



## ORIGINAL RESEARCH

## 2019 Novel Coronavirus (COVID-19) Pandemic; Transmission of SARS-CoV-2 Effectiveness of Infection Control and Prevention: Precautions in California

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### Abstract

**Background:** The emergence and spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have led to governments, and public health organizations offer advisory on effective preventive measures that must be adopted in disease prevention. An inadequate response could impact regions and countries significantly with the potential of collapsing the public health systems. The main challenge facing the containment efforts is the lack of effective measures for prevention. Public health response to prevent the spread. The unavailability of effective treatment options has all impacted the entire prevention and control measures.

**Purpose:** The study aims at evaluating the transmission of SARS-CoV-2 by evaluating the effectiveness of infection control and prevention and precautions in California. This study provides evidence of effective preventive strategies that could promote disease prevention-control and containment efforts. The study will consider California's data and evaluate the challenges and opportunities that could enhance disease prevention efforts.

**Settings:** California: The study is primarily focused on California. While there has an increasing number of cases, sad deaths across US California have also been one of the states with an increasing number of cases and deaths. The study setting is also encircled within the health centers from which the key participants who are the health workers can be easily located.

**Population:** The study's major focus is based on the healthcare workers working in SARS-CoV-2 intervention and isolation settings. This will be covering five California based health centers from which the healthcare workers have been selected. The center selected must have been operational since the first case of COVID-19 was recognized.

**Methods:** The study's demographic and clinical data will be obtained from hospitals in California. With a population involving healthcare workers working in SARS-CoV-2 intervention and isolation settings, the data obtained is connected to the population setting, furthermore, in regard to the data collection. Data will be conducted as a form of the healthcare worker. Data from the clinic centers and data from the government health department in all cases and deaths arising from the pandemic of Covid-19.

**Findings:** Regardless of the already applied strategies, there have been an increasing number of cases in California. For instance, demographic and clinical data show that California currently has the highest number of cases per 100,000 individuals from March 1 to July 18. The state has so far recorded 381,065 cases a reflection of 973.4 per population of 100,000.

**Interpretation:** Covid-19 continues being a threat in California as the state continues recording a high number of cases on a daily basis. Due to the situation, there should be a more defined approach to how the graph should be flattened to effectively contain the virus's further spread.

**Study ethics:** Adherence to the research ethics, the research would be conducted upon approval obtained from the University Ethics committee. The study would also be compliant with the Governmental Health Department's standards. In addition to any healthcare workers' private details involved in the study would be confidentially held.

### Introduction

Covid-19 has been a global pandemic affecting every country with at least each reporting a continuous rise

of both the infected and death cases [1]. For instance, California has been one of the states among the USA that have also been hit by the pandemic since the start of 2020. Marshall & Alexandra's [2] study on Covid 19 shows that the pandemic has rapidly spread across California, and it's further expected to increase in future days. Furthermore, in reference to the government's report on the already reported cases in California, experts allege that the true number of infected individuals is unknown and likely much higher than the official tallies. So far, the state has reported 386,960 cases and 7,714 deaths. As part of strategies adopted to combat the disease spread by both the government and governors, for instance, lockdown measures have been developed to slow down the virus to prevent the hospital from being overrun [3]. Based on the current strategies, it would be definite that much is yet to be attained on the containment of the disease as the state continues recording a high number of cases [4]. While the state only has the two options of lockdowns and social distance in an essential service provider, much needs to be accomplished. Thus, the study did develop key approaches regarding the nature of transmission of the disease and the effectiveness of infection control and prevention precautions in California.

## Objectives

The study seeks to examine the transmission of SARS-CoV-2 effectiveness of infection control and prevention precautions in California. This primarily seeks to further examine the current strategies employed by the government and governors to control the infection and prevent its further spread only within California.

## Methodology

In meeting the study, objective demographic and clinical data will be obtained from the hospitals in California. Both demographic and clinical data are expected to aid in examining the sequence. The rate and the trend of infection and deaths since the first case of Covid-19 were recorded in the state. The gathered data were analyzed through content analysis.

## Design, Setting, and Participants

### Study design and participants

Different approaches have been used by California's health department to combat any further spread of the virus. Private entities have also been involved as a factor that has made the whole process a national event meant for the government and the individuals' citizens. In conducting the study, much of the information would be attained from the clinics. This includes demographic and clinical data that will be analyzing the number of current deaths and infections. Besides, the information required to accomplish the study is the age and sex of the infected.

