

## Patient Robot Emulating Different Symptoms

Nurses have to perform nursing operations according to diverse patient's symptoms. For example, changing nightclothes is a kind of nursing operation which is affected by patient's whole body symptoms (Fig.1). Currently healthy people or mannequins are performing as a mock patient for nursing's training purpose. However, it is a problem that such mock patients are not suitable for nursing students to learn nursing operations according to diverse patients because they are not able to perform diverse patient's symptoms.

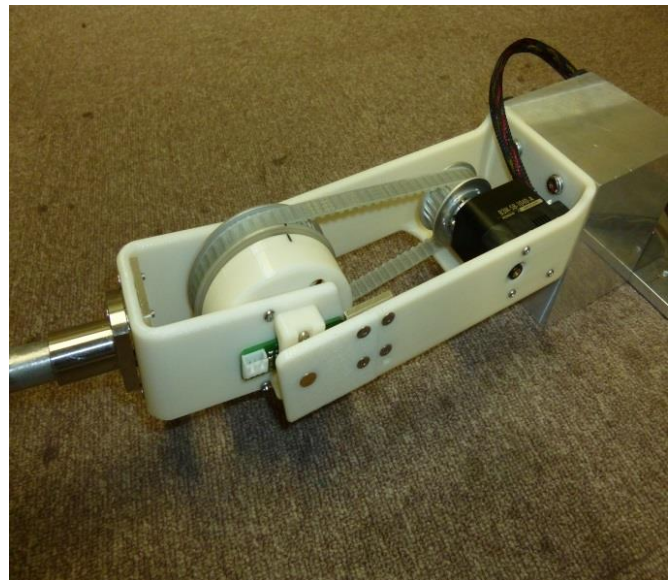
To solve the problem, we study to use a patient robot which can emulate different symptoms. We focused specifically on paralysis. Paralysis is a major symptom because it is caused by apoplexy. So, there are many cases where nurses treat patients with paralysis. Moreover, there are different paralysis conditions. One type is the spastic paralysis, which stiffens paralyzed body parts. Another type is the flaccid paralysis, which slackens paralyzed body parts. Thus, various types of paralysis should be considered when treating patients.

To emulate different symptoms of paralysis by a robot, we must imitate the whole human body. We try to construct a mechanism which can emulate both types: spastic paralysis and flaccid paralysis. So far, we made a prototype of a robot's elbow and tested its performance (Fig.2). In the future, we will make other joints of the robot to finally integrate it into an education system for nursing operation training by using patient robot.

**Keywords:** nursing operation, education system, patient robot, different symptoms



**Fig. 1** Changing nightclothes



**Fig. 2** Prototype of robot's elbow