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Research Article

The Role of Health Decision Making, Executive Capacity and Community Engagement in Preparedness and Response for Controlling COVID-19

Zainab Almoosa[1], Gasmelseed Y Ahmed[1]*, Osama Al-Shaya[2] and Mansour AlFadel[2]

[1]*Almoosa Specialist Hospital, Al-Ahsa, KSA*

[2]*King Fahad Medical City, Riyadh (KFMC), KSA*

***Corresponding Author:** Gasmelseed Y Ahmed, Almoosa Specialist Hospital, Al-Ahsa, KSA.

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Abstract

Background: Corona is an infectious disease first identified 2019 in Wuhan, China then spread globally resulting in pandemic. It is a new disease with no treatment, hence preparedness, early response and public awareness remain vital protective measures in combating the outbreak. We are aiming in this study to evaluate preparedness strategy and response for controlling COVID-19 outbreak in two Saudi hospitals.

Methods: It is a descriptive hospital-based cross-sectional study conducted in Almoosa Specialist Hospital, Alahsa (ASH) and King Fahad Medical City, Riyadh (KFMC). Random group of four hundred fifty one participants were interviewed on their opinion on governmental protective decisions and commitment to the rules. We have applied a data collection form consists of 4 sections and a total of 57 items. Ethical research committee approval was obtained from the two sites.

Results: Data on 451 participants were analyzed applying (SPSS). More than half 244 (54.1%) medical staff and the other were patients and their families. 250 (55.4%) females, 190 (42.1%) within age group 31 - 40, above 40 were (34.8%) and the remaining were below 31 years of age. High rate (94.6%) of participants rated frequent hands' washing the top protective measure followed by social distancing and wearing mask. Community's commitment rate and submission to governmental rules of curfew and prohibiting gatherings was (94.9%).

Conclusion: To the best of our knowledge, this is the first study in the region to assess public health emergency preparedness from perspective of decision making and executive capacity. The results revealed vital role of authorities in facilitating and coordinating the preparedness between all heath stakeholders. The study proved high level of commitment within the community with the most challenging decisions were the religious ones approached in a harmony between faith and science.

Keywords: *Preparedness; Saudi Arabia; Decision Making; Executive Capacity and Commitment*

Abbreviations

KSA: Kingdom of Saudi Arabia; COVID-19: Coronavirus Disease 2019

Background

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified 2019 in Wuhan, China, and has since spread globally resulting in the 2019-20 coronavirus pandemic [1-3]. Since December 2019, there has been a series of unexplained cases of pneumonia reported in Wuhan, China. The Chinese government and researchers took rapid measures to control the epidemic and carried out etiological research. On 12 January 2020, the World Health Organization (WHO) named this new virus as the 2019 novel coronavirus (2019-nCoV). On 30 January 2020, WHO announced the 2019-nCoV epidemic a public health emergency of international concern and on 11 February 2020 the coronavirus study group of the International Committee on Taxonomy of Viruses named 2019-nCoV as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [4,5]. SARS-CoV-2 is a coronavirus belongs to the β-coronavirus cluster. COVID-19 is the third known zoonotic coronavirus disease after SARS and the Middle East respiratory syndrome (MERS) [6]. There are no specific antiviral medications, people are managed with supportive care such as fluid and oxygen and supporting other affected vital organs [7]. However, prevention remains the first line of defense. Community participation is widely believed to be beneficial to the development and implementation of health services. It is key in priority setting to drive healthcare [8]. Supported by a robust infrastructure, the Saudi Kingdom has handled COVID-19 outbreak efficiently through adopting comprehensive preparedness strategy based on: right decisions, firm quick executive capacity and engagement community. The government set coordination between multiple participating stakeholders including public and private sectors. Moreover, applied the media for increasing public awareness in panic-free environment. They took challenging decisions by suspending many economic, social and religious activities.