With the approval of the Department of Health, I visited and collected samples from healthcare centers. I also visited some of the government officials on data provided for why lockdowns were necessary and the current state of quarantined individuals in terms of numbers. With the support of information gathered from clinics, there was also a crucial interaction of the clinical officers in the provision of the major strategies they have adopted to mitigate the disease's spread.

## Procedures

The study's participants involved Healthcare workers working in SARS-CoV-2 intervention and isolation settings. This wasn't, however, carried in all Healthcare workers working in SARS-CoV-2 intervention and isolation settings and facilities which have been in operation since the start of the first case that was recognized in California. The entire process would further involve getting personal opinions regarding the state of Covid-19 preventive measures within the state. The collected information would be compiled to give the true picture of the study's objectives.

## Main Outcomes and Measures

California has continued recording cases of persons infected with Covid-19. Evident from the government's report. The number of cases has been increasing from mid-march to mid July. The establishment of various government strategies of containment of the disease has not reduced the cases. For instance, according to the government's report on the first mitigation strategy of lockdowns that expected all citizens to stay at home, mid-March has not contained the cases as cases continue increasing. Besides, another mitigation strategy of governors to ease limits has not as well as not reduced the cases.

From the information and the data collected, it would be expressed that most states are currently on notice. The deteriorating situations have prompted the governor to put 33 counties on watch lists. There is also an increasing rate of cases and deaths. Records show a shattered rate with a new highest single-day death tolling, and currently, 18 counties failing the governor's standard for new cases. In the cases of hospitalization are currently increasing. Thus, the patient counts are climbing in five counties. A factor that is threatening a goal of the stay at home policies. While the number of cases increases relative to the number of testes, fewer tests are turning positive. The positivity rates have declined to 7.3%.

## Statistical Analysis

The descriptive statistics are presented. All findings from the health workers operating from various operational centers, such as clinics and isolation centers, are presented as case series. All research data were analyzed through content analysis.

## Results

### State cases per 100k new cases

New York	406,305	2,071
California	381,065	973.4
Florida	337,569	1,638.8
Texas	327,106	1,173
New Jersey	176,814	1,990.7
Illinois	161,785	1,261.8
Arizona	141,265	2,033.6
Georgia	139,880	1,358.4
Massachusetts	113,238	1,657.9
Pennsylvania	104,780	819.2

Demographic and clinical data show that California currently has the highest number of cases per 100,000 individuals from March 1 to July 18. The state has so far recorded 381,065 cases a reflection of 973.4 per population of 100,000. Furthermore, California is currently second after New York, which has so far recorded the highest number of cases of 406,305 a reflection of 2,071 per a population of 100,000.

### State deaths per 100k new deaths

Massachusetts	8,419	123.3
New York	32,478	165.5
New Jersey	15,699	176.8
Massachusetts	8,419	123.3
California	7,700	19.7
Illinois	7,483	58.4
Pennsylvania	7,015	54.8
Michigan	6,364	63.9
Florida	4,895	23.8
Connecticut	4,396	122.7
Texas	3,939	14.1

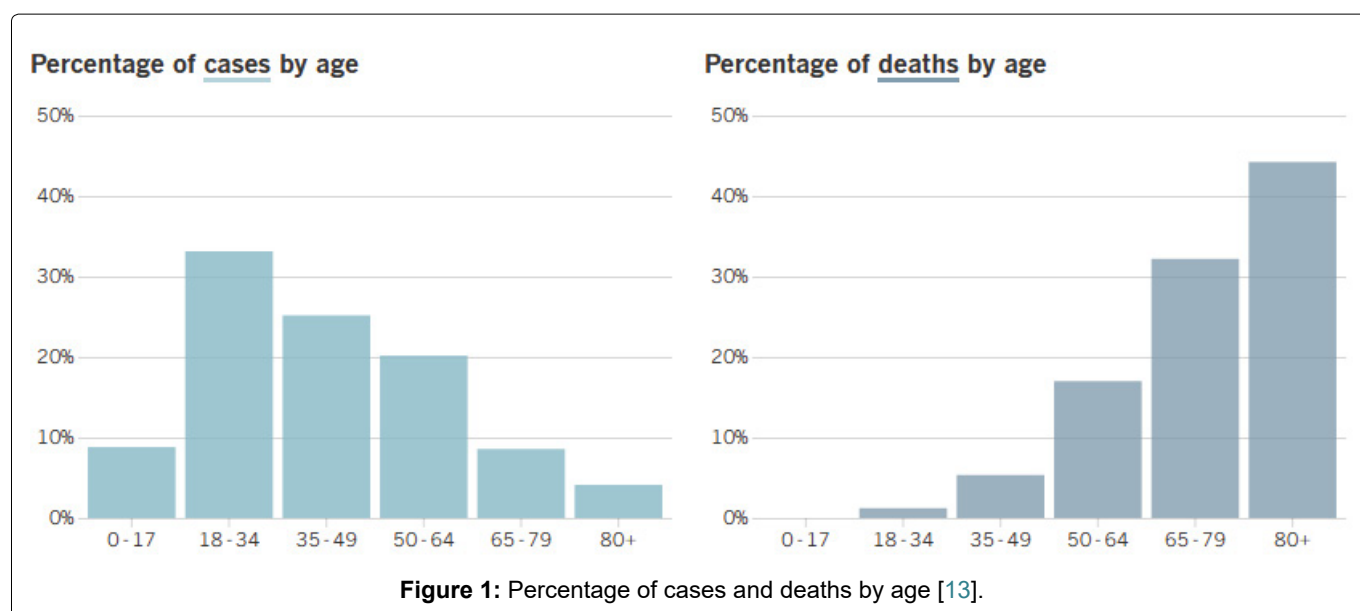
California has been fourth of all cases reported in the

