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Impact of Technological Communication Devices

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Impact of Technological Communication Devices Benchmark Study

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Executive Summary

Nurses, family members, and other medical professionals have always found it difficult when communicating with patients who have impaired communication. Those who fall under the category of impaired communication include those who are mechanically ventilated and those who have a tracheostomy. Ineffective communication skills on both ends of the spectrum have led to negative patient outcomes. According to Aslani, Niknejad, Maghaddasi, & Akbari (2017), ineffective communication in patients with impaired communication have led to numerous physical and mental complications. Discovering an effective communication method to implement has been of great importance in the nursing field.

The current practice of communicating with patients who are stable yet impaired in communication abilities is not acceptable. These simplistic methods of communication are not considered best practice. In order for there to be positive patient outcomes, effective communication, and an increase in patient/nurse satisfaction, changes need to be made immediately with the current communication methods. Therefore, it is recommended that the Intensive Care Unit incorporate a customized i-Pad with the installation of a specialized application to aid in communication between healthcare professionals and stable patients who have altered communication abilities.

1. Rationale for the Project

In the critical care setting, a majority of the patients that critical care nurses take care of are either intubated, on the ventilator with a tracheostomy collar, or are off the ventilator with a tracheostomy collar. These are individuals who for whatever clinical reason, were unable to

maintain their airway during their stay. Due to the impairment in their respiratory status, these patients are unable to clearly speak and communicate on their own.

During the post-operative period, communication can be a challenging feat between patients and nurses. In order to communicate with this specific population, “nurses routinely provide dry erase boards with markers, try to interpret patient’s facial/hand gestures, use verbal *yes* and *no* questions to solicit responses, and use a translator (if applicable)” (Brunner, et al., 2017, p. 2). Even though these methods may seem fulfilling from first glance, these forms of communication are unfortunately not effective. The current methods that most health care facilities promote end up being time consuming and laborious where they lead to patients being “associated with increase negative emotions and frustration levels” (Martinho & Rodrigues, 2016, p. 2). When working in the Surgical-Trauma ICU there is not efficient communication tools that promote beneficial or effective communication methods between impaired communication patients and nurses. Currently the patient population on the unit mostly consists of either patients who are intubated that rely on the ventilator or patients who were able to successfully come off the ventilator and now are status post tracheostomy collar. When communicating with these individuals, the nurses on this unit solely rely on gestures and white boards to communicate to convey a message. According to Khalaila et al (2011) there is a positive correlation between this specific sort of difficulty in communication and psychoemotional distress. From first hand accounts, feelings of frustration usually arise from both ends, which leads to unresolved issues. The use of a specific computer tablet, such as an iPad paired with a specific communication application, could be an impactful instrument that may be able to bridge the communication gap between this specific patient population and the nursing staff.

The goal of this Benchmark Study is to provide effective communication methods readily available to healthcare professionals and this specific patient population. With the assistance of staff members, current patients, the leadership team, and the technology department, there are high hopes that a specialized application can be successfully developed and installed within an iPad to assist with this growing problem.

2. Literature Synthesis

Various literatures have been reviewed, where multiple articles and studies have analyzed the importance of moving away from simplistic communication methods and onto the assistance of technology. The literature listed below will support the need for a customized technological device as the main method of communication between healthcare professionals and patients who have impaired communication abilities. Brunner et al. (2018) made use of a prospective design where a convenience sample was used for patients with head and neck cancer. Based on feedback by both patients and healthcare professionals, an application called Proloquo2Go was created “to meet the needs [of the] patient population” (Brunner, et al. 2018, p. 3). Prior to surgery, patients were informed and given a thorough demonstration of the customized tablet. Questionnaires regarding the usefulness of the tablet were developed and given out to patients both in the preoperative and postoperative setting. The study found that over 60% of the patients sampled were extremely satisfied with the customized communication application within the iPad.

Martinho & Rodrigues “assessed the level of communication difficulties” that intubated patients undergo through the use of the Ease of Communication Scale (ECS) (2016). This study made use of an observational, descriptive-correlational, and cross-sectional design. The study took into consideration various clinical and sociodemographic variables such as sedation level,

number of hours of intubation, number of hours after extubation, reason for intubation, age, education level, and gender. Based off of 0.951 Cronbach's alpha, "the Ease of Communication Scale showed excellent internal consistency" (Martinho & Rodrigues, 2016, p. 2). Besides number of hours after extubation, there was no correlation ($p < 0.05$) between the clinical and sociodemographic variable and communication difficulties. The study found that patients agreed that communication during intubation was quite hard (2.99).

