

Original Article

Sicilians' knowledge, perceptions, prevention and practices during the pandemic in relation to vaccination: A questionnaire-based survey

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Abstract:

Background: COVID-19 has influenced Sicily, Italy as any other part of the world, and people had various types of reactions to this global epidemic. This study aimed to assess the behavior, perception, and willingness of the Sicilian population to accept vaccination, as well as their attitudes toward conspiracy theories, which have been a concern for governments around the globe.

Methods: Study design: cross sectional-descriptive study. The data were collected through a survey developed based on a protocol from the World Health Organization's regional office in Europe, which was distributed in two waves. The first wave took place in April and May 2020, and a modified survey was distributed during June and July.

Results: Sicilians showed a very good knowledge of the virus, while their positive attitude has changed toward vaccination in the second wave. Furthermore, Sicilians showed an average trust in the governmental institutions, which allow the doubts of conspiracy to exist in the population.

Conclusions: Although the results indicate a good level of knowledge and positive attitude toward vaccination, we believe that further studies should be conducted in the Mediterranean to better understand how to face future epidemics with limited resources in the healthcare system, as compared with other countries.

Keywords: Sicily, Mediterranean, COVID-19, pandemic, vaccination, behaviors

Introduction

The unprecedented global pandemic that has affected the globe rapidly has put humankind in front of serious challenges that need to be considered and brought to the attention of all political leaders. A worldwide health system reevaluation is needed to face future pandemics (1). Based on world pandemic data, millions of people die every year and are at high risk due to other pandemics (2), which in some ways has been neglected in the last year of the Corona pandemic. This pandemic created a high level of stress among

Italians in general as soon as the undetected virus started to spread rapidly in a quick transmission chain, and Italy had the second average mortality in the very first months of the epidemic (3). Nevertheless, control taken by the government has decreased the degree of transmission (4).

Sicily's eruption of COVID was late, after other Italian regions; the decision of the government in March to close the territories including the island despite the low number of positive cases resulted in Sicily facing big challenges. The average age in Sicily is 44.4, with a population of almost 5 million, which ranks fourth among other regions. Accordingly, the

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Sicilian population is not a young population, which represents a sanitary burden and high costs of medicine and hospitals (5).

According to the official records of the Ministry of Health (MOH) and the Italian National Institutes of Statistics, the first peak in Italy was on 20 March 2020 (6), and the absolute number and percentage of deaths were reported based on the three waves that characterized the pandemic from the beginning of 2020 up to 16 December 2020.

The number of deceased patients in Sicily from March to May was 300 and during June to September, there were 57, while between October and December the number rose to reach 1654. The total number of deaths was 2011, accounting for the death of 3.2% of the total population by the end of the year (7). The number changed drastically during 2021, reaching 3260 deaths and 130,637 total cases, with 48,001 active cases, and 79,367 recovered individuals (8).

A 2021 MOH report confirms that vaccination started on 31 December 2020. A total of 1,449,170 shots were given out of 1,843,725 distributed for all the regions of Italy, while in Sicily 108,567 were given out of 169,525 received by the region (9). A study conducted by STATISTA found that in Italy, it took 208 days to double the number of deaths during the first wave, compared with Germany, which took only 39 days, and 139 days in the United States (6).

The importance of such research is the fact that it is implemented in an area described as European and at the same time Mediterranean. Accordingly, target groups represent an understanding of the individual's perceptions and attitudes in a microzone that includes both the European and Mediterranean perspectives, which can be helpful to many who are interested in any future comparative research, especially into the type of attitude that can provide a schema for a better understanding of new information (10). Timing for publication is crucial to inform population choices and attitudes. Far-Right groups instrumentalized the population's uncertainty and fear of being vaccinated, to spread suspicion of immigrants, especially in Sicily, an entry point for immigration; immigrants were accused of bringing the virus with them (11). This created confusion about their position among Sicilians and may have a negative impact on people's decisions on

how to deal with the vaccination. This would have been different if early detection happened on time, as in the case of the outbreak of bluetongue in 2017 in Sicily (12,13), the measles cases that were under control for more than five years in Sicily, (14) and, in 2013, the emerging rabbit hemorrhagic disease (15).

