ROBOTIC NURSES – THE FUTURE NURSES OF MODERN NURSING

===

Rajesh. P Joseph[1], Bindhumol G[2],

[1]*Associate Professor, Department of Pediatric Nursing*

Sumandeep Nursing college

Sumandeep Vidyapeeth deemed to be University

Piparia, Waghodia, Vadodara – 391760, Gujarat, India

[2]*Nursing Tutor, Sumandeep Nursing college*

Sumandeep Vidyapeeth deemed to be University

Piparia, Waghodia, Vadodara – 391760, Gujarat, India

Corresponding Author

Rajesh. P Joseph,

Associate Professor

Sumandeep Nursing college

Sumandeep Vidyapeeth deemed to be University

Piparia, Waghodia, Vadodara – 391760, Gujarat, India

Email: rajesh.p.joseph@gmail.com

INTRODUCTION

Robotic nurses are robots that help the patients physically move around or perform simple tasks like taking vital signs or delivering medicine. Some robotic nurses serve as interfaces for doctors to use over distances to communicate with patients. With the continuous improvement of living standards and medical standards, aging population has drawn great public attention in the world. However, most of the elderly are lacking the ability to take care of themselves. More families are finding themselves unable to look after aged relatives who are unable to look after themselves, that's why elderly nursing has become a social issue. With the rapid development of science and

technology, the nursing robot has come into being. The nursing robot is designed specifically for the elderly and disabled people, who are having difficulties in self-care.

HISTORICAL DEVELOPMENT OF ROBOTIC NURSING

Robot Dinsow is used by Thai and Japanese hospitals for patient care; Robot Dinsow monitors elderly patients via video and sets up video chats with their relatives. It also alerts caregivers of patient activity through the phone. Additionally, it provides reminders for medication and exercise also. It also provides entertainment by offering games.

Robot Paro is a seal-like robot and it is used in hospitals and extended-care facilities the world over. It stimulates interaction between patients and caregivers. It also helps to relax patients by imitating the voice of a baby harp seal, additionally, it adapts to patient behavior in part through its five sensor types: light, audio, temperature, posture, and tactile. Overall, this robot helps to reduce patient's stress, provide relaxation and motivation, and improve their socialization with caregivers and their peers too.

Robot Pepper is a humanoid robot and works in the area of two Belgian hospitals, greeting people and guiding patients. It can recognize 20 languages and can identify gender, and can identify joy, sadness, anger among patients. It can also understand the non-verbal language like head tilts, frowns, smiles, and shifts in vocal tones.

EXPANDED ROLE OF ROBOTICNURSE

ROBOTIC COORDINATOR: The need for individuals to oversee the duties of robots will create a new job opportunity.

ROBOTIC TELEMEDICINE: Patients are living in rural areas or those in urgent need of a specialist can receive a diagnosis and treatment plan through a robot. Nurses play a vital role in assisting robots and remote healthcare practitioners.

RESEARCH: Since nurses are well aware of the needs in the health care environment, they can participate in the technological advancement of developing robots.

USE OF ROBOTS IN HEALTH CARE SETTING

- Surgery
- Procedure
- Treatment
- Planning
- Simulation
- Guiding
- This robot can perform procedures with high precision, reduce the duration of some techniques and facilitate the manipulation of areas of difficult access.
- US and Egyptian nurses receive training in new technologies for the use of robots in surgical settings to ensure quality and safety of patient care.
- They participate in structured training programs that help them to gain confidence, aiming to achieve successful outcomes in the surgical procedures that involve these devices.
- In Brazil, the use of robots in health care setting has been increase, including less invasive and painful procedures. However, their use in nursing is still restricted to training and qualification of nurses to assist in surgical procedures.
- Robots could be designed to perform some assistance activities, reducing work time, facilitating detailed work and assisting the professionals in providing qualified assistance.

ISSUES RELATED TO THE USE OF NURSING-CARE ROBOTS

Privacy Issues: Nursing care robots can be easily provided with surveillance equipment that can give them the capability of monitoring their patients, recording the related data and communicate information wirelessly, it could also lead to a violation of patient's privacy.

Dignity Issues: Humans are social animals, who with need the interaction with other humans to survive. As a result, the removal of human caregivers from the care environment and their replacement by robots might give rise to major issues related to the dignity and the happiness of the patients.

Attribution of Liability Issues: The mechanical nature of nursing-care

robots makes impossible to attribute them liability in case of malfunctioning or any other adverse consequence related to their usage. As a result, it could result extremely complicated to attribute civil and criminal liability.

Safety and Security Issues:As a matter of fact, safety and avoidance of harm should be of utmost importance in healthcare domain when using robots because of the involvement of vulnerable people such as ill and older adults and children. There is the need for an improved technique that will eliminate or reduce safety-related failures as well as eliminating unpredictable behaviors.

