ORIGINAL ARTICLE

OVERVIEW OF COVID-19 SCENARIO DURING DIFFERENT SURGES EXPERIENCED AT HOLY FAMILY HOSPITAL RAWALPINDI

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ABSTRACT

Background: Mortality data and infectivity ratio of infectious diseases are of paramount significance to the policy makers in order to limit the spread of infection. The present study is therefore aimed to determine and compare the COVID positivity ratio and mortality observed during 3 surges of COVID-19.

Materials & Methods: A cross-sectional hospital data-based research was carried out during June 2021 in order to analyze the COVID positivity ratio and deaths experienced during 3 waves of COVID-19 at Holy Family Hospital Rawalpindi. The data was gathered pertaining to the number of patients admitted with COVID-related symptoms, confirmed COVID-19 cases and fatalities. The data was analyzed by means of Microsoft Excel 2010.

Results: Majority (42.6%) of patients with COVID-related symptoms were admitted at Holy Family Hospital during the second wave. The highest mortality (32.6%) was quantified during 2nd surge than those determined during 1st surge (21.95%) and 3rd surge (7.95%) respectively. However, the maximum positivity ratio (16%) was perceived during 3rd surge of COVID.

Conclusion: COVID-19-associated mortality during 3rd surge was quite less despite the mounted COVID-19 positivity ratio.

Keywords: COVID-19 surges, Mortality, Positivity ratio

BACKGROUND

Novel coronavirus (SARS-CoV-2) has drastically struck the whole world and led to declaration of pandemic.[1] This virus is known to be much more infective than SARS virus due to the identification of a comparatively huge number of cases.[2] Rapid spread of this fatal virus and exportation to diverse global regions is primarily attributed to density and mobilization of population.[3] The manifold mutation of this virus contributes to its rapid and prompt person-to-person transmission. [4]

Approximately three-quarter deaths have been reported globally from this disease.[5] United States, India and Brazil constitute the top three countries that seemed to be massively devastated by this pandemic. Highest case fatality rate (CFR = 2.6%) is determined to be in Brazil followed by 1.7% and 1.2% in US and India respectively.[6] Despite the contraction of coronavirus infection by highest number of people worldwide, there are many asymptomatic cases.[7] The actual data pertinent to COVID infection is therefore indiscernible.

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However, determining the proportion of cases during various surges in current research can help us a great deal to determine the COVID-related infectivity among catchment population of Holy Family Hospital that not only constitutes one of the biggest teaching hospitals of Rawalpindi Medical University but also a huge public sector hospital located in Rawalpindi city catering maximum population of Rawalpindi district. The calculation of COVID-19 positivity can profoundly facilitate our public health administrators in perceiving the extent of COVID transmission among our population.[8] Moreover, overview of COVID surges can sufficiently assist our strategic planners in drawing a prospective plan to curtail this infection rationally.

MATERIAL AND METHODS

A cross-sectional hospital data-based study was done during June 2021 in order to explore the COVID positivity ratio and deaths experienced during 3 waves of COVID-19 at Holy Family Hospital Rawalpindi. Holy family hospital with the capacity to accommodate more than 1000 patients is a public-sector teaching hospital that is affiliated with Rawalpindi Medical University. It is equipped with adequate healthcare diagnostic and managerial facilities to cater to the population of Rawalpindi district and the surroundings.[9] The data was collected about the number of patients admitted with COVID-related symptoms, verified

COVID-19 cases and mortality. The data was analyzed by using Microsoft Excel 2010. Percent positivity of COVID-19 cases during each surge was calculated by this formula:

$$\text{Percent positivity during each surge} = \frac{\text{No. of positive COVID-19 tests during the surge}}{\text{Total No. of tests (positive \& negative) done during the surge}} \times 100$$

RESULTS

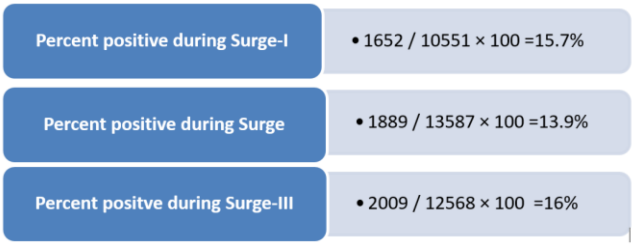
On delineating the data pertinent to three COVID-19 waves at Holy Family Hospital Rawalpindi, it became evident that highest number of patients with COVID-related symptoms got admitted during 2nd surge as illustrated below in Table-1.

Table-1: Patients with COVID-related symptoms attended at Holy Family Hospital Rawalpindi during 3 surges.

COVID-19 Waves	Period	No. of patients attended in OPD with COVID related symptoms
Surge-I	28 Feb 2020 – 30 Sep 2020	4935 (26.1%)
Surge-II	01 Oct 2020 – 31 Jan 2021	8043 (42.6%)
Surge-III	01 Feb 2021 – 21 May 2021	5924 (31.3%)
Total		**18902**

On an average COVID-19 positivity was determined to be 15.2%. Despite the detection of highest propensity of patients with COVID associated clinical presentations during 2nd wave as shown in Table-1, majority (15.7%) of percent positive was observed to be in Surge-I as shown below in Figure-1.

