

# Public Perception on Electronic Intensive Care Unit

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**B. Vishnu Priya**

*St. Joseph's College of Engineering, Chennai, Tamil Nadu, India*

**R. S. Lekshmi**

*Professor, St. Joseph's College of Engineering, Chennai, Tamil Nadu, India*

 <https://orcid.org/0000-0001-5597-1283>

## Abstract

*The inception of Intensive Care Units (ICUs) has been pivotal in modern medicine. This study conducted in Chennai with 198 participants, explores public perception of eICU systems. Objectives include understanding awareness, benefits, and concerns regarding eICU technology. Findings aim to inform policymakers and practitioners, fostering successful integration of eICU programs in Chennai's private hospitals, thus shaping the future of critical care delivery.*

**Keywords:** eICU, Intensive Care, Traditional ICU, Remote Monitoring, Virtual Interaction

## Introduction

The inception of traditional Intensive Care Units (ICUs) marked a significant milestone in modern medicine, revolutionizing patient care by providing specialized monitoring and treatment for critically ill individuals. However, as with any innovation, the traditional ICU model has faced its fair share of challenges and drawbacks over time. The concept of ICUs emerged in the mid-20th century, initially as recovery rooms for post-operative patients. With advancements in medical technology and understanding, these units evolved into specialized areas equipped to handle a wide array of critical conditions, including respiratory failure, sepsis, and trauma. The traditional Intensive Care Unit (ICU) model, born out of the necessity to provide specialized care for critically ill patients, has encountered a series of challenges and drawbacks over its evolution. These challenges include capacity strains leading to overcrowding, resource allocation dilemmas, and the persistent threat of healthcare-associated infections. Moreover, the high cost of care, fragmented delivery systems, and a predominantly reactive approach to treatment pose significant hurdles.

## Statement of the Problem

The traditional ICU's reliance on technology may inadvertently limit patient engagement and exacerbate dependency issues. The traditional model of Intensive Care Units (ICUs) often presents challenges for families, leaving them emotionally strained and uninformed about their loved ones' conditions.

Addressing these challenges requires a holistic approach, integrating technological advancements, improved resource management, and a shift towards patient-centric care models to ensure not only effective but also sustainable and compassionate critical care delivery. Recognizing the need for improvement, this study explores the integration of eICU programs in private hospitals of Chennai, with a specific focus on understanding public perception and acceptance.

### Need of the Study

Understanding how the people of Chennai view Electronic Intensive Care Units (eICUs) is crucial as healthcare evolves with technology. This study aims to uncover what residents think about eICUs, helping policymakers and healthcare professionals make informed decisions about their implementation. By identifying any concerns or barriers to acceptance, we can ensure that eICUs are introduced in a way that aligns with the needs and expectations of the community. This research seeks to provide valuable insights that can shape the future of healthcare delivery in Chennai and beyond.

### Objectives of the Study

The objective of the study is to explore the public perception of eICU systems, to investigate the awareness and understanding of eICU technology, to identify factors influencing public acceptance or reluctance towards eICU adoption, and to provide actionable insights to healthcare policymakers and practitioners for the effective integration of eICU systems into the Chennai healthcare ecosystem.

### Research Methodology

This study employed a mixed-methods approach to investigate the public perception of electronic intensive care unit (eICU) in Chennai, India. A structured questionnaire was framed and the data was collected from public across various hospitals in Chennai. The questionnaire targeted a sample of 198 public across in Chennai, using a convenient sampling method. Quantitative data analysis was conducted using SPSS software. Descriptive statistics (frequencies, percentages) summarized overall eICU awareness among public. Inferential statistics, such as ANOVA, chi -square and t-tests, were used to examine public familiarity with eICU services and likelihood of using eICU services based on demographics and other factors. This mixed-methods approach aimed to provide a comprehensive understanding of how public view eICU services and its perceived safety in eICU over traditional ICU of using eICU services.

### Result and Discussion

**Table 1 Demographic Profile of the Respondents**

Particulars	%	Particulars	%
<b>Age</b>		<b>Occupation</b>	
18-24 years	21.5	Employed	61.0
25-34 years	24.5	Unemployed	4.0
35-44 years	27.5	Homemaker	19.5
45-54 years	15.0	Student	13.0
Above 55	11.5	Retired	2.5
<b>Total</b>	<b>100.0</b>	<b>Total</b>	<b>100.0</b>
<b>Gender</b>		<b>Annual Income</b>	
Male	49.5	Less than 100,000	26.0
Female	48.0	100,000-250,000	19.0
Other	2.5	250,000-500,000	25.0
<b>Total</b>	<b>100.0</b>	More than 500,000	30.0
		<b>Total</b>	<b>100.0</b>
<b>Qualification</b>			
No formal education			3.0
Primary school			7.0
Secondary school			15.5
Undergraduate			49.0
Postgraduate			25.5
<b>Total</b>			<b>100.0</b>

Table 1 shows the demographic profile of the respondents. The analysis of respondents' demographic profile reveals a varied representation across age groups, with the majority falling within the 25-44 age range, indicating a comprehensive sampling of the working-age population. Specifically, 24.5% of respondents were aged 25-34 years, and 27.5% were aged 35-44 years. Gender distribution was nearly equal between males (49.5%) and females (48.0%), with a smaller proportion identifying as 'Other' (2.5%), reflecting the importance of inclusivity in research. A notable proportion of respondents possessed undergraduate qualifications (49.0%), while 25.5% were postgraduates, suggesting a well-educated sample. Additionally, the majority of respondents were employed (61.0%), highlighting the perspectives of working professionals, while smaller proportions were unemployed (4.0%), homemakers (19.5%), students (13.0%), or retired (2.5%). The diverse annual income distribution underscores the socioeconomic heterogeneity within the sample, with 26.0% reporting an annual income of less than 100,000, 19.0% earning between 100,000 and 250,000, 25.0% earning between 250,000 and

500,000, and 30.0% earning more than 500,000. These demographic insights, provides a foundation for exploring the implications of eICU adoption and guiding healthcare policies to ensure equitable access and acceptance across diverse demographic backgrounds.

