Original Article

DOI: http://doi.org/10.4038/jmj.v33i1.118

Impact of Non–Coronavirus -2019 (Non–COVID-19) Respiratory disease Hospital Admissions: A Single Centre experience.

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Abstract

Hospital admissions due to non-coronavirus disease 2019 (nonCOVID-19) respiratory diseases decreased in Teaching Hospital Jaffna following social distancing, other public health measures (face mask wearing) and due to lock down implemented by authorities in 2020.

Keywords

Social distancing; lock down; respiratory illness: hospital admissions, Northern Sri Lanka

Introduction

Impact of COVID -19 pandemic in year 2020 are many including economic deprivation and disturbance in routine health care of other ailments. Lock down and social distancing was implemented in many regions throughout the globe in 2020 to limit the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The novel coronavirus was first identified in Wuhan, China in December 2019 and since then it has spread globally resulting in an on-going pandemic in 2020. On 12th March 2020 World Health Organization (WHO) declared covid-19 as a global pandemic and a public health emergency of international concern and called all the communities to participate cooperatively to prevent further spreading (1, 2). Sri Lanka was not an exception and the first imported case of the COVID-19 was identified on 27 January 2020, and in March 10 the first Sri Lankan national confirmed for COVID-19 positive (3). Preventive strategies have been adopted to combat the COVID-19 transmission in Sri Lanka including closing of the public places and establishing quarantine centres. In addition, until May 2020, Sri Lankan government imposed strict lockdown and public were encouraged to stay indoors and work from home. This caused several impacts on routine health care including accessing for critical care. For example number of coronary angiograms and percutaneous coronary interventions at Teaching Hospital Jaffna showed significant drop (4).

Few researchers in different part of the world observed a reduction in hospital admissions due to non COVID-19 respiratory illness such as asthma, COPD exacerbation after implementing social distancing in their respective regions (5-7). Similarly, analysis of routine surveillance system in Australia showed drop in Flu cases by 99% due to physical distancing and good hand hygiene (8). This is the first report from Sri Lanka attempting to explore pattern of non COVID -19 related respiratory diseases hospital admissions observed in our region.

Methods

Data was extracted from the hospital records (which were collected routinely for audit) with the permission of the Director Teaching hospital, Jaffna for the period of March –September in 2019 and 2020. We compared the monthly admissions in 2019 and 2020 by using Figures and tables. In addition to routine statistics (mean and median), Chi squared test and Extended Mantel-Haenszel test were used in appropriate places and $P< 0.05$ was considered as statistically significant. As no data collection involved with subjects ethical clearance is was not applicable for this report.

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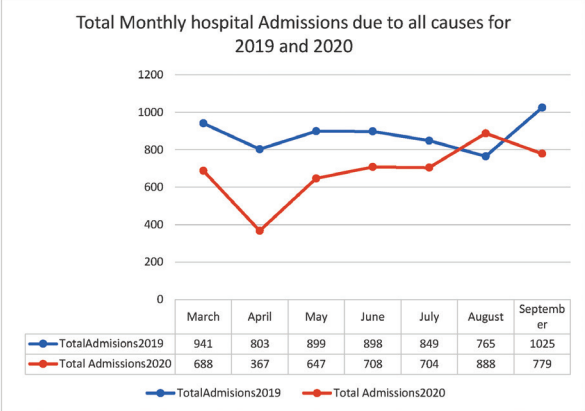
Submitted: January 2021 Accepted June 2021

Results

Monthly total hospital admissions (number and pattern) due to non COVID-19 related respiratory diseases to professorial unit (medical) in 2019 and in 2020 compared in the Figure 1 for the study period (March –September). As shown in the figure monthly admission in 2020 is less than 2019 for most of the months except August.

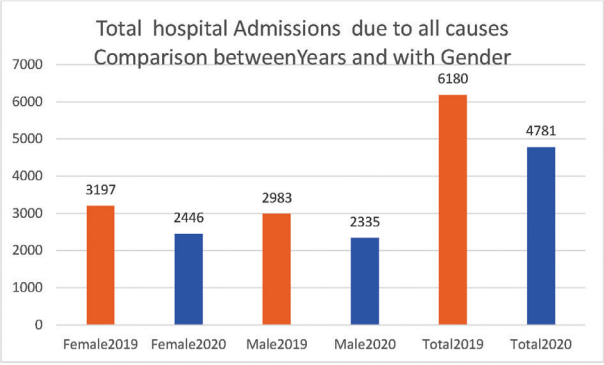
Figure 1: Total Monthly hospital Admissions due to all causes for 2019 and 2020



Total hospital admissions for the study period (March to September) in 2020 reduced to 4781 from 6180 in 2019 as showed in Table 1. Median for monthly admissions for in 2019 was 898 but for year 2020 was 779.Thies result is statistically significant (P-0.021).

Figure 2 Influence of gender on total monthly admission compared in

Figure 2. Total hospital Admissions due to all causes Comparison betweenYears and with Gender



When comparing gender differences on total hospital admissions we noted In 2019 females among the total admissions was 3197(51.73%) and males were 2983(48.27%),in 2020 females were 2446(51.6%) and males were 2335 (48.83%) but this observation is not statistically significant (Chi Sq^2-0351,P=0.839).

