AVAILABILITY, SUITABILITY AND USE OF TRAPEZE BAR IN NURSING CARE CONTEXT

Disponibilidade, adequabilidade e uso do trapézio em contexto de cuidados de enfermagem

Disponibilidad, adecuación y uso del trapecio en cuidados de enfermería

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ABSTRACT

Background: the trapeze bar plays a crucial role in promoting patient mobility and autonomy, thereby helping to prevent various complications associated with immobility. **Objectives:** to analyse the availability, suitability, and use of the trapeze bar by patients, and to examine the relationship between its use and nursing interventions, muscle strength, level of consciousness, and the ability to follow commands. **Methodology:** a quantitative, cross-sectional, correlational study was conducted with a convenience sample of 106 patients monitored by nursing students. Data were collected via an online questionnaire. **Results:** most patients (86.79%) had access to a trapeze bar, but only 55.66% used it. The device was most effectively used for repositioning (49.06%) and transfers (33.02%). A statistically significant association was found between trapeze use and muscle strength, level of consciousness, and the ability to follow commands. Nursing interventions, including education, training, and guidance, significantly increased device usage. Perceptions of human and material resources did not significantly influence its use. **Conclusion:** despite high availability, trapeze bar usage remains limited. Muscle strength, cognitive function, and educational nursing interventions are key determinants of effective use. Systematic functional assessment and patient empowerment by nurses are essential to maximize the benefits of the trapeze bar.

Keywords: nursing; rehabilitation; assistive devices; tertiary prevention

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RESUMO

Enquadramento: o trapézio é fundamental para promover a mobilidade e autonomia dos utentes, contribuindo para prevenir complicações várias associadas à imobilidade. **Objetivos**: analisar a disponibilidade, adequabilidade e utilização do trapézio pelos utentes e a relação entre o seu uso e as intervenções de enfermagem, força muscular, estado de consciência e capacidade para seguir comandos. **Metodologia**: estudo quantitativo, transversal, correlacional, em amostra conveniente de 106 utentes acompanhados por estudantes de enfermagem. Dados recolhidos através de formulário online. **Resultados**: a maioria dos utentes (86,79%) dispunha de trapézio, mas apenas 55,66% o utilizavam. A utilização mais eficaz reportou-se em posicionamentos (49,06%) e levantes (33,02%). Observou-se associação estatisticamente significativa entre o uso do trapézio e a força muscular, estado de consciência e capacidade para seguir comandos. As intervenções de enfermagem de ensino, treino e orientação aumentaram significativamente a utilização do dispositivo. A perceção dos recursos humanos e materiais não influenciou significativamente o seu uso. **Conclusão**: apesar da elevada disponibilidade, a utilização do trapézio permanece limitada. A força muscular, cognição e intervenções educativas de enfermagem são determinantes para o seu uso eficaz. A avaliação funcional sistemática e capacitação dos utentes pelos enfermeiros é crucial para maximizar benefícios do trapézio.

Palavras-chave: enfermagem; reabilitação; dispositivos de assistência; prevenção terciária

RESUMEN

Marco contextual: la barra trapezoidal es fundamental para promover la movilidad y la autonomía de los pacientes, contribuyendo a prevenir diversas complicaciones asociadas con la inmovilidad. **Objetivos:** analizar la disponibilidad, adecuación y uso de la barra trapezoidal por parte de los pacientes, así como la relación entre su uso y las intervenciones de enfermería, la fuerza muscular, el estado de conciencia y la capacidad para seguir órdenes. **Metodología:** estudio cuantitativo, transversal y correlacional, realizado con una muestra por conveniencia de 106 pacientes acompañados por estudiantes de enfermería. Los datos fueron recolectados mediante un formulario en línea. **Resultados:** la mayoría de los pacientes (86,79%) disponía de barra trapezoidal, pero solo el 55,66% la utilizaba. El uso fue más eficaz en el posicionamiento (49,06%) y en los levantamientos (33,02%). Se encontró una asociación estadísticamente significativa entre el uso de la barra y la fuerza muscular, el estado de conciencia y la capacidad para seguir órdenes. Las intervenciones de enfermería centradas en la enseñanza, el entrenamiento y la orientación aumentaron significativamente el uso del dispositivo. La percepción de los recursos humanos y materiales no influyó significativamente en su utilización. **Conclusión:** a pesar de su alta disponibilidad, el uso de la barra trapezoidal sigue siendo limitado. La fuerza muscular, la función cognitiva y las intervenciones educativas de enfermería son determinantes clave para su uso eficaz. La evaluación funcional sistemática y el empoderamiento de los pacientes por parte del personal de enfermería son esenciales para maximizar los beneficios del uso de la barra trapezoidal.