Saudi Arabia is divided into 13 regions. More than the other regions, population is high in Riyadh, Makkah, and the Eastern Region, due to urbanization, with a total population of 26 million [9]. Health services in the Kingdom have developed enormously over the last two decades, as evidenced by the availability of health facilities throughout all parts of the vast Kingdom. A series of development plans in Saudi Arabia have established the infra-structure for the expansion of curative services all over the country [10]. Healthcare in Saudi Arabia received from one of several ways, from Ministry of Health, military hospitals, of which there are two branches (the Saudi Arabian National Guard and the Ministry of Defense and Aviation) and from private hospitals [11]. Health care system has benefited from substantive investment in recent decades. As a result, there are 2.2 hospital beds for every 1,000 people, and the system determined to optimize and better utilize the capacity of hospitals and health care centers and enhance the quality of preventive and therapeutic health care services. The public sector focus on promoting preventive care, reducing infectious diseases and in encouraging citizens to make use of primary care as a first step [12]. Infectious disease outbreaks remain as an ongoing threat and efforts are required to ensure that core public health capacities for the full range of preparedness and response activities are sustained. Important lessons have been learned based on experiences from recent public health emergencies, such as SARS (2003), H1N1 pandemic (2009), and Ebola (2014 - 2016). There have also been substantial legacy benefits from recent mass gatherings such as the Olympics [13]. Health is on one hand a highly personal responsibility and on the other hand a major public concern. It thus involves the joint efforts of the individual, the community and the state to protect and promote health. The individual and community responsibility are complementary. The current trend is to involve the communities in a meaningful way [14].

Announcing COVID-19 as pandemic by WHO was alarming for the Kingdom to deal with the situation as public health emergency, working aggressively in fighting the outbreak and considering the control of the of the disease responsibility of every individual in the community. Health policy makers ensured the hospitals readiness in terms of space, supplies and staff to provide optimum care. Moreover, major decisions were taken in quarantining some cities, closing boarders, preventing gatherings and suspending religious visits to the two holy mosques. Hospitals played recognized roles in the national preparedness strategy; workflow was modified allowing some staff work remotely, introduction of personal protective supplies, dedicating corona team with task force committees to work around the clock. High risk departments like; ER, geriatric patient's words, patients taking immunosuppressant medications and pregnant received extra attention and care with work modification in accordance with their health conditions. The current preparedness strategy was supported by cumulative experience acquired from the annual mass gathering of pilgrimage, beside experience from the recent SARS outbreak. This joint study is assessing, documenting and reporting the role of health decision making, executive capacity and community commitment in Saudi's preparedness strategy for controlling COVID-19.

Methods

Study design and setting: It is descriptive cross sectional study, approached through electronic survey in two health facilities; Almoosa Specialist Hospital and King Fahad Medical city, covering hospitals' staff, patients and their families.

Sample design: The survey was emailed to the staff in the two hospital where 269 response were obtained, and 182 participants from patents and their families were randomly selected and interviewed.

Questionnaire validation: A questionnaire was consist of 4 sections and a total of 57 items. The content, construct and statistical validation for the questionnaire was done by our expertise staff in infectious diseases, epidemiology and biostatistics. Internal consistency test was applied to assess whether the items are inter-correlated with each other where Cronbach alpha reported 84% of internal consistency between items.

Results

Data on a total of 451 respondents in the two sites was descriptively analyzed applying (SPSS). Overall Level of Preparedness for Disease Outbreak's results are summarized in table 1 and figure 1-3. More than half 244 (54.1%) were medical staff and the other were patients and their families. 250 (55.4%) were females. 190 (42.1%) with age between 31 - 40, 34.8% above 40 and the remaining below 31 years of age. High rate (95%) of participants reported frequent hands' washing as their best protective measure, 90% reported social distancing and 88% reported wearing mask. When participants asked to rank protective measures (94.6%) rated frequent hands' washing the top. Commitment and submission to governmental rules showed the highest rate (86%) with prohibiting gatherings. Majority of respondents acknowledged the right and timely decision taken and executed by authorities and expressed their acceptance of the temporary economic social and religious impact of the restrictions.

Characteristics	N (%)
Nationality	
Saudi	219 (48.6%)
Non-Saudi	232 (51.4%)
Site/Workplace	
Almoosa Specialist Hospital	149 (33.0%)
King Fahd Medical City KFMC Riyadh	120 (26.6%)
Other	182 (40.4%)
Status of participant	
Staff	269 (59.6%)
Patient/family member	182 (40.4%)
Gender	
Male	201 (44.6%)
Female	250 (55.4%)
Age	
≤ 30	104 (23.0%)
31 - 40	190 (42.1%)
≥ 41	157 (34.9%)
Occupation	
Medical	214 (47.5%)
Non-medical	237 (52.5%)
Ranking protective measures you take	
Frequent hands washing ranked first of protective measures	427 (94.6%)
Wear mask ranked first of protective measures	024 (05.4%)
How frequent do you comply with protective instructions	
All the time	414 (91.8%)
Sometimes	037 (08.2%)
How frequent do you follow social distancing	
All the time	388 (86.0%)
Sometimes	063 (14.0%)
How frequent do you commit with the curfew	
Yes	289 (64.1%)
No	162 (35.9%)

