

How can bedside remote monitoring be more integrated in different patient settings

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PREFACE

The conceptual knowledge acquired by the MBA students is best manifested in the projects. As a part of curriculum, every student studying MBA has to undertake a dissertation report on a particular subject assigned to him/her.

Accordingly, I have been assigned the project work on “How can bedside remote monitoring be more integrated in different patient settings” at Dozee, Bangalore. The present project gives a perfect way to broaden my understanding of one the important assets of the organization.

The present study was undertaken to make dozee devices adaptable to different types of beds present in the hospitals. I have tried to put my best effort to complete the task on the basis of the skills that i have achieved during my studies in the institute. I also hope this report will be beneficial for my next batches and for those who will be related to this topic.



Acknowledgements

On the completion of this project, I would like to extend my sincere and heartfelt obligation towards all the people both in my college as well as my working organization who helped me in this endeavor. Without their help, their active guidance, cooperation and encouragement, it would have been very difficult to complete the project and learn new things from them.

I am extremely thankful to my mentor **Mr. Romit Shankar**, Head of Product team at Dozee, Bangalore. I thank him for being my greatest support and helping me throughout and guiding me towards the right direction.

I am obliged to Dozee for providing me the opportunity.

I am extremely thankful and pay my extreme gratitude to my faculty guide, **Mr. Rahul Sharma** (professor IIMHR University) for his valuable guidance and support in completion of this project.

I would like to extend my gratitude and appreciation to my college authorities and whole of the staff.

I also acknowledge with a deep sense of reverence, my gratitude towards my parents, family and friends who supported me morally in accomplishing the task.

Finally, and most importantly, I would like to thank God for allowing me to complete my project, my beloved parents for their blessings and my friends for their help and wishes for the successful completion of this training.



Introduction

- What is Remote patient monitoring(RPM)?

Remote patient monitoring, also referred to as remote physiologic monitoring, is the use of digital technologies to monitor and capture medical and other health data from patients and electronically transmit this information to healthcare providers for assessment and, when necessary, recommendations and instructions

Market Size of patient monitoring devices market is USD 36.4 billion in 2020 and is projected to reach USD 55.1 billion by 2025 with at a CAGR of 8.6% during the forecast period.

- Benefits of Remote patient monitoring(RPM)?
 - Reduced time in hospital
 - Decreased Readmission and Increased Prevention of Medical Emergencies Among Older Patients
 - Increased Freedom for Patients as they can continue with their daily chores and the healthcare provider can monitor them remotely



Dozee

Dozee is India's only contactless health monitor that silently tracks your heart, respiration, sleep patterns, stress levels, cardiac contractions, apnea and more while you sleep. Its AI algorithms enable early detection of any health deterioration, to save lives in time.

Dozee is the pioneer in contactless, continuous remote patient monitoring (RPM) in hospitals & at home, delivering unparalleled patient safety & maximizing utilization of ICU beds.