**Table 2 eICU – Public Perception**

Particulars	%
<b>Public awareness about eICU</b>	
Yes	6.0
No	94.0
<b>Total</b>	<b>100.0</b>
<b>Challenges faced in traditional ICU</b>	
Lack of specialized care	16.0
Limited resources	4.5
High costs	79.0
Overcrowding	0.5
<b>Total</b>	<b>100.0</b>
<b>Virtual interaction would improve critical care</b>	
Probably not	1.0
Not sure	11.5
Probably yes	62.0
Definitely yes	25.5
<b>Total</b>	<b>100.0</b>
<b>Real-time access to patient data helps to consult specialists</b>	
Not very helpful	0.5
Neutral	14.5
Somewhat helpful	60.5
Very helpful	24.5
<b>Total</b>	<b>100.0</b>
<b>eICU reduce the burden of traditional ICU</b>	
By providing remote monitoring and care	20.0
By reducing the need for patient transportation, physical space and equipment	31.5
By increasing access to specialized care	32.0
By facilitating communication between healthcare teams	16.5
<b>Total</b>	<b>100.0</b>
<b>eICU improves patient outcome</b>	
By enabling early detection and intervention	21.0
By facilitating timely communication between healthcare teams	22.0

By reducing the risk of medical errors	25.5
By providing continuous monitoring and support	31.5
<b>Total</b>	<b>100.0</b>
<b>Impact of eICU on the cost of healthcare</b>	
By reducing the cost of hospital stays	33.0
By reducing the need for physical space and equipment	16.5
By enabling more efficient use of healthcare resources	29.5
By reducing the need for patient transportation	21.0
<b>Total</b>	<b>100.0</b>
<b>eICU could help in providing better care</b>	
Neutral	9.5
Somewhat agree	71.0
Strongly agree	19.5
<b>Total</b>	<b>100.0</b>
<b>Public to avail eICU services</b>	
Neutral	10.5
Somewhat likely	47.5
Very likely	42.0
<b>Total</b>	<b>100.0</b>
<b>Factors to be considered</b>	
Cost	20.5
Convenience	17.5
Quality of care	37.0
Availability of specialized care	25.0
<b>Total</b>	<b>100.0</b>
<b>Challenges of implementing eICU in Chennai</b>	
Lack of patient acceptance	6.5
Technological limitations	16.0
Privacy and security concerns	51.0
Resistance from healthcare providers	26.5
<b>Total</b>	<b>100.0</b>

Table 2 shows the public perception of eICU in Chennai. The study unveiled a significant disparity in public awareness regarding eICUs, with 94.0% of respondents indicating a lack of familiarity with this healthcare technology, underlining the necessity for targeted educational initiatives to enhance understanding. Despite this, respondents expressed substantial confidence in the potential benefits of eICUs, with 87.5% acknowledging the likelihood

of virtual interaction enhancing critical care, and 85.0% considering real-time access to patient data helpful or very helpful for consulting specialists. High costs emerged as the most prevalent challenge in traditional ICUs, cited by 79.0% of respondents, underscoring the financial strain associated with traditional critical care settings. However, respondents recognized eICUs as potential solutions to mitigate these challenges, with 20.0%, 31.5%, and 32.0% acknowledging their roles in providing remote monitoring and care, reducing the need for physical resources, and increasing access to specialized care, respectively. Moreover, respondents perceived eICUs as beneficial for enhancing patient outcomes, with 21.0% and 31.5% highlighting early detection and intervention and continuous monitoring and support, respectively. Concerning healthcare cost, 33.0% and 29.5% believed eICUs could reduce the cost of hospital stays and optimize resource utilization, respectively. Despite limited awareness, respondents demonstrated a willingness to avail eICU services, with 89.5% indicating some likelihood to do so. However, considerations such as quality of care (37.0%), availability of specialized care (25.0%), and privacy concerns (51.0%) warrant attention for successful implementation.

### Conclusion

This study has uncovered valuable insights into eICU over Traditional ICUs. While satisfaction with existing healthcare services remains, the challenges faced by traditional ICUs particularly high costs persist. Surprisingly, awareness of eICUs is limited, emphasizing the need for education and outreach. However, participants expressed enthusiasm for virtual patient interaction and real-time data access through eICUs. The potential to reduce the burden on traditional ICUs and improve patient outcomes is evident. Privacy concerns and resistance from healthcare providers pose challenges, but safety perceptions favour eICUs. Effective communication

channels, including media coverage and engagement with healthcare providers, will be pivotal in realizing the benefits of eICUs. As we move forward, strategic implementation and public awareness will shape the future of critical care in Chennai.

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### Author Details

**B. Vishnu Priya**, *St. Joseph's College of Engineering, Chennai, Tamil Nadu, India.*

**Dr. R.S. Lekshmi**, *Professor, St. Joseph's College of Engineering, Chennai, Tamil Nadu, India,*

**Email ID:** [lekshmir@stjosephs.ac.in](mailto:lekshmir@stjosephs.ac.in).