with more years of service might have established routines and processes for themselves that are disrupted by the introduction of new technologies (Mlambo et al., 2021). These disruptions may lead to additional challenges, stress and frustration as they have to learn new systems and adapt their established workflow.

In contrast to the previous studies mentioned, Okonoda (2017) opined that more work experience means lesser likelihood of experiencing technostress and lower levels of it are experienced.

Problem Encountered

Technostress can give rise to various problems. It can manifest in many ways, impacting individuals both physically and mentally.

Physical Problems Encountered. Some of the emotions that nurses have experienced while working with technology include: fear of clicking or pressing wrong buttons, being forced to trust the machine instead of people, issuing an incorrect command or order, and headaches and spasms caused by working with various types of equipment (Abuatiq, 2015).

Nurses may have faced prolonged and repetitive use of technology that can also contribute to musculoskeletal issues. The physical strain associated with using various types of equipment can lead to discomfort and potential injuries for nurses such as neck and shoulder pain, back pain, wrist and hand discomforts, legs and foot issues (Tariah et al., 2020).

Technostress has been found to be connected with suboptimal self-rated health, sleep disturbances, cognitive disturbances, and burnout (Stadin et al., 2020). The constant pressure to be connected, respond to notifications, and multitask can lead to decreased focus, concentration, and overall work efficiency. Excessive reliance on technology can lead to social isolation and strained relationships.

Mental Problems Encountered. It has also been found that employees who experience technostress have shown dislike of their roles and organization, it has affected their mental health which lead to headaches and poor sleep, as well as reducing their performance and their general well-being.

Moreover, studies have shown that technostress can prompt unfavorable results to people's both psychological and physiological well-being like disappointment, uneasiness and weakness which therefore causes issues on focus, it causes anxiety, restlessness, fear of being replaced and of being a failure, as well as embarrassment, outrage, being passive-aggressive, biasing their decisions of computerized innovation, and diminishing work execution (Asad et al., 2023).

It is evident that the rapid advancement of technology, coupled with the challenges of adapting to new systems, have led to increased levels of stress and anxiety in their work environments. In our research, we aimed to contribute to this evolving body of knowledge and promote the well-being of healthcare professionals in the increasingly technological driven world.