Continuous Remote Patient Monitoring by Dozee

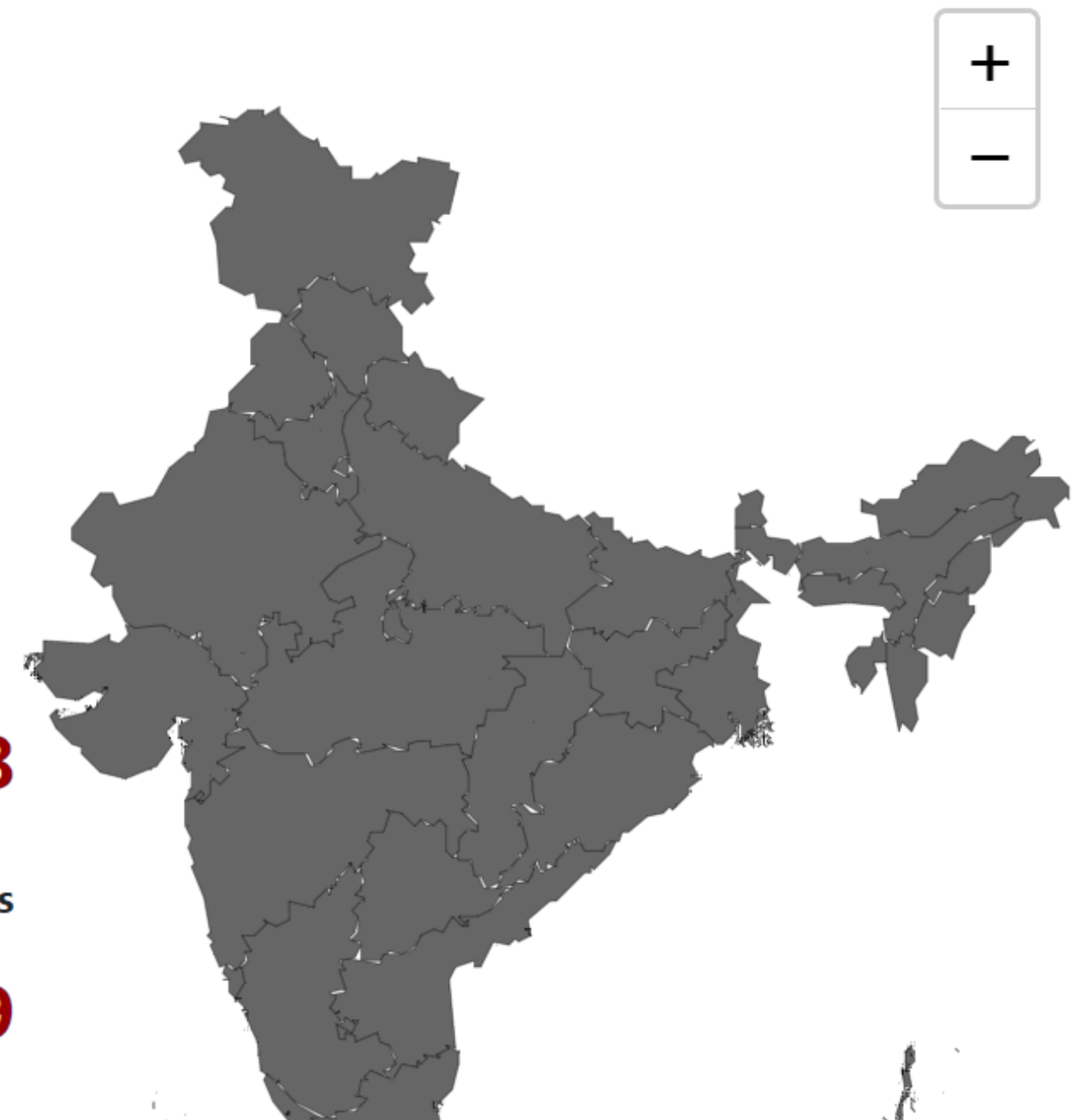
Saving nursing hours and improving patient outcome one heart beat at a time

Hospitals
375

Dozee Beds
7612

Patient
Monitored
104518

Nursing Hours
Saved
229939



Essentiality of Study

The Device which is currently used by dozee is facing some challenges in the field of logistics, wire management, changing the placement of the device from one place to another and isn't adaptable and/or integrated in the most available types of beds currently present in the hospitals.

Hence to find a suitable solution to overcome all these issues, Integration of monitor came into play and hence we took up this project to make remote patient monitoring device more adaptable in the hospital environment.



Objectives



- To make remote patient monitoring more efficient by looking for opportunities to integrate the monitoring device.
- To look and validate sites for integration of Remote patient monitoring(RPM) devices.
- To make remote patient monitoring devices more adaptable.

Research methodology:



Type of Research

Primary Research, Survey / Observation



Study Area:

Hospitals Across Bangalore and Hyderabad. 7 hospitals were covered from 2 different locations (Bangalore & Hyderabad) and included Government, Private as well as semi- private hospitals.



Inclusion Criteria

- Hospitals availing Dozee monitoring services.
- Hospitals raising issues related to placement of devices



Exclusion Criteria

- Hospitals which don't fulfil the inclusion criteria.