ADVANTAGES

- Assist bedridden patients with simple services and such robot is typically confined to patient's room in the hospital or at home.

- Nursing-care robots can also carry out the laundry services as well as other household chores also.

- As a human-like voice for greeting patients awakening from sleep.

- When compared to humans, robot nurses are easier to train, cheaper to maintain, easier to refuel and repair, and able to do very odd and repetitive tasks also.

- Robotic nurses can do most of the boring and dangerous nursing jobs that may also result in the occupational exposure of human

- nurses to hazardous infections or chemicals.
- Allow providers to offer their healthcare services at a lower cost.

- Robot nurse can store important medical information and minimizing the possibility of error.

DISADVANTAGES

- It is very expensive.
- Require operator to operate the robot.
- Difficult for the health care provider who are learning to use this system.

LITERATURE EVIDENCES

A discursive article written to explore the concept of futurism and the emergence of robotics in relation to the fundamentals of care, highlighting how nurses need a more anticipatory and contemporary position towards technology to maintain relevance in the future. The article examined the intersection of futurism and the fundamentals of care, and how adopting an anticipatory and posthuman perspective towards technological-care integration is necessary amidst a robot revolution in the techno-era. Nurses are currently challenged to understand, prioritize and deliver fundamental care. Health systems are challenged by a lack of care predicated by shortfalls in skilled staff and deficiencies in staff mobilization.

In 2016,a cross-sectional survey to determine the need for care robots among nurses and to suggest how robotic care should be prioritized in integrated nursing care services. we conducted a multicentre survey involving 302 Registered Nurses in five hospitals including three tertiary and two secondary hospitals in Korea. The questionnaire consisted of general characteristics of nurses and their views on and extents of agreement about issues associated with robotic care. Trial centre nurses and those with ≥10 years of experience reported positively on the prospects for robotic care. The top-three desired primary roles for care robots were "measuring/monitoring",

"mobility/activity" and "safety care". "Reduction in workload", especially in terms of "other nursing services" which were categorized as nonvalue-added nursing activities, was the most valued feature. The nurses approved of the aid by care robots but were concerned about device malfunction and interruption of rapport with patients.

A grounded theory study was conducted to explore the process of the development of the discriminative nursing care. Five categories were extracted. The categories include: "context," "causal conditions," "phenomena," "strategies," and "outcomes." Each of these categories contained subcategories with specific characteristics. The context was classified into "nurse's characteristics" and "patient's characteristics. ""Complete conflict" and "hatred" were extracted from the category of causal conditions. The causal conditions and context led to "discriminative nursing care" phenomena. The two strategies were "avoiding the patients" and "robotic care." Outcomes were located in a spectrum ranging from "annoyance and discomfort" to "imposition of costs." Finally, the categories were connected together and the meaning of "care in the context of the sense of interaction with the patient" was theorized. It is important to provide nursing education on the development of discriminative nursing care and its associated complications. Nurses should understand the nature, components, and the process of discriminative care. Understanding discrimination improves the action of nurses.

CONCLUSION

Nursing is a noble profession and it differs from all other disciplines because of its caring and curing nature. Robotic nurses may extend their services to the manual nurses in various ways and which may in turn save time and reduce the burden of nurses. But, No matter how excellent robotic nurses are, they must cooperate with and be controlled by nurses in order to provide effective patient care.

REFERENCES

1. McIntosh C, editor. Cambridge Advanced Learner's Dictionary. 4th ed. Cambridge, UK: Cambridge University Press; 2013.

2. Canadian Nurses Association. Codes of ethics for registered nurses [pdf] 2017. Retrieved from: https://www.cna-aiic.ca/~/media/cna/page-content/pdf-en/code-of-ethics-2017-edition-secure interactive.pdf?la=en .

3. Hausmann LR, Jeong K, Bost JE, Ibrahim SA. Perceived discrimination in health care and health status in a racially diverse sample. Med Care. 2008;46:905–14. - PMC - PubMed

4. Johnstone MJ. Nursing and justice as a basic human need. Nurs Philos. 2011;12:34–44. - PubMed

5. Ryan AM, Gee GC, Griffith D. The effects of perceived discrimination on diabetes management. J Health Care Poor Underserved. 19:149–63. - PubMed

6. Rafii F, Ghezeljeh TN, Nasrollah S. Discriminative nursing care: A grounded theory study. *J Family Med Prim Care*. 2019;8(7):2289-2293. doi:10.4103/jfmpc.jfmpc_341_19

7. Lee JY, Song YA, Jung JY, et al. Nurses' needs for care robots in integrated nursing care services [published online ahead of print, 2018 May 13]. *J Adv Nurs*. 2018;10.1111/jan.13711. doi:10.1111/jan.13711

8. Archibald MM, Barnard A. Futurism in nursing: Technology, robotics and the fundamentals of care. *J Clin Nurs*. 2018;27(11-12):2473-2480. doi:10.1111/jocn.14081