

# Electronic Clinic in COVID-19: Benefit to Reduce Mortality in the Community

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**Abstract:** Objectives: In the COVID-19 era, the huge numbers of patients that overcame the capacities of the Iraqi hospitals and the private health system sector left a significant number of patients unable to access health services. This led to an increase in the mortality rate. Aim: To use telemedicine (electronic clinics) to treat patients outside of the traditional health system and thus reduce the mortality rate. Patients and methods: A retrospective cross-sectional study was done by a group of specialists and consultants in internal medicine and community medicine over 4 months (15/3/2020 to 30/7/2020). All specialists and consultant's set-up electronic clinics using their smartphones and the WhatsApp application; patients call the doctor requesting help and advice and explaining symptoms. The doctors can then give direction, chat with patients, make investigations and radiology requests, order medications, and continue to follow up with the patients. Results: Most of the cases were mild to moderate in severity, with few severe and life-threatening cases that refuse hospital admission despite thorough, repeated advice. The vast majority (88%) of the mild to moderate cases fully recovered, and most of the severe cases fully recovered. Conclusion: The electronic clinics significantly reduced the mortality rate. With electronic connection, the infectivity rate among the medical health system staff can be limited. We propose that electronic clinics can be useful support (but not substitute) to the traditional health system.

**Keywords:** COVID-19, Electronic Clinic, Low Morbidity and Mortality

## 1. Introduction

COVID-19 was first reported in Iraq in March 2020. Multiple measures were implemented, including lockdown of communities, wearing masks, social distancing, and health measures. In the beginning, the disease was mild, with sporadic cases, few mortalities, and stringent health measures. Then, the cases began to increase steadily, with an increase in mortality rate, eventually overcoming governmental and private health sectors [1-8], with increases in infection and death among physicians and health care staff. This forced many patients to remain at home rather than seek

hospital care [3-6]. Those patients are poorly protected and highly infectious to other people, especially health care workers, due to rejection of the idea they are infected.

This situation led Iraqi physicians to implement telemedicine through WhatsApp groups. WhatsApp is one of the most common community applications worldwide [9-11] and allows its users to communicate via written messages, chatting, photos, and videos [8]. WhatsApp requires a mobile Internet connection; the low cost for sharing unlimited information makes it useful for social interaction.

The use of a smartphone app such as WhatsApp among physicians to communicate with their patients has risen quickly during the last decade. A large number of physicians now use their mobile devices as an important tool [11]. Physicians' usage of smartphones for professional purposes has been steadily increasing from 68% in 2012 to 84% in 2015 [7-13].

We must take appropriate measures to ensure those individuals who cannot access traditional healthcare services receive treatment [13-16]. In the COVID era, these patients can be divided into five categories; carrier, mild, moderate, severe, and life-threatening [1-6]. Each category had its own management plan that might include temperature measurement and recording SPO<sub>2</sub> level, pulse rate (PR), and respiratory rate (RR). For severe and life-threatening patients, referral to the hospital was advised, and most patients accept this idea.

## 2. Patients and Methods

A retrospective cross-sectional study was done by a group of specialists and consultants in internal medicine and community medicine over 4 months (15/3/2020 to 30/7/2020). Shared in the management of COVID-19 adult patients, a study done in Iraq. The patients' data in this study have been collected using telemedicine clinic by deploying one of the popular instant messaging platform (WhatsApp) by using direct call facility between the health professional and the patient.

The patients in this study have been categorized into five stages; diagnosed, treated and followed out during their illness and registered their end as cured, referred to a hospital or died.

Data are reported as numbers and percentages. The study was approved by the Human Research and Ethics Committee of Anbar university related to the Iraq Ministry of Higher Education and Scientific Research No.42 in August 2020.

## 3. Results and Discussion

*Table 1. Live and death distribution.*

Total patients	608	100%
live	595	97.8%
Death	13	2.2%

*Table 2. Sex distribution of the disease.*

Total patients	608	100%
Male	369	60.7%
female	239	39.3%

*Table 3. Type of disease severity distribution.*

Patients	Total	Mild	Moderate	Sever	Life-threatening
NO., %	608	301	233	71	3
	100%	49.55%	38.32%	11.67%	0.5%

*Table 4. Area distribution of the disease.*

Site of physicians' work	Baghdad	Ramadi	Falluja
Numbers of patients	106	366	136

This electronic clinic (telemedicine) trial is the first such application involving large numbers of Iraqi specialists and consultants in the management of COVID-19. This approach decreased the medical staff's exposure to the virus, allowed large numbers of patients without access to the government and private health sectors to receive treatments, and the reduced patient suffering and loss of life.

Eight specialists participated in this study from different districts (Baghdad, Falluja, and Ramadi) (Table 4). Six-hundred-eight COVID-19 patients were managed at their home by telemedicine in a 4-month period [369 (60.7%) male, 239 (39.3%) female]. The mortality rate was consistent with other national studies [14, 15]. The mortality rate reported by the Iraqi ministry of health in Iraq was higher (3.68%) [14] than in our study (2.2%), perhaps due to differences in case severity; most hospital cases are severe and life-threatening, while our study included mild 301 (49.55%) and moderate cases 233 (38.32%) (Table 3).

Based on our findings, we recommend that telemedicine can be a useful support to the health system in Iraq. The field of management in different areas; Baghdad, Ramadi, and Fallujah; the results were nearly similar for specialists, consultants who used telemedicine very high recovery rate about 97.87 % and low transfer rate of patients to hospitals with a low mortality rate that means there was good management and follow up due to relaxing doctor in management because they are away from the risk of acquisition of infection from the patients. The mortality rate 13 (2.2) these due to the refusal of patients to be referral to the hospitals in spite of explanation given by the doctors of the consequences on his health condition; the patients neglect/decline of the referral to the hospitals may be attributed to the false negative feedback about some hospitals in the social media.

## 4. Conclusion

Telemedicine is suitable for patient management, especially in highly infectious diseases like COVID-19, with negligible errors, low risk of medical staff infection, and reduced morbidity and mortality rates for patients.

## 5. Recommendations

Telemedicine should be widely adopted. Need more study in this field and systemization of telemedicine in medical field to be practiced clinically.

## 6. Limitation

Some data might have been overlooked because of the poor infrastructure in this post-war country.

## Disclosure

The authors declared no potential conflicts of interest.

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