Salem & Ahmad study examined "available evidence regarding existing knowledge, skills, perceptions and barriers to IMV patient communication in order to guide the development of strategies that enhance effective communication with these patients" (2018, p. 1). A total of 17 full-text PDF articles dated from January 2010 to December 2016 were reviewed and analyzed. All of the studies in the final database aimed at examining various details such as "the importance of communication with IMV patients", communication characteristics, psycho-emotional distress among IMV patients, and communication challenges between nurses and patients (Salem & Ahmad, 2018, p. 4). The literature supports the idea of using a combination of communication interventions such as technological devices, training, and materials to improve communication with mechanically ventilated patients.

Duffy et al. (2018) assessed the level of spiritual, emotional, physical, and physiological needs of mechanically ventilated patients through eye tracking devices, head nodding, and communication boards. Out of the 26 patients that met the inclusion criteria for this prospective study, only 12 patients ended up completing the entire study. In this study, patients were asked four basic needs questions regarding pain, room temperature, suctioning, and positioning. Immediately following, patients were then asked if they wanted to express anything else "in the format of a free response question" (Duffy, et al., 2018, p. 3). The study found that 83% of

patients preferred using the eye-tracking device to their normal communication method (head nodding, writing & communication boards).

Hosseini, Valizad-hasanloei, & Feizi (2018) discussed a quasi-experimental study that assessed communication in mechanically ventilated patients using a communication board. Using a consecutive sampling method, 30 patients were enrolled into the study and assigned to either the experimental or control group. The control group consisted of patients using baseline communication methods whereas the experimental group had access to the communication boards. The Ease of Communication Scale (ECS) and the Hospital Anxiety and Depression Scale (HADS) were two scales used for both groups. The study found “significant difference in communication scores between the two groups ($z = -4.69$; $p = 0.001$)” (Hosseini, Valizad-hasanloei, & Feizi, 2018, p. 1). There was also a significant decrease in anxiety within the experimental group ($z = -2.98$; $p = 0.003$). The results favor using a communication board over baseline communication methods to decrease patient’s anxiety and increase ease of communication during ventilation.

Rodriguez et al (2012) ran a feasibility study that analyzed the outcome of a speech-generating device in the form of a tablet on suddenly speechless patients. There was statistical significance in usability and satisfaction where “the device was on and functional at capacity 68% of the times” and participants were overall satisfied with the SGD during the hospital stay (Rodriguez et al., 2012). Radtke, Garrett, & Happ (2011) go on to conclude that AAC devices (Alternative Communication) could improve communication and ease the suffering of those ICU patients who are speechless. Happ et al (2014) assesses the effects of multi-level communication interventions through a quasi-experimental study. The study found significant difference ($p = 0.002$) in positive patient outcome with the use of AAC modalities.

3. Stakeholders

The primary success of this benchmark study lies in the hands of those who are fully vested in this implementation. The stakeholders who are involved within this implementation process include top-level management (Chief Nursing Officer & Executives), mid-level management (directors & nurse managers), staff nurses (registered nurses & licensed vocational nurses), and the Technology Department. The support from top-level management will allow for the formation of new policies, standards, and procedures. Mid-level management will bring in needed support and publicity. Acceptance from the staff will pull in first hand experience and knowledge needed to create effective change. The support of the Technology Department will allow for the actual creation of a well-supported application. The combined support of these stakeholders will aid in the success of this implementation.

4. Implementation

As stated before, the only materials and methods available for communicating between stable non-verbal patients (mechanically ventilated & tracheostomy) and healthcare professionals are alphabet boards and pictures, which have deemed to be ineffective. The current plan is to initially bring awareness to this issue. Awareness will be brought through initial surveys. These surveys will gather input on current communication methods within the unit from healthcare professionals. By providing concrete facts such as poor patient outcomes to nursing leadership and hospital administration, we will be able to pull in stakeholders. An alternative solution will be asked to be presented, where the idea of an i-Pad with a specific communication application will be explained. Once this is approved, another set of surveys and questionnaires will be sent out to nurses and patients to gather opinions and ideas for the creation of the new communication application. The creation of the application will immediately begin with the help of the nursing

staff, patient inputs, and the technology department. Once created, the i-Pads with the download communication application will be implemented on the unit. Online and in-person education modules will be developed in order to assist with updating the staff on the new implementation process. The primary goal of the education modules is to make sure the staff is competent enough to use this user-friendly device. Surveys and feedback will continuously be monitored throughout the year in order to assist with future improvements and maintenance. There will be continuous contact with the technology department for needed application updates. If successful, annual modules regarding competency and updates will be required to be completed by staff .

