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Preventing functional decline in hospitalized older adults in medical ward: a best practice implementation project

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ABSTRACT

Introduction and objectives: Functional decline frequently occurs in older adults in hospitals. The aim of this project was to promote evidence-based strategies for physical activity to prevent functional decline in hospitalized older adults in a medical center in southern Taiwan.

Methods: This project was guided by the JBI Evidence Implementation Framework. Seven audit criteria were derived from a JBI evidence summary and a baseline audit involving 25 nurses and 30 hospitalized older adults was conducted to compare current practice with best practice recommendations. The JBI Getting Research into Practice (GRiP) approach was used to identify barriers to implementation, and strategies were developed to overcome those barriers. A follow-up audit was conducted to measure any changes in compliance.

Results: After implementing the strategies, the pass rate of nursing staff improved in the physical activity knowledge test, rising from 56% to 88%. Compliance of nursing staff with providing physical activity instructions using evidence-based guidelines to hospitalized older adults reached 80%. The incidence of functional decline among hospitalized older adults decreased from 36.7% to 20%.

Conclusions: The results of this best practice implementation project suggest that initiating physical activity as early as possible for hospitalized older adults once their medical condition has stabilized can help prevent functional decline.

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Keywords: evidence-based practice; functional decline; hospitalized older adults; medical ward; physical activity

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What is already known

- Older adults often experience functional decline during hospitalization.
- There is limited awareness among health care providers regarding the prevention of functional decline in hospitalized older adults.
- Physical activity guidance for older adults during hospitalization is often lacking.

What this paper adds

- Physical activity guidance was established as a standard procedure and successfully implemented for older adults hospitalized in a medical ward.
- Through team collaboration that included doctors, nurses, and occupational therapists, the development of an assessment form and guidelines for physical activity for hospitalized older adults enabled early assessment of their condition and the provision of suitable physical activities.

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- Providing physical activity guidance tailored to the functional level of hospitalized older adults increased their physical activity during hospitalization.

INTRODUCTION

Populations are aging worldwide. According to statistics from the National Development Council, the proportion of people aged 65 years and above in Taiwan increased from 7% in 1993 to 14% in 2018, officially marking the transition into an aging society. By 2025, it is projected that the proportion of older adults will exceed 20%, transforming Taiwan into a superaging society.[1] As individuals age, the natural aging process affects various body systems, resulting in cognitive and functional decline that impacts independence in daily life.[2] According to a 2011 survey conducted by the Ministry of the Interior[3] on the current situation of the older adults in Taiwan, 21.1% of older adults were hospitalized in the past year. A cohort study reported that functional decline occurred in 35.6% of hospitalized older adults.[4] Unfortunately, clinical care often prioritizes disease treatment, neglecting the physical functions of hospitalized patients.[5] Prior studies have consistently found a clear link between the duration of hospitalization and the severity of functional decline.[6,7] Hoogerduijn *et al*.[8] discovered that functional decline during hospitalization not only extends the length of hospital stays but also increases the likelihood of being discharged to a long-term care facility; leads to higher readmission rates after discharge; and contributes to elevated health care expenses and mortality rates. Although many randomized trials have reported that physical activity can prevent functional decline in hospitalized older adults,[9–11] several barriers have been identified, such as the severity of illness, short hospitalization duration, the low willingness of hospitalized patients to engage in physical activity, and the belief in continuous bed rest as beneficial for health improvement during hospitalization.[12] Therefore, it is crucial for health care providers to adopt evidence-based measures to effectively prevent functional decline in hospitalized older adults. National Cheng Kung University Hospital (NCKUH) is a medical center located in southern Taiwan. Our department serves as a medical ward, accommodating 48 beds, with 95% of patients originating from the emergency department. The conditions treated include infections as well as hepatobiliary, gastrointestinal, metabolic, and nephrological diseases. The average age of our hospitalized patients is 65.17 years, with an average length of stay of 13.09 days. In May 2022, an official audit conducted by our unit's quality control team revealed that health care providers were not consistently providing physical activity guidance to older adults during their hospitalization. As a result, the rate of functional decline upon discharge was found to be 36.3%. To address this issue, the project team implemented best practice recommendations derived from a JBI evidence summary for the prevention of functional decline in hospitalized older adults in the medical ward.