Suitable Sites for Integration of devices

01

Wall mounting of devices

Pros : Device will remain safe i.e., no risk of device being fallen or breakage.

Cons : Most of the hospitals weren't ready to make construction-based changes in the hospital.

02

Making device easy to carry (Eg. Monitor of GE/Phillips)

Pro : The monitor being currently offered cost anywhere between 1.5L to 2L hence we can propose our device at much lower cost.

Cons : Continual patient monitoring can't be done. Multiple patients can't be monitored at one single time with one single device

03

Fixing Device on each bed.

Pro : The chances of breakage of devices will significantly reduce.

Cons : More number of devices will be required as each bed has to have its own device

04

Making a single device for complete ward

Pro: Less hassle as one monitor will show vitals of all the patients.

Cons : Connectivity between sensor sheet and monitor will be done through wires causing cluttering and thereby causing hindrance.

05

Bed Mounting

Pros : Easy to install, easy to remove, o
Doesn't cause hindrance in the mobility of patient

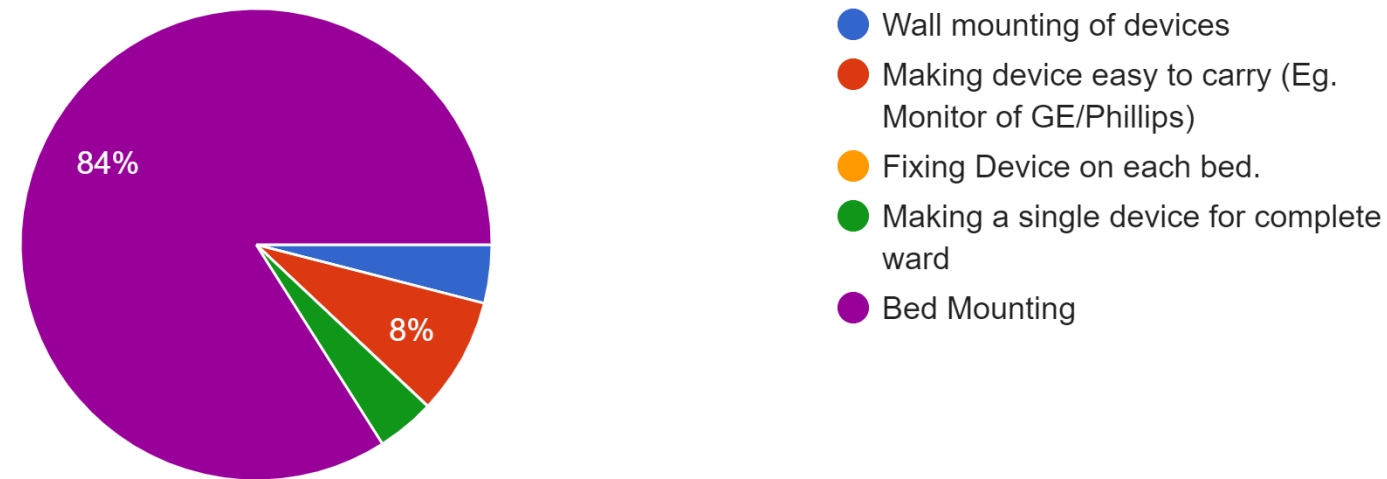
Cons : Since beds and bed brand vary from hospital to hospital, different mount has to be created for each bed brand.

Result

- Upon analyzing all the pros and cons of the sites and discussing it with the teams we did an internal survey to take and record their opinions.
- On the basis of the data collected (pictures & dimensions) of IV pole holders, A prototype of Bedside monitoring device has been created. Which provides ease to the patient and the healthcare providers making the process of monitoring the patients easy.

Which site you feel is most suitable for integration of Remote patient monitoring device ?

