



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 3, March 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Comparative study between "Traditional Bed" and "Hospital Bed" for patient

Prof. Pawan Mokhadkar¹, Prof. Harish G Langar²

Assistant Professor, Department of Mechanical Engineering, JDIET, Yavatmal, India¹

Assistant Professor, Department of Electronics & Telecommunication Engineering, JDIET, Yavatmal, India²

ABSTRACT: This paper states the comparison of "Normal Bed" and "Medical Bed" on the basis of different parts used, construction, working principle, pros and cons etc.

Normal bed consists of only mechanical parts and linkages and it will operate manually also required lot of efforts, manpower, handling problem, but at the other hand Medical bed can operate manually as well as automatically. It has lots of options like movements, comfortness etc. After considering the all features of each kind of bed, hospital beds are more suited to use by patients with health or mobility challenges and adjustable beds are more suited to use by able-bodied people who simply want greater comfort and convenience than a traditional bed provides.

KEYWORDS: Hospital bed, Traditional bed, Comfort

I. INTRODUCTION

When it comes to choosing a bed for your home, you might be wondering if there's any real difference between a hospital bed and a regular bed. After all, both are designed for sleeping, right? In this blog, we'll delve into the essential distinctions between hospital beds and regular beds to help you make an informed decision when it's time to select the right bed for your needs.





The History Of Hospital Beds

Pinpointing the exact origins of the hospital bed is challenging. Iterations of a hospital bed have been around for hundreds of years. They began as a basic stretcher. They had two long poles of equal length with a cloth material spread across it, allowing a person with a medical issue to be carried.

There is no doubt hospital beds have gone through significant changes over the years. A 2016 Journal of Physics: Conference Series paper titled, From Modern Push-Button Hospital-beds to 20th Century Mechatronic Beds: A Review, provides a historical outline of the developments of the hospital bed:

1815: It's estimated that sometime between 1815 and 1825 that beds with adjustable rails began to appear in Britain. They used a mechanical crank to move the side rails up and down.

1874: Andrew Wuest and Son, a mattress company out of Cincinnati, Ohio, registered a patent for a mattress frame that could be elevated. This is considered the first iteration of the modern hospital bed we see today.

1909: Willis D. Gatch, former chair of the Department of Surgery at the Indiana University School of Medicine, provided the next innovation in hospital beds. He invented the 3 segment adjustable bed, which today is often referred to as the Gatch Bed. It allows for the head and the feet to be elevated.

1945: Push button hospital beds were invented by General Electric. One interesting feature about this design is it included a built-in toilet. The idea was to eliminate the bedpan.

1946: Billionaire Howard Hughes was in a plane accident. Unhappy with the type of equipment available, he created a hospital bed to suit his needs. It had 6 sections and 30 electric engines.

1949: Control and basic functions start to appear.

1950s: In 1952, the Hill-Rom Company, developed a bed with an electric engine. In 1956, the company its first bed with full electrical functioning.

1958: The Circ-O'lectric Bed was developed by Dr. Homer Stryker. Many other alternative models to address complex medical conditions were developed.

1961: Beds with a basic bed controller were introduced.

1974: Control panel on side rails was invented.

1978: Side rails with remote control were added to the functionality of hospital beds.

1980s: The 1980s was more focused on the development of the mattresses used in hospital beds. Therapeutic mattresses were developed. Some had position detectors and mechanics to weigh patient while still in bed. Patient exit monitoring devices were also developed. Other developments included a device to call the nurse and permanent cardiovascular monitoring became standard bed features.

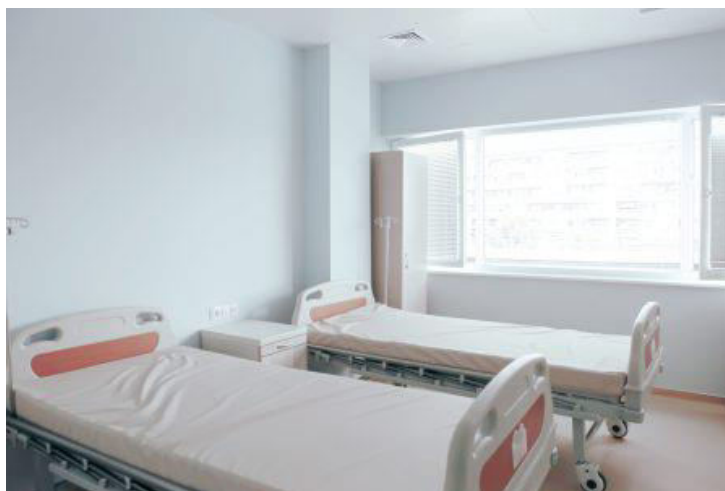
1983: An electric bed for home use outside of the hospital was introduced.