OBJECTIVES

The aims of this project were to evaluate the effectiveness of current practice and to implement best practices for preventing functional decline in hospitalized older adults. The project also aimed to improve compliance among nursing staff in guiding hospitalized older adults to engage in physical activities in the medical ward. The specific objectives of the project were to:

1. enhance nursing staff knowledge of best practices regarding the prevention of functional decline in hospitalized older adults;
2. improve compliance with evidence-based practices aimed at preventing functional decline in hospitalized older adults; and
3. reduce the incidence of functional decline in hospitalized older adults in the medical ward.

METHODS

The JBI Evidence Implementation Framework is rooted in an audit and feedback process and follows a structured method for identifying and addressing barriers to adherence with recommended clinical practices. It follows seven stages: (1) identification of the practice area for change, (2) involvement of change agents, (3) assessment of context and readiness for change, (4) evaluation of current practice (i.e., baseline audit) against evidence-based audit criteria, (5) implementation of practice changes, (6) reassessment of practice through a follow-up audit, and (7) consideration of the sustainability of the implemented changes.[13] The project also used the JBI Practical Application of Clinical Evidence System (PACES) and the Getting Research into Practice (GRiP) audit and feedback tool.[14] The Standards for QUality

Improvement Reporting Excellence (SQUIRE) reporting guidelines were used to report the project results[15] (see Appendix I, http://links.lww.com/IJEBH/A170).

This project was conducted in a medical ward of the NCKUH with a sample of 25 nurses who participated in both the baseline and follow-up audits. Additionally, two distinct groups of hospitalized older adults were recruited, aged 65 years (77.58 ± 7.98) or above. Thirty individuals took part in the baseline audit and another 30 took part in the follow-up audit. The exclusion criteria were as follows: (1) individuals unable to comply with health care providers' instructions and (2) individuals diagnosed with conditions requiring activity restrictions. The definition of functional decline was determined by assessing the ability to perform daily living activities using the Modified Katz Activities of Daily Living (ADL) scale for hospitalized older adults, both at admission and at discharge within the previous 2 weeks. A decrease in modified Katz ADL scores at discharge compared with the scores from 2 weeks prior to hospitalization indicated functional decline at the time of discharge.[16]

Implementation planning

The first phase started in May 2022, during which we selected the project theme, established the project team, and identified the unit.

Phase 1. Identification of the practice area for change

The project topic was selected based on potential issues in the unit. The medical ward at NCKUH did not generally implement early guidance for physical activity. Nurses lacked awareness of how to provide guidance for early physical activities for older adults during hospitalization, and the unit lacked standardized assessments and guidelines for physical activity.

Phase 2. Engaging change agents

The team consisted of a nurse practitioner as the project team leader, the director of the medical department, the head nurse, an advanced practice nurse (APN), a physiotherapist, and geriatricians. Each team member possessed relevant clinical expertise and had specific roles and responsibilities. The project team leader and the director of the medical ward were primarily agents of change and responsible for coordination, organizational leadership, and facilitating communication. The head nurse was in charge of project implementation and educational programs. The physiotherapist and geriatricians served as lecturers, developing a physical activity functional level assessment form, activity items, and a standard protocol for the project. The APN assisted with developing the guidelines, data collection, analysis, and writing. A group meeting was held to develop audit criteria and data collection methods before the baseline audit.

Phase 3. Assessment of context and readiness to change

Some of the health care providers on the project team worked in the medical ward; therefore, they were aware that in medical care for hospitalized older adults, the focus is primarily on acute care. The nursing staff do not routinely provide guidance to older adults regarding physical activities, nor are there tools or guidelines for assessing physical activity. As a result, the rate of functional decline upon discharge was found to be 36.3%. Therefore, an interdisciplinary team was established to initially conduct physical or online meetings for discussions 2 to 3 times per week. The team familiarized themselves with the project scenario and the factors that could affect the proposed change.