Conceptual Framework

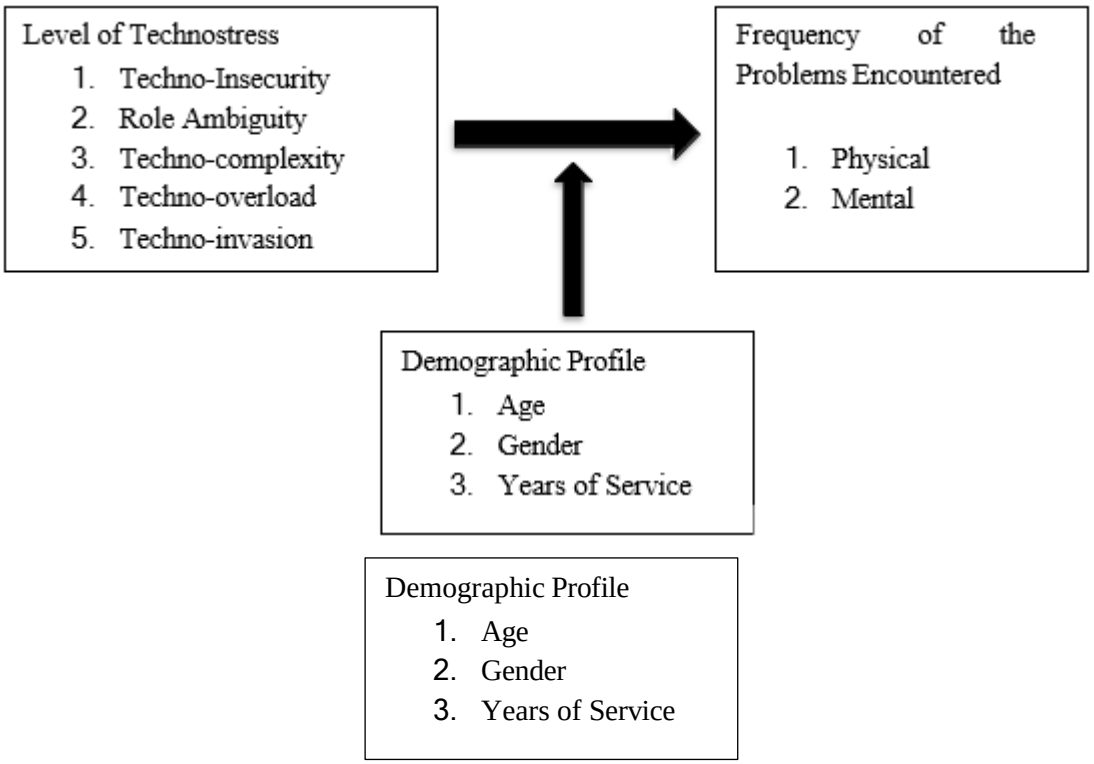

Figure 1. Conceptual framework on technostress among Filipino nurses in the Kingdom of Bahrain

The figure above is a conceptual framework on the technostress among Filipino nurses in the Kingdom of Bahrain. The level of technostress and its causes served as the independent variable while the frequency of the problems encountered served as the dependent variable.

The level of technostress and its underlying causes can significantly impact both physical and mental health. Technostress, which refers to the stress and anxiety experienced due to technology use, can have adverse effects on our overall well- being. When individuals experience high levels of technostress, it can lead to various physical symptoms such as headaches, muscle tension, fatigue, and sleep disturbances (La Torre et al., 2018). These physical manifestations can further contribute to increased stress levels and a sense of discomfort. Moreover, the causes of technostress, such as techno-insecurity, role ambiguity, techno-complexity, and techno-overload, can have a profound impact on mental health. Techno-insecurity, which stems from feelings of anxiety and insecurity related to technology use, can lead to increased levels of anxiety, irritability, and difficulty concentrating (Bondanini et al., 2020). This can result in a lack of sleep and reduced overall mental well-being.

The demographic profile, including age, gender, and years of service served as moderating variables in the relationship between technostress and its impact on physical and mental problems encountered among Filipino nurses. These variables can influence how individuals perceive and respond to technostress, potentially shaping the outcomes of their jobs and problems they experience.

Age plays a role in how nurses perceive and cope with technostress. Younger nurses who have grown up with technology may be able to adapt quicker, potentially experiencing lower levels of technostress. On the other hand, older nurses who are less familiar with technology might face more challenges, leading to higher levels of technostress (Roux and Botha, 2021). But, there is a study that revealed that age is negatively related to technology-related strain since older workers used less technology compared to

younger workers and have greater competence in handling stressors (Hauk et al., 2019). This just shows that the impact of technostress on their physical and mental health could vary based on age.

Gender might also influence technostress among nurses. Studies report women are subjected to higher levels of techno-complexity and techno-uncertainty, while men indicated feeling greater effects from techno-overload and techno-invasion (Marchiori et al., 2018). Most studies say that females usually experience higher technostress levels than their male counterparts however we found a study that says otherwise with male academicians experiencing more technostress than female academicians (Jena and Mahanti, 2014). These gender-related factors can shape how technostress affects their well-being, including physical and mental health outcomes. Lastly, years of service or experience in nursing have the possibility to moderate the relationship between technostress and the frequency of the problems encountered both physically and mentally. Nurses with more experience may have developed effective coping mechanisms and strategies to manage technostress which means that they have a lesser likelihood when it comes to experiencing technostress (Okonoda, 2017). However, there are studies that say otherwise.

3. Methodology

Research Design. This research used descriptive, correlational and comparative study which aimed to determine the level of technostress among Filipino nurses in the Kingdom of Bahrain and the frequency of the physical and mental problems they encountered.

Bhat (2023) defines descriptive research as "a research method describing the characteristics of the population or phenomenon studied." The descriptive approach was used to describe the demographic profile of the participants, the level of technostress among Filipino nurses in Bahrain as well as both the frequency of the physical and mental problems they encounter.

A correlational research design looks into the relationship between two or more variables without having the researcher control or manipulate those variables (Bhandari, 2023). The correlational approach was utilized to determine the relationship of the level of technostress to the frequency of the problems encountered among Filipino nurses.