Palabras clave: enfermería; rehabilitación; dispositivos de asistencia; prevención terciaria

INTRODUCTION

The trapeze bar plays a crucial role in preventing sequelae associated with immobility by promoting mobility and autonomy in dependent patients, and providing opportunities to maintain appropriate levels of physical activity among this population (Alves et al., 2024).

Nurses, as professionals who maintain direct and continuous contact with patients, are in a privileged position to identify early signs of functional decline and to implement strategies that promote mobility and autonomy. Moreover, in patients who are independent and autonomous, nurses should also ensure optimal conditions to prevent the deterioration of these attributes during hospitalisation (Alves et al., 2024; Maalouf et al., 2018).

Nurses play a decisive role in preventing complications associated with immobility. They actively promote mobility, assess patients' functional capacities, and intervene to enhance autonomy in self-care activities. Their interventions include assessment of muscle strength, level of dependence, orientation, and cognitive abilities. Nurses also use educational strategies such as information provision, demonstration, and training in using the trapeze bar. These actions lead to safer and more autonomous positioning and transfers (Alves et al., 2024; Boynton et al., 2020; Kissane et al., 2023).

The present study aims to analyse the availability of the trapeze bar, which is a key element for its implementation. It also examines its suitability to patients' needs and capabilities. Furthermore, it considers the manner in which the trapeze bar is used in clinical practice.

BACKGROUND

Sequelae of immobility

Immobility is associated with the development of a wide range of complications and, when combined with chronic diseases and other pre-existing conditions in bedridden patients, may give rise, among others, to pressure ulcers, deep vein thrombosis (DVT), pneumonia, and urinary tract infection (UTI). Several studies have demonstrated that complications resulting from immobility may lead to multiple adverse outcomes, including increased morbidity and mortality, prolonged length of hospital stay, higher hospital costs, and an overall increase in disease burden (Wu et al., 2018).

Immobility in bedridden patients, particularly during prolonged periods of hospitalisation, may result in a series of sequelae affecting multiple body systems, including the musculoskeletal, respiratory, cardiovascular, neurological, and gastrointestinal systems. These consequences may have a significant impact on patients' quality of life, persisting for months or even years after hospital discharge (Parry & Puthucheary, 2015).

Among the sequelae associated with immobility or reduced mobility related to hospitalisation, musculoskeletal impairments are particularly prominent, manifesting as muscle weakness and contractures, reduced joint range of motion, pain, postural changes, loss of body mass, and balance disturbances, among others. Prolonged bed rest, which is common in intensive care units (ICUs) and in cases of acute illness, leads to physiological changes that affect multiple organ systems, including the respiratory, cardiovascular, gastrointestinal, urinary,

integumentary, and musculoskeletal systems (Parry & Puthucheary, 2015).

Chronic diseases, frailty, sarcopenia, and osteoporosis are also factors that limit physical activity, particularly in older adults. Age-related reductions in cardiovascular and respiratory capacity further contribute to decreased levels of physical activity (Zhang & Giovannucci, 2025).

Early mobilisation of hospitalised patients with some degree of disability is an important therapeutic strategy aimed at mitigating the negative impacts of immobility syndrome during prolonged hospital stays (Alves et al., 2024). Protocols for the early implementation of mobilisation and therapeutic exercise during hospitalisation, and extending into the post-discharge period, are considered essential to enable patients to maintain functional levels close to their pre-existing condition (Peres et al., 2023).

Complications associated with immobility, such as pressure ulcers, pneumonia, deep vein thrombosis, and urinary tract infections, have a significant impact on clinical outcomes and patient well-being, resulting in a marked reduction in health-related quality of life. Evidence from multicentre studies shows that patients who develop at least one of these complications during hospitalisation experience poorer outcomes across multiple dimensions of post-discharge quality of life, including mobility, self-care, and the performance of activities of daily living. Furthermore, these patients report a higher prevalence of functional limitations and a lower overall perception of health, reinforcing the need for effective preventive strategies during hospitalisation (Wu et al., 2018).

Role of nurses in the prevention of sequelae of immobility

A reduction in health-related quality of life is significantly associated with the main complications of immobility. Preventing these complications through effective strategies is therefore essential to improve the quality of life of patients who are confined to bed (Wu et al., 2018).