Baseline assessment and implementation planning

Phase 4. Review of practice against evidence-based audit criteria

The team searched the JBI best practice database to identify evidence-based criteria for preventing functional decline in hospitalized older adults.[17] The baseline audit was conducted from May to July 2022. The project utilized evidence-based audit criteria for both the baseline and follow-up audits. It also described a sample for each audit criterion and the methodology to measure compliance with best practices (see Table 1).

Phase 5. Implementation of strategies to improve practice

This phase of the project was conducted from August to October 2022. The GRiP tool was used to identify gaps and barriers related to current practices and to provide best practice recommendations. Subsequently, strategies and resources were developed to improve compliance with best practices and address barriers.

Table 1: Audit criteria, sample, and method for measuring compliance with best practice

Audit criterion	Sample	Method used to measure compliance with best practice
1. Hospitalized older patients are assessed to determine if they are able and safe to mobilize.	Baseline audit: 25 nurses Follow-up audit: 25 nurses	The project team developed a questionnaire (see Appendix I, http://links.lww.com/IJEBH/A169) to assess the nurses' understanding of the physical activity function in hospitalized older adults. Yes: ≥80 points; No: <80 points Goal: 80% compliance
2. If able and safe, hospitalized older patients are mobilized as soon as possible to prevent functional decline.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing records documented that the nursing staff had guided hospitalized older adults to initiate physical activity on the second day, and these activities were recorded in the nursing records. Goal: 80% compliance
3. If able and safe, hospitalized older patients are mobilized as frequently as possible to prevent functional decline.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing staff guided hospitalized older adults to engage in physical activity twice daily, and these activities were documented in the nursing records. Goal: 80% compliance
4. Barriers to early and frequent mobilization are identified and addressed early during hospitalization.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing staff conducted pain assessments and interventions upon the admission of hospitalized older adults, and these actions were documented in the nursing records. Goal: 80% compliance
5. When appropriate, older patients who experience functional decline perform a supervised, multicomponent exercise intervention.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing staff guided hospitalized older adults to participate in two or more physical activities based on their functional level, and these activities were documented in the nursing records. Goal: 80% compliance
6. Hospitalized older patients perform the supervised, multicomponent exercise for 15 to 30 minutes per session.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing staff guided hospitalized older adults to engage in two or more physical activities continuously for 15 to 30 minutes, based on their functional level, and these activities were documented in the nursing records. Goal: 80% compliance
7. Hospitalized older patients perform the supervised, multicomponent exercise for 5 to 7 days per week.	Baseline audit: 30 older adults Follow-up audit: 30 older adults	This criterion was considered YES when the nursing staff guided hospitalized older adults to engage in physical activity for 5 or more days per week, based on their functional level, and these activities were documented in the nursing records. Goal: 80% compliance

Impact evaluation and sustainability

Phase 6. Reassessment of practices using a follow-up audit

The follow-up audit was conducted between November 2022 and January 2023 using the same audit criteria, methodology, and sample size as the baseline audit.

Phase 7. Consideration of practice changes

Based on the results of the follow-up audit, the effectiveness of the interventions was validated. After discussion, all team members decided to assess the sustainability of the practice changes every 6 months using the same criteria.

ANALYSIS

The changes in compliance were measured using descriptive statistics embedded in PACES, with the results presented in the form of percentage changes from baseline to follow-up.

ETHICAL CONSIDERATIONS

This project was approved by the Institutional Review Board (B-ER-111092) of the NCKUH.

