

The impact of outpatient virtual clinics on the emergency department patients during the COVID-19 pandemic

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Abstract

Covid-19 changed the way patients were managed throughout the hospital. The journey from community to hospital was tailored to avoid too much patient contact to break the cycle of infectivity. Due to the highly contagious nature of COVID-19 disease, measures were introduced to avoid physical contact, where possible. Virtual clinics (VCs) were operated in King Faisal specialist hospital & research centre, Riyadh (KFSH&RC) from March-July 2020, which meant telephonic assessment of the patient. This led to a limited patient's assessment without face to face (F2F) review for a longer period. These patients presented to the emergency department (ED) in relatively more deteriorated state. Whilst lesser number of patients presented to our ED in the VC period, there was a significant proportionate increase in our Canadian triage and assessment scale (CTAS) category 2 (1% (95% CI 0.5 - 1.5) ($p = 0.003$), which are relatively high acuity patients. A significant increase in the hospital mortality was also measured during this period (0.08% CI 0.13 - 0.15) ($p = 0.016$), compared with same period last year

Introduction

KFSH&RC is a large tertiary center, treating a cohort of complex cancer and transplant patients. The COVID-19 pandemic changed the operational process throughout the institution and outpatient specialty clinics were no exception. To reduce the risk of cross infection, the F2F conventional clinics were replaced with VCs, which meant contact with the patient via phone. The loss of contact with primary physicians can potentially lead to worsening of patient illness at home [1]. The patients who normally have 3-6 monthly scheduled outpatient clinic visits with additional access to "walk in clinics" for their urgent needs had only ED, as an access point. Their unscheduled presentations to ED with a possibility of more advanced illness raised question about the impact of the VCs. We wanted to know whether this practice directly led to increase in the ED patient attendances, higher acuity on presentation and higher hospital mortality.

Methods

All ED attendances from March-July 2020 were compared with exact same period in year 2019. Total number of ED attendances and their CTAS category in that period was retrieved through the hospital health care information technology (HITA) center. We also reviewed and compared the safety related incidents (SRS) and sentinel events (patient deaths) in the hospital during this period. The above information was retrieved from the patients safety and quality department.

Results

The total number of patients presented between March-June 2020 were 28.09% (17444 vs 24260) less compared to similar period in year 2019.

Patients demographics & the proportion of adults/pediatrics patients was comparable. Majority of the patients presented with oncological & transplant related emergencies, which is the normal case mix of our ED.

CTAS 3 & 4 categories constituted the main bulk of the categories in both the compared periods, although there was a significant decrease in the year 2020. CTAS 2 had a significant proportionate rise along with CTAS 5 (which had the highest proportionate rise) in year 2020. CTAS 1 patients did not show any significant rise.

Following differences between all the CTAS categories:

CTAS 1 had a percent difference of -0.1% (95% CI 0.006 - 0.19) ($p = 0.05$)

CTAS 5 had the highest percent difference of 5.4% (95% CI 4.9 - 5.8) ($p = 0.001$)

CTAS 4 had a percent difference of -2% (95% CI 1 - 2.9) ($p < 0.001$)

CTAS 3 had a percent difference of -4% (95% CI 3 - 4.9) ($p < 0.001$)

CTAS 2 had a percent difference of 1% (95% CI 0.5 - 1.5) ($p = 0.003$)

Hospital mortality was also significantly different between the two compared periods with percentage difference of 0.08% (95% CI 0.13 - 0.15) ($p = 0.016$)

We did not have any significant reported safety related incidences in the study periods.

Perceived advantages of virtual clinic (VC)

No face to face encounters, reducing the risk of cross infection especially in the Covid-19 pandemic situation, which is highly transmissible form of disease. This was the main reason in the first place to introduce an alternate method of keeping some form of contact with the patient [2].