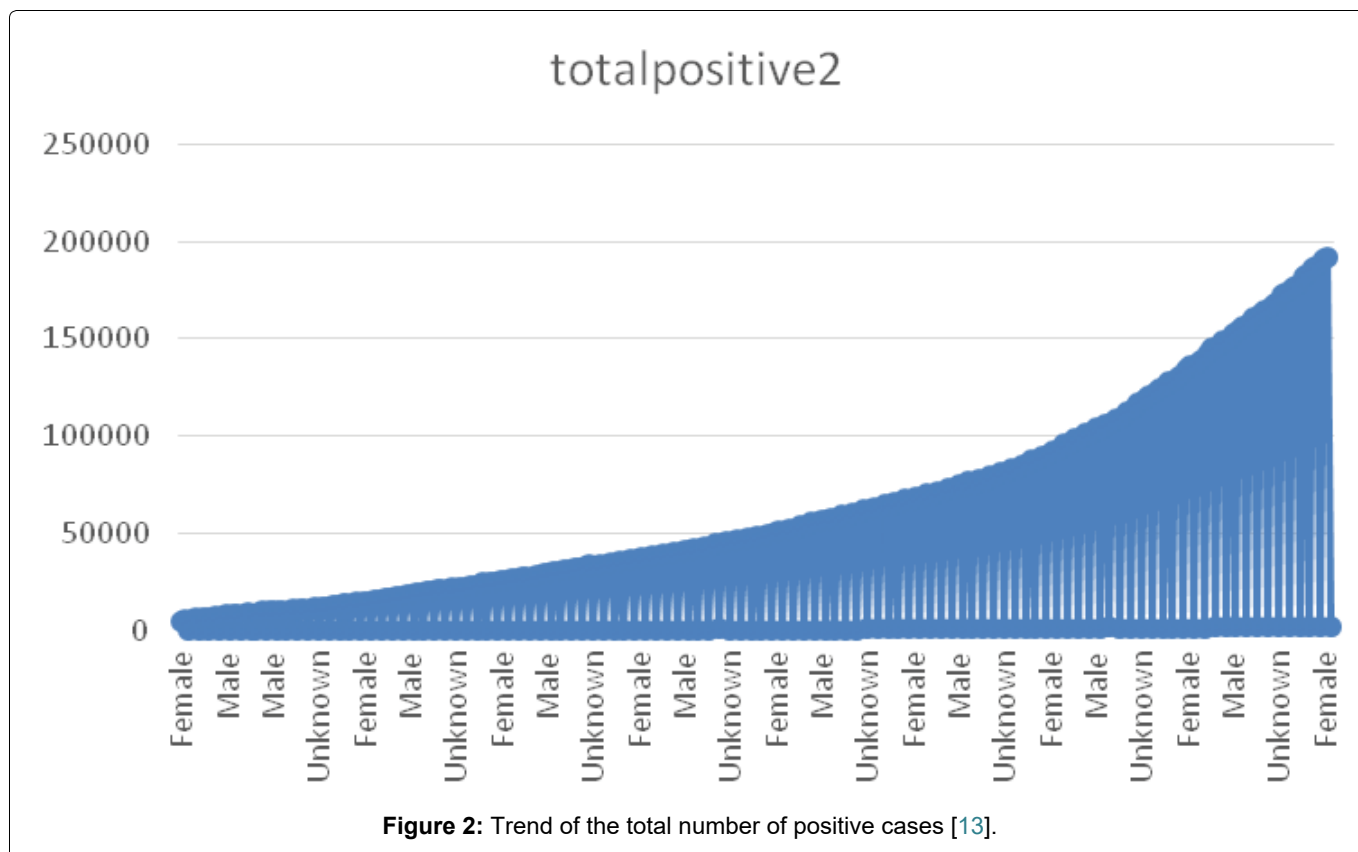
USA after New York, New Jersey, and Massachusetts. Currently, California has recorded a total case of 7,700, with a total approximation of 19.7 recorded deaths per a population of 100,000 between the period of March 1 and July 18.

