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# EXTENT OF USE OF COMMUNICATION TECHNOLOGIES IN THE REFERRAL SYSTEM AMONG NURSES AND PERCEIVED PROVISION OF CARE AMONG PATIENTS IN PRIVATE HOSPITALS IN ROXAS CITY

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**ABSTRACT –** Digital technology like the use of computers and other mediums of communication such as mobile phones has become a necessity in this age of advanced information technology. This study was conducted to determine the relationship between the extent of use of communication technologies in the referral system using short message/messaging service or SMS among nurses and the selected demographic profiles including the provision of care as perceived by patients in private hospitals in Roxas City. This descriptive-correlational research was conducted for two years during the COVID-19 pandemic. The study covered nurse respondents working in two tertiary private hospitals in Roxas City and selected admitted patients which includes 150 nurse respondents and 150 patient respondents. The IBM Statistical Package for Social Sciences (SPSS) Statistics 28 software was used to process the data. This study shows that the extent of use of communication technologies in the referral system as perceived by nurses and the perception of provision of care as perceived by the admitted patients have no significant relationship. Moreover, the extent of use of communication technologies in the referral system and the demographic profile such as age, sex, civil status, educational attainment, employment status, length of service, and area of assignment were not significantly related except for the length of service.

**Keywords**: Communication Technologies, Nursing, Provision of Care

## INTRODUCTION

Information and communication technologies (ICTs) are continuously becoming important for quality healthcare delivery by nurses. One example is getting patient satisfaction which is vital and the most frequently utilized barometer to measure the quality of the health care services rendered. A referral system allows a patient's medical requirements to be fully addressed using resources that go beyond what is offered at the institution where they get treatment, whether it be a community unit, pharmacy, health center, or a higher level medical facility (Ministry of Health).

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A recent study shows that ICTs are suitable at points where healthcare professionals consult with patients in hospital clinics, remote communication is needed, and management of referrals (Ogundaini et al., 2021).

Healthcare workers around the globe are increasingly adopting digital IMS (Integrated Management Systems) that include short messaging service usage (Martinengo et al., 2020). The use of the Short Messaging Service (SMS) has been the more available and accessible means to communicate with other team members of healthcare professionals. Healthcare Communications (2016) reported the role of SMS messaging in improving healthcare provision. SMS is an effective communication tool in appointment reminders, post-discharge surveying, and medication reminder services (Healthcare Communications, 2016). In the Philippines, SMS has become the most effective tool for expanding the compliance rate in prenatal follow-up (Banez et al., 2010). It is also benefiting healthcare industries in terms of booking or appointment, diagnostic test reports, and queue systems (Wordtext Systems, Inc., 2019).

Previous studies showed the benefits of short messaging service interventions for patient's medical check-up notification, health promotion especially in developing countries and health prevention. Health institutions, administrators, stakeholders, or clinicians using short messaging service to support healthcare actions have implemented interventions that have worked well in different healthcare settings and have continued evaluating short messaging service interventions. SMS has become an effective tool in healthcare scenarios for varied reasons ranging from medical practitioner's deployment status, to patient reminders for appointments, and follow-up medications. It also has its use as a reflective practice and dialogue for nurse practitioners assigned to remote areas.

In order to minimize the risk of transmission of COVID-19, many clinic appointments were postponed to lower patient attendance. Actively calling patients to refer them to appropriate doctors or postpone appointments is a labor-intensive process. The hospital utilized SMS to be the referral system during the pandemic. The referral system assisted in the staffing pattern and patient classification system through improved workflow during referrals made to physicians when such intervention is adapted, sustained and supported. On a personal observation, the researcher found that elderly patients are complaining of queuing time during consultation. One of the reasons for the incident is because of vague policy on the referral system. The researcher believes that this study is very relevant to provide clear evidence, especially during this period of pandemic when health consultation is difficult compared to normal situations.

Despite the many approaches implemented in different clinical settings; patient satisfaction is not sustained. There is also a lack of research done in the Philippines on patient perception of the provision of care as influenced by the extent of the use of communication technologies in the referral system. In Roxas City, no study was found exploring the two factors thus, the researcher focused on this specific research locale.