Early mobilisation is of paramount importance in reducing the negative impact of immobility syndrome during prolonged periods of hospitalisation, particularly when patients require assisted ventilation, present with muscle weakness, and have other associated comorbidities, such as inflammatory processes and an increased risk of pulmonary thromboembolism (Peres et al., 2023).

Structured and standardised nursing interventions result in greater patient functionality and independence and have a significant effect on functional outcomes and on reducing the need for nursing care after discharge (Imhof et al., 2015).

Nurses play a central role in the early identification of patients at risk of complications arising from immobility, relying on systematic assessments and validated tools such as the Braden Scale, which enables the detection of vulnerabilities related to sensory perception, moisture, activity, mobility, nutrition, and friction/shear. Interventions such as early mobilisation, range-of-motion exercises, muscle-strengthening training, and appropriate positioning are essential to reduce tissue pressure and preserve functionality (Kennerly et al., 2022).

Early mobilisation has been shown to be a safe and feasible intervention in patients admitted to Intensive Care Units, including those receiving mechanical

ventilation. Evidence indicates that structured early mobilisation programmes may contribute to a reduction in the duration of mechanical ventilation and length of hospital stay, as well as to improvements in muscle strength and overall physical function (Wang et al., 2023). Assistive devices such as the trapeze bar are essential in preventing the sequelae of reduced mobility, as they facilitate safe movement and repositioning, and constitute fundamental resources that nurses should make available to patients (Alves et al., 2024).

Through a comprehensive assessment of patients' functional capacity, the development of individualised care plans, and the implementation of specific interventions such as therapeutic exercises, gait training, and activities of daily living, nurses promote the recovery of independence and quality of life (Rodrigues et al., 2022). The same authors highlight the importance of nurses in patient and family education and support. Nurses are responsible for informing patients about the risks associated with immobility, clarifying the importance of early mobilisation and self-care, and demonstrating and training positioning techniques and other exercises that can be performed at home. Empowering patients and their families for self-care is crucial to maintaining the gains achieved during hospitalisation and to preventing future complications.

In this context, nurses act as educators for patients and informal caregivers or family members, with a focus on promoting autonomy and mobility by supporting the adoption and correct use of assistive devices. The empowerment of informal caregivers by nurses, through systematic strategies and close follow-up, contributes to higher-quality nursing care, particularly by facilitating effective care transitions, promoting the well-being and satisfaction of both the person receiving care and the informal caregiver, and improving health outcomes for both (Alves et al., 2024).

With regard to the limited availability of resources, both material and human—an argument frequently used to discourage continuous improvements in the quality of nursing care—the study by Patrician et al. (2024) demonstrates that, although the importance of factors such as nursing staffing levels, workload, and work environment for quality and safety is widely recognised, there is no robust evidence showing that the perception of a need to improve these resources directly leads to the adoption of less appropriate practices.

In summary, nurses accompany patients throughout all phases of the care process and play an essential role in the prevention, management, and treatment of the sequelae of immobility. Early intervention, the use of effective preventive measures, and the education of patients and families are crucial to minimising the effects of immobility and promoting functional recovery, independence, and quality of life.

Use of the trapeze bar in the prevention of sequelae of immobility

To prevent the sequelae of patient immobility, regular changes in body position, assisted sitting or standing, and stimulation of mobilisation are required. These interventions should be carried out by healthcare professionals who are able to assess the patient's condition and suitability for the procedures, including general care nurses, rehabilitation nurse specialists, physiotherapists, and healthcare support workers. The usefulness of assistive devices, including the trapeze

bar, as part of strategies to reduce the risk of injury to both caregivers and patients, facilitate repositioning and in-bed mobility, and support personal hygiene and elimination—particularly in bedridden patients or those with reduced mobility—is widely recognised (Donaldson et al., 2021).

By enabling independent movement in bed, the trapeze bar allows patients to change position autonomously, thereby relieving pressure on critical areas of the body and helping to prevent the development of pressure ulcers, a problem that remains highly prevalent among patients confined to bed for prolonged periods. By strengthening upper limb musculature, the trapeze bar also contributes to the maintenance of functional mobility and patient independence, which may accelerate recovery and improve quality of life (Pereira, 2017).

