

Short Review

Effect of healthcare burden and resource reallocation on elderly during COVID-19 pandemic

Aarti Karahda, Sujata Sethi, Shobhit Kumar Prasad

Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS CoV2), a novel virus causing the COVID-19 infection, has emerged recently as a pandemic. Studies have shown that this virus causes worse outcomes in the elderly who have comorbidities such as hypertension, cardiovascular diseases, diabetes, etc. leading to higher mortality risk. This has put a huge pressure on intensive care units worldwide raising ethical dilemmas like prioritising patients who would benefit over those who would not. In this review, we discuss difficulties in patient selection with limited resource availability and how predicting survival on the basis of age can be discriminatory for elderly.

Key words

Aged, COVID-19, Critical Care, Delivery of Healthcare, Health Resources

Introduction

On 11 February 2020, World Health Organisation (WHO) declared a name for the new coronavirus disease: COVID-19, which was classified as SARS-CoV-2 on the same day by International Committee on Taxonomy of Viruses. COVID-19 represents “coronavirus disease in 2019”.¹ COVID-19 is an aggressive infection and it has very high risk of contagion. Clinical healing, unlike other viruses, is not compatible with medical healing and patient may still be infected after clinical discharge.²

Healthcare burden

COVID-19 is taxing the global healthcare system with increasing demands on vital life-saving equipment and medical supplies. The biggest concerns are insufficient personal protective equipment (PPE), limited availability of intensive care beds and ventilators in the hospitals because of the volume of critical patients being hospitalized.³ The number of total available critical care beds is another constraint in most countries. As per an analysis in Asia, the median number of critical care beds per 100,000 populations was 2.3 in 10 low-income and lower-middle-income countries, 4.6 in 5 upper-middle-income countries, and 12.3 in 8 high-income countries.⁴

But, Italy, a high-income country with 12.5 critical care beds per 100,000 population, continued to struggle with the outbreak.⁵ China, an upper-middle-income country, has 3.6 critical care beds per 100,000 population and was overwhelmed by COVID-19. By contrast, a low-income country such as Uganda has only 0.1 critical care bed per 100,000 population. This highlights the serious concerns for managing critically ill patients in resource-limited settings.⁵

Globally, hospitals are already facing shortage of intensive care unit (ICU) beds and mechanical ventilators for patients and personal protective equipment (PPE) for healthcare providers. Healthcare workers and hospital administrators are confronted by moral-ethical dilemma of choosing between which patient receives life-saving care when the alternative outcome is certain death. In the USA, some regions have even advocated Do-Not-Attempt-Resuscitate (DNAR)/Allow Natural Death (AND) orders for all COVID-19 patients irrespective of patient preferences or prognosis.⁶

For hospitals amid an overwhelming COVID-19 surge with an existing or imminent shortage of ventilators, ICU beds, and PPE, a utilitarian approach i.e. “one who has the best chance of being treated and cured should be given the available bed” will guide whether to resuscitate any patient with ‘In Hospital Cardiac Arrest’, irrespective of COVID-19 status but the battlefield model of triage, gives privilege to those with the greatest life expectancy thus abandoning the traditional ‘first come, first served’ model. Unfortunately, due to the high number of patients needing respiratory support, these decisions are not once in a while but has become a routine practice and factors such as age, comorbidities and functional outcomes are assessed frequently in the decision for admission in critical care.⁷ When these parameters guide us to choose who receives the critical care, who would bear the brunt of not receiving it?

Challenges for the care of elderly

The outbreak of COVID-19 has raised great challenges for health services for older adults in the community. Around 8.5% of people worldwide are 65 and above.⁸ In the USA, 31% of cases of COVID-19 were the people over 65 years of age and 6% over 85 years of age.⁹ Feeble

immune system, associated chronic underlying diseases, decreased psychological capability, and fragile information receiving and processing ability put the elderly at an extra risk especially for COVID-19.¹⁰ The case fatality in affected patients increases with age, especially when associated with comorbid conditions. According to WHO reports, the global mortality rate is about 5.8%, but this varies from country to country. For example, the UK and Italy both have a mortality rate of approximately 14%, while Germany and Switzerland have a mortality rate of approximately 5%, and countries such as Austria and Norway have mortality rates of approximately 2-3%.¹¹

Further elderly has higher prevalence of comorbidities such as diabetes, hypertension, cardiovascular disease, and cerebro-vascular diseases. These comorbidities further lead to organ dysfunction and complications. Owing to age related comorbidities, undernutrition, declined airway protection and slow immune responses, the elderly are more susceptible to COVID-19, with higher morbidity and mortality.¹² As per data from the USA, of all the COVID-19 positive patients, those aged 65 years and above account for 45% of hospitalizations, 53% of ICU admissions, and 80% of deaths.⁹ In Italy median age for ICU admissions for COVID 19 cases was 69 years (age 51-70: 46%; age >70: 44%).¹³

A study of COVID-19 patients in China reported the average duration of hospitalization for elderly patients as 27.0 days in contrast to 18.0 days for young patients. In this study, more elderly patients were admitted to ICU, and received high proportions of nutritional support treatment, mechanical ventilation, and extracorporeal membrane oxygenation (ECMO).¹²

It is not only the higher chances of getting infected, mortality rate also rises with age, from 3-5% between 65-74 years, 4-11% 75-84 years and 10-27% above 85 years.⁹ Figures from the USA are similar to those in other countries such as China and Italy.¹⁴ A comparative study from China have reported that mortality of elderly patients with COVID-19 is higher than that of young and middle-aged patients, and elderly patients with COVID-19 are more likely to progress to severe disease as this new type of coronavirus mainly causes lung infections that increase the burden on the heart, leading to a multi-system disease. Thus, elderly patients are prone to multi-system organ dysfunction and even failure.¹⁵ Apart from mortality, lockdown had led to inactivity contributing more to comorbidities, disturbing news of pandemic, lack of opportunities to share worries with family members is adding up to mental health issues along with physical health.¹⁶

So, it is quite evident that age has a major role in health-related risks and mortality. The poor outcome due to various factors in elderly led to various modifications in guidelines related to triaging resource allocation amidst this pandemic.

