

ARTICLE ON NEEDS AND TECHNOLOGY OF ROBOTIC NURSING

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ABSTRACT

Today, the view has changed. When we look at how robotics has evolved, the technology has advanced so far that it makes sense now to consider robotic technology for cost savings, waste reduction and improved patient care. 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. Robotic technologies appear in many areas that directly affect patient care. They can be used to disinfect patient rooms and operating suites, reducing risks for patients and medical personnel. They work in laboratories to take samples and the to transport, analyze, and store them. This is especially good news is you 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. Robots also prepare and dispense medications in pharmacological labs. In larger facilities robotic carts carry bed linens and even meals from floor to floor, riding elevators and maneuvering through automatic doors. There are also “gears and wires” robotic assistants that help paraplegics move and can administer physical therapy.

INTRODUCTION

Immediate response to actual needs with technology



There is an increasing number of emergencies ,the need to emerging in line with progress being made with feasibility trial involving robot nursing care devices¹.

The Ministry of Economy, Trade and Industry (METI) defines a robot as an intelligent mechanical system that incorporates three technological elements: sensing, intelligence and control, and drive.

Robots are categorized by their use into 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.

Anticipating a reduction in workforce due to the tide lining birthrate and aging population, and the improvement of the quality of products and services, is implementing various measures for the development of robot technologies of the next generation and for the creation of new industry².

The introduction of new technology could change nursing care and welfare significantly. The lives of elderly people can be

further enriched by adding the vitality of the private sector to collaboration with the government.

New tools to develop new technology

One of the caregivers says, “The carrying of patients from a bed to a wheelchair or to the toilet is a heavy physical burden on care attendants (caregivers).

It may also become a psychological burden for the guests (residents).”The reality is that about 70% of caregivers complain of backaches. Transfer of patients is one of the issues with the most urgent need to be resolved at the actual site of nursing care³.

By utilizing devices to assist 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.“ORIX Living corporation has been using lifting devices for such transfers for some time.

It was popular among users and was also effective in improving the lives of the bed ridden⁴.

Different robotic technologies

There are some of the promising technologies

1. *Stride management assist*

Honda Motor Co., Ltd.

This device adjusts the length of a person’s stride with the use of a motor and supports independent walking for the elderly.



Stride Management Assist 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 get⁵

The CPU (control unit) fixed on the waist automatically calculates the length of the stride and walking pattern that is best suited for the person, and the motor assists the swinging of the legs at the thigh. Usability is pursued.



also fits is

The belt-type device various kinds of physical types, and it small and light so that wearing it will not become a burden regardless of the strength of the patient⁶.

2. Smart suit lite

► Smart Support Corporation

The technology utilized for designing robots that protect your back with the power of rubber! “Smart Suit Lite” is a hip supporter that alleviates fatigue by utilizing the tension of rubber bands. It alleviates 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 trunk⁷.



Although it was first developed as a robot suit with sensors, the electric components were eliminated in the course of pursuing characteristics such as “light to wear” and

“fit for working.”

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

3. Robohelper Sasuke

Muscle Corporation offering stylishness in nursing care.



Tenderness, assurance, and also stylishness. That is the concept from which SASUKE, a transfer robot, was born. By using soft cloth, it provides an airy feeling when being held up. The compact and lightweight device can be moved smoothly⁵.

4. Minelet sawayaka

► NWIC

This is an automatic toilet care machine to ensure patients can comfortably relieve themselves in bed.

“Mine let SAWAYAKA” is an automatic toilet care machine that can maintain a sanitary condition without needing to change diapers many times a day. To use it, the patient needs to simply wear the special cover in the shape of a paper diaper.

The sensor works each time the patient egests, and the excreta are automatically aspirated.

The inner side of the diaper is washed and dehydrated⁸. Ejection care imposes 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 generate “room” in caregivers’ time and feelings.





The introduction of robotic devices is being accelerated by formulating 4 Priority Areas

1. Lifting aids

- Wearable device
- Non-wearable device

Patienttransferassist

TOYOTA MOTOR CORPORATION

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 progress⁶.

Robotic devices for nursing care, which is a culmination of advanced technological efforts, can be useful in various occasions⁹.

This area covers technologies using robot technology for occasions such as transferring patients from beds to wheelchairs.

(1) Wearable devices using robot technology to provide power assistance to caregivers, and

(2) Non-wearable devices using robot technology providing power assistance to caregivers in lifting.

2 . Mobility aids

In this area, the development of walking-aid devices using robot technology to support elderly people walking outdoors

and to secure safe carrying of loads, that stimulates people’s desire to walk using their own legs¹⁰.

3.Toilets

This area covers adjustable-position toilets using robot technology for treating excrement.

These can be installed in the rooms the patients live in or bedrooms, and assumes use by those who can defecate on their own⁷.

4. Monitoring systems for people with senile dementia

This area covers monitoring system platforms consisting of devices with sensors and external communication functions using robot technology, used in nursing care facilities.

One point is whether such systems have mechanisms to prevent incorrect reporting¹¹.



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. Today, robots are being designed to complement human skill sets, reduce workload and enable professionals to focus on more important activities that have a greater impact on patient care delivery. As this technology advances and becomes more affordable, we can expect more health care institutions to embrace robotics.

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