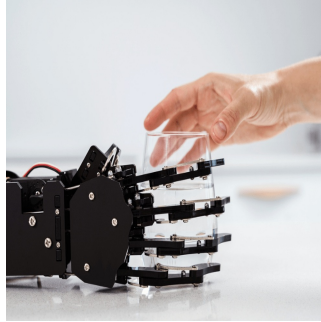


## The Role of Robotic Nurse Assistants in Inpatient Care



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The global nursing shortage presents a significant challenge to healthcare systems. With increasing demand for high-quality patient care, the reliance on human staff alone is becoming insufficient. Robotic nurse assistants (RNAs) are being explored as a solution to support routine tasks, freeing up nurses to focus on more critical and specialised care. A recent review published in the *Journal of Medical Systems* explores the deployment of a robotic nurse assistant, Florence, in a hospital setting, focusing on its usability, social acceptance and its potential to alleviate the burden on healthcare professionals.

### Social Acceptance of Robotic Nurse Assistants

The integration of robotic assistants into healthcare environments hinges on patient acceptance. In the case of Florence, the study found that patients responded positively to interacting with the robot. Many patients engaged with Florence as if it were a human assistant, showing gestures such as waving or greeting the robot verbally. This acceptance was facilitated by the robot's design, which incorporated human-like features such as a calm voice, blinking eyes and a familiar physical structure. These aspects helped bridge the gap between machine and human, making the robot feel less like a piece of technology and more like a part of the caregiving team.

Patients seemed willing to overlook minor technical glitches, focusing on the overall experience. This might be attributed to an understanding that robots, like humans, are prone to errors. The positive response suggests that patients are increasingly becoming comfortable with the idea of robots performing certain caregiving tasks, potentially due to the widespread presence of robots in other everyday settings, such as malls and airports. However, it remains essential to continue refining robotic designs to enhance interaction and boost trust in their capabilities.

### User Experience and Usability in Routine Care

Florence was designed to assist with specific tasks, including vital signs monitoring, medication delivery and transporting small items. The usability of the robot was evaluated based on its ability to perform these tasks independently and its effectiveness in doing so. Patients reported varying experiences when interacting with the robot for these activities. Medication delivery and item transportation were perceived as straightforward, with Florence effectively managing these simple tasks without significant issues.

The measurement of vital signs, however, proved to be more complex. Despite Florence's instructions, patients faced challenges using the robot's voice command and pain scale input functions. Some patients, unfamiliar with the technology, struggled to understand the commands or misinterpreted the robot's interface. These difficulties indicate that while robots can take over routine tasks, they still require enhancements to improve clarity and intuitive interaction. Notably, the success of these interactions is largely influenced by the patients' technological familiarity and the robot's user interface design.

Nevertheless, patients were willing to adapt to the robot's limitations, suggesting that they did not expect Florence to replace human nurses entirely but to complement their efforts. This highlights the need to position robotic assistants as a supporting element in patient care, where human oversight remains vital. The robot's ability to perform simpler tasks could reduce nurses' involvement in repetitive activities, freeing them to focus on more complex care responsibilities.

### Long-Term Feasibility and Potential for Workload Reduction

The long-term viability of robotic nurse assistants depends on their effectiveness in easing the workload of nursing staff. The study revealed mixed perspectives from nurses on this matter. While some acknowledged Florence's potential to take over routine tasks like item delivery and medication distribution, others questioned whether these changes would genuinely translate into increased efficiency or time savings. Nurses pointed out that the robot's slower pace and the occasional need for multiple task attempts might disrupt patient schedules or introduce inefficiencies.

Despite these concerns, there was a consensus that the robot could prove beneficial in specific scenarios. For instance, if Florence could

autonomously perform tasks such as vital signs monitoring on a fixed schedule, this would allow nurses to plan their other duties more effectively. Automating low-priority tasks and reducing direct patient contact for these activities would enable nurses to allocate more time to higher-value tasks such as patient education and emotional support.

However, the feasibility of using robotic assistants is not without challenges. Technical reliability is crucial, as nurses stressed the importance of task precision, particularly for critical responsibilities such as medication delivery. Additionally, some nurses expressed doubts about Florence's adaptability in diverse patient groups, particularly among elderly patients or those with mobility issues. Customisation, as well as improvements in navigation and patient interaction capabilities, are essential to enhance Florence's effectiveness in such cases.

The deployment of robotic nurse assistants like Florence in inpatient settings appears promising in alleviating the workload of nursing staff and enhancing the overall patient experience. The study demonstrated that patients generally responded positively to interacting with Florence, finding its human-like features comforting and its assistance beneficial in certain tasks. However, there remains room for improvement, particularly in enhancing the robot's usability for complex tasks and refining its interactions with patients.

Florence's integration into hospital workflows offers valuable lessons for future developments in healthcare robotics. As the healthcare sector increasingly adopts automated technologies, the focus should remain on addressing both technical challenges and the human aspects of patient care. Building robots that can effectively communicate, understand patient needs and reliably perform routine tasks without human intervention is crucial for their successful implementation.

Future research should explore ways to improve robotic assistants' interactivity, enhancing their ability to respond to patient needs and fostering a more dynamic and engaging healthcare environment. Additionally, further studies should investigate the potential time savings these robots offer and assess whether these efficiencies translate into increased productivity or improved patient outcomes. By refining their capabilities and addressing current limitations, robotic nurse assistants could play a vital role in transforming the delivery of inpatient care and addressing the ongoing challenges posed by global healthcare workforce shortages.

**Source:** [Journal of Medical Systems](#)

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