**OBJECTIVES OF THE STUDY**

This research was conducted to ascertain the relationship between nurses' extent of use of communication technologies in the referral system and perception on the provision of care among patients in private hospitals in Roxas City. Specifically, it aimed to determine the following:

1. The demographic profiles of the nurse respondents in terms of:
    1.1 age
    1.2 sex

1.3 civil status
1.4 educational attainment
1.5 employment status
1.6 length of service and
1.7 area of assignment

2. The extent of use of communication technologies in the referral system among nurses in private hospitals in Roxas City in terms of:
   2.1 health promotion and disease prevention
   2.2 treatment compliance
   2.3 health information systems and point-of-care support
   2.4 data collection and disease surveillance
   2.5 emergency medical response

3. The perception on provision of care among patients admitted in private hospitals in Roxas City in terms of:
   3.1 nurse communication
   3.2 doctor communication
   3.3 the hospital environment
   3.4 your experiences in the hospital
   3.5 when you left the hospital
   3.6 overall rating of hospital
   3.7 understanding your care when you left the hospital

4. The relationship in the extent of use of communication technologies in the referral system among nurses in private hospitals in Roxas City and the following demographic profiles:
   4.1 age
   4.2 sex
   4.3 civil status
   4.4 educational attainment
   4.5 employment status
   4.6 length of service and
   4.7 area of assignment

5. The relationship in the extent of use of communication technologies in the referral system and perception on provision of care among patients admitted in private hospitals in Roxas City.

## SCOPE AND DELIMITATION

This descriptive-correlational research was conducted for two years during the COVID-19 pandemic. The study covered nurse respondents working in two tertiary private hospitals in Roxas City and selected admitted patients, thus findings will not generalize other institutions. The hospitals were chosen based on their ease of access, lower cost needed to gather data, availability of results in less time and positive response of the hospital administrators to allow the conduct of research.

Patient perception on the provision of care can be influenced by many factors but this study, however, focused on the influence of the use of communication technologies in the referral system. Only age, sex, marital status, level of education, work status, duration of service, and area of assignment are considered demographic characteristics. The referral system is only through SMS, a direct text from one mobile phone to another using mobile load and not using any other applications such as WhatsApp, Viber, Messenger, or any other messaging apps using Wi-Fi or mobile data.

## METHODOLOGY

This study utilized a descriptive-correlational research design using a one-shot survey. The correlations that may exist between these factors were determined by using this non-experimental study methodology to characterize the personal profiles of the nurses, their level of usage of communication technologies in the referral system, and the patient assessment of the care provided.

### Study Setting

This study was conducted in two tertiary hospitals in Roxas City, Capiz, Philippines. The choice of tertiary hospitals depends on their accessibility to the researcher as well as their ease of access for the data gathering procedures. Both hospitals offer varied healthcare services, recognized by the Department of Health (DOH) and Phil Health. The hospitals were chosen based on their ease of access, lower cost needed to gather data, availability of results in less time and positive response of the hospital administrators to allow the conduct of research.

### Sampling Size

Total enumeration was utilized in this study. The combined actual population size of the nurses working in the two hospitals is 282. As of November 2020, Hospital A has 152 nurses and Hospital B has 130 eligible respondents while the average number of patients daily census ranges from 50 to 100 patients.

### Research Instrument

A set of questionnaires with three parts was administered to the participants. Part I of the research instrument asked about the nurses' age, sex, civil status, educational attainment, employment status, length of service, and area of assignment.

Part II determined the extent of the use of communication technologies in the referral system among nurses. The tool is a 25-item validated questionnaire created by the researcher. The scale includes five categories with five items each that covers both individual- and system-level interventions upon which communication technologies in the referral system are expected to be of use. The categories covered the continuity of care from promotion of health and prevention of disease to long-term care and extreme response as outlined by Mecheal et al (2010).

The questionnaire was answerable using a 5-point Likert-type scale where five (5) is the highest score and one (1) is the lowest score. The responses and the scoring vary from "5=full extent," "4=large extent," "3=some extent," "2=certain extent," and "1=no extent."

### Data Analysis and Interpretation

Prior to being analyzed with the IBM Statistical Package for Social Sciences (SPSS) Statistics 28 software, the data was coded, tabulated, and classified.

For the descriptive analysis, the use of frequency distribution, percentages, median scores, and mean scores was used to present data on nurse respondents' demographic profiles as well as their distribution according to the extent of their use of communication technologies in the referral system.

In addition, Spearman's correlation was used to measure the strength and direction of association between two variables measured on at least an ordinal scale. The test was performed between the age and extent of use of communication technologies in the referral system among nurses and the length of service and extent of use of communication technologies in the referral system among nurses.

### Data Management

Individual data was coded and encoded to Excel in preparation for data analysis. An SPSS® version 28.0 was the statistical software program used to perform all statistical operations. Data was stored in a cabinet for five years and all data will be deleted after this period.

### Ethical Considerations

Before the data collection, the researcher sought ethics approval for the study from the UP Open University Institutional Research Ethics Committee (IREC). An informed consent was prepared and was secured from the respondents. The form stated the purpose of the study, the description of the research procedures, the right to refuse and withdraw, and the privacy and confidentiality of records. An individual questionnaire was assigned a code to which only the researcher has access. Each questionnaire was placed in a secured envelope to ensure that the data would not be disclosed.

