JNPE, March 2018, Vol. 4, Issue 1, pp. 16 – 19 ISSN No. 2395-1974

Review Article

Article on Needs and Technology of Robotic Nursing

Mrs.K.Usha Rani[1]

Assistant professor HOD, Department of Fundamentals of Nursing, Rama College of Nursing, Rama university, Mandhana , Kanpur, UP, India.

Abstract

Today, the view and technology has changed. Now we can see, the technology has advanced so far that it makes sense now to consider robotic technology for cost and time savings, waste reduction and improve patient care in all healthcare settings. The Automation driven by digital health care technologies, such as robotics and artificial intelligence, could heavily contribute to the long-term sustainability and profitability of health care systems. The Robotic technologies appear in many areas that directly affect patient care in everywhere. Robotics can be used to disinfect patient rooms and operating rooms, reducing risks for patients and medical personnel. It can work in laboratories to take blood samples and to transport, to analyze, and to store them. This is especially good news for have ever had blood drawn by someone who had to try several times to find a "good vein." The robotic lab assistant can locate that vessel and draw the blood with less pain and anxiety for the patient. The Robots also prepare and dispense medications in pharmacological labs. In the larger facilities robotic carts carry bed linens and even meals from floor to floor, riding elevators and maneuvering through automatic doors. There are robotic assistants that to help the paraplegic patients to move and can administer physical therapy. The robotic technology has good opportunities in the current generation in all health care areas.

Keywords: Robotic Nursing, Digital healthcare,

Introduction

The Immediate response to the actual needs with robotic technologies

There are an increasing number of emergencies, the need to emerging in line with progress being made with feasibility trial involving with robotic nursing care devices [1].

A robot is an intelligent mechanical system that has three technological elements: sensing, intelligence and control, and drive. Industrial robots, which are used in factories, and Service robots, which are used in the areas of medical care and welfare, and for livelihood support.

The reduction in workforce due to the tide and aging population, and the improvement of the quality of products and services.

Implementation of various measures for the development of robotic technologies to the next generation and for the creation of new industry for providing health care services [2].

The introduction of new technology could change nursing care and welfare significantly in all the health care settings. The lives of elderly people can be further enriched by adding the vitality of the private sector to collaboration with the government agencies.

The New tools to develop new robotic technologies

One of the caregivers says, that "The shifting of patients from a bed to a wheelchair or to the toilet is a heavy physical burden on care caregivers.

It may also become a psychological burden for the caregivers. The caregivers may complain of backaches due to heavy lifting of the weight during shifting of the patient. The Transfer of patients is one of the issues areas with the most urgent need to be resolved at the actual site of nursing care management [3].

By proper utilizing robotic devices to assist for patient transfer care, all the caregivers need to do is lift up the upper body of the elderly person. Thereafter, nearly all of the transfer can be completed by pushing buttons. The major corporations has been

using lifting devices for such transfers for some time for easy shifting of patient from one place to another place, and for easy completion of diagnosis and radiology investigation purposes, and for easy moving the patient transfers from one area to the another area and to fulfill the patient needs in patient shiftings .

It was popular among users and was also effective in improving the lives of the bed ridden patients; it will help the patient as well health care personnel to complete their task in easy manner in the aspects of patient lifting and shifting [4].

The current available of Different robotic technologies

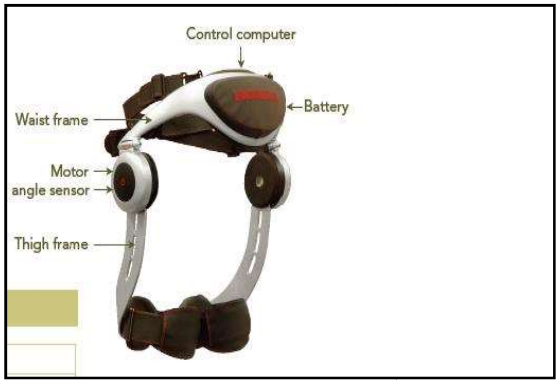
There are some of the promising technologies

1**. Stride management assist** which is brought by the Honda Motor Co., Ltd.

This robotic device adjusts the length of a person's stride with the use of a motor and supports independent walking for the elderly people or patients.

The Stride Management Assist device is a robot to support independent walking, developed to satisfy the wishes of people who want to walk by themselves no matter how old they get.[5]

It helps walking support for the elderly patients, in order to reduce falls and for prevention of physical injuries, and improve confidence in walking by the elderly people and improve physical comfort by the



patient.

The control unit fixed on the waist and automatically calculates the length of the stride and walking pattern of the patient, and that is appropriate suited for the person or not, and the motor assists the swinging of the legs at the thigh.

The belt-type device fits various kinds of physical types, and it is small and light so that wearing it will not become a burden regardless of the strength of the patient [6].

2. Smart suit lite which brought by the Smart Support Corporation.

The advanced technology utilized for designing robots that protect our back with the power application of rubber! "Smart Suit Lite" is a hip supporter that alleviates fatigue by utilizing the tension of rubber bands. It prevents strain on the back by helping the movement of lifting the upper part of the body from a semi-crouching position, and by tightening the body trunk [7].

Although it was first developed as a robotic suit with sensors, and the electric components were eliminated in the course of pursuing characteristics such as "light to wear" and "fit for working." This robotic device provides comfort to the people while wearing and doing the activities with this.

The achievements of robot design technology and simulation of musculo skeletal dynamics were utilized, resulting in the current form.

The robotic device will help all health care personal in their physical activities and reduce their physical strain and make it comfortable work environment.

It helps as supportive device in primary patient care needs and maintains healthy relations with patient as well as family members.