Table 1: *Demographics characteristics (n = 451).*

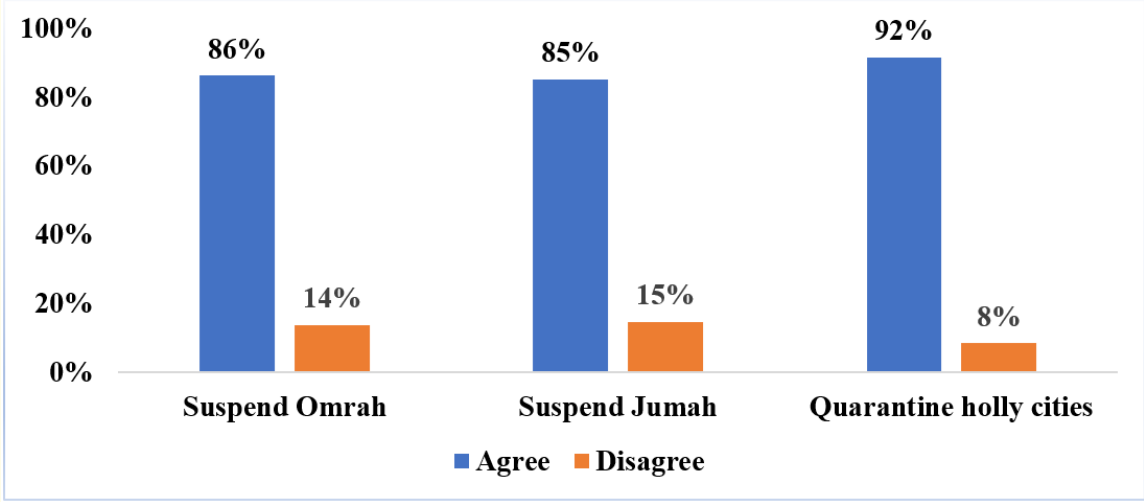

Figure 1: *Most significant challenging decisions for health policy makers (n = 541).*

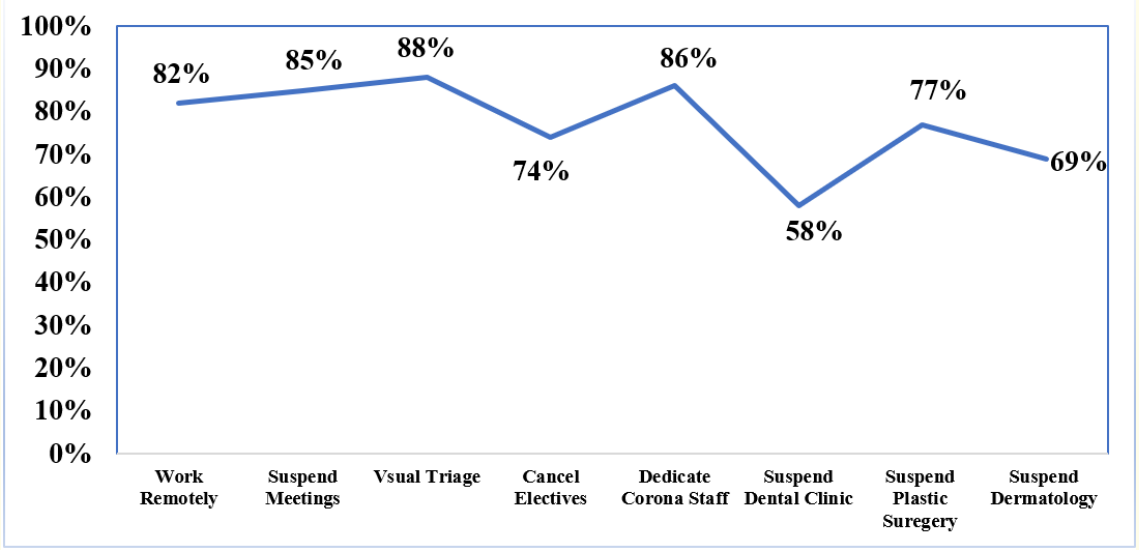

Figure 2: *Participants' opinion on their hospitals' preventive measure (n= 451).*