## RESULTS AND DISCUSSION

The data collection generated responses from 150 nurses who answered a total of 25 questions and 150 patients who answered a total of 21 questions.

### Profile of the Respondents

Table 1 shows the distribution of the subject participants according to selected social and work-related characteristics of the respondents. The profile of the respondents was discussed in terms of age, sex, civil status, educational attainment, employment status, years of service, and area of assignment.

**Table 1**
*Demographic Profiles of the Nurse Respondents*

| Independent Variable | | Frequency | Percentage |
|---|---|---|---|
| | | n = 150 | 100 % |
| Age (in years) | 1 (25 and below) | 37 | 24.7 |
| | 2 (26-30) | 84 | 56.0 |
| | 3 (31-40) | 24 | 16.0 |
| | 4 (41-50) | 5 | 3.3 |
| Sex | 1 (Male) | 12 | 8.0 |
| | 2 (Female) | 138 | 92.0 |
| Civil Status | 1 (Single) | 111 | 74.0 |
| | 2 (Married) | 37 | 24.7 |
| | 3 (Widow/er) | 2 | 1.3 |
| Educational Attainment | 1 (College Graduate) | 146 | 97.3 |
| | 2 (Master's Graduate) | 4 | 2.7 |
| Employment Status | 1(Regular/Permanent) | 148 | 98.7 |
| | 2 (Probationary) | 2 | 1.3 |
| Length of Service (in years) | 1 (1-5 years) | 68 | 45.3 |
| | 2 (6-10 years) | 29 | 19.3 |
| | 3 (11-15 years) | 17 | 11.3 |
| | 4 (16-20 years) | 22 | 14.7 |

| | | | |
|---|---|---|---|
| | 5 (21 years and above) | 14 | 9.3 |
| Area of Assignment | 1 (Emergency Room) | 27 | 18.0 |
| | 2 (Pediatric Ward) | 64 | 42.7 |
| | 3 (Intensive Care Unit) | 26 | 17.3 |
| | 4 (Surgical Ward) | 22 | 14.7 |
| | 5 (Medical Ward) | 11 | 7.3 |

The table above shows that the age distribution of more than half or 84 (56%) of the respondents were aged 26-30. There were only five (3.3%) healthcare providers who were from the age group 41-50. This indicates that the majority of the respondents in the two private hospitals belong to a younger population. This is due to higher job opportunities among the younger population who were employed in private hospitals. During the second and third quarters of the pandemic in the year 2020 to 2021, the Department of Health hired volunteer nurses who were young and did not have comorbidities to work at COVID-19 wards among the referral hospitals in the National Capital Region and other designated local hospitals in the country. This situation gives young nurses employment opportunities.

Almost all the respondents were female with 138 (92%) from the total population of 150 respondent nurses in the two private hospitals. In terms of the civil status of the respondents, it was revealed that most or 111 (74%) of the healthcare providers from private hospitals were single and only 37 (24.7%) were married. There were only two (1.3%) healthcare providers who were widows/widowers. This suggests that the younger demographic of nurse responders is made up of single individuals.

Regarding the educational attainment of the respondents in both private hospitals, there were only four (2.7%) with master's degrees who hold managerial positions such as supervisors and chief nurses of the two private hospitals. The majority of the respondents with a total number of 146(97.3%) were college graduates. In employment status, 148 (97.8%) or majority of the respondents for both private hospitals were regular/permanent , and only two (1.3%) were on probationary status being newly hired employees. Nearly one-half or 68 (45.3%) of the healthcare providers in privately-owned hospitals have been employed for 1-5 years. It was followed by 29 (19.3%) who have stayed in the service for 6-10 years . Only 14(9.3%) were employed for 21 or more years. This implies that the majority of the healthcare providers in this study were young in the service. This suggests that the length of hospital experience in the service of the healthcare workers in both private hospitals was almost similar.

Nearly half or 64 (42.7%) of the total nurse respondents for the two private hospitals were assigned to Pediatric Ward. Distribution was followed by those who were assigned to the Emergency Room with 27 (18%), Intensive Care Unit with 26 (17.3%), Surgical Ward with 22 (14.7%), and lastly, Medical Ward with only 11( 7.3%). The grouping of the respondents according to the area of assignment is very important in this study in identifying the nurse respondent's extent of use of communication technologies between the two private hospitals.

