



Effective Triage of Patients in Confronting Covid-19 Pandemic: Favorable Experience from Yarmouk Health Care Center, Kuwait

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Abstract

An efficient and functional triage system, is a successful strategy adopted at various health care facilities in combating against the COVID-19 pandemic. It helps to reduce exposure to the infection and ensures safety of health care workers, patients and visitors. The aim of the study was to observe the effectiveness of triage practice, at Yarmouk Primary Health Care Center, Kuwait. A descriptive cross-sectional study was conducted during February 2019, to December 2020 at the Yarmouk Primary Health Care Center clinics, Kuwait. A triage-based health care delivery model, with rate of overall service usage, were compared before and during the application of triage during COVID-19 pandemic. The control period was from February to December 2019, when the center was working under normal circumstances. Crisis period was from February to December 2020. Data was collected from the primary care information service, Ministry of Health database, for Yarmouk PHCC activities and service utilization pattern, from February 2019 till December 2020.

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Due to application of triage system, total number of patient visits were reduced from 151,886 patients in 2019 (pre-Covid) to 72,454 patients in 2020 (CoVID-pandemic), that is 75% reduction in patients visit. The employees were screened 9,511 times for possible COVID-19 symptoms. None of the employees got COVID at workplace because of the effective triage system. Those who got infected with COVID-19 had the exposure from outside workplace. In addition, 105 written reports and a daily follow-up schedule were written. Appointment links were used 102,256 times across various clinics and departments. The link to issue medical reports was used more than 330 times, and more than 70 medical reports were issued. The Chronic Medicines Refill link was used 868 times. Tele-consultation and online consultation were significantly increased, with no change in patient's satisfaction. Applying well planned and monitored triage system at Yarmouk PHCC prioritized services and ensure safety of doctors, staff, patients and visitors, without compromising quality not patient satisfaction.

Keywords: COVID-19 Pandemic; Patient Safety; Patient Satisfaction; Telemedicine; Triage.

1. Introduction

COVID-19 pandemic has challenged health systems around the world. The State of Kuwait has confronted this challenge very effectively and has efficiently followed World Health Organization (WHO), European Center for Disease control, US Center for Disease control, and several established protocols from reputed countries. Government of Kuwait is utilizing all available resources to control the pandemic, as it is faced with cases among Kuwaitis returning home from affected areas, and susceptible overseas residents [1].

Yarmouk district is part of Asimah governorate of Kuwait, with an estimated population of 24,634, comprising 56.6% Kuwaitis, 51.7% female, and 77.7% in 15-64 age group [2].

Yarmouk Primary health care centre (PHCC) provides frontline primary health care services in the district. World Health Organisation (WHO) regards it as an exemplary model for primary health care service provision in the region. It has to fulfill expectations to improve existing services, implement Ministry of Health regulations, and maintain WHO accredited Yarmouk Health City center status for provision of excellence in health services in the region [3].

Unusual situations demand extraordinary measures. A variety of strategies have been implemented globally, by health care facilities, to efficiently control COVID-19 pandemic.

Establishing an efficient and functional triage system at the health care facilities, has been a successful strategy adopted at various health care facilities. The triage procedure screens the patients to identify the high-risk individuals [4]. A study conducted by Wahab et al in the hospitals of Kuala Lumpur concluded, that there was a 77.5% reduction in the number of exposed health care workers after the implementation of a triage system [5].

Evidence based, standardized protocols and procedures are developed and implemented, at the health care service delivery centers. This strategy helps identify high risk patients and offer them virtual consultation or referral to respiratory clinics, to avoid unnecessary exposure risk to patients, staff and visitors at these facilities

[6]. Telephonic triage, using standardized protocols, is found to be effective during the COVID-19 pandemic. Telephonic screening allows identification of high-risk patients, who can be offered virtual consultation or can be seen at respiratory clinics [6]. A systematic review of eight studies on the utility of tele-health in the pandemic era concluded, that it is a significant tool in providing care services which also keeps patients and the health care workers safe from the exposure to the virus [7].

Yarmouk Primary Health Care Center, responded to challenges posed by COVID-19 pandemic, by embarking on several key strategic initiatives. Setting up an efficient and functional triage system to confront COVID-19 pandemic at the center, was designed to demonstrate its favorable impact on reducing COVID-19 exposure to patients, health care providers, staff and visitors at the facility and without compromising patient and staff satisfaction and improved clinical outcomes.