1990s: Beds with more advanced functionality are developed. Mechatronic beds become a reality and developments are focused on more intelligent design.

1993: Specific industry standards for electronic hospital beds are developed to protect against mechanic and electric hazards.

Today: Researchers continue to develop and build upon current hospital bed designs. New industry standards are evolving helping to make beds more functional, intelligent, comfortable and easy to use for patients and caregivers in a hospital, care facility, or private home setting.

II. BASICS OF HOSPITAL BEDS



Hospital beds against the wall and other medical equipment in a hospital room

Hospital beds are primarily designed for medical purposes and are commonly found in healthcare facilities. Here are the key features that set them apart:

Adjustability: Hospital beds are known for their adjustable features. They can be raised or lowered at the head and foot, and some models even have multiple positions for added comfort and functionality.

Safety Rails: Hospital beds often come equipped with safety rails or siderails to prevent falls and aid in repositioning.

Mobility: Many hospital beds have wheels, making them easy to move around as needed.

Mattress Options: Hospital beds use specialized medical mattresses designed to reduce pressure sores and provide adequate support.

III. REGULAR BED



Regular beds, also known as conventional beds, are what you typically find in homes. They serve as comfortable places for sleeping and relaxation. Here's what distinguishes them:

Fixed Design: Regular beds have a fixed design with no adjustable features like hospital beds.

Simplicity: They are straightforward and designed for sleeping, making them ideal for everyday use.

Mattress Variety: Regular beds offer a wide range of mattress options to suit personal comfort preferences.

Aesthetics: Regular beds often prioritize aesthetics and blend seamlessly with bedroom decor.

IV. DIFFERENT USE CASES

Understanding the key differences in use cases is crucial:

Hospital Beds: These are essential for individuals with medical conditions, disabilities, or those recovering from surgery. The adjustability and safety features make them ideal for healthcare and home care settings.

Regular Beds: Perfect for everyday use by individuals without specific medical needs. They provide comfort and are chosen for their aesthetic appeal in bedrooms.

V. FACTORS TO CONSIDER

When deciding between a hospital bed and a regular bed, consider the following:

Health Needs: Your or your loved one's health requirements are paramount. If medical conditions necessitate adjustability and safety features, a hospital bed may be the right choice.

Comfort: For general comfort and everyday use, a regular bed offers more options in terms of mattress types and designs.

Budget: Hospital beds tend to be more expensive due to their specialized features. Regular beds offer a broader range of price points.

VI. TYPES OF HOSPITAL BED

Hospital beds serve diverse healthcare settings including hospitals, clinics, home care, nursing homes, and more. Some of the most prominent medical beds for home care are:

FOWLER BED

Fowler beds are specifically designed beds consisting of four perforated sections that allow patients to achieve different positions. The fowler's position, commonly used in medical settings, involves the patient sitting up with straight or bent knees. Different variations include the high fowler position at a 90-degree angle, semi-fowler position at 30 to 45 degrees, and low fowler position with a slight elevation of the head. These beds are utilized for immobile patients experiencing respiratory distress, postpartum women requiring uterine drainage, individuals in need of nasal feeding tubes, and those at risk of aspiration.

Fowler beds are equipped with motors and cranks for effortless adjustments, collapsible side rails, and ABS steel foot and head panels. They employ individual or central braking systems and offer functions for backrest and knee rest adjustments.

SEMI FOWLER BED:

A semi-fowler bed is designed to accommodate the semi-fowler position, where the patient's torso and head are raised at an angle of 15 to 45 degrees while lying on the back. It offers a smaller angle of elevation compared to a fowler bed, and it may also involve raising the foot of the bed and bending the knees. Similar to a fowler bed, the semi-fowler bed is beneficial for patients with respiratory or cardiac conditions, requiring lung expansion, or having a nasogastric tube. It also provides added comfort for women in labor during childbirth.