With limited data available different respiratory conditions were separated and compared of the year 2019 and 2020 (Table 1 and Table2).

Table 1 Comparison of total hospital admissions due to respiratory conditions (non-Covid-19) in Professorial ward in teaching hospital Jaffna during study Period March- September in 2019 and 2020

	Hospital Admissions due to respiratory conditions	**Total Hospital admissions**
2019	306(4.95%)	6180
2020	201(4.2%)	4781
Statistics	Pearson's chi-square with Yates's correction = 2.728 P = 0.09	

Total number of admissions due to respiratory conditions reduced from 306 (4.95%) in 2019 to 201 (4.2%) (P=0.09).Number of admissions for Bronchial Asthma (BA) and COPD (Chronic Obstructive Pulmonary Disease) in 2019 and in 2020 were 100, 55 and 81, 44 respectively. Non-specified respiratory infections reduced from 64.18% (95%CI: 58.6-69.3) in 2019 to 30.84% (95%CI: 24.5-37.7) in 2020 when considering the repertory diseases.

Figure 3 showed the gender differences on different respiratory conditions between year 2019 and 2020.Among males significant reduction noted in total respiratory admissions from year 2019 to 2020(225 to 112) and non-specified respiratory tract infections 48% in 2019 to 30.36% in2020 ($X^2$8.83,P=0.003).

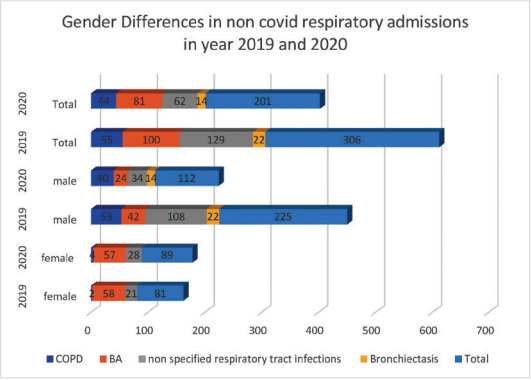
Table 2: Comparison of Chronic Lung Diseases between Year 2019 and 2020 with Gender

Disease	2019			2020		
	Male	Female	Total	Male	Female	Total
COPD	53(96.36%)	2(3.64%)	55(17.97%)	40(90.9%)	4(9.1%)	44(21.89%)
BA	42(42%) 58(58%)		100(32.68%)	24(29.63%)	57(70.37%)	81(40.2%)
non specified respiratory tract infections	108(83.7%)	21(16.28%)	129(64.18%)	34(54.84%)	28(45.16%)	62(30.84%)
Bronchiectasis	22(100%)	0	22 (7.19%)	14 (100%)	0	14(6.96%)
Total Respiratory disease	225	81	306	112	89	201

Discussion:

The COVID -19 pandemic highlighted the reality of lock downs of regions, mandatory quarantine and social isolation globally. The negative impact of this not only limited economy and disturbance in critical health (4) care but also significantly associated several psychological effects such as suicides, anger, acute stress disorders, PTSD (post traumatic disorders) and depression (9).But impact of COVID -19 pandemic on non covid related respiratory illnesses hospital admissions showed an interesting aspect of COVID-19 pandemic preventions measures such physical distancing and lock downs.

Figure 3. Gender Differences in non covid respiratory admissions in year 2019 and 2020



We noted significant reduction among males in total respiratory admissions from year 2019 to 2020 (225 to 112) and non-specified respiratory tract infections 48% in 2019 to 30.36% in 2020 ($X^2$8.83,P=0.003). Izquierdo et al., reported that a lower percentage of patients with concurrent asthma and COVID-19, compared to other chronic diseases we also noticed a similar finding. (10). Small increase in number of admissions noted in August 2020 which corresponds with date of reopening lockdown cities due the economic constrains. When considering bronchial asthma exacerbations, admission reduced from the 100 in 2019 to 81 in 2020 and similarly COPD exacerbation admission reduced from 55 in 2019 to 44 in 2020. Above findings are in par with other studies reported in other parts of the world (7, 11-14). even though our study failed to show statistical significant due to small number. Possible explanation for observed reductions could be patient altered health behaviour due to COVID -19 Pandemic, making them less likely to seeking treatment but we feel alternative explanation as a reduction in rates of common circulating respiratory viruses (RVI) infections most possible explanation because of the fact that a significant reduction in non-specified respiratory infections from 64.18% in 2019 to 30.84% in 2020 and it was previously postulated in other study as well (15). Irrespective of the economic status and geographical location of the country community based public health measures adopted to prevent transmission of SARS-CoV-2, face masking and social distancing, could reduce community transmission of common RVI potentially decreasing asthma exacerbations and hence reducing hospitalizations and related economic burden.

Limitations

As no organized data collection involved in the study it is not possible to exclude confounding effect of other factors and also in our region

laboratory diagnosis respiratory viruses are not routinely carried our except for COVID-19 as a result exact diagnosis of respiratory infection is not possible.

Conflict of interest: Nil

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