2. Materials and Methods

A descriptive cross-sectional study was conducted at the Yarmouk Primary Care Clinics. A triage-based health care delivery model, with rate of overall services utilized and quality, were compared before and during the COVID-19 pandemic, at the Yarmouk PHCC. The data was gathered from February 2019, to December 2020. Control period was from February to December 2019, when the center was working under normal circumstances. Crisis period was from February to December 2020, period of COVID-19 pandemic in Kuwait. This allowed comparison before and during the COVID-19 pandemic, changes that can be attributable to the pandemic. Universal sampling was employed and data regarding COVID-19 was gathered from all the patients visiting the Yarmouk PHCC and the employees including health care workers working at the centers during the data collection period. Ethical approval was obtained from the Institutional Review Board (IRB). Moreover, personal identifiers were removed from the study files to ensure anonymity and confidentiality of the information obtained. Data was gathered from various points including patients' satisfaction survey, whereby the patients were asked if they were satisfied with the triage system and patients and employees screening registry for COVID-19 symptoms (sore throat, fever, cough, shortness of breath, change in the sensation of taste and smell, body ache, chills, fatigue, headache rhinorrhea/runny nose, vomiting, diarrhea, confusion/loss of concentration, contact with a person with Covid-19, travel history of the past 14 days). The questionnaire was composed according to rules and regulations of the Ministry of Health.

The data was entered and analyzed on SPSS version 19. Descriptive analysis was conducted and results were presented in the form of numbers, frequency and percentages for the control and crisis period of COVID-19.

2.1. Triage Plan at Yarmouk PHCC

Triage services were introduced at the start of the COVID-19 pandemic, to ensure safety of patients, visitors and staff working at Yarmouk PHCC. As part of the triage system, Respiratory Clinics were established at the Center, to follow up suspected COVID-19 cases and isolate them from the rest of the patients. Triage system included identifying high risk patients for COVID-19 infection, during telephonic calls for appointment. Standardized protocols were followed by telephone operators, allowing them to identify patients with symptoms

suggestive of COVID-19 infection such as fever, cough, sore throat, body pains, in addition to any history of recent high risk Covid-19 infection exposure. An electronic administrative health services structure was developed at the Yarmouk PHCC, with regard to appointments, virtual consultations, patient satisfaction questionnaire administration and data collection. A group was created (COVID-19 Protocols) on WhatsApp, and all the doctors working at the center were added for information sharing. At the Yarmouk PHCC, Triage nurse initially assessed patient to exclude possibility of Covid-19 infection. On duty Doctor was immediately notified in case of suspicion, and was called “sounding the alarm’ initiative, to prevent suspected COVID-19 suspects from mixing with the rest of the center’s staff, patients and visitors. Standard Operating Procedures (SOPs) for screening mechanism by Triage Nurse was shared with nursing staff, to avoid any decisions based on personal judgment. At the end of the day, duty doctor followed up on the results and details of suspected cases. To ensure the accuracy of the triage system, fake cases were purposefully planted, and followed up for any omissions. Yarmouk PHCC established a telephone consulting system using Zoom and WhatsApp programs. Diabetes and Blood pressure control was assessed and controlled online remotely, without patient visit to the center, based on availability of tools and capacity to measure blood pressure and blood sugar at home (Figure 1).