For the appropriate use of the trapeze bar—ensuring that it facilitates the work of healthcare professionals and is beneficial for the patient—certain criteria must be met. These include an adequate level of consciousness and cognitive function that enables the patient to understand and follow instructions provided by healthcare professionals. In addition, the patient must possess sufficient muscle strength not only to overcome gravity but also to lift (or attempt to lift) their trunk when using the trapeze bar. This requires muscle strength equal to or greater than grade 3 according to the Medical Research Council (MRC) muscle strength scale (Pereira, 2017).

According to a study by Alkadri and Jutai (2016), older adults with cognitive impairments are less likely to use mobility assistive devices and, when they do, may use them ineffectively. This finding highlights the concerning association between cognitive deficits and the reduced or problematic use of mobility aids.

In summary, the trapeze bar is an essential tool in the mobilisation of patients with reduced mobility, offering a practical means of preventing the consequences of immobility and promoting recovery. When used appropriately and under the supervision of healthcare professionals, this device ensures safety and maximises its benefits, making it an effective strategy in the care of postoperative patients or those with conditions requiring prolonged periods of bed rest. Nevertheless, it is important to recognise that not all patients are suitable candidates for its use, as adequate cognitive function is required to ensure safe and correct utilisation of the equipment. It is the nurse's responsibility to carefully assess these conditions, thereby ensuring that the use of the trapeze bar is appropriate and beneficial for each individual patient.

METHODOLOGY

A quantitative, cross-sectional correlational study was conducted using an accidental or convenience sample of 106 patients who received care from nursing students during their transition into professional practice. Data collection took place between February and May 2025 using a Google Forms questionnaire. Students recorded patients' age, sex, level of consciousness (assessed through responses to verbal stimuli and simple interaction), ability to follow simple commands, muscle strength according to the Medical Research Council (MRC) scale, potential factors limiting mobility, the availability and use of the trapeze bar, the purpose of its use and its effectiveness, as well as nursing interventions aimed at promoting mobility and

appropriate physical activity. These interventions were assessed using dichotomous items (Yes/No) from the Nursing Interventions Scale for the Prevention of Sequelae of Immobility (IEPSI), which comprises 17 statements based on the International Classification for Nursing Practice (Alves et al., 2024).

The aim of this study was to analyse the availability, appropriateness, and use of the trapeze bar in the clinical setting.

Throughout the data collection process, confidentiality and anonymity of all participants were ensured. The study was approved by an Ethics Committee (No. CE…/06/2020), and all ethical and formal requirements were duly observed.

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 30.0.0. Descriptive statistics (absolute and relative frequencies, medians, means, and standard deviations) and inferential statistics (chi-square tests and Mann–Whitney U tests) were applied. Non-parametric tests were selected due to the non-normal distribution of the sample, as confirmed by the Kolmogorov–Smirnov test ($p < 0.05$).

RESULTS

In a sample of 106 patients, 65 (61.32%) were male, and 41 (38.68%) were female. The mean age was 73.25 years (standard deviation [SD] = 14.04), ranging from 26 to 97 years. Most of the data (93.40%) were collected in a hospital setting, while only 6.60% originated from a home-care setting.

Regarding level of consciousness, the results indicate that 83 patients (78.30%) were awake and alert, 20 were lethargic (18.87%), and 3 were unresponsive (2.83%).

With respect to muscle strength in each limb, among the 106 patients assessed, 67 (63.21%) were able to raise the right leg approximately 20 degrees against gravity with the knee extended, whereas 39 (36.79%) were unable to do so. The mean muscle strength observed on the Medical Research Council (MRC) scale was 3.42 (SD = 1.43).

Table 1 presents the results of the muscle strength assessment using the MRC muscle strength scale, which is widely applied in clinical settings and ranges from 0 to 5. The mean muscle strength of the right lower limb was 3.42 (SD = 1.43), and 67 patients (63.21%) were able to raise the leg against gravity to approximately 20 degrees with the knee extended. For the left lower limb, the mean muscle strength was 3.29 (SD = 1.46), and 64 patients (60.38%) were able to perform the movement against gravity under the same conditions. The majority of patients, 85 (80.19%), were able to raise the right arm approximately 45 degrees against gravity with the elbow extended, with a mean strength of 3.85 (SD = 1.30) on the MRC scale. Similarly, 81 patients (76.42%) were able to raise the left arm against gravity to approximately 45 degrees with the elbow extended, and the mean muscle strength for the left upper limb was 3.77 (SD = 1.31).