Lastly, the comparative approach was used to determine the difference in level of technostress of Filipino nurses when grouped according to their demographic profile, namely years of service, age and gender. Nupi (n.d.) says that the comparative method is "about looking at an object of study in relation to another."

Locale and Participants of the Study. This study was conducted in the Kingdom of Bahrain, a small island country in the Persian Gulf. It was chosen as the research locale due to its well-developed healthcare system and technological advancements. With the significant presence of Filipino nurses, Bahrain provides an ideal setting to explore the relationship between technostress and its impact on nurses' mental health and physical well-being. The integration of technology in healthcare and the potential challenges it poses to Filipino nurses make the Kingdom of Bahrain a relevant and suitable locale for this study.

The study was conducted with Filipino nurses from different hospitals in the Kingdom of Bahrain. The eligibility criteria for participation were as follows: 1) The respondent must be an active/working nurse, 2) The respondent must be employed at a hospital in Bahrain, 3) The respondent must currently reside in Bahrain, and 4) The respondent must utilize Electronic Health Record (EHR) or Electronic Medical Record (EMR) systems.

Table 1. Profile of the Filipino Nurses

	LEVEL	COUNTS	PERCENTAGE
a. Age	29 to 37	19	54.30%
	38 to 46	9	25.70%
	47 to 56	7	20.00%
b. Gender	Female	21	60.00%
	Male	14	40.00%
	13 to 21	11	31.40%
c. Years of Service	22 to 31	9	25.70%
	4 to 12	15	42.90%

Note. Proportions tested against value: 0.5.

The table shows a total of 35 respondents from different hospitals of Filipino nurses in the Kingdom of Bahrain. The highest age range with 54.3% is 29-37 and the lowest age range with 20.0% is 47 to 56. 60.0% of the respondents are female and 40.0% of the respondents are male. All nurses have been in service for a certain amount of time, with the highest proportion being Filipino nurses who have been serving for over 4 to 12 years and the lowest being Filipino nurses who have been serving for 22 to 31 years.

To reach this sample size, this study utilized non-probability convenience sampling, specifically snowball sampling. Snowball sampling is a technique wherein other research participants are asked to assist in identifying other potential participants for the research (Snowball Sampling, 2017). This method was used due to time restrictions and limitations of this research.

Data collection instrument and procedures. To ensure the ethical conduct of the study, the researchers sought consent from the Philippine School (Bahrain) and the respondents at the outset. This step demonstrates respect for respondents' rights and ensures that the research is conducted with proper authorization and follows all ethical standards. Once consent was obtained, respondents received an email invitation that explained the purpose and objectives of the study. The email included an attached consent form, which emphasized that participation was voluntary and guaranteed confidentiality and anonymity. During the survey administration process using Google Forms, respondents' responses were recorded and collected as data. Once the data collection phase was complete, the respondents' answers were recorded, collected, and the researchers organized and prepared the gathered information for analysis.

This research utilized a survey questionnaire as the data collection instrument. It contains questions that will help in identifying the level of technostress and the frequency of the physical as well as mental problems encountered by Filipino nurses in Bahrain. The questionnaire was adapted from other existing questionnaires. When it comes to getting the level of technostress among Filipino nurses, the survey on a study done by Kwinana (2022) was adopted. As for the questions regarding the frequency of the physical and mental problems encountered, the researchers adapted the contents from a study done by Olasanmi (2016). A five-part Likert scale was used for the questionnaire as follows:

The interpretation of the description for the level of technostress among Filipino nurses will be as follows:

RESPONSE	INTERPRETATION
5	Very High Stress (VHS)
4	High Stress (HS)

3	Moderate Stress (MS)
2	Low Stress (LS)
1	Very Low Stress (VLS)

The interpretation of the description for the frequency of the physical and mental problems encountered will be as follows:

MEAN	INTERPRETATION
4.21 - 5.00	Always Encountered
3.41 - 4.20	Often Encountered
2.61 - 3.40	Sometimes Encountered
1.81 - 2.60	Rarely Encountered
1.00 - 1.80	Never Encountered

Treatment of Data. The data gathered from the participants was analyzed using different statistical tools. In describing the demographic profiles years of service, age and gender the measure of central tendency: mean. The mean is basically the average of a certain data set that is computed by adding up all the numbers together and then you divide the total number by the number of the numbers (Third Space Learning, 2023). Moreover, when getting the level of technostress among the participants and the frequency of the physical and mental problems faced, the researchers used a measure of central tendency: mean.

