

## Chapter 6

# COVID-19 and Intensive Care Management: A Comparative Analysis

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### ABSTRACT

*The COVID-19 pandemic has challenged healthcare systems around the world with the large number of hospitalizations and the need for intensive care management. The capacity of healthcare systems to provide adequate treatment and prevent the spread of the virus has become a crucial factor in the fight against COVID-19. The purpose of this study is to assess and contrast the healthcare system capabilities of various countries in handling COVID-19 patients and managing intensive care. The study will use and analyze data to compare the number of intensive care units (ICUs), hospital beds, and healthcare workers in the most affected countries. Through this analysis, the chapter aims to provide insights into the strengths and weaknesses of different healthcare systems and identify best practices in intensive care management during the pandemic. The comparison will provide insights into the preparedness of healthcare systems and the effectiveness of the measures taken to prevent the spread of the virus.*

## INTRODUCTION

Several countries around the world have adopted a variety of measures during a pandemic crisis related to Covid-19. These measures must be adapted to (i) local reality, and (ii) difference in the growth curve. The study of infectious diseases is often based on epidemiological analysis that attempt to emulate the dynamics of the disease and estimate the indicators related to it, such as the reproduction number, growth rate, doubling time, the mortality rate, and more. Due to the difficult situation with Covid-19, all public attention was focused on fighting the transmission of the virus, the number of cases and deaths, but we must not forget the impact of this pandemic on the healthcare systems.

Covid-19's unforeseen effects have posed problems for many countries, especially the most affected one, and many people around the world have had to resort to the "isolation model" of survival. Similar emergency circumstances like Ebola, SARS, and MERS have already served as a measure of the preparedness of the healthcare system in many countries, despite their low incidence due to the low number of recorded cases. These previous experiences with the fight against viruses show that the rapid implementation of adequate measures can help countries stop the spread of outbreaks like Covid-19. The healthcare system was not allowed to get overloaded, thus containment measures were implemented.

This is the case when too many people with serious symptoms cannot be treated at the same time. That is why the capacity of the health system is a crucial factor. The health system's capacity, the fundamental goal of the estimation of the previous indicators, will be the deciding factor. Therefore, the healthcare system's current state and the afflicted population's demographics are likely to be the most significant factors. The rapid expansion of the pandemic throughout the five continents has put at risk the strength of the health systems of many countries (Vellingiri et al., 2020).

There will be a greater challenge to discover, track, and contain new transmission chains as the healthcare system gets overwhelmed with number cases. In the absence of extreme interventions, this trend was unlikely to increase until the virus affected millions of populations. Therefore, the capacity of countries to provide healthcare is a crucial factor in how they deal with the pandemic (Kandel et al., 2020).

The large number of cases necessitates the hospitalization of several patients, some of whom will require treatment in Intensive Care Units (ICUs), which were at risk of becoming overcrowded as the number of infected people continued to rise exponentially. The capacity of intensive care beds (ICUs) in the countries has a transcendental place in the fight against the new type of coronavirus that has been transmitted to millions of people around the world (WHO, 2020a). Since the spread of the Coronavirus has been global since its emergence, it is important to know how well-prepared health systems are to prevent and track the virus.

In this paper, data analysis will be used to examine how the health services in the most affected countries have proceeded, what is their capacity to respond to such emergency, and how much it has diminished over the past years. To compare countries' health care systems capacity during Covid-19 crisis, the paper refers mainly to the number of ICUs, hospital beds, and total number of health service workers. The findings of the study are important in understanding the challenges faced by healthcare systems during the Covid-19 pandemic, and can help inform future preparedness plans and interventions.

The paper is organized as follows: Section 1 provides an overview of the Covid-19 and the importance of studying healthcare system preparedness in the face of pandemics. Section 2 discusses previous outbreaks and the role of healthcare system capacity in pandemic response. Section 3 explains data analysis and the factors used to compare health services in the most affected countries. Section 4 discusses the

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