**Table 2**

*Health Promotion and Disease Prevention*

| Health Promotion and Disease Prevention | Mean | SD |
|---|---|---|
| 1. I use information technology to raise the awareness of my clients about healthy behaviors. | 3.49 | 1.11 |

| | | |
|---|---|---|
| 2. I use information technology to empower behavior change and actions to my clients through increased knowledge. | 3.37 | 1.12 |
| 3. I use information technology to encourage, make available, and enable healthy choices for my clients. | 3.36 | 1.14 |
| 4. I use information technology to help modify risk behaviors of my clients such as tobacco use or poor eating habits. | 3.39 | 1.19 |
| 5. I use information technology to highlight the dietary regimen that is prescribed for my clients. | 3.31 | 1.16 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent*
*4.21 – 5.0 = Full Extent*

Table 2 presents the extent of use of communication technologies in the referral system among nurses in private hospitals in Roxas City in terms of Health Promotion and Disease Prevention. The table shows that there is a large extent of use of information technology to raise awareness of clients about healthy behaviors with the result of 3.49 (SD=1.11). There were only 3.31 (SD=1.16) extent of use of information technology to highlight the dietary regimen that is prescribed for the clients. This was affirmed by the study of Househ (2014) that the use of SMS interventions can help in preventive healthcare especially those focusing on healthcare outcomes and its long-term impact. With the continuous expansion of technology and other factors influencing social media, information technology is emerging as a powerful tool in spreading awareness and education of various relevant concepts in health and conducting activities, online courses, and classes more effectively than face-to-face direct communication (Latha et al., 2020).

**Table 2.1**
*Treatment Compliance*

| Treatment Compliance | Mean | SD |
|---|---|---|
| 1. I use information technology to reach out to my clients and remind them about due medications. | 3.17 | 1.19 |
| 2. I use information technology to give discharge instructions to my clients. | 3.11 | 1.19 |
| 3. I use information technology to help monitor my clients' recurring untoward signs and symptoms. | 3.16 | 1.14 |
| 4. I use information technology to help improve the management of the disease of my clients. | 3.22 | 1.11 |
| 5. I use information technology to monitor my clients' compliance with prescribed therapeutic and treatment regimens. | 3.16 | 1.17 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent*
*4.21 – 5.0 = Full Extent*

Table 2.1 shows the treatment compliance where to some extent nurse respondents use information technology to help improve the management of the disease of the clients with the result of 3.22 (SD=1.11) as the highest and the use of information technology to give discharge instructions to clients was only 3.11 (SD=1.19) being the lowest. However, the use of information technology to help monitor the clients' recurring untoward signs and symptoms was 3.16 (SD-1.14), and the use of technology to monitor clients' compliance to prescribed therapeutic and treatment regimen with similar results of 3.16 (SD=1.17). Schwebel & Larimer et.al., (2018) asserted that information technology, particularly the use of SMS, was utilized in improving patient medical compliance. In the meta-analysis study of Palmer et.al., (2021), it was established that the efficacy of the actions brought by mobile

phone technology improves adherence to medication for the initial prevention of cardiovascular disease in adults.

**Table 2.2**
*Health Information Systems and Point-of-Care Support*

| Health Information Systems and Point-of-Care Support | Mean | SD |
|---|---|---|
| 1. I use information technology to raise the awareness of my clients about healthy behaviors. | 3.65 | 1.08 |
| 2. I use information technology to empower behavior change and actions to my clients through increased knowledge. | 3.59 | 1.08 |
| 3. I use information technology to encourage, make available, and enable healthy choices for my clients. | 3.65 | 1.04 |
| 4. I use information technology to help modify the risk behaviors of my clients such as tobacco use or proper eating habits. | 3.60 | 1.10 |
| 5. I use information technology to highlight the dietary regimen prescribed to my clients. | 3.58 | 1.11 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent*
*4.21 – 5.0 = Full Extent*

Table 2.2 shows that there is a large extent of use of information technology to raise the awareness of the clients about healthy behavior and the use of information technology to encourage, make available, and enable healthy choices to the clients with the same results of 3.65 (SD=1.08) and 3.65 (SD=1.04), respectively. However, the use of information technology to highlight the dietary regimen prescribed to clients has the lowest result with a mean of 3.58 (SD 1.11). This supports the study of Kannisto et.al, (2014) where the use of information technology reminds the patients of health services through mobile phone text message reminders. In another study, although they might not increase real adherence to recommendations, text-message reminders can offer a platform to enhance comprehension of treatment guidelines and case management decision-making abilities Kaunda-Khangamwa et al., 2018). Increased engagement might be a crucial element of an intervention to assist in the removal of structural obstacles and promote better therapeutic practices, including two-way communication (Kaunda-Khangamwa et al., 2018).