The interpretation of the description for the level of technostress among Filipino nurses was as follows:

MEAN	INTERPRETATION
4.21 - 5.00	Very High Stress (VHS)
3.41 - 4.20	High Stress (VS)
2.61 - 3.40	Moderate Stress (MS)
1.81 - 2.60	Low Stress (LS)
1.00 - 1.80	Very Low Stress (VLS)

The interpretation of the description for the frequency physical and mental problems encountered was as follows:

MEAN	INTERPRETATION
4.21 - 5.00	Always Encountered
3.41 - 4.20	Often Encountered
2.61 - 3.40	Sometimes Encountered
1.81 - 2.60	Rarely Encountered
1.00 - 1.80	Never Encountered

When it comes to determining the relationship between technostress and the frequency of the problems encountered, Spearman's rho was used. Okpala (2020) defines Spearman's rho as a statistical measure used to assess the strength and direction of the relationship between two variables. It is a non-parametric correlation coefficient that is based on the ranks of the data rather than the actual values.

Additionally, independent samples T-test was used in getting the significant difference between technostress among nurses when they are grouped according to their gender. Voxco (2021) said that the independent samples t-test is used to compare the means of two groups.

Lastly, an analysis of variance ANOVA was used to examine the significant differences between technostress among nurses when they were grouped according to age and years of service. ANOVA is a statistical test used to compare means among three or more groups (Kenton, 2023).

Results and Discussion

Table 2. Level of Technostress Among Filipino Nurses.

LEVEL OF TECHNOSTRESS	MEAN	INTERPRETATION
a. I am open to sharing knowledge with my coworkers knowing that it contributes to the work environment.	4.20	HS
b. I share my knowledge with my co-workers, fostering a positive and collaborative work environment.	4.20	HS
c. I embrace the nature of technology and view it as an opportunity to enhance my skills and adapt to new possibilities in the workplace.	4.14	HS
d. I am inspired by my co-workers' advanced technology skills. It encourages me to embrace learning and strive for personal growth in my own skill set.	4.11	HS
e. I need to continually update my skills, recognizing it as a valuable opportunity for self-improvement and professional growth. 4.17 HS Overall Techno-insecurity	4.17	HS
Overall Techno-insecurity	4.17	HS
a. I find it challenging to understand my responsibilities regarding technology use.	3.89	HS
b. I am unsure about how technology impacts my role as a nurse.	3.31	MS
c. I receive conflicting instructions or guidelines about the appropriate use of technology at work.	3.43	HS
d. I often feel confused about the boundaries and limitations of my role in utilizing technology in patient care.	3.34	MS
e. I do not know enough about technology to handle my job satisfactorily.	2.89	MS
Overall Role Ambiguity	3.49	HS
a. I do not know enough about technology to handle my job satisfactorily.	2.89	MS
b. I need more training to understand it.	3.31	MS
c. I need to study and upgrade my technological skills.	3.71	HS
d. Other people in this organization know more about computer technology than I do.	3.49	HS
e. It is difficult for me to use new technologies.	3.26	MS

Overall Techno-Complexity	3.33	MS
a. I work much faster.	3.91	HS
b. I do more work than I can handle.	3.89	HS
c. I work with a very tight schedule.	3.69	HS
d. I change my work habits to adapt to new technologies	3.77	HS
e. I work hard because of technical complexity.	3.66	HS
Overall Techno-overload	3.78	HS
a. I spend less time with family due to this technology.	1.74	VLS
b. I'm in touch with my work even during my vacation	1.94	LS
c. I sacrifice my vacation and weekend time to keep current on new advancements.	1.74	VLS
d. I feel that my personal life/space is being compromised.	1.66	VLS
Overall Techno-Invasion	1.77	VLS
Overall Technostress	3.31	MS