3. Robohelper Sasuke *by the* Muscle Corporation offering stylishness in nursing care.

It helps in, assurance, and also stylishness. It is prepared with soft cloth, which can provide an airy feeling when being held up. The compact and lightweight device can be moved smoothly [5]. This device will provide good body circulation and provide relaxation to the patient.

It helps in patient care, and maintains comfort feeling by the patient by providing smooth support. This device will reduce muscle spasm and provide good sleep to the patient.

4. Minelet sawayaka

It provides an automatic toilet care to ensure patients can comfortably relieve them in bed with proper defecation process.

This is an automatic toilet care machine that can maintain a sanitary condition without needing to change diapers many times a day. For using this, the patient needs to simply wear the special cover in the shape of a paper diaper.

The

sensor works each time the patient ejects, and the excreta are automatically aspirated with the machine support. The inner side of the diaper is washed and dehydrated [8]. Ejection care has heavy physical and mental burdens on the people who provide care, since it must be dealt with 24 hours a day.

It is expected that the utilization of this product will help the patient in proper defecation process.

These devices help the patient for maintenance of good personal hygiene and reduce foul smell from the patient environment and improve patient hygienic needs.

The introduction of robotic devices is being available by identifying as Priority Areas are

1. Lifting aids

- Wearable device
- Non-wearable device

Patient transfer assists which is brought by the Toyota Motor Corporation.

This Contribution to the actual work of nursing care and the creation of a new industry through robot technology, and the expansion of the peripheral services of medical care and nursing care, are all parts of an important growth strategy for the future.

In order to accelerate such a movement, various kinds of development projects are in progress [6].

The Robotic devices for nursing care, which is a culmination of advanced technological efforts, can be useful in various occasions while giving patient care [9].

This area covers robotic technologies for occasions such as transferring patients from beds to wheelchairs.

(1) Wearable devices using robot technology to provide power assistance to caregivers, and reduce strain of health care professionals.

(2) Non-wearable devices using robotic technology providing power assistance to caregivers in lifting which helps easy patient transferring and reduce risk during shifting of the patient.

2. Mobility aids

The development of walking-aid devices using robotic technology to support the elderly people during walking in outdoors and to ensure safe

carrying of loads, which stimulates people's desire to walk using their own legs as independently [10].

This kind of technology will support the elderly people, and which can maintain physical fitness by the elderly people as well as elderly patients.

3. Toilets

This area helps in adjustable-position for toilet using with robotic technology for treating excrement easily. This can be fixed in the patient rooms or bedrooms, and assumes use by those who can defecate on their own [7].

This method will help the bedridden patients for maintenance of defecation process easily, and odor can be prevented during defecation process and which gives more comfort to the surgical clients especially.

4. The Monitoring systems for people with senile dementia

This will helps in monitoring system platforms consisting of devices with sensors and have external communication functions using robotic technology, it helps in providing nursing care facilities.

This method helps for dementia people for performing their activities easily without forgetting their target daily activities [11].

Conclusion

Robotic devices is very essential in treating patient with in all emergency situations, and it aid in nursing care ,to prevent care giver role strain, and promotes quick patient recovery. Robotic technology is still evolving. Currently robotics are being designed to increase human skill, to reduce workload and enable professionals to focus on more important activities that have a greater impact on patient care delivery system. As this technology advances and becomes more affordable, we can expect more health care institutions to be managed with robotics for giving patient care.

References

[1] ABI research (2011) Healthcare and medical robots. Allied Business Intelligence, Oyster Bay.

[2] ABI research (2011) Medical robots market to approach $1.3 Billion in 2016.https://www.abiresearch.com/press/medical-robots-market-to-approach-13-billion-in-20.

[3] M Anderson, SL Anderson (eds) (2011) Machine ethics. Cambridge University Press,Cambridge

[4] H Austin (2013) Virtual girl dubbed ‘Sweetie’ snares thousands of would-be sex predators. In: World News, 5 Sept 2013, http://worldnews.nbcnews.com/_news/2013/11/05/21316335-virtual-girl-dubbed-sweetie-snares-thousands-of-would-be-sex-predators.

[5] H Becker , M Scheermesser , M Früh et al (2013) Robotik in Betreuung und Gesundheitsversorgung. TA-SWISS 58/2013. vdf Hochschulverlag, Zürich.

[6] GA Bekey (2012) Current trends in robotics: technology and ethics. In: Lin P, K Abney ,GA Bekey (eds) Robot ethics: the ethical and social implications of robotics. The MIT Press, Cambridge, pp 17–34.

[7] O Bendel (2012) Die Medizinethik in der Informationsgesellschaft: Überlegungen zur Stellung der Informationsethik. In: Informatik-Spektrum, November (2012) (“Online-First”- Article on SpringerLink).

[8] O Bendel (2012) Maschinenethik. Contribution for the Gabler Wirtschaftslexikon. Gabler/ Springer, Wiesbaden, http://wirtschaftslexikon.gabler.de/Definition/maschinenethik.html.

[9] O Bendel (2012) Informationsethik. Contribution for the Gabler Wirtschaftslexikon. Gabler/ Springer, Wiesbaden, http://wirtschaftslexikon.gabler.de/Definition/informationsethik.html.

[10] O Bendel (2013) Ich bremse auch für Tiere: Überlegungen zu einfachen moralischen Maschinen. In: inside-it.ch, 4 Dec 2013. http://www.inside-it.ch/articles/34646.

[11] O Bendel (2013) Dr. Robot entdeckt die Moral: Maschinen- und Menschenethik im Gesundheitsbereich. In: IT for Health, 02/2013, pp 2–4.