This study aims to look at COVID-19 outbreak response measures, including policies, interventions and communications, and monitor variables that are critical for behavior change in the population to avoid transmission of COVID-19, including risk perceptions, trust, use of information sources, knowledge, as well as barriers and drivers to recommended behaviors – allowing adjustment of measures aiming to change behaviors in Sicily. Furthermore, the study aimed to assess the Sicilian population's perception and attitude toward vaccination offered by their government. The possibility to look at this issue in two different periods during the epidemic is a way to formulate a more credible attitude, especially in relation to vaccination and its implementation.

Research questions

The emphasis of this paper is to highlight the outbreak responses of the Sicilian population and find out the level of knowledge and understanding related to COVID-19, while taking into consideration some important social variables. Most importantly, the study aims to explore the perception of vaccination among the population.

The research will deal with the following main questions:

1. What are the risk perceptions, knowledge, used and trusted sources of information, confidence in crisis management, correct knowledge about and uptake of preparedness and protective behaviors, at each data collection point?
2. What is Sicilians' attitude to vaccination against COVID-19 during the first and the second wave?

Method

Early closure and preventive measures taken by the governments obliged us to collect data through an adapted survey (10–15 min) based on WHO

protocol, which was published at PsychoArhive (16) and distributed in the nine provinces of Sicily. A cross-sectional design was used to conduct the study during April and May of 2020, and a second modified survey was distributed during June and July of 2020. In the first survey, a total of 1021 answers were collected from persons who were over 18 years old, answered all the questions, and submitted the final survey via Google Form. In the second wave, a total of 1001 answers were collected following the same regulations as in the first survey.

It is important to continually update studies and research on COVID-19 to reflect the changing situation and provide accurate and relevant information. This ensures that outbreak response measures are effective and appropriate for the current situation. This is why we modified the first survey into a second one which had fewer questions and reflected the updates given by the WHO committee.

Data collection tool

The tool, which was approved by the WHO regional office in Europe (17), has been translated into Italian. The questions were tested by 10 persons, from various areas, to ensure national validation, and modifications were done accordingly. The same validation took into consideration the length of time required to complete the survey. The persons who agreed to participate completed a self-report questionnaire that covered the four areas of study: (1) demographic characteristics, (2) knowledge, (3) perceptions, and (4) prevention practices.

Data analysis

A Statistical Package for Social Sciences (SPSS) software V21.0 was used to analyze the data collected, with basic descriptive statistics (averages and frequencies) and bar charts. Differences in frequencies between levels of categorical variables (e.g. gender, region, and type of locality) were tested using Fisher Exact Test. For variables measured using the Likert scale (e.g. 1 = not severe to 6 = very severe), differences were tested using an independent-sample *t*-test. Paired *t*-tests were used to compare between and within groups. Significance was declared when the *p*-value was less than 0.05 ($p < 0.05$).

Table 1. Demographic characteristics.

What is your age?			
	Percent Wave 1		Percent Wave 2
18–30	18.6	>	17.3
31–45	30.7	>	31.0
46–60	38.7	<	39.0
60 and above	12.0	<	12.8
Gender?			
	Percent Wave 1		Percent Wave 2
Male	34.1	>	29.2
Female	65.9	<	70.8

1 = first wave; 2 = second wave

Ethical considerations

Having the patronage of both the Sicilian region and the Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS), Oasi Maria SS gave us a more official support in distributing the survey among Sicilians. The ethical approval was approved on 16 June 2020 by the ethical committee IRCCS Oasi Maria SS number 2020/06/16/CE-IRCCS-OASI/33. All participants took part in the survey voluntarily and they had the right to withdraw at any time without any penalties.

Results

Table 1 presents the participants' gender and age with a special focus on the fact that 46–60 is the median of participants' age. Participants represented various social categories with 79.3%¹, ($n=810$) in wave 1 (W1) and 66.9% in wave 2 (W2) ($n=670$) reporting no chronic disease.