Based on the information obtained from the clinical centers on the already adopted strategies. The preventive strategies can be divided into early prevention, strengthened preventions. The early preventive strategies and measures against Covid-19 entailed public announcement regarding the disease outbreak within the country and across the world and the preparation for the diagnosis and management of Covid-19 in all health-care centers. All of the medical and healthcare officers engaged in managing Covid-19 patients executed infection control procedures. For the general population, individuals entering the hospital were all expected to have masks and take body temperature. The hospitals were regularly and timely disinfected, handwashing equipment and disinfectants were equipped in multiple places, and indoor air ventilation was strengthened.

From the corrected data, Since January, California hospitals have begun preparing for the possible outbreak of the disease by training the medical staff and epidemiological investigators. The outpatient adjustments, hospital disinfection, and preservation of medical materials and a structured form of medical waste management.

From the California department of public health (Figure 1), there is a great difference in the percentage of cases by age and the percentage of deaths by age. The number of deaths and cases of infection vary from one age group to another. For instance, many of the cases recorded were between 18-34 years, followed by the person's age between 35-49 years, as 50-64 years was third and 65-79 and above 80 years, respectively. While the cases reported were high within the age of 18-49 years, this was contrary to the side of deaths. Many





deaths were recorded on the aged population, with the highest being the population of the age of more than 80 years. Subsequently, a population of more than 50 years has also recorded high death rates compared to the age group population below 49 years.

As from the graph extracted from the clinical data record, the number of females and males increased from February when the state recorded its first cases of 5015 and 5547 patients representing females and males respectively (Figure 2). The total number of both genders has been increasing through the number of men is increasing more compared to women. No defined research has been provided to justify the differences, but the higher number reported by men is attributed to social settings which expose men to the disease than women [3].