Table 1

Muscle strength (MRC scale) and ability to elevate limbs against gravity

Muscle Strength (MRC Scale 0–5)	**n**	**%**	**M**	**SD**
Right Lower Limb (RLL)				
Raised leg ~20° (Yes)	67	63,21	3,42	1,43
Did not raise	39	36,79		
Left Lower Limb (LLL)				
Raised leg ~20° (Yes)	64	60,38	3,29	1,46
Did not raise	42	39,62		
Right Upper Limb (RUL)				
Raised arm ~45° (Yes)	85	80,19	3,85	1,3
Did not raise	21	19,81		
Left Upper Limb (LUL)				
Raised arm ~45° (Yes)	81	76,42	3,77	1,31
Did not raise	25	23,58		

M = Mean; SD = Standard deviation

It was observed that 70 patients (66.04%) presented factors limiting mobility. The most frequently identified causes were cognitive impairments, agitation, and alterations in the level of consciousness (28 cases), followed by fatigue, weakness, and reduced muscle strength (22 cases), and the sequelae of vascular events, such as acute myocardial infarction and cerebrovascular accidents (14 cases). A further group of conditions, including obesity, urinary and venous catheterisation, and various diseases, collectively accounted for 15 cases (Table 2).

Table 2

Mobility-limiting factors identified in the sample

Mobility-limiting factors	**n.**
Cognitive and level of consciousness problems (e.g. disorientation, agitation, dementia)	28
Fatigue, weakness, and reduced strength	22
Vascular events (e.g. myocardial infarction, stroke, hemiparesis)	14
Unspecified motor deficits (e.g. incoordination, triplegia, tetraplegia)	8
Pain (generalised, exacerbated, or osteoarticular)	6
Orthopaedic problems (e.g. osteoarthritis, fractures, amputations)	6
Respiratory problems (e.g. dyspnoea, need for oxygen therapy)	4
Behavioural issues (e.g. resistance, fear of falling)	3
Other (e.g. obesity, urinary/venous catheterisation, various diseases)	15

The nursing interventions related to teaching, guiding, demonstrating, and training were among the least frequently implemented in the promotion of physical mobility (Table 3). Interventions such as providing guidance, demonstrating use, training, promoting, optimising use, and teaching about mobility devices ranged between 11.32% and 33.02%.

The nursing interventions most frequently performed were promoting mobility and assessing mobility, both recorded in 85.85% of cases, followed by assistance with mobility (73.58%) and repositioning the patient (69.81%).

Table 3

Nursing interventions for the promotion of mobility

			n.	%				n.	%
1	Promote Mobility	No	15	14,15	10	Demonstrate the Use of a Mobility Device	No	80	75,47
		Yes	91	85,85			Yes	26	24,53
		Total	106	100,00			Total	106	100,00
2	Assess Mobility	No	15	14,15	11	Train in the Use of a Mobility Device	No	75	70,75
		Yes	91	85,85			Yes	31	29,25
		Total	106	100,00			Total	106	100,00
3	Assist with Mobility	No	28	26,42	12	Promote the Use of a Mobility Device	No	82	77,36
		Yes	78	73,58			Yes	24	22,64
		Total	106	100,00			Total	106	100,00
4	Assist with Bed Mobility	No	44	41,51	13	Assist with Ambulation Using a Device	No	94	88,68
		Yes	62	58,49			Yes	12	11,32
		Total	106	100,00			Total	106	100,00
5	Reposition the Patient	No	32	30,19	14	Promote Ambulation Using a Device	No	90	84,91
		Yes	74	69,81			Yes	16	15,09
		Total	106	100,00			Total	106	100,00
6	Position the Patient	No	48	45,28	15	Increase Activity Tolerance	No	71	66,98
		Yes	58	54,72			Yes	35	33,02
		Total	106	100,00			Total	106	100,00
7	Transfer the Patient	No	68	64,15	16	Optimise the Use of Mobility Devices	No	73	68,87
		Yes	38	35,85			Yes	33	31,13
		Total	106	100,00			Total	106	100,00
8	Assist with Ambulation	No	72	67,92	17	Educating the Use of Mobility Devices	No	72	67,92
		Yes	34	32,08			Yes	34	32,08
		Total	106	100,00			Total	106	100,00
9	Providing Guidance on Mobility Devices	No	83	78,30					
		Yes	23	21,70					
		Total	106	100,00					

Most patient units were equipped with a trapeze bar (86.79%); in seven services, trapeze bars were not available (6.60%), and 55 patients used the trapeze bar (55.66%), as shown in Table 4.