Interpretations: 1.00-1.80: Very Low Stress (VLS); 1.81-2.60: Low Stress (LS); 2.61-3.40: Moderate Stress (MS); 3.41-4.20: High Stress (HS); 4.21-5.00: Very High Stress (VHS)

Table 2 shows that Filipino nurses experience high levels of technostress in terms of techno-insecurity with a mean of 4.17, role ambiguity with a mean of 3.49 and techno-overload with a mean of 3.78. Moreover, the respondents experience moderate stress when it comes to techno-complexity with a mean of 3.33. On the other hand, respondents experience very low levels of stress when it comes to techno- invasion with a mean of 1.77. Based on the data in the table, the overall technostress of Filipino nurses in Bahrain is moderate.

A study by Golz et al. (2021) revealed a significant association between digital competence and technostress, indicating that health professionals with a high digital competence experienced lower level of technostress, health professionals in Swiss psychiatric hospitals rated their technostress as moderate and their digital competence as high

Moreover, a study that was conducted by Sjödin et al. (2018) found that the rapid pace of technological advancements is another factor that can overwhelm individuals as they constantly need and adapt to new technologies and digital

environments which will make employees feel insecure or uncertain about their ability to meet these heightened expectations. That's why they experience techno-insecurity. Furthermore, the data shows that Filipino nurses are more uncertain about how technology impacts their role and are unsure about the boundaries and limitations of their role in utilizing technology in patient care.

Additionally, increased work demands that feel that they have more work than they can handle due to the complexity of technology. La Torre et al. (2018) found that one of the two main stressors from the use of ICTs is information overload. The constant influx of emails, notifications, and data can be both a blessing and a burden. Trying to process and manage the overwhelming volume of information becomes a challenge, leading to feelings of being overwhelmed which leads to techno-overload.

Table 3 shows the frequency of physical problems encountered among Filipino nurses in the Kingdom of Bahrain. The frequency is reflected by the mean, which indicates how often they experience the given physical problems.

Table 3. Physical Problems Encountered When it Comes to Technostress.

PHYSICAL PROBLEMS	MEAN	INTERPRETATION
a. Headaches	2.74	Sometimes Encountered
b. Spasms	1.74	Never Encountered
c. Back and Shoulder Pain	2.17	Rarely Encountered
d. Wrist and Hand Pain	2.29	Rarely Encountered
e. Leg and Foot Pain	1.83	Rarely Encountered
f. Sleep Disturbances	1.91	Rarely Encountered
g. Burnout	1.80	Never Encountered
h. Visual Fatigue	2.71	Sometimes Encountered
i. Low Energy Levels	1.77	Never Encountered
j. Overall Physical Problems	2.11	Rarely Encountered

Interpretations: 1.00-1.80: Never Encountered; 1.81-2.60: Rarely Encountered; 2.61-3.40: Sometimes Encountered; 3.41-4.20: Often Encountered; 4.21-5.00: Always Encountered

When it comes to physical problems encountered. Filipino nurses surveyed generally experience a low frequency of physical problems. Among the physical problems given, visual fatigue and headaches were reported to be sometimes encountered, with the highest mean score of 2.743. This suggests that a significant number of nurses experience visual fatigue and headaches to some extent, although it may not be a prevalent issue among all respondents. Other issues such as spasms had the lowest encounter with a mean score of 1.743, indicating that spasms are not commonly experienced by the nurses. Back and shoulder pain, wrist and hand pain, leg and foot pain, sleep disturbances, burnout, and low energy levels were also reported to be rarely or never encountered, showing that a smaller proportion of nurses experience these issues. Overall, Filipino nurses in Bahrain rarely encounter physical problems.

It has been found that technology can elevate stress for nurses, resulting in physical symptoms like headaches, fatigue, and sleep disturbances (Ahn, 2021).

Tariah et al. (2020) in their study opined that nurses may face prolonged and repetitive use of technology that can also contribute to musculoskeletal issues. The physical strain associated with using various types of equipment can lead to discomfort and potential injuries for nurses such as neck and shoulder pain, back pain, wrist and hand discomforts, legs and foot issues.