RESULTS

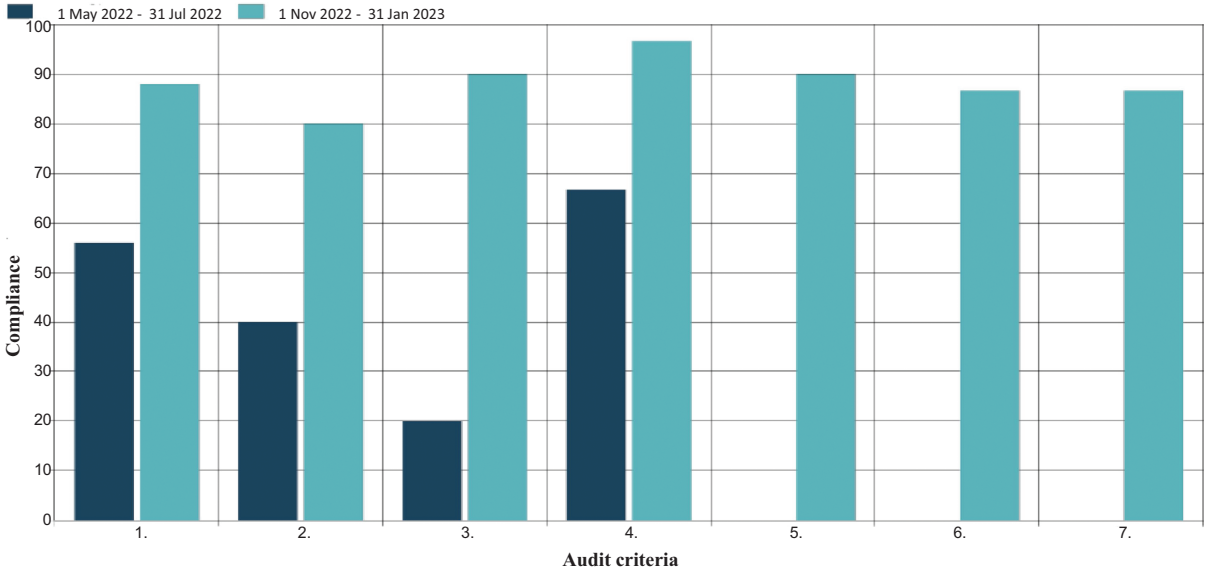
Baseline audit

Compliance with the seven audit criteria in the baseline audit were determined through tests, observations, and nursing records. Figure 1 illustrates the baseline audit compliance rates with the best practice criteria. At baseline, Criterion 1 demonstrated a compliance rate of 56% regarding nursing staff knowledge of physical activity functionality for hospitalized older adults. Criterion 2 showed a compliance rate of 40%, while Criterion 3 had a rate of 20%. For Criterion 4, the compliance rate was 66%. However, Criteria 5, 6, and 7 had a compliance rate of 0%.

Design and implementation of strategies to improve practice (Getting Research into Practice)

Four barriers to compliance with best practice recommendations were identified (lack of staff knowledge, lack of motivation to engage in activity, lack of an assessment tool, and lack of a specific protocol directing activity). Strategies were also devised to overcome these barriers (see Table 2). To address the first barrier (lack of staff knowledge), we invited geriatric care nurses and occupational therapists to deliver lectures, enhancing the knowledge and skills of nurses in implementing early physical activity. We also recorded the course content using PowerCam, making it accessible to colleagues who were unable to attend due to day or night shifts.

For the second barrier (hospitalized older adults lack motivation to engage in activity), we educated the patients about the benefits and importance of



Audit criteria

1. Hospitalized older patients are assessed to determine if they are able and safe to mobilize.
2. If able and safe, hospitalized older patients are mobilized as soon as possible to prevent functional decline.
3. If able and safe, hospitalized older patients are mobilized as frequently as possible to prevent functional decline.
4. Barriers to early and frequent mobilization are identified and addressed early during hospitalization.
5. When appropriate, older patients who experience functional decline perform a supervised, multi-component exercise intervention.
6. Hospitalized older patients perform the supervised, multi-component exercise for 15 to 30 minutes per session.
7. Hospitalized older patients perform the supervised, multi-component exercise for 5 to 7 days per week.

Figure 1: Compliance with best practice in the baseline and follow-up audits.