Table 4

Availability and use of the trapeze bar

Is a trapeze bar available at the patient's unit?	n.	%
No	14	13,21
Yes	92	86,79
Total	106	100,00

Is a trapeze bar available in the ward/service?	n.	%
No	7	6,60
Yes	99	93,40
Total	106	100,00
Did the patient use the trapeze bar?	n.	%
No	47	44,34
Yes	59	55,66
Total	106	100,00

Among the patients who used the trapeze bar, the most frequent and effective use was for repositioning (49.06%), whereas ineffective use was observed in 4.72% of cases.

For assisted rising or sitting up, effective use was observed in 33.02% of cases, while ineffective use occurred in 5.66%. About support for elimination and personal hygiene, usage was more limited, with only 20.75% and 19.81% of cases, respectively, demonstrating effective use. In relation to feeding support, effective use was observed in only 16.98% of patients, and for the maintenance of physical activity, effective utilisation was identified in just 10.38% of cases (Table 5).

Table 5

Purposes of trapeze bar use

	Did not use		**Yes, but it was not effective**		**Yes, and it was effective**		**Total**	
The trapeze bar was used for:	n.	%	n.	%	n.	%	n.	%
Repositioning	49	46,23	5	4,72	52	49,06	106	100,00
Assisted sitting up / rising	65	61,32	6	5,66	35	33,02	106	100,00
Support with elimination	80	75,47	4	3,77	22	20,75	106	100,00
Support with personal hygiene	82	77,36	3	2,83	21	19,81	106	100,00
Support with feeding	86	81,13	2	1,89	18	16,98	106	100,00
Support in maintaining physical activity	89	83,96	6	5,66	11	10,38	106	100,00

When analysing the relationship between muscle strength (MRC) in the upper and lower limbs and the use of the trapeze bar (Table 6), it was observed that patients with greater muscle strength in both the upper and lower limbs were those who most frequently used the trapeze bar. These differences were statistically significant for both the upper limbs ($U = 770.5$; $p = 0.000$) and the lower limbs ($U = 987.5$; $p = 0.010$). For this analysis, the mean muscle strength was calculated by summing the strength scores of the upper and lower limbs and dividing the total by two.

Table 6

Use of the trapeze bar according to muscle strength (Mann–Whitney U test)

	Used the trapeze bar (n=59)				Did not use the trapeze bar (n=47)				Mann–Whitney U test	
	Mean rank	M	SD	Med	Mean rank	M	SD	Med	U	p
Upper limb strength (Mean MRC)	63,94	4,31	0,73	4,00	40,39	3,18	1,54	3,50	770,500	<0,001
Lower limb strength (Mean MRC)	60,26	3,69	1,24	4,00	45,01	2,95	1,50	3,00	987,500	0,010

M = Mean; SD = Standard deviation; Med = Median

When analysing the relationship between level of consciousness and use of the trapeze bar, statistically significant differences were observed ($\chi^2 = 21.854$; $p = 0.000$). Patients who were awake and alert were those who most frequently used the trapeze bar. Nevertheless, a substantial proportion of these patients (33.00%) did not use the trapeze bar (Table 7).

In the same table, and about the analysis of trapeze bar use according to patients' ability to follow commands, statistically significant differences were also identified (chi-square = 17.436; $p < 0.001$). Patients who were awake and able to follow commands were the most frequent users of the trapeze bar. However, a considerable proportion of these patients (35.00%) still did not use the trapeze bar.

Table 7

Use of the trapeze bar according to level of consciousness and ability to follow commands (Chi-square test)

			Use of the trapeze bar		Total	
			No	Yes		
Level of Consciousness	Not responsive	n.	3	0	3	$X^2 = 21,854$; p<0,001
		%	100	-	100	
	Lethargic	n.	17	3	20	
		%	85	15	100	
	Awake and alert	n.	27	56	83	
		%	33	67	100	
Was the patient able to follow 2 out of 3 commands?	No	n.	16	2	18	$X^2 = 17,436$; p<0,001
		%	89	11	100	
	Yes	n.	31	57	88	
		%	35	65	100	

About the relationship between nursing interventions involving information provision, demonstration, and training, and the use of the trapeze bar, it was observed that the proportions of patients who received nursing interventions related to teaching, guidance, demonstration, and training and who used the trapeze bar were higher than those of patients who did not receive these interventions and nevertheless used the trapeze bar, with statistically significant differences ($p < 0.05$). Patients who were the recipients of nursing interventions focused on education, instruction, and training in the use of the trapeze bar were those who most frequently and successfully used the device (Table 8).