Table 3 Shows the Frequency of Physical Problems Encountered Among Filipino Nurses in the Kingdom of Bahrain. The Frequency is Reflected by the Mean, which Indicates how Often they Experience the Given Physical Problems.

Table 4. Mental Problems Encountered When it Comes to Technostress.

MENTAL PROBLEMS	MEAN	INTERPRETATION
a. Anxiety	1.57	Never Encountered
b. Increased Stress	1.74	Never Encountered
c. Mental Fatigue	1.54	Never Encountered
d. Decrease in Focus/Concentration	1.48	Never Encountered
e. Outrage	1.42	Never Encountered
f. Restlessness	1.48	Never Encountered

g. Uneasiness	1.51	Never Encountered
h. Passive-aggressive behavior	1.42	Never Encountered
Overall Mental Problems	1.54	Never Encountered

Interpretations: 1.00-1.80: Never Encountered; 1.81-2.60: Rarely Encountered; 2.61-3.40: Sometimes Encountered; 3.41-4.20: Often Encountered; 4.21-5.00: Always Encountered

When it comes to mental problems encountered, the mean scores for anxiety, increased stress, mental fatigue, decrease in focus/concentration, outrage, restlessness, uneasiness, and passive-aggressive behavior all fall within the range of 1.00-1.80, indicating that these mental problems are never encountered by the respondents.

In contrast to this, the use of technology can add to the overall stress levels of nurses, as they may feel overwhelmed by the demands of using technology while also providing patient care. Those who aren't more experienced with the technology might lead to mental fatigue, as nurses may have to navigate complex systems, input data, and interpret information (Lucena et al., 2021).

Additionally, a two-year study conducted found that different cognitive problems like having trouble concentrating or remembering things and poor decision making come from high IT demands (Sharma, 2023)

Table 5 presents the significant relationship between technostress and the frequency of problems encountered among Filipino nurses in Bahrain.

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Table 5. Shows the Significant Relationship Between Technostress and the Frequency of Problems Encountered among Filipino Nurses.

VARIABLE	OVERALL TECHNOSTRESS	INTERPRETATION
1. Overall Physical Problems		
Spearman's rho	0.596	Strong Correlation
p-value	< .001	Significant
2. Overall Mental Problems		
Spearman's rho	0.534	Moderate Correlation
p-value	< .001	Significant

Interpretations: 0.00 – 0.20: Negligible Correlation; 0.21 – 0.40: Weak Correlation; 0.41-0.60: Moderate Correlation; 0.61 – 0.80: Strong Correlation; 0.81- 1.00: Very Strong Correlation.

As shown in Table 5, the results show that both the p-values of the overall physical and mental problems are less than .001, signifying that the relationship is statistically significant. There is enough evidence gathered from this study to prove a direct significant relationship of technostress and the frequency of the overall physical and mental problems, therefore the first alternative hypothesis is accepted (H1: There is a direct significant relationship between technostress and the frequency of the problems encountered A study by Borle et al. (2021) concludes that techno-overload and techno- invasion have consistently been associated with adverse health and work outcomes. These outcomes may include increased levels of stress,

anxiety, and depression, as well as decreased job satisfaction and productivity.

Moreover, a study found technostress to be associated with suboptimal self- rated health, cognitive disturbances, sleep disturbances and symptoms of burnout (Stadin et al., 2020). The constant pressure to be connected, respond to notifications, and multitask can lead to decreased focus, concentration, and overall work efficiency. Excessive reliance on technology can lead to social isolation and strained relationships.

Furthermore, a study that was done by Asad et al. (2023) showed that technostress can prompt unfavorable results to people's both psychological and physiological well-being like disappointment, uneasiness and weakness which therefore causes issues on focus, it causes anxiety, restlessness, fear of being replaced and of being a failure, as well as embarrassment, outrage, being passive- aggressive, biasing their decisions of computerized innovation, and diminishing work execution.

Table 6.1 presents the significant difference in technostress among Filipino nurses when grouped according to their age. Based on the data that was presented in Table 6.2, all age ranges that were surveyed showed moderate levels of technostress. There is no sufficient evidence gathered from this study to prove any significant difference when grouped according to age, therefore the second null hypothesis is accepted (Ho: There is no significant difference in technostress among Filipino nurses when grouped according to their age.)

