

## Rural Healthcare in Light of a Multinational Pandemic: A Global Perspective

Liew TYS<sup>1\*</sup> and Khoo CY<sup>2</sup>

<sup>1</sup>Emergency Department, Ng Teng Fong General Hospital, National University Health System, Singapore

<sup>2</sup>Department of General Surgery, Singapore General Hospital, Singapore

### \*Corresponding author:

Liew Yi Song Terence,  
Emergency Department, Ng Teng Fong General  
Hospital, National University Health System,  
Singapore, 1 Jurong East Street 21,  
Singapore 609606, Tel: +65 83213015,  
E-mail: liew.yisong.terence@gmail.com

Received: 15 May 2021

Accepted: 29 May 2021

Published: 03 Jun 2021

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### Keywords:

Equity; Healthcare Disparity; Pandemic; Rural Healthcare; Rural Population

### Citation:

Liew TYS, Khoo CY. Rural Healthcare in Light of a Multinational Pandemic: A Global Perspective. Ann Clin Med Case Rep. 2021; V6(18): 1-4

### 1. Abstract

Rural healthcare recently came into international spotlight, with recent reported influx of the COVID-19 into rural regions. This article focuses on susceptibilities of the rural population to pandemics and mitigating measures to prevent formation of disease epicentre. Rural Healthcare is by far one of the most neglected areas of medicine. The discrepancies in quality of rural healthcare has been evident for decades, yet no lasting measures have been able to bridge this gap till date. Lessons gleaned from the recent SARS and H1N1 pandemics has once again fallen through the cracks in a futile attempt to curb urban spread. Adequate provisions and delivery of healthcare to rural areas, early identification, isolation and implementation of precautionary measures, re-evaluation of rural healthcare infrastructure and strategies on rural healthcare worker retention are quintessential to equity of healthcare worldwide. Only robust, sincere and well-tailored measures would result in a resilient and enduring rural population.

### 2. Introduction

Rural medicine is the delivery of healthcare to individuals residing in rural conditions. The needs of the rural population is not just unique to developing nations. Regardless of nationality, the coverage of and access to rural healthcare remains reprehensible [1]. The deficiency in delivery of quality health services leads to unnecessary suffering and deaths in the rural population.[1] It must

be acknowledged and recognized that with an increasingly interconnected world, the rural community has somewhat benefited from an increase in healthcare provisions [2]. However, commonly preventable mortalities such as under-5 mortality and maternal deaths remain much higher in rural states compared to the urban counterparts [2]. Hart JT pointed out in 1971 that *the availability of good medical care tends to vary inversely with the need for it in the population served* [3]. The persistence of the inverse care law remains regrettable [3].

The COVID-19 global pandemic has infected more than 40 million people to date. The urban population took the greatest hit initially, with more than 90% of COVID-19 cases reported in urban cities as of June 2020 [4]. This is attributed to the dense and highly populated cities with high levels of interconnectivity within the populace [4]. Globalization and urbanization has significant influence in the spread and containment of a disease [5]. However, there has been reports of a significant influx of the pandemic into the rural population [6]. This phenomenon drew parallel to the 2003 SARS pandemic, when countermeasures had been proposed by world leaders then [7].

### 3. Why Rural Areas are more Susceptible to a Pandemic

The rural population has limited access to technology and is consequently poorly prepared against a pandemic. They are particularly susceptible to misinformation which may result in distrust in the

local health system. Recent advancement in informative technology has allowed for near instantaneous relaying of information. This has often been manipulated for political, financial or personal agendas resulting in erosion of public confidence in the healthcare system [8]. At the same time, those who live in areas with limited technology may lack access to such information resulting in failure to take necessary precautions against an impending pandemic. This include personal hygiene and safe distancing measures, which are primary preventative measures imperative in mitigating the spread of infection and flattening the epidemiological curve. Lower healthcare literacy has also been shown to result in poorer health outcomes in rural populations [9].

The glaring disparity of healthcare services and quality between urban and rural locales has been well recognized. It is known that increased primary healthcare physician supply is associated with improved clinical outcomes of any given population [10]. Over the decade, the density of primary healthcare physicians have declined, with significantly greater loss in the rural areas [10]. This may explain the rural-urban mortality disparity across states, accounting for poorer outcomes in rural settings [11,12]. Healthcare disparity continues to persist, and will become more evident in the pandemic. With a global pandemic overwhelming healthcare institutions in urban areas, even less focus will be placed in the rural setting, contributing to an uncontrollable influx of disease.

Deficiencies in healthcare resources is another contribution to the increased susceptibility of rural populations to a global pandemic. Since the H1N1 pandemic, it was evident that rural mortality far exceeds the urban counterparts, with greater lack of healthcare resource in the rural precincts [13]. Essential medical facilities and equipment for a predominantly respiratory pandemic includes Intensive Care Units (ICUs), ventilators, personal protection equipment for healthcare workers and eventually vaccines when available. Lack of availability and access to healthcare facilities and resources will result in a larger population succumbing to the disease [13].