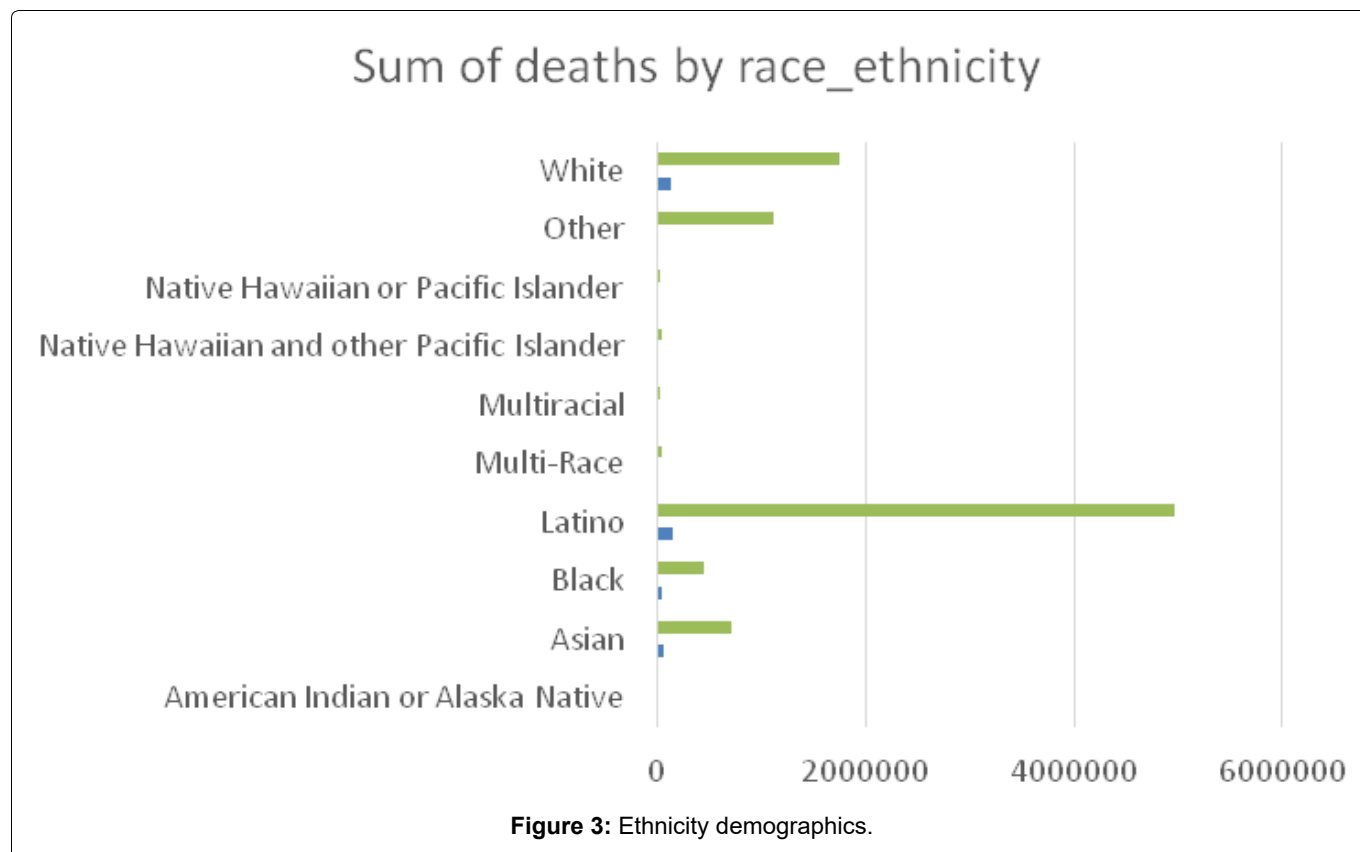
### Ethnicity demographics

Race ethnicity	Sum of deaths
American Indian or Alaska Native	1341
Asian	56801
Black	37294
Latino	154712
Multi-Race	1642
Multiracial	681
Native Hawaiian and another Pacific Islander	1242
Native Hawaiian or Pacific Islander	1050
Other	4344
White	127420

From the above table on Ethnicity Demographics and Figure 3, there exists a wider difference of individuals infected by the disease. The results show that the Latino ethnicity group has recorded the highest number of infections, followed by the white population and the Asian and Black. Latino has a total infection of 154,712 cases, whites 127,420 cases, Asian 56,801 cases and the Blacks recording 37,294 cases while the other ethnicity groups consisting of American Indian or Alaska Native, Multiracial, Multi-race, native Hawaiian or Pacific Islander and others recording cases less than 5,000 with the least being Multiracial with 681 cases.

### Discussion

Different approaches have so far been adopted, with isolation being the most convenient approach within the health sector. However, this has not been efficient towards the containment of the disease [5]. There should be an advanced approach that would literary be an improvement of the current strategies [6]. One of the most effective strategies that would just act as reinstatement to the current isolation strategies is enhanced educative and awareness creation among the citizens. At the same time, the pandemic has been of global concern. Unfortunately, some of the citizens have been ignorant of its existence. This is evident from the fact that some people are still ignoring the already in place strategies such as social distancing and lockdowns [7]. Thus, it is high time that key approaches such as awareness creation are intensified. This would include the use of social media influencers through social media posts and general digital media platforms. Employing competent health-



care workers as the front-line personnel in the sensitization process would be crucial [8]. This is because they have the first hand information regarding the disease and can comfortably answer any questions that might arise from the citizens.

From research conducted by Liguori & Winkler [9] expresses that some of the many cases of Covid-19 involve persons with the underlying health cases. For instance, individuals with hypertension, kidney disease, and diabetes are considered riskier to the disease [10]. While this is a major challenge facing several healthcare workers and the California state at large, the issues arising from other disease is also a challenge. Much emphasis has been directed towards the containment of the disease. These as left several individuals susceptible to the disease [11]. As part of comparing the disease, the healthcare workers and the state should focus on the containment of other diseases, which can highly lead to more death cases. The need to focus on such a challenge is based on the fact that many other disease tend to affect the individuals' immune systems, which would literary be detrimental if they get infected with Covid-19 [12].

Covid-19 has had a devastating impact across the globe, and its prevention paused a major challenge among most countries. Simultaneously, the search for a vaccine is underway; countries have to lay key strategies of containing the disease. Demographic and clinical data show that California currently has the highest number of cases per 100,000 individuals from March 1 to July 18. The stated has so far recorded 381,065 cases a reflection of 973.4 per a population of 100,000. The

state is currently second after New York, which has so far recorded the highest number of cases of 406,305 a reflection of 2,071 per a population of 100,000. Comparing the cases rise their need to enhance citizen education and awareness of preventive measures and take care of the aged population and individuals living with disorders such as diabetes, hypertension, and chronic disease.

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