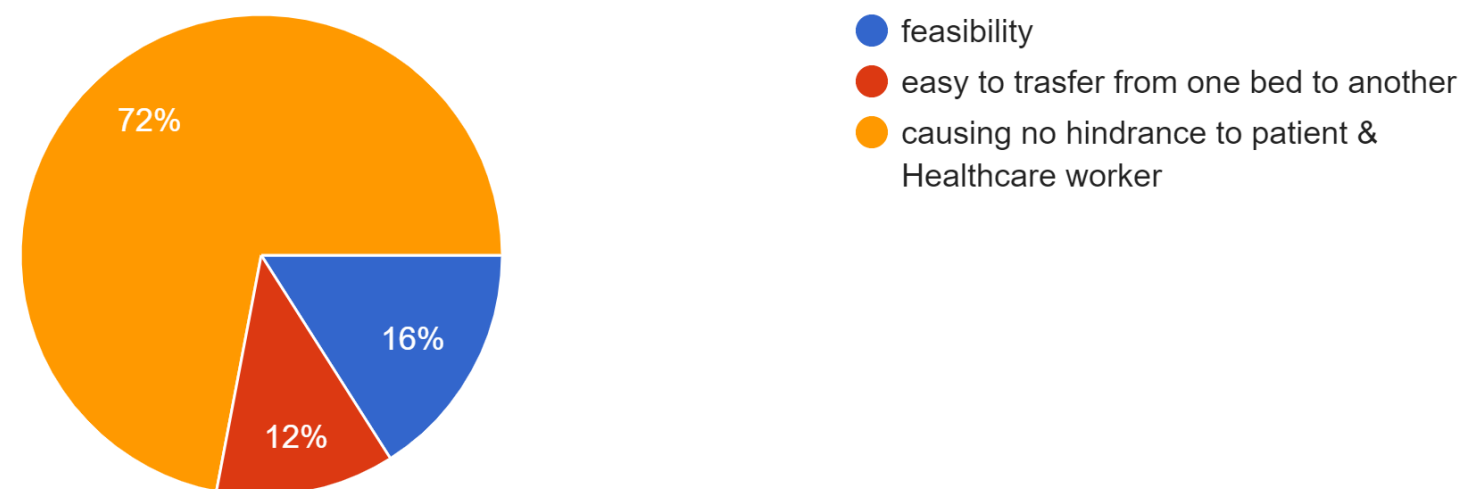
25 responses



- Based On the Results, we found out that 84% of the responses found Bed Mounting to be a better way forward, while
- 72% of respondents feel so because of it “Causes no hindrance to patient & healthcare workers

Why do you feel the selected site is most suitable

25 responses



- So we decided to go forward with the Bed mounting and found IV pole holder to be the suitable site for RPM device integration

Midmark

- **Location** - Experience Room, Dozee HQ
- **No of IV Pole Holders** - 4
(Outside of the Bed Frame)
 - Top Left
 - Top Right
 - Bottom Left
 - Bottom Right
- **Measurement** -
D - 1.6 Cm
Depth = 9 Cm





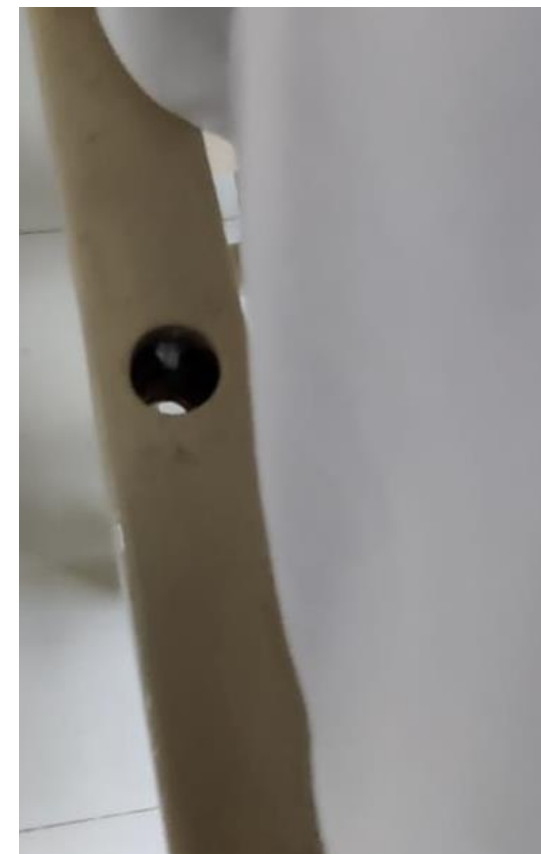
Janak (1)