**Table 2.3**
*Data Collection and Disease Surveillance*

| Data Collection and Disease Surveillance | Mean | SD |
|---|---|---|
| 1. I use information technology to gather information about my clients' signs and symptoms. | 3.27 | 1.11 |
| 2. I use information technology to monitor my clients' adverse reactions to medications. | 3.22 | 1.20 |
| 3. I use information technology to monitor adverse reactions of drugs in my clients. | 3.29 | 1.21 |
| 4. I use information technology to obtain a client's appearance from his/her room during my shift. | 3.21 | 1.28 |
| 5. I use information technology to collect patient reports about his experience | 3.15 | 1.29 |

*Legend: 1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent*

*4.21 – 5.0 = Full Extent*

Table 2.3 shows the Data Collection and Disease Surveillance wherein to some extent nurse respondents use technology to monitor adverse reactions of drugs in their clients with the result of 3.29 (SD=1.21). This was insisted in the study of Kannisto et.al., (2014) that the use of mobile telephone through text message was widely utilized for medication compliance and clinic appointments with 100% utilization of SMS as a means of communication among its respondents. There were, however, only 3.15 (SD=1.29) who used information technology to collect patient reports about their experience. Considering that the standard deviation is low it would indicate that the values tend to be close to the mean. In addition, the review of the literature shows 100% utilization of the SMS as a tool of communication among its subjects and it was found that 73% of the studies, shows that 44 out of 60 research utilized mobile phone text message reminder as the lone intervention(Kannisto et al., 2014). With such an approach the use of mobile telephones ranged from reminders of patient's health services sent to different patient groups, like medications taken and scheduled appointments (Kannisto et al., 2014).

**Table 2.4**
*Emergency Medical Response*

| Emergency Medical Response | Mean | SD |
|---|---|---|
| 1. I use information technology to alert the physician in times of emergency. | 3.99 | 1.09 |
| 2. I use information technology to disseminate abnormalities in the laboratory results to the physician. | 4.04 | 1.02 |
| 3. I use information technology to notify colleagues of any emergency or disaster. | 3.85 | 1.06 |
| 4. I use information technology to notify the physician of any improvement in patient response. | 3.85 | 1.15 |
| 5. I use information technology to initiate a cardiopulmonary response. | 3.76 | 1.27 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent*
*4.21 – 5.0 = Full Extent*

Table 2.4 shows the Emergency Medical Response where there is a large extent of use of information technology to disseminate abnormalities in the laboratory results to physicians with the result of 4.04 (SD=1.02). In the study of Lu et. al., (2018), it was found that the use of information technology provided a sophisticated yet simple tool to improve perioperative healthcare. There were only 3.76 (SD=1.27) which is the lowest result among variables with the use of information technology to initiate cardiopulmonary response. This indicates that the majority of the time, the responders notify the attending physician or the on-call medical resident to start advanced cardiac life support via information technology.

**Perception on the Provision of Care among Patients Admitted in Private Hospitals in Roxas City**

**Table 3**
*Nurse Communication*

| Nurse Communication | Mean | SD |
|---|---|---|
| 1. During this hospital stay, how often did nurses treat you with courtesy and respect? | 3.57 | .676 |

| | | |
|---|---|---|
| 2. During this hospital stay, how often did nurses listen carefully to you? | 3.49 | .691 |
| 3. During this hospital stay, how often did nurses explain things in a way you could understand? | 3.38 | .702 |
| 4. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it? | 3.86 | 1.74 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3 shows the perception on the provision of care among patients admitted in private hospitals in Roxas City. In terms of nurse communication, the majority of the respondent patients were very satisfied during their hospital stay after pressing the call button revealed 3.86 (SD=1.74) often got help as soon as they wanted it. In the study of Karaca and Durna (2019), results showed that patients were more satisfied with the concern and caring of the nurses. Even if there were only 3.38 (SD=.702) during their hospitalization, patient respondents were very satisfied since nurses explained things in a way that the client could understand. Research has shown that effective communication between patients and healthcare providers is essential for the provision of patient care and recovery (Madula et al., 2018).

**Table 3.1**
*Doctor Communication*

| Doctor Communication | Mean | SD |
|---|---|---|
| 5. During this hospital stay, how often did doctors treat you with courtesy and respect? | 3.26 | .764 |
| 6. During this hospital stay, how often did doctors listen carefully to you? | 3.31 | .758 |
| 7. During this hospital stay, how often did doctors explain things in a way you could understand? | 3.00 | .712 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.1 shows that there were 3.31 (SD=.758) patient-respondents who identified that doctors always listen carefully to their complaints hence, they were very satisfied. There were only 3.00 (SD=.712) responses among patient respondents during their hospital stay wherein the doctor usually explained things in a way that the patients could understand but still, they were satisfied. This was like in the study of Vega-Hurtado (2020) where the study shows that fluid and close communication with the patients can get better results and patient satisfaction. Physicians with strong communication skills can get accurate, thorough, and pertinent information concerning a patient's stress and distress. Research indicates that physicians with communication skills training are more likely than those without such training to identify and diagnose emotional and psychological distress in their patients and to adequately address their needs (Jahan & Siddiqui, 2019).