Table 2: Getting Research into Practice (GRiP) analysis

Barrier	Strategy	Resources	Outcome
1. The nursing staff lacked knowledge about physical activity for hospitalized older adults.	• Arrangements were made for training, education, and skills development of nursing staff regarding physical activity for hospitalized older adults.	• Geriatric care practitioners and physical therapists were invited. • Education sessions, PowerPoint slides, and PowerCam videos were used.	• A total of 25 nursing staff members participated in in-service education courses focused on physical activity for hospitalized older adults, demonstrating a knowledge test pass rate of 88%.
2. Hospitalized older adults lacked motivation to engage in physical activity.	• Appropriate physical activity goals for hospitalized older adults were set. • Hospitalized older adults underwent pain assessment and management during every shift. • Videos of successful cases were shown to hospitalized older adults who lacked motivation for physical activity.	• Morning meetings were conducted. • Geriatricians and physical therapists were invited. • Educational leaflets and videos were made.	• Hospitalized older adults received guidance from nursing staff and consistently engaged in daily physical activities.
3. An assessment tool for evaluating physical activity levels among hospitalized older adults was lacking.	• An assessment sheet and education tool for assessing the levels of physical activity among older adults were developed.	• Geriatricians and physical therapists were invited. • Group meetings were conducted. • An assessment form was printed.	• All nursing staff used an assessment form for evaluating physical activity levels and provided appropriate education on physical activity for hospitalized older adults.
4. A protocol regarding physical activity among hospitalized older adults was lacking.	• A standardized flowchart and checklist for nursing management of physical activity among hospitalized older adults were developed.	• Group meetings were conducted. • A flowchart and checklist were developed.	• All nursing staff followed the flowchart and checklist for physical activity, which led to improvements in the follow-up audit.

physical activity, emphasizing that engaging in early physical activity helped to prevent a decline in physical function when they were admitted to the ward. We established appropriate physical activity goals based on the physical condition of the patients, providing guidance at different levels and recommending suitable activities to increase their confidence in achieving these goals. Every day, medical staff and family members provided positive feedback for the patients, motivating them to continue participating in the activities. Our audit revealed that pain was a common factor limiting the physical activity of older adults when they were admitted to our unit. Consequently, the team organized ward meetings to encourage the nursing staff to consistently conduct pain assessments during every shift. If patients reported discomfort or pain scores (Visual Analogue Scale, VAS) of 3 or higher, we immediately provided non-pharmacological interventions and informed clinical physicians to assess the need for pain medication. This approach aimed to reduce the patients' reluctance to engage in physical activity due to physiological discomfort. Additionally, we showed films demonstrating successful functional improvement in hospitalized older adults, aiming to boost the confidence of the patients to engage in physical activity.

To address the third barrier (lack of an assessment tool), we collaborated with transdisciplinary teams to produce educational videos on physical activities and created posters to display in each patient's room. Older adults could scan the QR code (see Appendix II, http://links.lww.com/IJEBH/A169) with their mobile phone to instantly access the videos. Furthermore, we developed an assessment form and activity items for staff use (see Appendix III, http://links.lww.com/IJEBH/A169).

To tackle the fourth barrier (lack of a specific protocol directing activity), we created flowcharts (see Appendix IV, http://links.lww.com/IJEBH/A169) and created an easy-to-remember slogan, 2-2-2-2, defined as on the second day of admission, twice a day, two types each time, 20 minutes per suitable physical activity should be provided to hospitalized older adults. We also created large posters to be displayed at the nursing station to remind the unit nurses to

provide early guidance on physical activity based on the assessed level.

Follow-up audit

For the follow-up audit, the data were collected from November 1, 2022 to January 31, 2023. Figure 1 compares the compliance rates of the follow-up audit with the baseline audit. Criterion 1 (Hospitalized older patients are assessed to determine whether they are able and safe to mobilize) demonstrated increased compliance of nursing staff in the knowledge test on physical activity functionality for hospitalized older adults from 56% to 88%. Criterion 2 (If able and safe, hospitalized older patients are mobilized as soon as possible to prevent functional decline) improved from 40% to 80%. Criterion 3 (If able and safe, hospitalized older patients are mobilized as frequently as possible to prevent functional decline) improved from 20% to 89%. Criterion 4 (Barriers to early and frequent mobilization are identified and addressed early during hospitalization) improved from 66% to 97%. Criterion 5 (When appropriate, older patients who experience functional decline perform a supervised, multicomponent exercise intervention) improved from 0% to 90%. Criteria 6 (Hospitalized older patients perform the supervised, multicomponent exercise for 15–30 minutes per session) and Criterion 7 (Hospitalized older patients perform the supervised, multicomponent exercise for 5 to 7 days per week) improved from 0% to 87%.