5. Timetable/Flowchart

During the beginning of this MSN track, the development of this specific PICO question was initiated. The PICO question was tweaked and altered multiple times during the first and second semesters for clarity reasons. In the beginning of this final semester, it was decided that an Evidence-Based Benchmark Study on Impact of Technological Communication Devices would be presented to the top-level management of the Intensive Care Unit. Due to the current pandemic, the Benchmark Study was the only feasible implementation method. The Benchmark Study will be presented to management in late November or early December of 2020.

6. Data Collection Methods/Planned Evaluation

Primary data collection for the Benchmark Study was through the various clinical studies mentioned previously. Each study mentioned previously analyzed the implementation of a technological communication device. Initial processes, designs, outcomes, strengths, and weaknesses were thoroughly evaluated. The second set of data will be taken from the surveys and questionnaires that will be provided to both healthcare professionals and patients. The data

collected from these surveys and questionnaires will be the main guide to creating a successful communication application.

The main goal is to produce positive patient outcomes and decrease any negative emotions through the use of effective communication. In order for this to successfully be implemented there has to be evaluation steps along the way. Evaluations will allow there to be room for adjustment and growth. The evaluation will consist of surveys and questionnaires that will provide an abundant amount of information to create, implement, and adjust this implementation project. Surveys and questionnaires will be sent out directly by email through a database called 'Survey Monkey'. An online database seems to be most fitting at this time due to the current predicaments. Another key portion to this evaluation plan will be the online ongoing module. Annual competency modules will assist with competencies and any new updates.

7. Costs/Benefits

Overall cost of this implementation project was analyzed in terms of office supplies, IT Developer, and i-Pads. Though there may be other minor costs involved, these are the main items to examine. Necessary office supplies such as pens, office paper, folders, etc. would total to be \$150. The main IT Developer will be paid an hourly rate of \$45 per hour. The estimated development process for the application will be at most a 30-day process. Each day will consist of a total of 8 working hours. The main IT Developer will receive a total 1-month salary of \$10,800. The ICU will be budgeting for 15 i-Pads initially. The specific i-Pad that will be bought will be a Second Generation 12.9 inch i-Pad Pro (128 GB) that is estimated at \$999. The total cost for 15 i-Pads will be close to \$16,000. The entire cost of the project will be estimated at \$26,950. Though this may sound like a cost heavy project, the benefits definitely outweigh the

financial aspect. The implementation of this project will lead to positive patient outcomes that will lead to higher satisfaction scores, which will inevitably benefit the hospital financially.

8. Overall Discussion/Results

It is projected from the various data collected that once this implementation process is implemented, both healthcare workers and patients with impaired communication abilities will be able to effectively communicate with one another. Patient needs will be met at all levels as nurses and other healthcare workers will now be able to deliver efficient care. The positive results will hopefully relay to leadership the need to continue to incorporate technology within the healthcare system.

Conclusion/Recommendations

In order to provide safe, effective, and sufficient care to a patient, there has to be a properly established communication system set up. Patients who are mechanically ventilated and those who have tracheostomy collars are unable to effectively communicate. The use of gestures, lip reading, eye contact, dry-erase boards, and illustrative methods can decrease the rapport between a nurse and their patient, leave room for gross misunderstanding, and negatively affect the patient on an emotional level. It is evident that there is a communication deficit within the critical care settings for these specific populations. The use of a customized communication application via an iPad will be the method needed to bridge the communication gap between the nursing staff and post-operative patients who fall under the umbrella of ‘impaired communication’.

It is recommended that the successes of this Benchmark Study be presented to the entire hospital. There are plenty of patients throughout the hospital in various floors who are struggling to normally communicate. Incorporating the customized communication device within the step-

down units and on the floors will allow the entire hospital to benefit. Overall, the success of this project should be an example. Communicating with patients with altered communication abilities is only one of the many problems within the healthcare system. This implementation process has displayed the benefits of technology. The continual incorporation of technology could be beneficial for the future of the healthcare system.

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