In contrast, a study done by Golz et al. (2021) showed that older healthcare workers tend to experience higher levels of technostress, and are less confident about their ability to effectively navigate and utilize digital technologies. Another study by Roux and Botha, (2021) found that older workers experience higher levels of techno- complexity, techno-invasion, and techno-uncertainty but not for techno-overload, techno-insecurity or the overall score for technostress when compared with younger groups.

Table 6.1a. Shows the difference in technostress among Filipino nurses when grouped according to their age.

CASE	SUM OF SQUARES	Df	MEAN SQUARE	F	P	INTERPRETATION
Age						No significant difference
Range	0.342	2	0.171	1.141	0.332	
Residuals	4.794	32	0.15			

Table 6.2a. Shows the Difference in Technostress Among Filipino Nurses When Grouped According to Their Age.

AGE RANGE	N	MEAN	INTERPRETATION
29 to 37	19	3.38	MS
38 to 46	9	3.14	MS
47 to 56	7	3.33	MS
Overall Age	35	3.28	MS

Interpretations: 1.00-1.80: Very Low Stress (VLS); 1.81-2.60: Low Stress (LS); 2.61- 3.40: Moderate Stress (MS); 3.41-4.20: High Stress (HS); 4.21-5.00: Very High Stress (VHS)

On the other hand, a similar study done by Hauk et al. (2019) revealed that age is negatively related to tech-

nology-related strain since older workers used less technology compared to younger workers and have greater competence in handling stressors.

Table 7.1 presents the significant difference in technostress among Filipino nurses when grouped according to their gender.

OVERALL TECHNOSTRESS	W	df	P	INTERPRETATION
a. Overall Techno-insecurity	146.5	33	1	No Significant Difference
b. Overall Role Ambiguity	137	33	0.747	No Significant Difference
c. Overall Techno-complexity	109	33	0.204	No Significant Difference
d. overall Techno-overload	114	33	0.249	No Significant Difference
e. Overall Techno-invasion	165	33	0.519	No Significant Difference
f. Overall Technostress	141	33	0.853	No Significant Difference

Note. Student's test.

Table 7.1b. Shows the difference in technostress among Filipino nurses when grouped according to their gender.

GROUP		N	MEAN	INTERPRETATION
a. Overall Techno-insecurity	Female	21	4.171	HS
	Male	14	4.157	HS
b. Overall Role Ambiguity	Female	21	3.429	HS
	Male	14	3.589	HS
c. Overall Techno-complexity	Female	21	3.2	MS
	Male	14	3.529	HS
d. Overall Techno-overload	Female	21	3.8	HS
	Male	14	3.757	HS
e. Overall Techno-overload	Female	21	1.881	LS
	Male	14	1.607	VLS
Overall Technostress	Female	21	3.296	MS
	Male	14	3.328	MS

Interpretations: 1.00-1.80: Very Low Stress (VLS); 1.81-2.60: Low Stress (LS); 2.61-3.40: Moderate Stress (MS); 3.41-4.20: High Stress (HS); 4.21-5.00: Very High Stress (VHS)

Table 7.1a shows that when Filipino nurses are grouped according to their gender, the p-values for the overall technostress and other types of technostress are greater than 0.05. Based on the data that is presented, both females and males experience high levels of stress when it comes to overall techno-insecurity, role ambiguity and techno-overload. Moreover, when it comes to overall techno- complexity, males have high levels of stress whereas females have moderate stress. On the other hand, when it comes to techno-invasion, males show very low stress while females show low stress. Overall, the technostress of both the male and female respondents in general are moderate.

There is no sufficient evidence gathered from this study to prove any significant difference when grouped according to gender, therefore the second null hypothesis is accepted (Ho: There is no significant difference in technostress among Filipino nurses when grouped according to their gender.)

In contrast to this, a study by Marchiori et al. (2018) says that women are subjected to higher levels of techno-complexity and uncertainty, while men indicated feeling greater effects from techno-overload and techno-invasion.

Furthermore, a study done by Ariapooran and Abdolmaleki (2023) found that women experience higher levels of technostress compared to their male counterparts which indicates that most techno-stressors are significantly associated with the female gender and their degree-level education (La Torre et al., 2020). However, a study done by Jena and Mahanti (2014) revealed that male academicians experience more technostress than female academicians.