Figure 1 shows that the most symptoms considered by Sicilians are fever (95.1%¹, $n=972$ – 87.6%², $n=877$), cough (97.8%¹, $n=1000$ – 83.5%², $n=836$), shortness of breath (96.3%¹, $n=984$ – 96.6%², $n=967$), and fatigue (79%¹, $n=807$ – 77.9%², $n=780$).

As seen in Figure 2, (15.7%¹, $n=160$ – 66.9%², $n=670$) said yes to vaccination while (69.3%¹, $n=708$ – 27.5%², $n=275$) said no, and (15.0%¹, $n=153$ – 5.6%², $n=56$) kept the position of

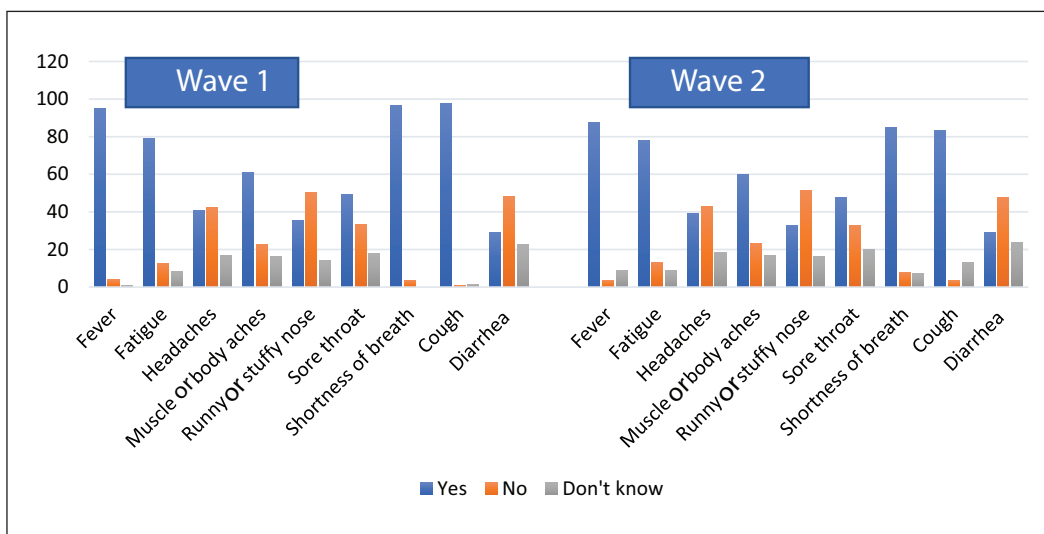


Figure 1. Percentage of survey respondents by knowledge of symptoms of COVID-19.

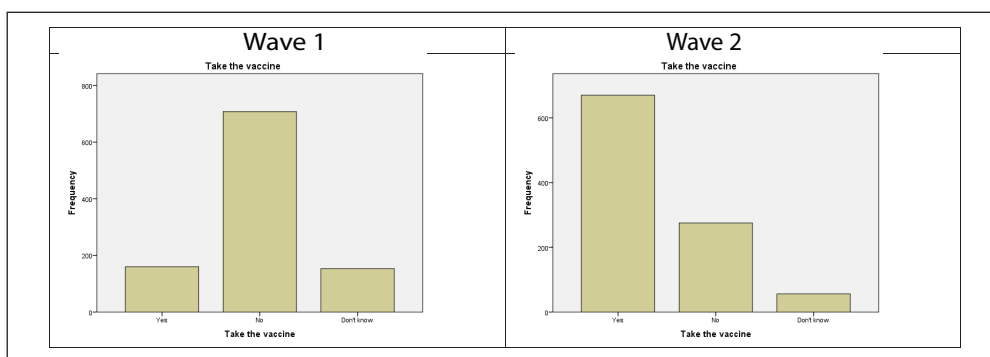


Figure 2. Prevention action/take the vaccine (Yes/No/I don't know).

supporting the 'don't know' statement. There was a statistically significant difference between the first and the second wave with a p -value < 0.001 .

