



Frequency of COVID-19 in Children and Adults in City of Lahore Pakistan

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Abstract: Background and objectives: Coronavirus (COVID-19) is pandemic, has affected almost every country around the world. A retrospective multi-centered study was carried out to determine the frequency of COVID-19 in children and adults in Lahore, Pakistan from March 2020 to May 15 2020. The study was included 574 corona positive (PCR-positive) patients of all age groups including 147 children. Record of the patients who visited emergency with symptoms of Corona like fever, sore throat, and respiratory distress and those admitted in hospitals due to corona illness was analyzed. Travelling history was recorded and frequency determined using SPSS ver 21. Data of study showed that 54% middle aged patients were found to suffer with Corona virus followed by children and 23% old age group. The patients belong to middle / low socioeconomic status. 26 patients had international travel history while 49 travelled domestically. Study concluded that the incidence of coronavirus disease was more in middle age men followed by children and old age group. However, it is found that the incidence of virus observed in children with better recovery than other age groups. In most of the cases, the course of disease is mild to moderate with less mortality rate.

Keywords: COVID-19, Age, Gender, Adult, Children

1. Introduction

Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The coronavirus disease is pandemic, first reported in China, quickly spread to various countries, with many cases having been reported worldwide including Pakistan [1].

However, in the earlier days of the pandemic, Pakistan lacked the ability to diagnose COVID-19 directly due to the lack of facilities, poor infrastructure and therefore the country had to rely on other countries and there is a delay via government to give proper response the issue [2]. According to WHO after the epidemic of virus in Italy, US, Iran, the

Pakistan may be upcoming country to observe the rise in transmission of COVID-19 and deaths [3].

It is proposed that receptor for COVID-19 in human may be the receptor of angiotensin-converting enzyme or ACE2 similar to SARS-CoV. As nucleocapsid protein or N protein of COVID-19 has sequence homology with protein of SARS-CoV. The N protein related antibodies of SARS-CoV may annoy to react with COVID-19 without providing cross-immunity and may suppress the interference of RNA to defeat the host defense [4].

Factors associated with COVID -19 are age, gender, history of travelling from countries infected with virus, local transmission and lack of immunity [5].

The patients are usually hospitalized due to problem created by coronavirus and if problem is severe the death may result especially of the young and middle aged people. However, old age people especially men with COVID-19 may be at risk of development of disease severity due to comorbidity like diabetes, hypertension, which raises in adult age under 40 years and men with age more than 60 years [6]. The mortality rate is different in different age groups i.e. 0.0016% for children with age under ten and 7.8% in individual with age greater than 79 years [7].

Immune system has an important role in increase the susceptibility of virus as well as helps to protect the people and is mainly related with age. With increasing age the immune system progressively deprive of its resiliency and are more at risk of development of infection including COVID-19 [8]. It is probable that earlier exposure to coronaviruses may produce an immune related memory, which may react excessively to COVID-19 especially in old age individual who have past exposure to other type of coronaviruses [9].

Gender is another risk of factor of COVID 19. Males are at more risk of getting infection than women. According to a study 64% of the COVID 19 patients were middle age. Out of 400 patients, the effected males were 70% and female were 30% [10].

However it is found that developing countries have mild to moderate infection with COVID 19 in comparison with developed countries. The reason may be the type of nutrition used by people of developing countries as well as uses of BCG vaccine proposing that people may form antibodies which may protect them from severity [11]. However, it is found that though in Asian countries like Pakistan, India and Bangladesh, the population is more with less medical facilities in comparison with Europe. The numbers of patients in countries of Asia are less and reason may be proper lockdown and the presence of mild form of COVID-19 [12].

The purpose of this retrospective study was to find the

frequency of COVID 19 in children and adults in city of Lahore Pakistan with strategies to proper deal with the outbreak of COVID-19.

2. Material and Methods

The study was included 427 corona positive patients including adolescents, young, middle age and old age group. 147 children with age range 2-13 were also included in the study. All cases were admitted in local hospitals of Lahore. Many of them visited hospital with fever and respiratory distress. Some patients who were referred from other hospital have chest pain only. Their details were noted from data sheets of hospital.

3. Statistical Analysis

Data was scrutinized by SPSS 21. Data was summarize and simplify of corona positive patients including children, adolescents, young, middle and old age was displayed as percentage frequency. It was structured as table / graph.

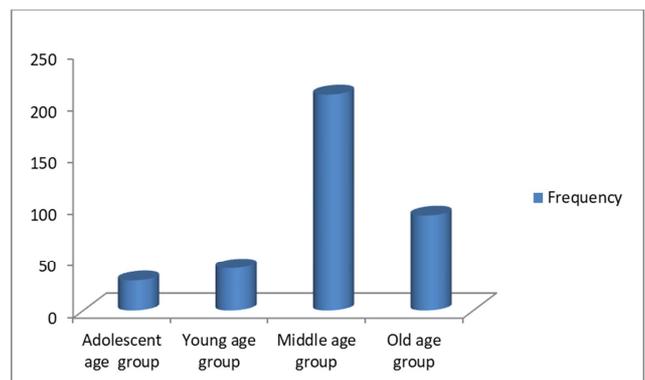


Figure 1. Frequency of COVID-19 with different age groups.

Table 1. Demographics of patients.

Socioeconomic class	B and C class
Sign and symptoms	Fever / sore throat respiratory distress
History of Traveling	Refereed patients come with chest pain
Within country	45 cases
From Saudi Arabia	18 cases
Iran / Dubai	08
History of contact or local transmission	95%
Local transmission in duty doctors / Nurse	0.5 to 1.0%
Severity of COVID-19	Mild to moderate
Data of visit of patients	From 11.4.2020 to 10.5.2020
Stay of patients in ward	14-15 days
Patients release after COVID-19	After repeating test with the duration of 7 days. If not negative then patients stay for 18-20 days
Mode of treatment	Symptomatic

Table 2. Frequency and percentages of COVID-19 with different age groups.