Semi-fowler beds feature ABS or steel foot and head panels and are equipped with motors or cranks for easy adjustments. They may also have collapsible side rails for enhanced safety and convenience.

ELECTRIC BED:

Electric beds are specially designed beds that offer adjustable positions for both the upper and lower body, as well as height adjustments. They are particularly beneficial for individuals with various medical conditions that make sleeping in uncomfortable positions difficult. Electric beds provide relief for people experiencing swelling, chronic pain, arthritis, respiratory issues, limited mobility, heartburn, and acid reflux.

Key features of electric beds include collapsible guard rails operated by electricity, multiple resting position options, compatibility with hospital bed mattresses, detachable head and footboards, and swivel castors. These beds can be controlled through electric mechanisms, making them versatile for use in home care settings, rehabilitation centers, nursing homes, and hospitals. Incorporating advanced engineering technology, electric beds prioritize patient safety and comfort.

MANUAL BEDS:

A manual bed is a widely used and popular type of bed found in hospitals, nursing homes, and caregiving facilities. These medical beds feature hand cranks to adjust the bed's height and raise the head or foot section. They are suitable for patients who require minimal position changes and offer a cost-effective solution for long-term care.



Manual beds are a budget-friendly alternative to electric beds, providing affordability. A semi-electric bed is a variation that serves as a middle ground between manual and electric beds, offering some electric functionalities alongside manual adjustments.

MOTORIZED BED:

A motorized bed is a hospital bed designed with the capability to be adjusted in height according to the patient's requirements. These beds are equipped with removable side rails for added safety. The head and foot sections of the bed can be raised or lowered, facilitating easier mobility for patients when sitting or standing up. Some motorized beds are also equipped with lockable wheels, allowing for easy movement when necessary. These beds incorporate various features to ensure patient comfort and convenience, including motorized adjustments for the knees, back, and overall height.

RECLINER BED:

These beds can transform a regular home bed into a convenient and adjustable one. Featuring a flexible frame, they can be positioned at different angles, from low lying to upright. Many of these beds are designed with a user-friendly remote control and have a compact size suitable for modern homes. They are especially beneficial for patients seeking relief from acute back pain and aiming for a comfortable sleeping experience.

VII. CONCLUSION

In conclusion, understanding the key differences between hospital beds and regular beds is crucial for making the right choice. Assess your specific needs, health requirements, and budget to determine which type of bed aligns best with your circumstances.

REFERENCES

1. A Study on Examining User Comfort in Hospital Beds, Güzide Güzelbey Esengün(&)and Ekrem Cem Alppay, ©Springer International Publishing AG 2018. Rebelo and M. Soares (eds.), Advances in Ergonomics in Design
2. Ergonomic evaluation of hospital bed design features during patient handling tasks
Author links open overlay panelRanjana K. Mehta, Leanna M. Horton, Michael J. Agnew, Maury A. Nussbaum, International Journal of Industrial Ergonomics
Volume 41, Issue 6, November 2011, Pages 647-652
3. MedBed: Smart medical bed, Abdallah Kassem; Mustapha Hamad; Chady El Moucary; Elias Nawfal; Alain Aoun, 2017 Fourth International Conference on Advances in Biomedical Engineering (ICABME)
4. A New Design of Multi-Functional Portable Patient Bed, M. N. Mohammeda*, N. G. Khrita, M. A. Abdelgneia, Es. Abubakera, A.F. Muftaha, M. Z. Omara, M. S. Salleha, 59 (2012) 61–66 | www.jurnalteknologi.utm.my | eISSN 2180–3722 | ISSN 0127–9696
5. Design and Analysis of Pneumatic Operated Bed for Hospitals, Omar Adel Mustafa Abdallah^{1*}, K. M. Abubacker², V. Suresh Babu², Received: 20.08.2019; Received after Revision: 15.09.2019; Accepted: 16.09.2019; Published: 30.10.2019 ©2019 The Authors. Published by G. J. Publications under the CC BY license.
6. Next Generation of Medical Care Bed with Internet of Things Solutions, 978-1-7281-1292-3/19/\$31.00 ©2019 IEEE



**Impact Factor:
7.512**



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details