**Table 3.2**
*The Hospital Environment*

| The Hospital Environment | Mean | SD |
|---|---|---|
| 8. During this hospital stay, how often were your room and bathroom kept clean? | 3.40 | .782 |

| | | |
|---|---|---|
| 9. During this hospital stay, how often was the area around your room quiet at night? | 3.25 | .819 |

*Legend:*
*1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.2 shows the Hospital Environment where the room and bathroom during hospital stay were always kept clean with the result of 3.40 (SD=.782) which means that patient respondents were very satisfied. There were only 3.25 (SD=.819) during admission when the room was quiet at night. The study of Byang et. al., (2019), reveals that patients were satisfied with nurses who respected their privacy and treated them as individuals.

**Table 3.3**
*Your Experience in the Hospital*

| Your Experience in the Hospital | Mean | SD |
|---|---|---|
| 10. During this hospital stay, did you need help from nurses or other hospital staff in getting to the bathroom or in using a bedpan? | 1.33 | .472 |
| 11. How often did you get help in getting to the bathroom or in using a bedpan as you wanted? | 2.86 | .884 |
| 12. During this hospital stay, were you given any medicine that had not been taken before? | 1.30 | .459 |
| 13. Before giving you any new medicine, how often did hospital staff tell you what the medicine was for? | 3.07 | .832 |
| 14. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand? | 2.90 | .943 |

*Legend: 1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.3 shows the Patient's Experience in the Hospital where usually before giving any new medicine a hospital staff explains the indication of the drug with a result of 3.07 (SD=.832), this indicates that the patient respondents were satisfied. This was affirmed in the study of Githemo et. al., (2018) which highlighted in their results that the main reference for patient satisfaction is the quality of nursing care that they received as well as the individualized quality care that they rendered. There were only 1.30 (SD=.459) which shows that during their admission, they never received any new medicine that they had not taken before. This further explains that the experience in the hospital by the respondent patients was asked based on the frequency that the hospital staff extended their help to the patients. In addition, the patient respondents were asked about their level of dependency of the patient respondents to the nurses and whether they received new medication explained to them.

Items 10 to 14 are both situations that are in the hospital. Again, this study was done in two years during the pandemic. It is evident that people are not very satisfied when they receive assistance using the bedpan or going to the restroom. Nurses reported that personal protective equipment (PPE) and physical distancing made it more difficult to create relational interactions, assist and communicate with patients (Petry et al., 2022). Thus, some assistance was not efficiently provided by nurses during the pandemic situation and affected the feeling of satisfaction of the patients in terms of the kind of help that they needed.

**Table 3.4**
*When You Left the Hospital*

| When You Left the Hospital | Mean | SD |
|---|---|---|

| | | |
|---|---|---|
| 15. After you left the hospital, did you go directly to your own home, to someone else's home, or another health facility? | 1.05 | .250 |
| 16. During this hospital stay, did doctors, nurses, or other hospital staff talk with you about whether you would have the help you needed when you left the hospital? | 1.10 | .297 |
| 17. During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital? | 1.26 | .439 |

*Legend: 1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.4 shows that respondents were dissatisfied since they did not get information in writing about what symptoms or health problems to look out for after the patient left the hospital with a result of 1.26 (SD=.439). There were only 1.05 (SD=.250) wherein the patient goes directly to the patient's home, to someone else's home, or another facility. This indicates that the patient-respondents did not get guidance regarding symptoms or health issues to be aware of following their release from the hospital. It is worth noting that after discharge the patient-respondents did not go directly to their home, someone else's home, or to another facility wherein the reasons were not disclosed. It was affirmed in the study of Githemo et. al., (2018) that both positive and negative feedback of patients' perceptions were talked about at home based on the quality of the nursing care they received.

**Table 3.5**
*Overall Rating of Hospital*

| Overall Rating of Hospital | Mean | SD |
|---|---|---|
| 18. Would you recommend this hospital to your friends and family? | 3.27 | .662 |

*Legend: 1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.5 displays the overall hospital rating, which produced a mean score of 3.27 (SD=.662) indicating that patients were extremely happy and would recommend the hospital to their friends and relatives. This was supported by the study of Karaca and Durna (2019) where the result revealed that patients were more satisfied with the concern and caring of the hospital staff.