Age group	Frequency	Percentages
Adolescent age group	30	7.0%
Young age group	69	16%
Middle age group	230	54%
Old age group	98	23%

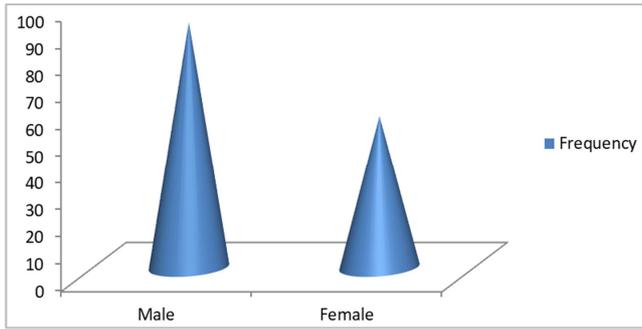


Figure 2. Frequency of COVID-19 in children based on gender with age 3-13 years.

Table 3. Frequency and percentages of COVID-19 based on gender in 147 children with age 3-13 years.

Gender	Frequency	Percentages
Male	91	62%
Female	56	38%

4. Results

Demographics of patients are given in table 1. Most of the patients belong to C and B class with fever, sore throat, respiratory distress, and some referred patients have chest pain. History of traveling was reported by 45 cases. 18 cases have travelling history from Saudi Arabia and 08 cases from Iran and Dubai. History of contact of local transmission is therefore 95%. Local transmission in duty doctors / nurses is only 0.5 to 1.0%. Severity of COVID-19 is mild to moderate. Stay of most of the patients in wards is 14-15 days and these were release after confirmation of Corona negative. Mode of treatment is symptomatic. Disease may be cure by increasing the working system of immunity.

Frequency and percentages of COVID-19 with different age groups (all were males) is tabulated and figured as table 2 and figure 1. Highest frequency and percentages was observed in middle age group with 230 frequency and 54 percentages. Next suffered group was old age group with 98 frequency and 23 percentages. Old age group was followed by young age group with 69 frequency and 16 percentages. On the other hand in adolescents the frequency and percentages were 30 and 07% respectively.

Frequency and percentages of COVID-19 based on gender in 147 children with age 3-13 years is tabulated as table and figured as figure 2. In children we found that both sexes were corona positive. However, the frequency and percentages of male was 91 and 62% and in female 56 and 38% respectively.

5. Discussion

In our study subjects the severity of corona virus was mild to moderate. According to a study passive immunization, take part the administration of antibodies from a COVID-19 of healed patient to a person who has no immunity. This may help to produce immune response of low quality. However this prevented action in seen in some cases only [13].

We found that some medical staff is corona positive due to lack of appropriate equipment, and this creates an issue for the protection of medical experts. A study reported that about 18 medical workers were quarantined due to corona. Study stated that the job of medical workers in transmission of corona is complicated, though most of the infected health workers have no symptoms [14].

We agreed with a study who reported that infection from Coronavirus is reached all over the world due to local transmission mainly via hospital and crowded places [12, 15]. According to a Pakistani study, the un-cooperative behavior by the public may be a reason of speedy transmission of the infection across the kingdom [16].

We observed that stay of most of the patients in wards is 14-15 days and these were released after confirmation of Corona negative. A study reported that the usual time between a person infected with corona and was dying in 17-18 days, while many patients recover from the infection was longer and patient may discharge in about 23 days [17].

We agreed with a study that male infected with COVID 19 have high fatality rate as compared to females. A study reported that due to multiple reasons like response of immune system, sex hormones and genetic factors men are more likely get infection of COVID 19 and it may be more severe than women [18]. Another study reported that due to the presence of X chromosome women have a powerful immune system and give late response to infection as compare to men [19].

Our study is inline with a study who found that the reason of COVID-19 positive in children is the transmission of virus via their family. The sign and symptoms in children are mild to moderate with good prognosis as compared to adult [20]. It is proposed that old age people who are vaccinated by BCG may have a pool of monocytes and has less risk of developing infection from COVID 19. Study also proposed that BCG vaccinated children have less risk of development of infection of COVID 19 [21].

According to our study male children were more infected with COVID 19 than female children. A study reported that in babies' disparity of gender for COVID-19 may not be due to different immune response but it may be related with specificity of virus [22].

We observed that middle age / old age male adults are more corona positive than others. It is proposed that Corona virus use ACE2 protein and enter into the cells. It is found that gene related to ACE2 in human is related with different expression of ACE2 and may be link with COVID-19 infection. The level of ACE2 is higher in male and raised with age [23]. A study demonstrated that the aptitude of the immune system to act against COVID-19 reduce with time and age and therefore old people are more at risk of severity of disease [24].

6. Conclusion

The incidence of coronavirus disease was more in middle

age men followed with old age group. The incidence of virus was also observed in children with better recovery than other age groups. In most of the cases, the course of disease is mild to moderate with rare mortality.

There is a need to fight at official level against the deadly disease and prevents the transmission of the virus. Otherwiselimited health care amenitiesmay results severe outbreak.

7. Limitation of Study

We are incapable to adjust for the effect on forecast of fundamental health conditions due to a lack of patient level data.

Author's Contribution

Rukhshan Khurshid -----wrote the paper and data analysis

Anila Jaleel-----Study supervision

Farrukh Javaid----Data collection

Waqas Shabbir----Data collection

Abeera Mazhar Siddiqui Study concept and design

Kiran Namooos -----Proof reading and interpretation

Owais Bin Khalid -----Proof reading and check plagiarism

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