As seen in Figure 3, (58.3%¹, $n=595$ – 97.3%², $n=974$) said yes to mask use, while (40.1%¹, $n=409$ – 1.6%², $n=16$) said no, and (1.7%¹, $n=17$ – 1.1%², $n=11$) said don't know. Figure 3 shows clearly that Sicilians have moved toward wearing masks at large.

Populations showed average trust in public TV channels (36%¹, $n=368$ – 32.6%², $n=326$), newspaper (36%¹, $n=368$ – 32.6%², $n=326$), INPS

(33.7%¹, $n=344$ – 31.1%², $n=311$), Ministry of Health (36%¹, $n=368$ – 32.6%², $n=326$), while the same populations showed poor trust in social media (39.7%¹, $n=406$ – 36.3%², $n=363$), and below average trust shown in hospitals (31.2%¹, $n=319$ – 42.7%², $n=427$), unions (20.8%¹, $n=213$ – 28.5%², $n=285$), schools (23.9%¹, $n=244$ – 32%², $n=320$), and universities (23%¹, $n=235$ – 31.3%², $n=313$).

While participants showed below-average trust in taking the vaccine in the first wave (41.4%, $n=414$), above-average trust was shown on the contrary in the second wave (52.2%, $n=522$). In Figure 4 the

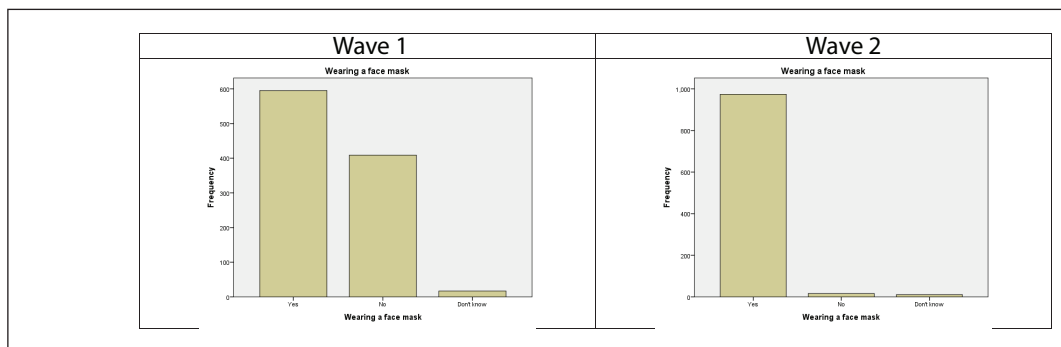


Figure 3. Wearing a face mask (Yes/No/I don't know).

same change of position is shown, where participants said no in the first wave and this has changed rapidly to reach almost the maximum to say yes to the vaccine. The average mean score in the first wave was 3.87, and in the second wave was 5.01, and the difference was statistically significant with p value < 0.001 .

In Figure 4, a high percentage moved from strongly agreeing in the first wave to agreeing in the second wave. One example is the first question: strongly disagree (2%¹, $n=20$ – 1.9%², $n=19$), disagree (1%¹, $n=10$ – 1%², $n=10$), somewhat disagree (10.1%¹, $n=103$ – 10.1%², $n=101$), somewhat agree (16.6%¹, $n=170$ – 16.2%², $n=162$), agree (23%¹, $n=235$ – 23.4%², $n=234$), strongly agree (47.3%¹, $n=1021$ – 47.5%², $n=475$).

Discussion

Considering the island is the least affected among Italian cities, it has shown a moderate capacity to face the challenge despite the pressure of a fragile health system. The data collected in the first wave were crucial for us to understand the characteristic of Sicilians and their defense mechanism and capacity when faced with a new epidemic that is hitting the island. The difficult economic situation and lack of jobs has worsened the situation and left Sicily without a pioneer role despite its geopolitical status, but remained adherent to the government centralization. What remains is the attitude facing something that is not connected to any of the generation's memory; accordingly, the attitude is not a judgment or belief but rather just a reaction to such a new phenomenon. With the idea that attitude

is considered to be a temporary state of consciousness and should be dynamic (10), we have decided to take the risk and evaluate both waves to determine whether there has been certain stability, or rather shifting of the Sicilian attitudes toward the epidemic. It is also important to highlight the fact that the research was not sponsored and we believe that the answers collected were sincere and honest.