Table 8

Use of the trapeze bar in relation to nursing interventions (Chi-square test)

			Use of the trapeze bar		Total	X^2	p
			No	Yes			
9. Provide guidance on the use of a mobility device	No	n.	43	40	83	8,643	0,003
		%	51,81	48,19	100,00		
	Yes	n.	4	19	23		
		%	17,39	82,61	100,00		
10. Demonstrate the use of a mobility device	No	n.	42	38	80	8,800	0,003
		%	52,50	47,50	100,00		
	Yes	n.	5	21	26		
		%	19,23	80,77	100,00		
11. Train in the use of a mobility device	No	n.	42	33	75	14,128	<0,001
		%	56,00	44,00	100,00		
	Yes	n.	5	26	31		
		%	16,13	83,87	100,00		
17. Educating the Use of Mobility Devices	No	n.	38	34	72	6,476	0,011
		%	52,78	47,22	100,00		
	Yes	n.	9	25	34		
		%	26,47	73,53	100,00		

When analysing the relationship between perceived resource availability and the use of the trapeze bar (Table 9), it can be concluded that there were no significant differences in trapeze bar utilisation according to the perception of available resources, either with regard to material resources (U = 1258.0; p = 0.355) or human resources (U = 1192.0; p = 0.144).

Table 9

Use of the trapeze bar according to perceived resources (Mann–Whitney U test)

	Used the trapeze bar (n=59)				Did not use the trapeze bar (n=47)				Mann–Whitney U test	
	Mean rank	M	SD	Med	Mean rank	M	SD	Med	U	*p*
Material resources	55,68	2,39	0,59	2,00	50,77	2,26	0,64	2,00	1258,00	0,355
Human resources	56,80	1,92	0,50	2,00	49,36	1,77	0,67	2,00	1192,00	0,144

M = Mean; SD = Standard deviation; Med = Median

DISCUSSION

Analysis of the association between upper and lower limb muscle strength and trapeze bar use revealed that patients with greater muscle strength in both upper and lower limbs used the trapeze bar more frequently, with statistically significant differences observed for both upper limbs (U = 770.5; p = 0.000) and lower limbs (U = 987.5; p = 0.010). These findings are supported by Alves et al. (2024), who emphasise the relationship between preserved muscle strength and the effective use of the trapeze bar as a mobility assistive device.

The results also showed that the majority of the sample (66.04%) presented mobility-limiting factors.

The most frequently identified causes were cognitive problems, agitation, and altered levels of consciousness (28 cases), followed by fatigue, weakness, and reduced muscle strength (22 cases), the consequences of vascular events such as acute myocardial infarction and stroke (14 cases), and a group of other conditions and diseases (15 cases). These findings are in line with those of Zhang and Giovannucci (2025), who report that chronic diseases, frailty, sarcopenia, and osteoporosis are key factors limiting physical activity in older adults. The authors further note that age-related reductions in cardiovascular and respiratory capacity also contribute to decreased levels of physical activity.

With regard to trapeze bar availability, most patient units were equipped with a trapeze bar (86.79%), and 55 patients used it (55.66%). These results are consistent with those reported by Alves et al. (2024), indicating widespread availability of this device in clinical contexts.

The most frequent and effective uses of the trapeze bar were for repositioning (49.06%), assisted sitting up or rising (33.02%), and support with personal hygiene (20.75%). These findings are consistent with Donaldson et al. (2021), who describe the use of assistive devices, including the trapeze bar, as part of strategies to reduce the risk of injury to both caregivers and patients, facilitate repositioning and bed mobility, and support personal hygiene and elimination, particularly in bedridden patients or those with reduced mobility.

Analysis of the relationship between level of consciousness and trapeze bar use indicated statistically significant differences, with patients who were awake and alert being the most frequent users of the trapeze bar. Similarly, patients who were awake and able to follow commands were those who used the trapeze bar most often, with statistically significant differences observed. These results corroborate the findings of Noble and Sweeney (2018) and Alkadri and Jutai (2016), who report that patients with cognitive impairment or an inability to follow commands are less likely to use assistive devices, largely due to difficulties in understanding their purpose.