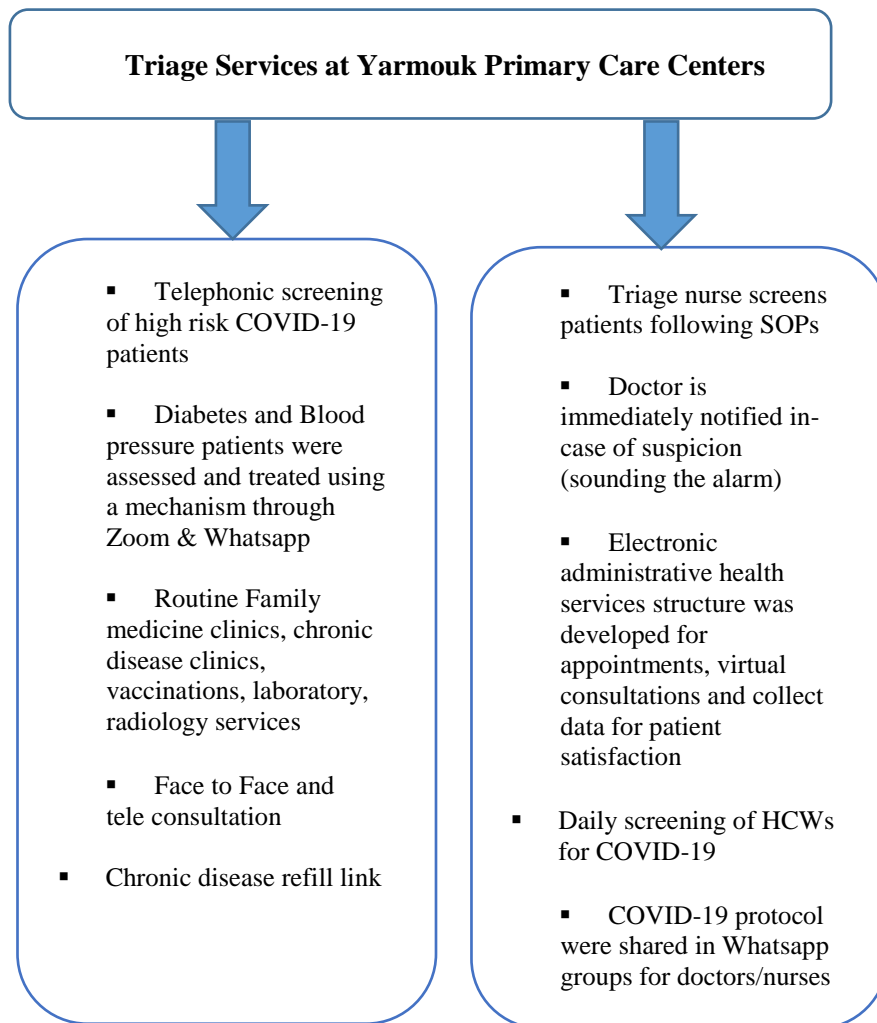


Figure 1: Triage plan implemented at Yarmouk PHCC

In addition to identifying suspected COVID-19 patients through effective triage system at Yarmouk PHCC, and providing them required treatment, Center continued to provide the services of family medicine clinic, chronic diseases clinic, general medicine clinic, follow-up of the elderly at home, vaccinations, and laboratory and radiology services.

In addition to face-to-face consultations in emergency cases, teleconsultation was offered and conducted in non-urgent cases, particularly those suspected to have COVID-19 infection.

3. Results

Data was collected from the primary care information service (PCIS), Ministry of Health [2] database, for Yarmouk PHCC activities and service utilization pattern, from February 2019 till December 2020.

Yarmouk PHCC employed eight Family Medicine Specialists, four General Practitioners, twenty-nine Nurses, and fifteen Administrators and Support Staff. The total number of patient visits were reduced from 151,886 patients in 2019 (pre-Covid) to 72, 454 patients in 2020 (Covid-pandemic).

The survey questionnaire revealed that majority of the participants visiting the Yarmouk PHC were satisfied with the triage services. About 92% of the Arabic language responders and 89% of the English and other language responders stated that they are satisfied with the triage services offered during the COVID-19 period (Table 1).

Table 1: Satisfaction with the Triage Services at the Yarmouk PHCC

Satisfaction with the Triage Services	Arabic language responders (n=4015)	English & other Language responders (n=342)
Yes	3694 (92%)	304 (89%)
No	321 (8%)	38 (11%)

The employees were screened 9,511 times for possible symptoms of the COVID-19 infection, using the innovative triage system in the Yarmouk Center. None of the employees got infected with COVID at workplace because of the effective triage system. However, those who got infected with COVID-19 had the exposure from outside workplace.

In addition, 105 written reports and a daily follow-up schedule were written. Appointment links were used 102,256 times across the centers various clinics and departments. The link to issue medical reports was used more than 330 times, and more than 70 medical reports were issued. The Chronic Medicines Refill link was used 868 times.

The number of patients that visited the center during the pandemic, in comparison the number of that visited

before, was reduced by 75%. Teleconsultation and online consultation were significantly increase during the pandemic with no change in patient's satisfaction.

The overall Yarmouk PHC services utilization declined with overall reduction of 50% in May 2020. Alternative virtual online, and remote services were provided, telemedicine was introduced, and it made up 50% of the consultation volumes for the same period.

Key performance Indicators (KPI) for chronic disease control (HBA1C, LDL, BMI, BP) showed either same results, or better results during the pandemic. The triage system introduced during COVID-19 pandemic for screening both the staff and the patient succeeded significantly in controlling the spread of the disease in the Yarmouk health center in the first six months, with improved patient and staff satisfaction and absent significant complaints.