- **Location -**

Jayanagar Hospital ICU Ward

- **No of IV Pole Holders - 4**
(Inside the frame)

- Top left
- Top right
- Bottom left
- Bottom Right



- **Measurement -**

D - 1.6 Cm



Janak (2)

- **Location -**
Sagar Hospital, Sparsh Hospital
- **No of IV Pole Holders - 4**
(outside the frame)
 - Top left
 - Top right
 - Bottom left
 - Bottom Right

- **Measurement - ****

D - 2.5 Cm

Depth = 9 Cm

Janak (3)



Mid



- **Location -**
Sparsh Hospital
- **No of IV Pole Holders - 6**
(inside the frame)
 - Top Mid left
 - Top Mid right
 - Bottom Mid left
 - Bottom Mid Right
 - Top Left
 - Top Right
- **Measurement -**
2 Top IV holders
2.5 Cm
Depth = 9Cm
 - 4 IV poles on Side Frame
- D = 1.5 Cm

Stryker



- **Location** - Apollo Jubli , Hyderabad
- **No of IV Pole Holders** - 4
(Outside of the Bed Frame)
 - Top Left
 - Top Right
 - Bottom Left
 - Bottom Right
- **Measurement** -
D= 3.5 Cm
Depth = 13 Cm



Paramount



- **Location -**
Apollo Hospitals Jubilee Hills, Hyderabad
- **No of IV Pole Holders - 4**
(outside the frame)
 - Top Left
 - Top Right
 - Bottom Left
 - Bottom Right
- **Measurement -**
D = 2 Cm
Depth = 7 Cm

Huntleigh - Contoura



Top left of Bed
(Inside)



Behind Head Rest



Foot Rest (Down Part of
Bed)

- **Location -**
Sagar Hospital
- **No of IV Pole Holders - 5**
(outside & Inside the frame)
 - Top left and Right (outside)
 - Bottom left and Right (Inside)
 - Top left (Inside)
- **Measurement -**
 - Top left, Top right, Bottom left and Bottom Right

D = 2 Cm

- Top Left

D = 3.5 Cm



Godrej

- **Location -**
Sparsh Hospital
- **No of IV Pole Holders - 4**
(Inside the frame)
 - Top left
 - Top right
 - Top left
 - Top Right



Top Part of bed (IV pole holder on

- **Measurement -**
Big
D= 2.5 Cm Depth =10 Cm
Small
D=1.5 Cm



Steelcraft (Iron Frame)

- **Location -**
DG & Shasra Hospital
- **No of IV Pole Holders - 4**
(inside the frame)
 - Top left
 - Top right
 - Bottom left
 - Bottom Right
- **Measurement -**
D - 2 Cm



Steelcraft (Plastic Frame)

- **Location -**
Shasra Hospital
- **No of IV Pole Holders - 4**
(Inside the frame)
 - Top left
 - Top right
 - Bottom left
 - Bottom Right
- **Measurement -**
D - 3 Cm

Conclusion

While on my visit we found out that there are 8-9 types of beds which are majorly available in the hospitals and all them had minimum 3 IV pole holder spaces of which one can be utilized

we gathered all the photos of the beds from different angles showcasing and highlighting the IV pole holders along with their dimensions on the basis of which mounting can be created to mount the continuous patient monitoring device on the bed.