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1. Telephonic assessment can be carried out in a comfortable home environment for the patient. Video call can also enhance the quality of interaction if that facility is available. A common sense approach and index of suspicion can increase the sensitivity of diagnosis in the hands of an experience physician, during these calls [3].
2. Virtual clinics is a cost effective modality. The consumables required to run F2F clinics are costly. Deployment of ancillary staff like nurses, porters, receptionist to run the clinics do not come cheap [4].
3. No paper based records generated in VC (clinic encounters can sometimes be paper based) with less likelihood of documentation being lost. The patient confidentiality and privacy is better taken care of.
4. No transportation required by the patient to attend the clinic. As our institution is a tertiary care centre, patients travel long distances by air/road to attend their appointments. Ambulance and other transportation vehicles have to be dispatched/arranged by the hospital to bring the patients from distant areas.

Disadvantages of VC

1. Missing the F2F encounter can lead to incomplete clinical assessment of the patients’ condition. VCs completely remove the element of physical examination, measurement of physiological parameters (vitals) and conducting investigations. Delays in investigations is also caused by ancillary specialities like radiology and laboratories, under the same principle of reduced patient contact [5].
2. Phone interactions may lead to a limited subjective description by the patient or a second hand information from the patient’s relatives, due to various reasons. Incomplete information can be counter productive. The threat could be underestimation of the patient’s issues and consequently a less targeted treatment [6].
3. Patients cannot always be reached on phone. Equipment issues like signal availability, out of charge device, change of phone number can hamper access to patients. Subsequent phone calls to the same patient can be easily missed or delayed due to time constraints. It is always easy to document “patient not accessible” by the physician after an unsuccessful phone call [7].
4. Phone lines can be disruptive and clinical description may be incorrectly understood. Some patients may not be able to describe their condition on the phone as they would normally do in a F2F encounter. Their ability to communicate might be dependent more on use of non-verbal clues [7,8].

Table 1. Statistical comparison of Triage categories

	March – June 2019	March to June 2020	P-value	Percent difference 95%CI
CTAS 1	66 (0.3%)	33 (0.2%)	0.05	-0.1% (0.006-0.19)
CTAS 2	1,989 (8%)	1,579 (9%)	0.003	1% (0.5-1.5)
CTAS 3	9,949 (41%)	6,433 (37%)	<0.001	-4% (3-4.9)
CTAS 4	11,689 (48%)	8,060 (46%)	<0.001	-2 % (1-2.9)
CTAS 5	567 (2.3%)	1,339 (7.7%)	0.001	5.4% (4.9-5.8)
Total Patient Attendances	24,260	17,444		

Table 2. Mortality rate

	March – June 2019	March to June 2020	P- value	Perc Difference, 95%CI
Number of Deaths	20 (0.08%)	28 (0.16%)	0.016	0.08% (0.13-0.15)