In both waves, a good knowledge and perception of COVID-19's symptoms have been shown. Similar results were found in studies implemented in Palestine by Salameh *et al.* (18), in Jordan by Khasawneh *et al.* (19), and in Pakistan by Saqlain *et al.* (20).

A high percentage of participants confirmed that fever, fatigue, muscle aches, shortness of breath, and cough are for sure the main symptoms that they can note when people are infected (Figure 1). It does not look like there is a big difference between males and females in their answers on whether they have chronic diseases, seeing that the number of female participants is double that of the males. The level of knowledge in both waves seems to be equal and there are no differences to be considered. Figure 3 gives us a quick understanding of the change of position people show in the second wave, while some groups are still working on an anti-vax campaign, previously promoting demonstrations against masks and lockdowns (11).

In our data collection, a shift was made by Sicilian populations a couple of months after the epidemic started moving toward vaccines and masks (Table 2 and Figure 3). Similar willingness to get vaccinated was reported in studies conducted by Salameh *et al.* (18), Kumari *et al.* (21), and Seale *et al.* (22).

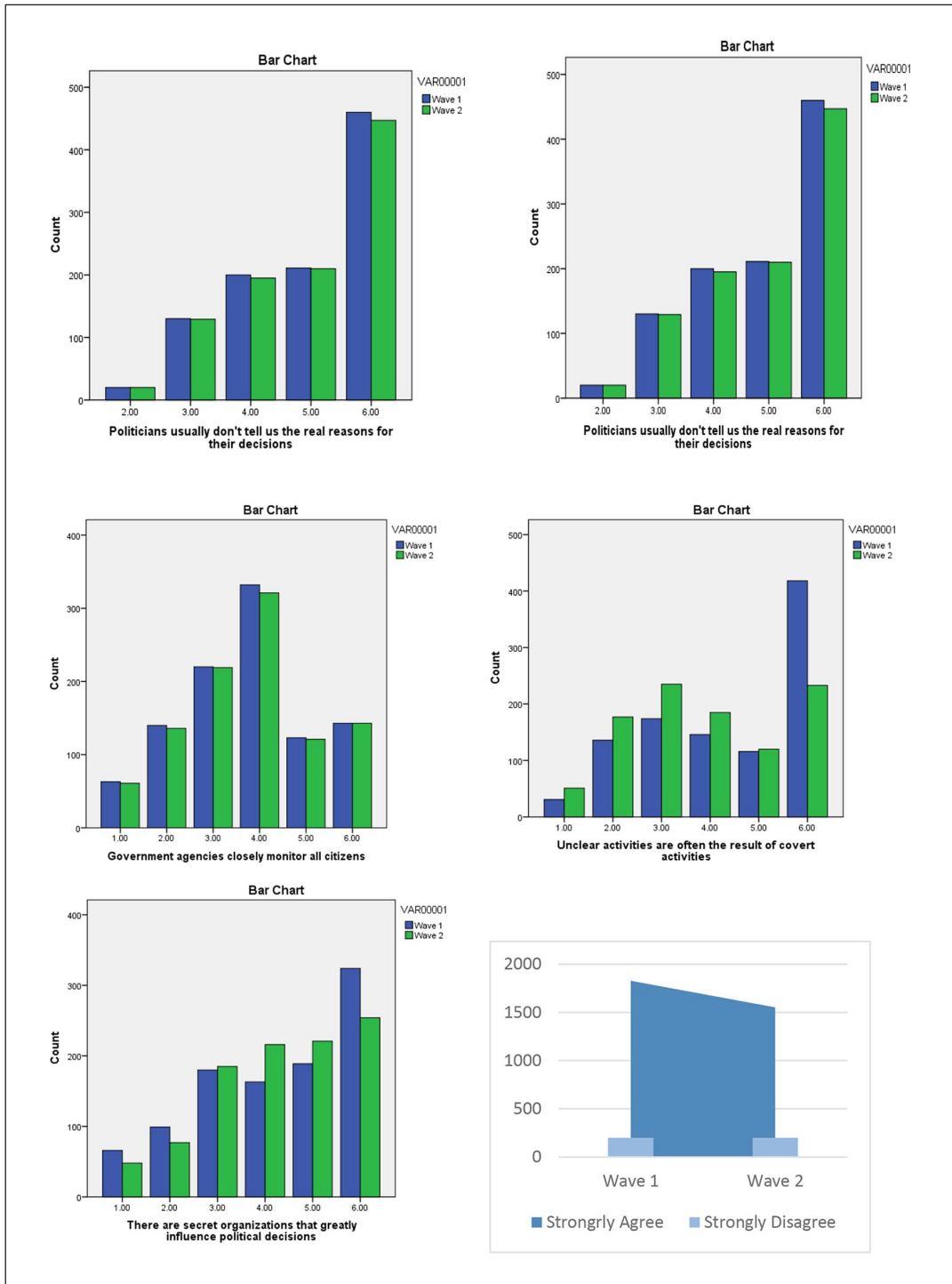


Figure 4. Conspiracy theory during COVID-19 pandemic.

Table 2. Respondents' trust in taking the vaccine.

If a vaccine becomes available and is recommended for me, I would get it							
	<i>Very little trust</i>	<i>Poor trust</i>	<i>Below average trust</i>	<i>Average trust</i>	<i>Above average trust</i>	<i>A great deal of trust</i>	<i>Total</i>
Wave 1	40 4	92 9.2	414 41.4	121 12.1	120 12	234 23.4	1021
Wave 2	10 1	75 7.5	10 1	42 4.2	522 52.2	342 34.2	1001
Total	50	167	424	163	642	576	2022

Sicilians showed little trust in the public institution, and average trust in the MOH. However, they tend to place more trust in the INPS, the institution that guarantees pensions and provides some economic support. In addition, newspapers with in-depth analysis of the situation and the TV channels that provide live coverages and have a greater impact on people and their attitude are also more trusted.

The theory of conspiracy has been strongly seen in the answers given by participants in Figure 4. Conspiracy has been very strong in the minds of people, and while 1828 said to be strongly convinced about the presence of conspiracy, this number has slightly decreased to reach 1552 persons in the second wave. Similar conclusions generally found a high level of belief in different variations of conspiracy implemented by Sallam *et al.* (23), Al-Sanafi and Sallam (24), and Yang *et al.* (25).