Hence,

- We successfully integrated Remote Patient monitoring device making it more adaptable**
- We managed to minimize Hindrance caused by the device**
- Since this device has a fixed position, data quality has been improved making device more efficient**

Final Prototype



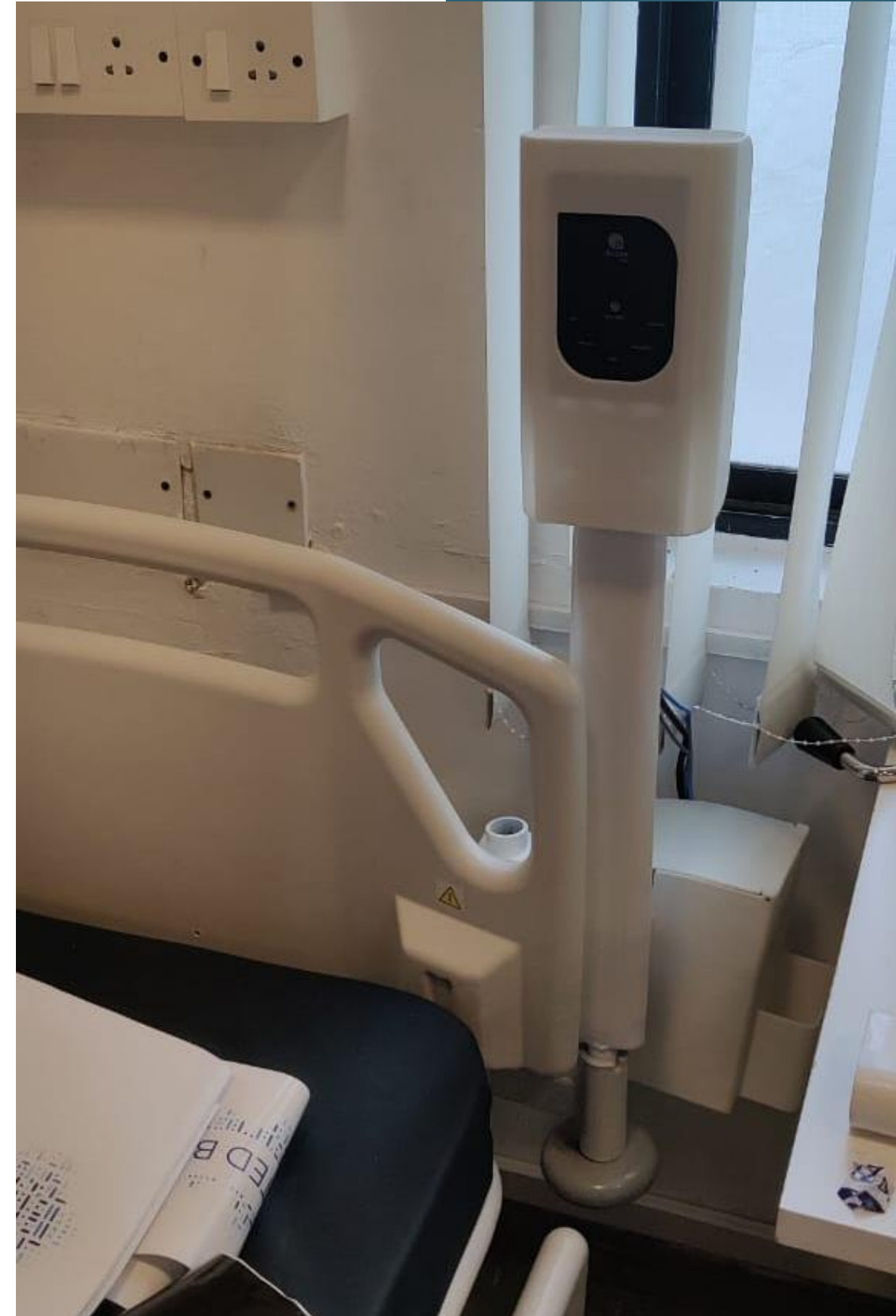
Remote patient monitoring device is integrated on the bed