In its usual sense, triage guides that medics should attend to the most dangerously wounded first, without regard to

rank or distinction. Criteria for mass casualty triage depend upon the duration of care required (short-term or long-term) and chances of survival with treatment/care.¹⁷ This applies to patients with and without COVID-19, because both groups will be competing for the same ICU resources. It is ideally to be coordinated at a regional or national health-care systems level, and many countries have revised treatment resource allocation guidelines for COVID-19.

Guidelines from various countries

Review of the guidelines illustrates that emphasis is on maximising the benefit, priority to be given to those with maximum chances of survival and good short-term prognosis, and saving the limited available resources.¹⁸ Guiding principles to decide that include severity of acute illness, comorbidities and level of independence prior to becoming sick with COVID-19. Though no country directly mentions the age as the sole deciding criterion, but age indirectly becomes the deciding factor as elderly have higher chances to have comorbidities and are more prone to have severe forms of infection.

Italy

The Italian College of Anaesthesia, Analgesia, Resuscitation, and Intensive Care (SIAARTI) issued recommendations saying: "An age limit for the admission to the ICU may ultimately need to be set. The underlying principle would be to save limited resources which may become extremely scarce for those who have a much greater probability of survival and life expectancy, in order to maximize the benefits for the largest number of people." And "In extreme situations when the availability of resources is overwhelmed by the needs, a decision to deny access to one or more life-sustaining therapies, may ultimately be justified." Though the guidelines did not suggest that age should be the only factor determining resource allocation, the committee acknowledged that an age limit for ICU admission may ultimately need to be set.¹⁹

United Kingdom

Revised NICE guidelines²⁰ advocate the use of Clinical Frailty Scale (CFS) to guide admission to hospital as well as for critical care. It mentions clearly that CFS should not be used in younger people but with all the patients aged over 65. CFS score of 5 or more is the further deciding factor for providing critical care or not. It appears, most elderly would score more than 5. Apart from this, in order to reduce the risk of spread of COVID-19, UK had switched to telephone or video consulting of their patients and are avoiding face to face consultations where possible. Whilst the digital age allows us to do this quite effectively, there are concerns that we are restricting online consulting to those who own smartphone or internet enabled devices and many of our elderly patients do not.²¹

Switzerland

Swiss Academy of Medical Sciences/Swiss Society for Intensive care (SGI) has given ethical guidelines for COVID-19 triage.¹⁸ Age is not in itself a criterion but

affects short-term prognosis which is set as an ultimate goal. There is exclusion for people older than 85 years of age from admission to ICU, if no ICU beds available. They have concluded that in connection with COVID-19, age is a risk factor for mortality and must therefore be considered.

Austria, Germany, Belgium have also considered short term prognosis to be decisive during times of COVID-19 triage.¹⁸ If two patients have the same estimated survivability, the scoring protocols will give younger people better odds of getting treatment, with the “lowest priority” given to patients 85 and older; but using predicted survival to determine access to resources might be inherently discriminatory.²² Some authors have suggested a three-pronged approach for allocation of resources i.e. determining frailty status, balancing harms and benefits while considering outcome and considering the comorbidities.^{23,24}

Many countries including India do not seem to have a clear plan for older adults in relations to COVID-19. In India, the response to the COVID-19 disaster has been founded on the legal infrastructure of the Disaster Management Act of 2005. The National Disaster Management Guidelines (Hospital safety) deals with the issue of how hospitals are to act in the times of a national disaster.

However, the section on Triage (chapter 4.9) is just a single page and utilizes the principle of “*the sickest is seen first*”. Section 4.10 on Surge capacity i.e. the ability of a health service to expand beyond normal capacity to meet increased demand for clinical care does not provide any guidelines on the issue of overwhelmed hospital infrastructure. The guidelines are not specific with regards to the procedure to be adopted in deciding how limited life-saving equipment and resources are to be rationed out; or how to decide which patient should be given priority amongst many individuals who would require a ventilator during a crisis.²⁵

There is massive difference when the health care is funded by the state, insurance or the patients themselves. When it is the patients who have to pay for their treatment affordability becomes a major issue; as in spite of availability of resources some people may not afford it. This might be the case for many people.

Conclusion

Governments and policy makers throughout the world have formulated the guidelines for allocation of scarce resources. The criteria of age and comorbidities as one of the deciding factors for deciding the suitability for critical care tilts the balance adversely for the elderly population. From the existing statistics it is clear that the elderly population is going to suffer the highest rates of fatality during the pandemic. It needs to be reflected whether it will be a righteous decision, to deny or withhold essential care and life support for this population when there are limited resources. Deciding based on age is not easy, e.g. between 20 or 50 year olds, or for that matter a 65 year old, is any one less important for their family.

Principle of equality (first come, first served) may increase the burden on already overburdened health care systems globally. In such desperate times probably the ethical principle of maximizing benefits (save the most lives and save the maximum years) may take priority over the guiding principle of triage i.e. treating the sickest first. This would to some extent, take care of the concerns that we have raised about the elderly patients being adversely affected during reallocation of scarce resources. Countries such as India where there are no national guidelines on this matter should set recommendations and guidelines to spare the treating team or the family members to make these drastic decisions at their own level as it may scar them emotionally.

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