The correlation indicates that people who believe in conspiracy theories tend to have reduced confidence in powerful groups or institutions involved in ambiguous political activities in the past that have led to conspiratorial events (26). Individuals who endorse conspiracy theories may be less likely to accept the vaccination, as shown in Figure 2, which has changed in the second wave in accordance with the conspiracy theory belief on vaccine hesitancy.

A change of position toward trust in the vaccination has to be seen clearly in the second wave, in order to overcome this epidemic.

Conclusion

Despite the hard time the island is still facing, we believe that Sicilians were able to face the challenge and take an active part in responding

with a balanced position, showing a very good knowledge and understanding of the virus situation and any future impact this can have on their daily life. Furthermore, the results are giving us a clear and positive attitude of Sicilians toward the vaccination despite the presence of 41.4% who showed below-average trust. The second wave has shown a more positive tendency toward the acceptance of vaccination; still, a deeper study should be conducted during the coming months to enlarge the perspective on this specific aspect of the epidemic.

Limits

The initial measurements taken by the government in the first wave reduced the number of cases, and still living under less-than-ideal conditions has influenced people's attitudes and their general psychological conditions.

Throughout the pandemic, illegal immigration persisted on the island, which was already grappling with various challenges. The issue was seen as crucial, with a description by Goethe (27) as a "key to everything."

The lockdown was one of the biggest challenges due to the low use of technology in Sicily (5). The homogeneity of participants as shown in Table 1 was a limitation in this study. We also would consider the lack of direct and quick access to data as a limit for this study and the delay in updating such details on the official websites of the local governments.

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Declaration of conflicting interests


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