The implementation of a new online medical services at Yarmouk PHCC, significantly improved practice management services. Home refill medication delivery, managed to supply 15,245 prescriptions, by end of May 2020. These measures led to significant successes, as indicated by high levels of patient and health care provider satisfaction. Chronic disease indicators (control of diabetes, cholesterol, blood pressure, body mass index) demonstrated good clinical outcome.

4. Discussion

COVID-19 pandemic has unleashed unprecedented challenges to healthcare services around the world. All conceivable and plausible strategies have been tried to meet COVID-19 challenges. It is the combined efforts of all applied strategies that COVID-19 pandemic is under reasonable control.

Triage of services has traditionally been a highly successful strategy to prioritize healthcare services. It involves screening of patients and prioritizing them according to available services, it helps patients in both acute and critical illnesses and our applied triage strategy at Yarmouk PHCC, compares well with similar strategy applied in similar settings [8].

We have demonstrated effective use of triage screening strategy, successfully applied to ensure safety of staff, patients and visitors availing health care services, and compares well with similar strategy applied in other healthcare settings [9].

Several components of triage strategy for available services were successfully applied, at the Yarmouk PHCC. Appointments were given through call center. At the call center, patients were screened for possible COVID-19 infection and exposure. Standardized and evidence-based protocols were applied at the call center for triaging of patients. Suspected COVID-19 infection patients were diverted towards respiratory clinics, specially set up to manage such patients. Our findings compare well with similar strategy applied in other healthcare settings [10]. For instance, results of a study from the Ardabil province of Iran concluded that the strategy of implementing screening and triage system helped in reducing the number of visits to the hospital, which consequently reduced the likelihood of disease transmission [11].

Alongside, the benefits of effective triage system during pandemics, it can have detrimental effects also, for an example misclassification can occur at the time of screening over telephone or improper referral can happen. To avoid this issue, patients presenting physically at Yarmouk PHCC were screened for possible COVID-19 infection and exposure, using agreed standardized and evidence-based protocols. Moreover, a Whatsapp group of all the health care workers was also created and the latest guidelines and treatment protocols were shared regularly. These triage procedures ensured minimum COVID 19 exposures to doctors, patients and visitors at the Yarmouk PHCC. It compares well and is in line with similar strategies applied in similar healthcare settings [12, 13].

Health care providers working at health care service delivery centers, are at a greater risk for acquiring COVID-19 infection [14]. Employees and staff working at Yarmouk PHCC as well as visitors were screened for possible COVID-19 infection and exposure, using agreed standardized and evidence-based protocols.

In line with strategy applied in other healthcare settings, tele-consultations were promoted [15, 16]. Separate Respiratory Clinic was established at the Center, to follow up suspected cases of the COVID 19 infections, to isolate them from the rest of the patients [17]. Home delivery of medicines was promoted, resulting in reduce number of patients visits to Yarmouk PHCC, limiting exposure to COVID-19 infection at the facility [18]. The results of a study conducted in Sunderland Eye Infirmary, UK are consistent with the current study, whereby about 52% of the cases were successfully managed by the telephone triage system, while 48% had to visit hospital for the treatment; which was 65% lesser from the previous year patient visits to the hospital [19]. Another study from Michigan Medicine revealed the importance of telephone triage system in referring patients to suitable endpoints for treatment [10].

Triage procedures implemented at Yarmouk PHCC helped reduce exposure to exposure to COVID 19 infection and ensured safety of doctors, staff, patients and visitors. More importantly, it also ensured patient satisfaction was not compromised [20], maintaining quality of care and patient safety. Similar triage strategies have been successfully applied in different healthcare setting, to ensure quality of care, safety of doctors, staff, patients and visitors and our finding are in line with such similarly applied strategies [9].

5. Conclusions

COVID-19 pandemic has challenged healthcare services to an extent never witnessed in recent past. Triage of healthcare delivery system is found to be an effective strategy to limit exposure of patients and visitors. Moreover, none of the employees got COVID at workplace because of the effective triage system. Those who got infected with COVID-19 had the exposure from outside workplace. Triage strategy implemented at Yarmouk Primary Health Care Centre, Kuwait, supports use of triage facility at primary health care facilities that minimizes unnecessary health care workers exposure to the infection and provides timely care to the patients. Effective use of such triage facilities at health care delivery services is thus, strongly recommended.

6. Funding

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7. Conflict of Interest

There are no conflicts of interests.

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