**Table 3.6**
*Understanding Your Care When You Left the Hospital*

| Understanding Your Care When You Left the Hospital | Mean | SD |
|---|---|---|
| 19. During this hospital stay, staff took my preferences and those of my family or caregiver into account in deciding what my healthcare needs would be when I left. | 3.03 | .607 |
| 20. When I left the hospital, I had a good understanding of the things I was responsible for managing my health. | 3.07 | .678 |
| 21. When I left the hospital, I clearly understood the purpose of taking each of my medications. | 3.12 | .728 |

*Legend: 1.0 - 1.80 = No Extent 1.81 - 2.60 = Certain Extent 2.61 - 3.40 = Some Extent 3.41 - 4.20 = Large Extent 4.21 – 5.0 = Full Extent*

Table 3.6 reveals that the patient respondents were satisfied with the care they received when they left the hospital, they clearly understood the purpose for taking each of the

medications with the result of 3.12 (SD=.728). The respondents were happy with the hospital staff's customary consideration of their choices and those of their family or caregiver when determining their post-discharge health care needs, despite the fact that the sample size was low 3.03 (SD=.607). This was mentioned in the study of Githemo et. al., (2018) that patient satisfaction was based on the standard nursing care they received and were based on the information they received during admission, orientation, and individualized quality care which were all found to be positive or high in their study.

**Table 4**

*Relationship Between Extent of Use of Communication Technologies in the Referral System and Selected Demographic Variables*

| Variables | Correlation Coefficient | p-value Sig. (2-tailed) |
|---|---|---|
| Age* | .030 | 0.72 |
| Sex** | -.028 | 0.74 |
| Civil Status** | .002 | 0.98 |
| Educational Attainment** | .030 | 0.71 |
| Employment Status** | -.033 | 0.69 |
| Length of Service* | -.422 | <0.001 |
| Area of Assignment** | -.069 | 0.40 |

*<0.05 level of significance*
**Spearman Correlation*
***Point-biserial Correlation*
*Description: .00-.19 "Very weak"; .20-.39 "Weak" ; .40-.69 "Moderate"; .70-.89 "Strong" ; .90-1.0 "Very strong"*

Table 4 shows that in terms of age, it shows it has a very weak positive correlation between the extent of use of communication technologies (sp=.03, p=0.72), however the relationship is not significant. In addition, since the p-value was > .05 (not significant) equal variances were assumed. This means that the majority of the respondents were young adults. This further explains that young adults tend to use communication technology due to easy adaptability for change among them. These results were similar to the study of Zickuhr (2011) which showed that younger adults are more likely influenced by the technology using their gadgets for a series of uses. Meanwhile, older generations are becoming prevalent as well, they tend to adapt to the needs of the situation and become more technologically savvy.

Moreover, in terms of sex, it shows a very weak negative correlation with the extent of use of communication technologies (rs=-.028, p=0.74), however, the relationship is not significant. This was affirmed in the study of Chen et al. (2017), wherein males tend to use gadgets because it may be related to playing online games and listening to videos and music.

In terms of civil status, it shows a very weak positive correlation with the extent of use of communication technologies (rs=.002, p=0.98), however, the relationship was not significant. This simply implies that singles have a high probability of communication technology utilization. This is due to unmarried people's tendency to use communication technologies since they have more time to communicate with their loved ones and significant others. Furthermore, these singles belong to a young population where chances of communication technology use were high.

In terms of educational attainment, it has a very weak positive correlation with the extent of use of communication technologies (rs=.030, p=0.71), however, the relationship was not

significant. This means that the higher the educational achievement, the higher the rate of communication technology usage. This was affirmed in the study of Khoong et. al. (2020) that vulnerable populations, including non-English speaking or low-income individuals, have an impact on the use of communication technologies. Also, the youth today have unprecedented access to modern technology and spend many hours on different applications. Technology has assumed a considerable stake in the social and educational lives of younger people (Simuforosa, 2013).

In terms of employment status, it has a very weak negative correlation between the extent of use of communication technologies (rs=-.033, p=0.69), however, the relationship was not significant. It explains that it does not necessarily mean that there is a relationship between the communication technologies against those permanent respondents. Regardless of the employment status of the respondents, it will not affect the extent of use of communication technologies in the referral system.

Consequently, in terms of the length of service, it has a moderate negative correlation between the extent of use of communication technologies (sp=-.422, p=<0.001). This means that the longer the length of service, the lesser the use of communication technology hence, the relationship is significant. This is because those respondents who were working in the hospital for quite some time and were promoted to managerial positions have a lesser direct patient exposure and this will result in less usage of communication technology in the referral system. In addition, considering that the majority of the nurse respondents were young the probability of use of communication technologies was also high. However, for effective communication technology in referral systems, there should be a collaborative platform where easy search and discovery for health care providers is possible and help in decision making (Bashar et al., 2019).

Lastly, in terms of the area of assignment, it has a very weak negative correlation between the extent of use of communication technologies (rs=-.069, p=0.40), however, the relationship was not significant. This justifies that the area of assignment does not necessarily mean that it determines the extent use of communication technologies. However, those who were assigned to special areas tend to use communication technologies for work-related concerns.