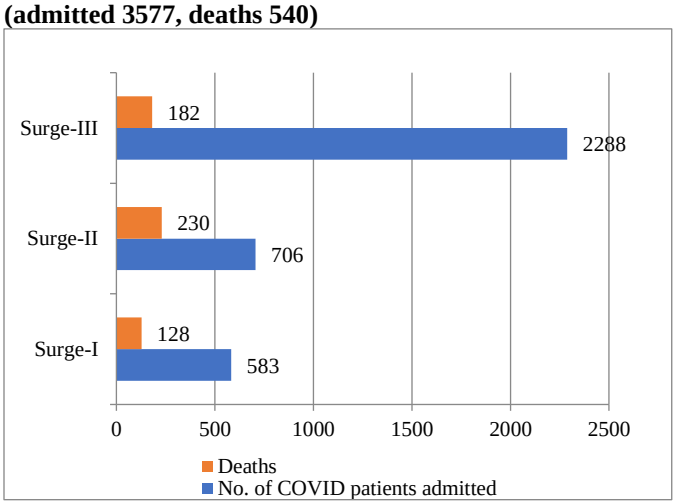
Figure-1: Percent positive during COVID-19 Surges.



***Numerator – Positive COVID-19 cases, Denominator-total tests done during specific surge period**

On comparing the 3 surges of COVID-19, maximum fatalities (32.6%) were reported during 2nd surge than those recorded during 1st surge (21.95%) and 3rd surge (7.95%) as depicted below in Figure-2.

Figure-2: COVID related admission and mortality during various surges at Holy Family Hospital Rawalpindi (admitted 3577, deaths 540)



***540 deaths are reported among confirmed COVID-19 cases**

DISCUSSION

COVID cases in Pakistan have also occurred in significant magnitude although comparatively declined than those of western countries.[10] Upsurge of COVID-19 was anticipated in Pakistan since reporting of first COVID case on 25th February due to scarcity of healthcare resources.[11] Even World Health Organization intimated the Pakistani Government on 23rd April 2020 about the threat of escalating COVID-19 associated mortality and morbidity without countrywide implementation of preventive measures.[12] The relatively diminished incidence in Pakistan is predominantly attributed to lockdown imposition carried out periodically to restrict public gatherings for religious festivals. Apart from lockdown obligations amid COVID pandemic, even nine days rigorous shutdown was observed in Pakistan particularly at diverse travel and tourist sites with prime goal to curtail coronavirus infection in our community.[13]

COVID-19 positivity ratio as computed from Holy Family Hospital during all the 3 surges was 15.2% with highest positivity (16%) during the 3rd surge till 21st May 2021. National Command on Operation Center (NCOC) reported 4.5% country wide COVID-19 positivity ratio during 2nd Surge. This ratio was determined to be the highest (16.59%) in Hyderabad and about 4.63% in Rawalpindi city.[14] In our study, the positivity ratio during 2nd surge (Figure-1) was 13.9%. This raised ratio is suggestive of higher COVID- associated morbidity in Rawalpindi city due to increased No. of positive test

reports. COVID-19 positivity in Pakistan during the 3rd surge was observed to be 5.25% which revealed a quite an alarming scenario. Strict compliance to precautionary measures was enforced by the concerned authorities in order to combat the dissemination of infection.[15] After receiving half a million doses of Sinopharm vaccine from China, Pakistani government made arrangements for vaccination of frontline warriors followed by elder citizens (above 65 years of age) due to their higher vulnerability to infection.[16] In our study, 3rd surge data till 21st May 202i is presented. The high positivity ratio during 3rd wave of COVID might be attributed to the fact that COVID-19 vaccination was a trial and its efficacy is to be verified in future. However, non-adherence to precautionary measures in Pakistan was due to consideration of COVID-19 as an arbitrary bug.[17] A study by Urban R et al among Hungry community also revealed non-compliance to preventive strategies among 18-29 aged people due to their carefree attitude.[18] Contrary to other global nations, Pakistan health authorities received huge applaud from WHO on continuation of routine healthcare activities with strict observance of SOPs which resulted in relatively meager COVID-19 positivity ratio.[19] The declined COVID positivity at national level is also attributed to positive attitude of the public towards COVID vaccination.[20] However, qualitative research should be envisioned to determine the reasons for diminished COVID cases.

Of the total 3577 COVID-19 patients hospitalized at Holy Family Hospital Rawalpindi 540 (15.1%) deaths were reported till 21st May 2021. The highest propensity of deaths (230) was observed during 2nd wave of COVID. Likewise, a cohort study done among Indus Hospital Karachi hospitalized 171 COVID-19 patients illustrated 39% mortality.[21] A similar study carried out among 800 hospitalized COVID-19 patients in Mexico illustrated about 241 (30.1%) fatalities from February – June 2020.[22] Countries reported to have low life expectancy and high prevalence of non-communicable diseases are determined to have confrontation with grave COVID associated health consequences primarily in term of mortality.[23] No doubt dwellers of Pakistan are also more prone to silent epidemics like hypertension and diabetes due to their stagnant life style and intake of unhealthy diet[24]; however observance of social distancing, adequacy of knowledge pertinent to symptoms of COVID-19 and receptive behavior of our people towards preventive measures rendered to safeguard them[25]. There is dire need to plan further studies based on focused group discussions to scrutinize the attributes of less COVID-19 associated mortality and morbidity in Pakistan.

CONCLUSION & RECOMMENDATAIONS

Reduced COVID-19 related mortality with raised COVID-19 positivity ratio was determined during 3rd surge of COVID. Strict adherence to precautionary measures against COVID can be of great help to limit the COVID linked cases and deaths.

AUTHOR CONTRIBUTION

Shazia Zeb: Conception of study & data collection
Rizwana Shahid: Data analysis & manuscript writing
Muhammad Mujeeb Khan: Discussion
Muhammad Umar: Critical review

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