Nevertheless, a substantial proportion of awake and alert patients (33.00%) did not use the trapeze bar. This finding is consistent with the results of Alves et al. (2024), who reported that 34.21% of patients in their sample did not use the trapeze bar despite its availability.

Analysis of the relationship between nursing interventions and trapeze bar use demonstrated that patients who received nursing interventions focused on education, instruction, and training in the use of the trapeze bar were those who most frequently and successfully used the device, with statistically significant differences observed ($p < 0.05$). These results support the conclusions of Ferraz et al. (2025), who highlight the role of nursing-led educational strategies aimed at empowering informal caregivers to promote autonomy and safety in mobility and daily care. Although their focus was the informal caregiver, the underlying pedagogical principle remains applicable: nursing educational interventions are a decisive factor in the adoption and correct use of strategies and devices that promote autonomy and mobility. Similarly, Imhof et al. (2015) provide robust evidence that structured nursing interventions, including practical training and follow-up, result in greater patient functionality and independence, a

finding that can be extrapolated to the correct and sustained use of devices such as the trapeze bar.

The influence of perceived human and material resources on trapeze bar use was also analysed. No statistically significant differences were found in trapeze bar utilisation according to the perception of either material resources (U = 1258.0; p = 0.355) or human resources (U = 1192.0; p = 0.144). These findings are consistent with those reported by Patrician et al. (2024), who note that although the literature emphasises the importance of human and material resources for quality of care, robust evidence demonstrating a direct influence of perceived resource availability on the adoption of specific practices is lacking.

This study has limitations related to the use of a convenience sample and its cross-sectional design, which restricts the generalisability of the findings and precludes the establishment of causal relationships. Additionally, data collection by nursing students may have introduced variability in clinical assessment and observer bias. It was also not possible to control for differences between clinical services or institutional practices that may have influenced trapeze bar use.

These limitations highlight the need for future studies employing random samples, direct assessments by trained observers, and longitudinal methodologies that allow monitoring of mobility outcomes and assistive device use over time.

CONCLUSION

The use of the trapeze bar for repositioning, assisted rising, and support with personal hygiene highlights its versatility and clinical utility. These findings reinforce the importance of incorporating the trapeze bar as an essential resource in nursing care plans, particularly in the context of prolonged hospitalisation. Its use contributes to the prevention of immobility-related sequelae and injuries, both for patients and healthcare professionals, while also promoting dignity and comfort in care delivery.

A statistically significant association was identified between upper and lower limb muscle strength and trapeze bar use, underscoring the importance of functional assessment as a criterion for prescribing assistive devices. In clinical practice, these results reinforce the need for nurses to integrate muscle strength assessment into patient admission and periodic reassessment, thereby promoting more effective and individualised interventions.

The relationship between level of consciousness and trapeze bar use demonstrates how cognitive status directly influences adherence to mobility interventions, with awake, alert patients who are able to follow commands benefiting most from this device. Combined with the identification of limiting factors such as cognitive deficits, fatigue, and neurological sequelae, these findings highlight the complexity of factors affecting functional autonomy. Consequently, it is essential for nurses to implement educational interventions tailored to each patient's cognitive profile, promoting active participation in care. This reinforces the importance of a holistic and continuous nursing assessment that considers not only physical aspects but also cognitive and emotional factors, enabling the development of mobility strategies adapted to individual needs.

Although trapeze bar availability in the analysed units was high, the fact that only approximately half of the patients used it reveals a gap between availability and

effective utilisation. This discrepancy points to the need to strengthen professional training and patient education regarding the benefits of trapeze bar use, fostering a culture of safety and autonomy.

Evidence that nursing education and training interventions significantly increase trapeze bar use validates the pedagogical role of the nurse. Nursing practice should therefore systematically incorporate patient and caregiver empowerment strategies aimed at promoting safe and autonomous mobility, particularly during transitions from hospital care to home.

Finally, the absence of a statistically significant relationship between perceived resource availability and trapeze bar use suggests that the mere presence of resources does not guarantee their effective utilisation. This finding challenges nursing practice to go beyond resource availability and focus on team training and competence, ensuring that available resources are used efficiently and safely.

Despite its limitations, this study highlights the importance of an individualised approach to promoting mobility in dependent patients. The appropriate use of the trapeze bar, combined with evidence-based nursing interventions, contributes significantly to the prevention of immobility-related sequelae and to the promotion of autonomy, safety, and quality of care. It further reinforces the need for protocols that systematise functional assessment and the provision of assistive devices, alongside continuous professional education for healthcare providers.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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