Additionally, the rate of functional decline among the 30 hospitalized older adults decreased from 36.7% to 20% (see Figure 2).

DISCUSSION

A systematic review conducted by Jadczak *et al.*[18] reported that exercise interventions effectively improve physical function in frail older adults. However, there is a lack of evidence on exercise interventions to prevent functional decline in hospitalized frail older adults. This study evaluated compliance with evidence-based criteria for preventing functional decline among hospitalized older adults in a medical ward. The PACES and GRiP tools were used to facilitate the implementation of evidence into practice. Following the intervention, there was a significant improvement in nursing staff knowledge of physical activity functionality in hospitalized older adults, with the test pass rate increasing from 56% to 88%. The compliance rate of the nursing staff in guiding hospitalized older adults to engage in early physical activity reached 80%. At the same time, the rate of functional decline decreased from 36.7% to 20%. Thus, our study echoed the findings of Martínez-Velilla,[19] who report that moderate physical activity in acute wards can improve functional decline in hospitalized older adults. Additionally, Boltz *et al.*[9] and Pacheco *et al.*[20] reviewed evidence-based care guidelines for the elderly and suggest that the early implementation of exercise programs following

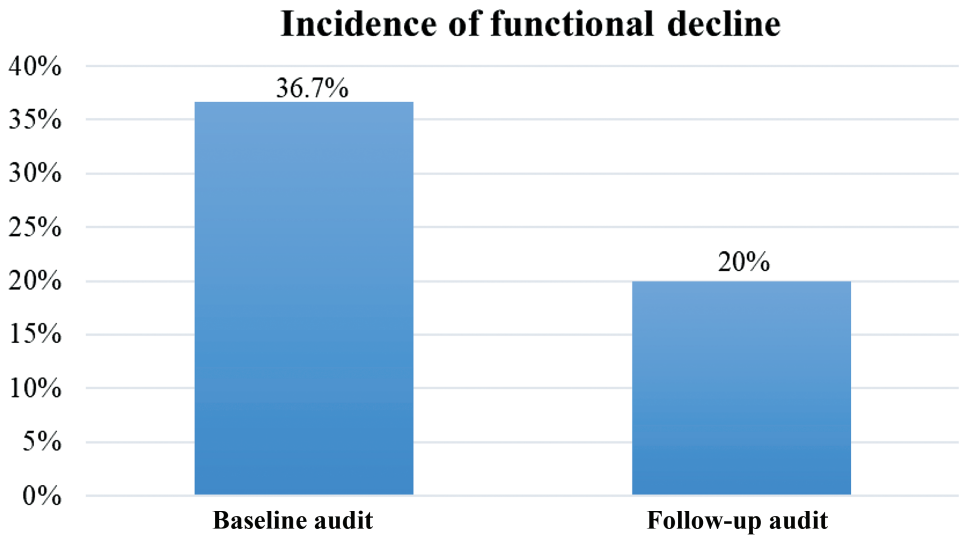


Figure 2: Baseline audit and follow-up audit results showing the reduced incidence of functional decline among hospitalized older adults.

hospitalization can prevent functional decline and disability in older adults.

To address the barriers, such as limited staff knowledge about physical activity for older adults during hospitalization, the project team employed a collaborative approach by engaging geriatric nurses and physical therapists to conduct training. The assessment revealed that following on-the-job education and training regarding hospitalized older adults, there was a significant improvement in staff knowledge of the early implementation of physical activity. White *et al*.[21] found that using a cross-team collaboration model guided by physical therapists enhanced nurses' knowledge and skills in early mobilization activities, thereby improving patient mobilization.