Table 8.1 presents the significant difference in technostress among Filipino nurses when grouped according to years of service.

Table 6.1a. Shows the Difference in Technostress Among Filipino Nurses When Grouped According to their Age.

CASE	SUM OF SQUARES	Df	MEAN SQUARE	F	P	INTERPRETATION
Age						No significant difference
Range	0. 552	2	0. 276	1. 926	0.162	
Residuals	4. 584	32	0. 143			

Table 8.2b. Shows the Difference in Technostress Among Filipino Nurses When Grouped According to Years of Service

YEARS OF SERVICE	N	MEAN	INTERPRETATION
4 to 12	15	3.43	HS
13 to 21	11	3.135	MS
22 to 31	9	3.319	MS
Overall Years of Service	35	3.295	MS

Interpretations: 1.00-1.80: Very Low Stress (VLS); 1.81-2.60: Low Stress (LS); 2.61-3.40: Moderate Stress (MS); 3.41-4.20: High Stress (HS); 4.21-5.00: Very High Stress (VHS)

Table 8.1a shows that when Filipino nurses are grouped according to their years of service, the p-value is greater than 0.05. Table 8.2b shows that Filipino nurses with 4 to 12 years of service experience high levels of technostress. On the other hand, Filipino nurses with 13 to 21 years of service along with Filipino nurses who have 22 to 31 years of service both experience moderate levels of technostress. There is no sufficient evidence gathered from this study to prove any significant difference when grouped according to years of service, therefore the second null hypothesis is accepted (Ho: There is no significant difference in technostress among Filipino nurses when grouped according to their gender.)

A study done by Okonoda (2017) opined that more work experience means lesser likelihood of experiencing technostress and lower levels of it are experienced.

In contrast, a research conducted by Quinn (n.d.) in this area indicated that nurses who served longer periods of time in the healthcare industry may encounter higher levels of technostress. Another study by Barchielli et al (2021) mentions nurses with more years of service have likely seen significant advancements in technology and changes in healthcare practices. Adjusting to the changes can be difficult and confusing, often heightening their levels of stress. A third study by Mlambo et al (2021) says that nurses with more years of service might have established routines and processes for themselves that are disrupted by the introduction of new technologies. These studies report that disruptions may lead to additional challenges, stress and frustration as they have to learn new systems and adapt their established workflow

4. Conclusions and Recommendations

The level of technostress of Filipino nurses in the Kingdom of Bahrain is moderate because they don't feel that technology invades their life, however they still experience high stress when it comes to techno-insecurity, role ambiguity and techno- overload. It was also found that the physical problems encountered due to technostress are rarely encountered while mental problems are never encountered. The findings also revealed that there is a direct significant relationship between technostress and the frequency of the problems encountered as well as there is no significant difference in technostress among Filipino nurses when grouped according to their demographic profile.

Based on the conclusions, the following are recommended:

1. Communities, organizations, and hospitals should offer comprehensive training programs that focus on enhancing nurses' digital literacy skills. These programs should cover the use of Electronic Health Records (EHRs), medical devices, communication tools, and other technology commonly used in healthcare settings. The training should cater to nurses of different proficiency levels, providing both basic and advanced skills training. Additionally, it is recommended that hospitals invest in the latest technology used when it comes to healthcare.
2. Hospitals could develop user-friendly documentation, manuals, and guides that explain how to effectively use different technologies in the nursing practice especially when it comes to new technologies. These resources should be easily accessible and provide step-by-step instructions, troubleshooting tips, and best practices. Visual aids, video tutorials, or interactive modules can enhance the learning experience.
3. Colleges, nursing schools, and policy makers should prioritize the provision of physical and mental health support for nurses. The integration of technology in healthcare settings can sometimes lead to increased workload and stress. Therefore, it is important to implement policies and programs that promote work- life balance, stress management, and overall well-being among nurses.
4. Future researchers can improve the study by looking at different locales, having a greater number of respondents, different nationalities of respondents, respondents in other professions and consider other factors that may affect the level of technostress as well as the frequency of the different problems encountered.

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