**Table 5**
*Relationship Between Extent of Use Communication Technologies and Perceived Provision of Care*

| Variable | Correlation (Pearson's Coefficient | *p-value* *Sig. (2-tailed)* |
|---|---|---|
| Perceived Provision of Care | 0.67 | 0.836 |

Table 5 shows that there is no significant relationship between the extent of the use of communication technologies in the referral system and the perception of the provision of care among patients admitted to private hospitals in Roxas City (r=0.67, p=0.84, α=.05).

This is in contrast with the study of Rassy et al., (2021) wherein they stated that the use of communication technology in suicide prevention plays a major role. This study was confirmed by Chen. et al., (2016) where the use of communication technology interventions reduced social isolation among the elderly. It was also mentioned in the study of Bradley et al., (2020) that the widespread use of mobile technology through expansion of telemedicine will facilitate communication between health professionals thus, it will improve patient

health outcomes. In a meta-analysis study by Palmer et al., (2021) they found that the use of communication technology improves adherence to medications among patients with cardio-vascular disease (CVD) in adults. Consequently, the result of the researcher's study does not support the previous studies on the extent of use of communication technologies in the referral system primarily, because of the type and method of communication technologies that the nurse-respondents have utilized. Second, responses from the patient-respondent may vary from each study due to technology application and advancement of hospital facilities. Third, is the adaptation of the extent of use of communication technologies among health professionals. Lastly, due to a lack of hospital protocol/guidelines on the use of communication technologies in the referral system.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The following conclusions were made based on the findings of the study. Generally, the length of service among the respondent nurses is significantly related to the rest of the variables. The result of the study suggests that based on the selected demographic profile, it will not affect the extent of the use of communication technologies in the referral system except for the length of service**.** This is evident among managerial employees in the hospital since supervisory and managerial positions have lesser direct patient exposure. In effect, the extent of use of communication technologies in the referral system is not fully utilized among these groups. Specifically, the use of communication technologies to raise awareness of the client's healthy behavior and referral to a physician for any abnormalities in the laboratory result of the patient has a big impact on the utilization of communication technologies.

The patient perception of the provision of care provided to the patient respondent while admitted is promising especially when it comes to the cleanliness of the hospital environment. In addition, the majority of the client respondents said that they would recommend the hospital to their family and friends for the excellent care that they received during the whole hospital stay. However, it was noted that the health providers failed to instruct the patient after discharge for any signs and symptoms to watch out at home. Thus, these can help nurses, physicians, as well as hospitals to strategize further in creating health instructions after discharge. Furthermore, The results of the study will assist in policy-making and basis in creating implementing rules and regulations on the integration of communication technology as a strategy in order to improve referral systems.

### Recommendations

1. Findings from this study will serve as baseline data that will guide the hospital leaders and administrators in the utilization of communication technologies particularly in the referral system. Given the findings, it is recommended that hospitals should have a standardized method using communication technologies in the referral system.
2. Given the fact that patient perception of the provision of care depends primarily on the quality of nursing care rendered by nurses and other allied health professionals services, as well as the hospital environment that plays a significant role in patient satisfaction. Thus, this study suggests revisiting and enhancing the referral system in the hospital starting from admission until discharge and follow-up, to aid nurses and improve the referral system in the hospital.
3. Given that most healthcare providers, particularly nurses in private hospitals, have increased workload due to the high nurse-patient ratio, the study suggests improving the referral system to augment the patient satisfaction index.

4. Examine some other components that could influence the extent of the use of communication technologies in the referral system. This might include the acceptance of the new communication technologies introduced and the implementation of the new system to the subject respondents.
5. The results of this study showed that there is no statistical evidence of the extent of the use of communication technologies in the referral system and the patient's perception of the provision of care. Thus, this study suggests further investigation using other modalities or methods in conducting the said research.
6. Because of the advent of technology, it is about time for hospitals to adopt current methods in the referral system using the different modes of communication technologies that apply to every hospital setting. This will improve the process in the referral system and aid the physician in intervening while he/she is still on his way to the hospital; thus, it will improve patient outcomes and recovery.
7. To be proactive in ensuring quality care to the patients and address patient's concerns regarding their safety and health.
8. Re-evaluate or revisit existing guidelines of the hospital on the methods in the referral system to give attention to strategic planning and program expansion.
9. The study findings apply to all hospitals concerned. A similar study can be done on a bigger scale to be able to generalize the findings.
10. Hospital leaders and administrators of the two private hospitals in Roxas City must discuss the results of the study with the different members of their health care team as their basis towards increasing awareness on the use of communication technologies in the referral system that has an impact on the perception on the provision of care.

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