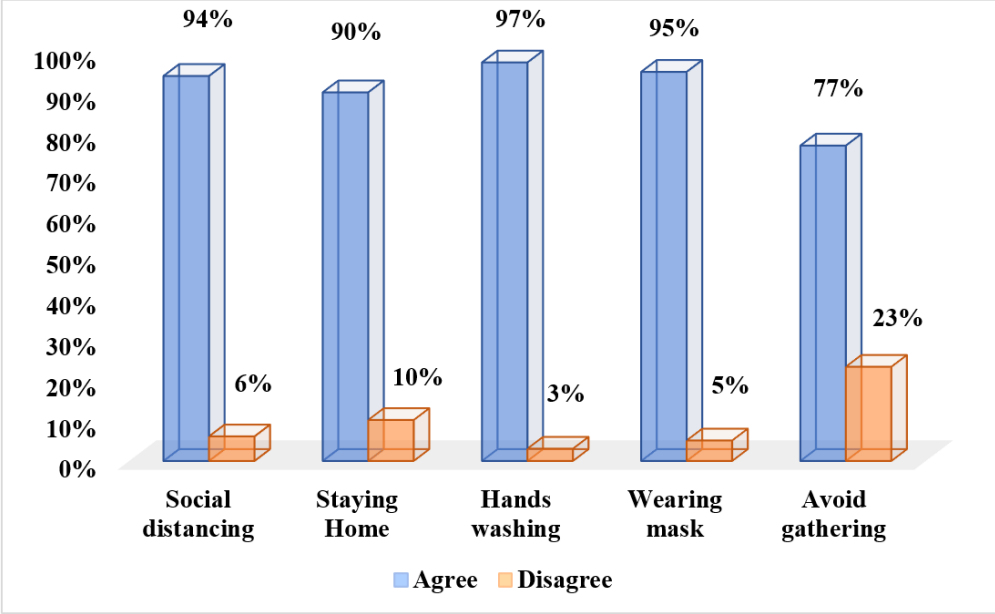

Figure 3: *Participants opinion about applied authority's decision (n = 451).*

Discussion and Conclusion

This study has evaluated preparedness and response for controlling COVID-19 in Saudi in the light of the cumulative experience acquired from the annual religious gatherings. Hajj (pilgrimage) is one of the largest mass gatherings (MG) in the world with up to four million pilgrims performing its ritual each year in an area of less than three square miles. The extreme yearly congestion of people and vehicles during this time is no less than organizing an Olympics. During this annual event, protection of the health of pilgrims is challenging responsibility of the Kingdom. Pre-Hajj efforts continuous annual update and recommendations improve the provided services and implementation of protection measures for pilgrims. After decades of planning the annual event of Haj, learned and acquired experience have qualified the Kingdom in providing unique healthcare services and logistic capacity in response to this pandemics. We have evaluated preparedness in terms of firm decisions by authorities, timely prompt execution, and community's commitment.

The 1978 Alma Ata declaration on primary health care strongly emphasized the duty of people to plan and implement health care programs, such involvement is expected not only to be cost-effective but, more importantly, the best way of providing comprehensive solutions to public health problems. Both governmental and non-governmental organizations have been active in promoting the concept [15]. It had been demonstrated during the global Ebola crisis of 2014 - 2016, healthcare institutions in high resource settings need support concerning preparedness during threats of infectious disease outbreaks. The four pandemics (SARS, Influenza A/H1N1, MERS and Ebola) that have emerged since the beginning of this century underpin the necessity of awareness and optimal control strategies [16].