The livelihood of a significant proportion of the rural population still lies in agriculture, manufacturing and construction [14]. The novel "Work-from-Home" culture to maintain productivity during a pandemic cannot be applied to such activities. Although the scale of operations may be large (especially within agricultural fields) with few interactions between co-workers, safe distancing measures cannot be guaranteed. In large-scale manufacturing and construction, workers who travel huge distances to their workplace are generally housed in cramped and shared quarters to reduce travel time, increasing susceptibility to formation of disease clusters/epicentres.

Delayed care is also another dominant issue in the rural population. Patients with illness generally present later in the course of disease with advanced disease presentation, which is associated

with a higher mortality [15]. This is commonly attributed to further travel to healthcare facilities, lack of access to healthcare, lower healthcare literacy leading to later diagnosis, lack of availability of disease information and fear of stigmatization associated with disease. With the relatively high R0 values of respiratory diseases, these factors can lead to formation of huge clusters and epicentres long before detection of disease. Mitigating actions at that stage may already be too late.

#### **4. Approach to Rural Health in a Global Pandemic**

Delivery of healthcare and medical resources to rural areas can potentially mitigate the impact on the pandemic on these populations in the short term. This can come in the form of ambulatory clinical services, military medical services, personal protection and medical equipment, and funding for telehealth to bridge the distance factor in healthcare delivery to the vast rural land areas. However, these resources must be customized to fit the rural environment, where distance and accessibility may limit movement of such resources. It is thus imperative that health officials identify in advance specific susceptibilities and vulnerabilities of the rural population to allow for judicious allocation of resources.

COVID-19 test kits should also be made readily available to rural areas early, allowing local authorities to identify and isolate cases and take the necessary precautions to prevent formation of large disease clusters. Upon identification of an outbreak, measures to disperse or shelter specific vulnerable communities should be implemented quickly. Efforts to provide these patients with essential services such as food and personal care must be undertaken. This has to be done tactfully so as not to alarm the local population. Many countries have mobilized the military, which can boost the capacity and capabilities to reach and render assistance to the rural regions. This can help to temporarily alleviate the critical shortage of healthcare provision in these areas.

The long term goal should be to improve rural healthcare collectively. This can only be done with adequate support, funding and endowments from the government and non-profit organizations. Healthcare infrastructure needs to be revitalized and equipped with basic capabilities similar to their urban counterparts, while remaining accessible. This will come in the form of hospital facilities, primary healthcare clinics and medical posts to deliver quality healthcare to the population. Similarly, the emotional and socioeconomic repercussions sustained post pandemic would need to be addressed in the form of support schemes and counselling services. In order to build a robust and holistic rural healthcare system, financial gain cannot be the primary driving force. Assistance must be sought from the governing bodies to incentivise the movement of healthcare resources to the rural population.

Rural upbringing was the most common predictor of physicians entering rural practice [16]. Early exposure to rural practice and personal characteristics of physicians are also common predictors

[16,17]. Negating factors include professional isolation and perceived lack of access to amenities in rural practices [18]. Monetary incentives played a minimal role in long term retention of rural physicians [19]. Understanding the needs and proper recognition services provided by rural physicians is paramount to improving rural healthcare in the long term. This will encourage recruitment and retention of healthcare workers in the rural setting.

There are many lessons on rural healthcare delivery that can be further drawn from nations worldwide. Structured clinical practice guidelines can incorporate evidence based medical treatments, but rural healthcare physicians must have both the awareness and ability to practice it in a myriad of clinical settings [20]. Policies crafted must adequately address the key issues faced by rural physicians in their practice in rural healthcare settings [21]. Policies incorporating the multiple dimensions of access will be better tailored to the needs of rural healthcare [21]. The public health response strategy incorporated in Australia and Canada provides insight to the management of a global pandemic in a rural primary healthcare setting [22]. The elements include risk assessment, pandemic resilience and response, which are critical in quickly identifying the salient differences in the rural healthcare system and ensuring that needs of the rural population are not overlooked [22].

## 5. Conclusion

The lack of technology, health care and social services are some of the non-exhaustive list of issues faced in the rural population. Instead of channelling a large majority of resources to mitigate the impact of the pandemic in urban cities alone, perhaps more efforts should be placed on prevention of spread within the rural environments where a large majority of the population reside. The current Covid-19 pandemic will definitely not be the last pandemic this world will see. It is time for lasting measures to be implemented to minimize the discrepancy in healthcare between urban and rural areas. Access to healthcare was declared a fundamental human right in 1948 by the World Health Organization (WHO). The WHO's Universal Health Coverage (UHC) necessitated equity in access to health services, adequate quality of health and protection against financial risks. To achieve these goals, there must first be awareness of the persistence of healthcare disparity despite multiple measures to bridge this gap. The rewards of improving rural medical care are innumerable, and the time is now.

The authors declare no conflicts of interest.

## 6. Authors Contribution Statement

Both authors were involved in the literature review, processing, writing and editing of this manuscript.

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