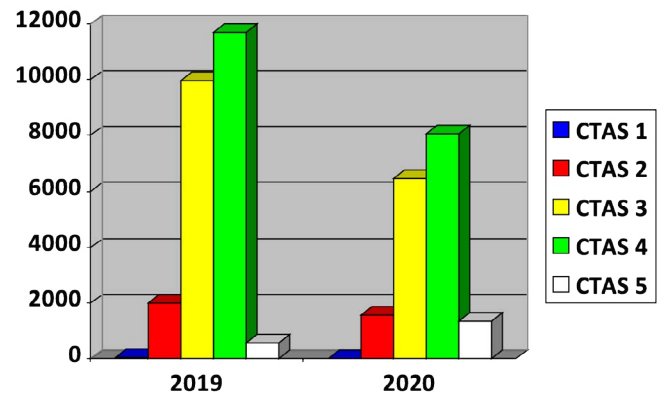


Figure 1. Comparison of Triage categories

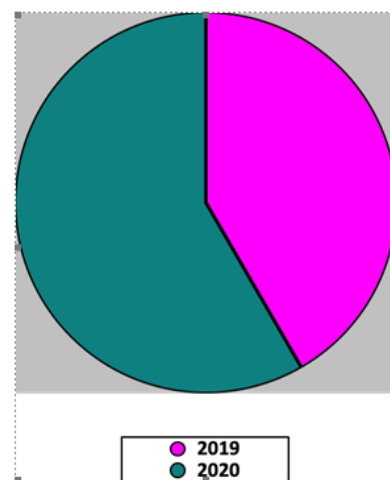


Figure 2. Mortality rate between the two years

5. Physicians may not be phone savvy to either extract the right information or deliver holistic advice. Lack of training will impede patient assessment in a virtual environment [8].
6. Documentation generated as a result of a VC encounter can be challenged medico-legally, unless a record of the phone conversation is kept, which unfortunately is not a current practice [9].
7. The patients on long term treatments (e.g oncology & post transplant) develop a personalised relationship with their treating physicians. A huge psychological component of getting advice from their trusted physicians is completely lost during VC. In addition to scheduled F2F encounters, patients also get deprived of the “walk in clinics” for assessments at shorter notice [10,11].
8. Patient experience of compassion, empathy and F2F counselling with caring physicians is completely negated.
9. Breaking bad news in a controlled clinical F2F environment is gone in a virtual environment [12].
10. When F2F clinics are not operational, the patient feels compelled to stay at home and may not get help for their condition in a timely manner.

11. Clinicians can develop a postponement attitude. They may compromise on substandard care, till a right environment of F2F gets re-established
12. Phone calls can be delegated to the relatively junior physicians. In a F2F encounter, senior decision are mostly around to oversee the patient's condition and take quicker management decisions [13].

Discussion

VCs are a worldwide reality and are operational in various countries for a selected group of patients. Success of VCs have been through careful planning, staff training and detailed risk assessment, before their launch [3,4,5]. COVID-19 pandemic situation led to a sudden incorporation of VCs in KFSH&RC, which is not comparable with a planned establishment. The institutional operational strategy was reactive to the pandemic crisis, although carried out in the best interests of the patients, to maintain some form of patient contact [6,14]. Unfortunately the impact of this operation on the ED was not fully thought through, despite ED being the most affected with closure of clinical services in other areas of the health care institution [7,8].

Our study is novel in this aspect, as no previous study has directly assessed the impact of VCs on the ED attendance and related hospital mortality, especially in a pandemic situation. Our study has been done in a tertiary care center, where patient's disease complexity is not matchable to any non-tertiary care ED [10,11]. The patients' "follow up" patterns are also quite different due to their complex needs. They usually need more frequent & closer outpatient appointments, with regular incorporation of multidisciplinary teams, during their clinic attendance [5,8,13].

The above reasons explain increased proportions of ED CAT 2 patients during March-July 2020 period. The patients presented with advanced sickness and needed longer stay in ED, consultation with other specialities and had increased likelihood of getting admitted. These patients had at least two missed F2F appointments in their specialised clinics. Majority of these CAT 2 patients' sickness was attributed to worsening of the actual disease or superimposed infection, due to their immunosuppressed status (cancer therapy or post transplant therapy). The Covid-19 was not the working diagnosis in majority of the ED CAT 2 on presentation in the study period of 2020, although we did not have the final diagnosis on these patients.

KFSH&RC patients were also less likely to attend a non specialised local facility in their area of residence. They would prefer to wait and get seen in KFSH&RC, even it means a longer wait for their scheduled F2F encounter. This patient practice leads to a significant number of patients getting admitted from the scheduled F2F clinics, due to clinical deterioration. VCs could have a significant impact on these patients [13,14].

The CTAS category 5 patients increased possibly due to the increased predilection of the staff and patients to get tested for the COVID-19, which was readily accessible within ED. This corroborated with the increased number of COVID-19 tests utilised in the same period.

Whilst the ED patient acuity had increased significantly in our research period, the overall attendance of patients in ED was far less compared to a similar period a year before. Patient "fear factor" due to risk of acquiring COVID-19 from hospital and government led awareness campaigns (to avoid crowding and unnecessary travel) could have also contributed to lesser ED visits [1,2,3].

Our centre is a tertiary care facility and a significant percentage of patients attend our facility from outside the city. Limited availability of air/land travel could have also barred them from attending.

The increased hospital mortality during the second study period of 2020 could be directly related to the increased severity of illness presenting within ED but a detailed root causes analysis of those patients was not accessible to us.

Outcomes

VCs are not a substitute for F2F clinical encounters for a specialised group of patients in a tertiary care facility. They can be a compromise in challenging circumstances, like a COVID-19 pandemic. VCs can have a significant impact on increasing ED clinical acuity and may have an impact on mortality. More research will be needed in this area to establish direct relationship between VCs and hospital mortality.

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