Doesn't cause hindrance to Patient or healthcare workers



Looks Premium and Aesthetic

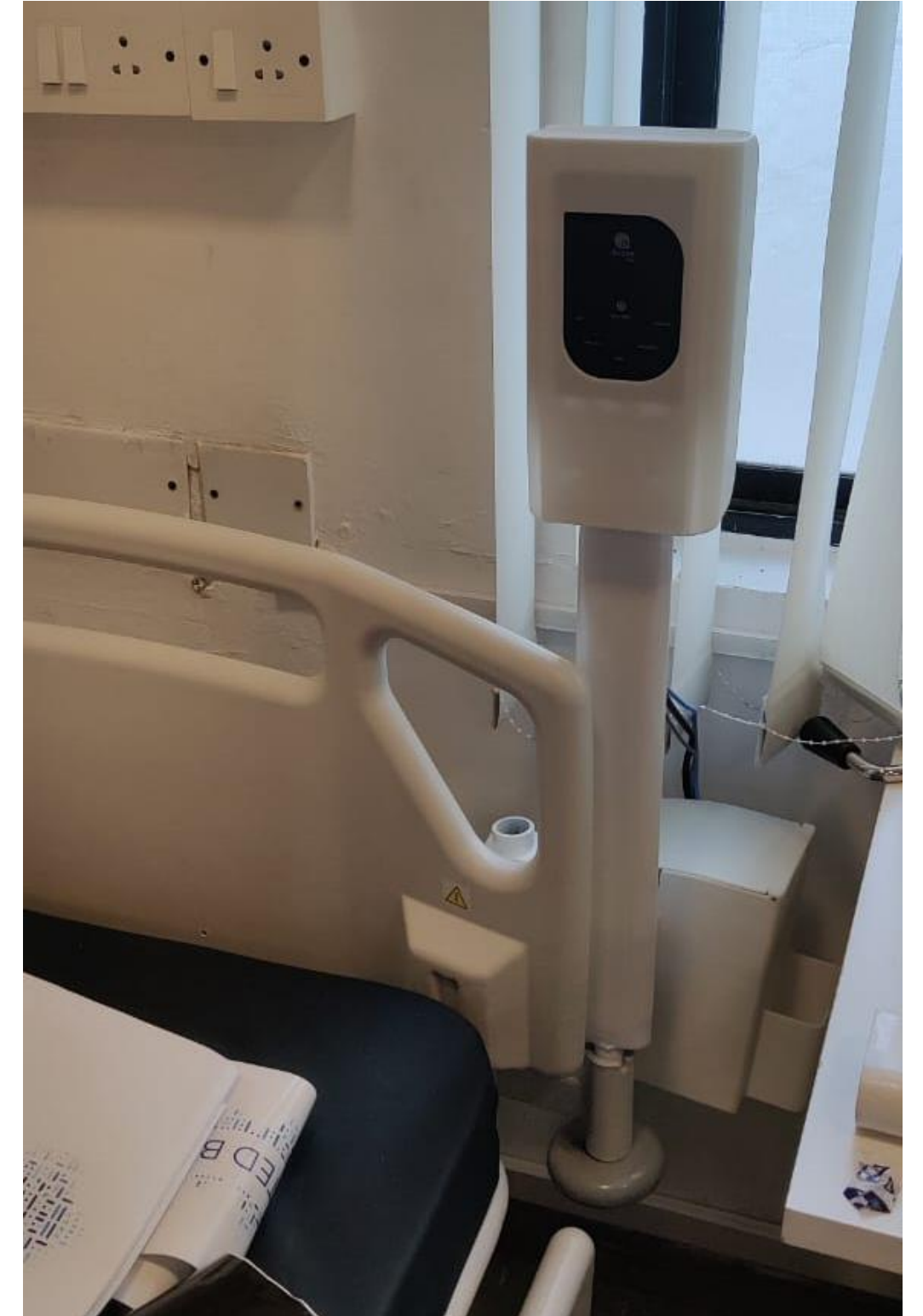


Comparison



Current RPM Device

- **Better Integrated**
- **Less or no Hinderance to Patient/ Healthcare Workers**
- **Enhanced Data Quality**
- **Less or no chances of device falling down**
- **Looks Aesthetic and premium**
- **Wires doesn't cause any clutter**
- **IV Pole still available, if required**



Prototype made on the basis of Research



THANK YOU

For your guidance and patient listening

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