In analyzing the low willingness of hospitalized older adults to engage in physical activity, it was identified that their concerns revolved around the potential impact of physical activity on their illness progression and the presence of pain. Additionally, many hospitalized older adults reported not receiving guidance on physical activity from health care professionals during their hospital stay or abandoning physical activity due to excessively challenging goals. To address these barriers, the team advocated for early guidance on physical activity during weekly morning meetings and ward conferences. Additionally, all nursing staff were requested to offer guidance on specific physical activities tailored to the functional abilities of the patients. The medical team used a well-established form to assess the functional level of physical activity, enabling them to set achievable goals for the patients at different stages. The medical team provided timely encouragement and recognition to the patients as they achieved each of their goals. The team also recorded videos, showcasing successful physical activity by the patients. These videos were shared specifically with other patients who were reluctant to engage in physical activity, with the aim of increasing their motivation.

Pain assessment for hospitalized older adults was consistently conducted throughout their stay, and if the pain score exceeded 3, appropriate pain medication was administered in a timely manner. Once pain improved, the patients were encouraged to express their thoughts about engaging in physical activity, and suitable activity plans were developed accordingly.

Finally, in the absence of a standardized flowchart for physical activity for hospitalized older adults, health care professionals from various disciplines collaborated to design a suitable standardized flowchart specifically tailored to older adults in medical wards. Clinical caregivers used the flowchart to direct the patients to engage in physical activity.

Success factors

The unit staff members unanimously recognized the urgent need to address this clinical issue, leading to a high compliance rate in implementing care guidelines. Through cross-team collaboration, a physical activity level form and a mnemonic were designed: "2-2-2-2: on the 2nd day of admission, x2 daily, 2 types each time, for 20 minutes each session." This clear and straightforward classification enabled unit nurses to independently provide guidance on physical activity to the patients, thereby enhancing the practicality of clinical implementation.

Challenges

This project encountered some challenges. First, limitations in equipment and environment prevented the provision of an optimal space for hospitalized older adults to engage in physical activity. To address this issue, we conducted team meetings and discussions with occupational therapists and geriatric physicians to choose activities suitable for the ward (such as hand grippers, bed bicycles, resistance bands, etc.), enabling hospitalized older adults to participate in physical activities within the ward. Due to the COVID-19 pandemic, nursing staff experienced increased workloads, leading to insufficient time to the patients to perform the physical activities. Consequently, they found it challenging to understand the educational content and correctly perform the physical activities. In response, we developed posters and QR code videos for caregivers and patients to watch, which helped them to understand the proper execution of the exercises and techniques.

Second, due to the varying severity of illness among the patients, nurses may have unintentionally prioritized critically ill or terminally ill patients, inadvertently overlooking the provision of physical activity guidance and health education to other patients. During the COVID-19 pandemic, strict infection control measures were implemented, limiting patients to only one caregiver in each patient's room. Some

caregivers, who were foreign, experienced language communication limitations. This made it difficult for frontline nursing staff to provide physical activity guidance in the caregiver's native language. Communication primarily relied on a combination of Chinese and English, supported by non-verbal cues. Although the physical activity videos were presented with Chinese subtitles, there was a possibility of misunderstandings and incorrect execution of techniques. To address this issue, our posters and videos focused on images and dynamic physical activities, making it easier for the patients to understand. Physical activity equipment, such as hand grippers and bed bicycles, were installed in each ward to reduce the entry and stay time of nursing staff, thus lowering the risk of infection. For caregivers who could not communicate in Chinese or English, guidance was provided with the assistance of other caregivers in the same ward who understand the given language. Looking ahead, we recommend developing instructional materials and videos in languages such as English, Vietnamese, and Indonesian. This will assist foreign caregivers to guide the patients so that they can correctly execute the physical activities.

CONCLUSIONS

This best practice implementation project demonstrated that the early implementation of physical activity can effectively prevent functional decline in hospitalized older adults. In this evidence-based applied research project, unit-based education was conducted by field experts, in accordance with the JBI clinical practice guidelines. This education was proposed to enhance nurses' knowledge and skills in promoting physical activity among hospitalized older adults. Multiple improvement strategies were developed through interdisciplinary collaboration to address barriers in implementing care guidelines in clinical practice. These efforts were aimed at effectively preventing functional decline among older adults in medical wards.

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