The overall finding in this study is the identification of the proactive precautionary measures taken by the government; February 6th all direct flights between Saudi Arabia and China were stopped, February 27th all international flights were suspended and February 28th travel from SARS-CoV-2 affected countries including GCC citizens were banned. On March 2nd the first COVID-19 case was confirmed in a traveler returning from Iran through Bahrain without declaring travel history. On the 5th of March complete lockdown of the Holy Mosques was enforced. This was a huge religious and economic decision by the government given the number of daily visitors to the Holy Mosques of more than 278.000 per hour. On March 8th virtual learning in schools and university started. March 9, travel to all affected countries were banned and quarantining passengers who already arrived from these countries. By March 12th, all gatherings were suspended. Moreover, work in most of the sectors was converted to working from home, prayers in mosques were banned, and virtual health visits and medication delivery were activated in governmental hospitals as well as most of the private hospitals. By late March, Saudi government offered free healthcare to all citizens and residents even illegal residents, all these proactive measures were taken while the number of confirmed cases in Saudi Arabia was still less than 300. The study revealed high level of preparedness in the Saudi Arabia in terms of decision making and executive capacity for controlling COVID-19. Another similar study carried out to measure the level of preparedness and evaluated different countries for their level of preparedness to a possible influenza outbreak reported sixty-two percent of the countries were found to have low levels of preparedness [17]. In managing the current public health emergency, the Kingdom's government was leading and facilitating collective action of multiple organizations in both heath and security force fields. Making firm decisions with immediate executive capacity and encouraging smooth and transparent flow of information in the media to alert the community and all involved stakeholders. Previously published study conducted in Chia found that public health emergencies caused by infectious viruses often quickly affect the entire population of a community within a short period of time. Therefore, public administrators need to respond quickly, make professional, accurate judgments as swiftly as possible. In dealing with public health emergencies, the essential responsibility of governments is to make sound strategic decisions [18].

Toward the end of the preparedness strategy and with the satisfactory progress in the rate of recovery and controlled limited number of new cases, it was justified for policy makers to decide on releasing the tight precautions, in spite of the fear that lifting curfew could lead to another wave and enable the virus to start spreading all over again. The decision of returning to normal life across the country has processed through three phases with concomitant strict guidelines released by the authorities stressing the community to assume their responsibilities and abide preventive measures and commit to relevant instructions. The curfew lift witnessed early increase in new cases. However, it was short, within control and with limited mortality; early in April cases started to increase in Makkah, Jeddah and Madinah cities mostly related to illegal residents living in a very crowded residence. Hence, the Kingdom implemented a lockdown and isolation of several districts in these cities and started mass testing. April 24th curfew time decreased during the daytime, with complete curfew during 5 days of Ramadan Eid, then partially reduced till complete lift and reopening the country on June 21. Moreover, determined decision was made on Haj of 2020 restricting international pilgrims and permitting only national citizens and residents with limited numbers. Despite all these measures cases started increasing exponentially in mid-July. It observed that the surge of cases is happening in waves, started in Jeddah, then Riyadh and now it is affecting the eastern region, the reason behind that is not clear yet. Although the cases are escalating and increasing but still the situation is under control with the critical care and regular bed capacity still accommodate the cases. There were several strategic plans helped to utilize the hospital beds efficiently at the start of the crises, all COVID suspected and confirmed were admitted to the hospitals even if they are asymptomatic, but with increasing number of cases only symptomatic cases are admitted while suspected and asymptomatic positive cases are transferred for isolation facilities in hotels. As the situation evolved the severity of cases increases and the admission criteria revised, so only moderate to severe cases are admitted to the hospital. In conclusion, this study evaluating the preparedness and response in the Kingdom for controlling the spread of COVID-19. The study results revealed firm health decision making and executive capacity by authorities. Decisions on congregational prayers, Friday prayer, umrah

and pilgrimage as religious worship with profound significance for the community and individuals were taken and executed in harmony between faith and science. The study reported the collaborative contribution of private and public hospitals as front liner in the preparedness strategy for combating COVID-19. The major limitations of the study were the poor testing capacity, limited number of certified labs, lack of innovative disease spread tracking mechanism like bracelets and the shortage of (n95) masks supplies.

Ethics Approval and Consent to Participate

Ethical research committee approval was obtained from both sites. All participants in the study were consented prior to their enrolment.

Consent for Publication

Not applicable.

Availability of Data and Materials

All materials and data generated, used and analyzed in this study will be promptly available for the publisher upon request.

Competing Interests

All authors declare that they have no competing interests.

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The total expenses for this study in terms of; the study design, data collection, statistical analysis, and results' interpretation were covered by the authors.

Authors' Contribution

ZA, GYA, MF and OA were all involved in the design and implementation of the study, they have read and approved the study proposal and the submitted manuscript in its final versions. GYA conducted data analysis. All the team involved in manuscript preparation the proposal and the final revision and edit of the manuscript.

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