

## STUDY ON SAMPLE COLLECTION OF COVID-19

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## ABSTRACT

Covid-19 is a new virus disease caused by novel corona virus. First human infection was found in Wuhan, China in December 2019. It becomes pandemic globally, having a very special management protocol as it is highly infectious. Currently real-time PCR based technique is used as a confirmatory diagnostic tool for diagnosis of the disease. We collected samples from nasopharynx and oropharynx from 220 people with personal protection guidelines by WHO. The study result revealed that RT-PCR positivity is significantly associated with swab taken from nasopharynx than from oropharynx ( $p < .001$ ).

**KEYWORDS:** Corona virus, covid-19 disease, oropharyngeal and nasopharyngeal swabs.

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an illness caused by a novel coronavirus called Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2)<sup>[1,2]</sup> It was first identified as an outbreak of respiratory illness in Wuhan city of Hubei province, China, which was later declared as a global pandemic by WHO on March 11, 2020. COVID-19 can affect any age group. Comorbidities like hypertension, diabetes mellitus, cardiovascular disease, chronic kidney disease.<sup>[3,4]</sup> Respiratory manifestations can account of more risk known so far through different studies.<sup>[5]</sup>

The virus spreads respiratory droplets. It becomes infectious when comes to contact with mucous membrane. The disease is clinically manifested by respiratory illness presenting as a flu like illness accompanied by fever, cough, throat irritation, dyspnea, diarrhea, myalgia, generalized weakness, headache, anosmia, tastelessness.<sup>[5]</sup>

Currently real-time PCR based technique is used as a confirmatory diagnostic tool for diagnosis of the disease. Respiratory swab from upper respiratory tract,

nasopharynx, and lower respiratory tract specimen such as sputum, bronchial lavages are preferred for detection of the virus.

We conducted this study to observe the results of sample collection from nasopharynx and oropharynx in COVID-19. Requirements for ethical aspects are different from country to country. In many nations study will be done under public health surveillance in emergency/pandemic situation. There is no need to have ethical approval from any Institutional Review Board.<sup>[1]</sup>

## MATERIALS AND METHODS

- Aims and objective: To see the result of sample collection from nasopharynx and oropharynx in covid-19 disease.
- Type of study: Comparative cross-sectional study.
- Study period: April 2020 – May 2020
- Place of study: Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh.
- Sampling: Oropharyngeal and Nasopharyngeal samples were taken depending upon availability of kits with proper personal protection guided by WHO.

- Inclusion criteria: Cases provided samples for covid-19 RT-PCR test was included with their consent to be inclusion in the study.
- Data analysis: Data collection and analysis were done.

Male: Female ratio = 2.4:1. Male is more than female, as male are going out for work.

## RESULTS

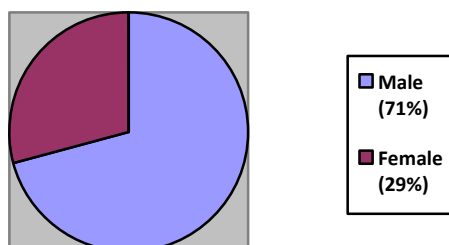


Figure 1: Sex distribution, n=220.

Table I: Age Distribution: n=220.

Age in years	Total number	Percentage
0 - 10	3	1%
11 - 20	8	3%
21 - 30	33	15%
31 - 40	38	17%
41 - 50	61	28%
>51	77	35%

Highest number of cases were above 51 years. Highest age was 95 year and lowest age was 3.5 years.

Table II: Test result: n=220.

Total	Number 220	Percentage
Positive	164	74%
Negative	56	26%

74% test were positive and 26% negative among 220 patients.

Table III: Distribution by RT-PCR test results from site of swab collection: n=220.

Site of swab collection	Result positive	Result Negative	Total
Nasopharynx	134	16	150
Oropharynx	30	40	70
Total	164	56	220

Nasopharyngeal swab results are highly significant.  $X^2 = 53.1$ ,  $df = 1$ ,  $p (.001)$ .

Table IV: Predisposing factor: n=220.

Factors	Number	Percentage
Smoking	142	65%
Tobacco products	15	07%
Nonsmoker	78	35%

Among 220 cases 142(65%) are smoker. Smoking is a predisposing factor to have corona virus infection. Co-morbid conditions are hypertension 83 (37%), bronchial asthma 50 (23%), diabetes mellites 65 (30%).

## DISCUSSION

Since its a new disease caused by a novel corona virus never seen before no relevant articles regarding sample collection of COVID-19 was found. Hence, ours one might be the first study from Bangladesh on study of sample collection of COVID-19. The study was conducted in order to see the various parameters between

sample collection of COVID-19 based on various age groups, sex, site of sample collection, co-morbidities and predisposing factors.<sup>[1,3]</sup> With proper personal protection guided by WHO and others, sample for RT PCR for COVID-19 was taken from 220 cases within the time period April 2020 - May 2020.

Personal protective equipment (PPE) includes standard gloves, gown, N95 or equivalent mask, head cap, goggles etc.<sup>[4]</sup> All the cases either were in contact of COVID-19 affected patient or had sign symptoms of the disease. They were divided in six age groups among which the highest number of cases to be tested was from age group >51 year with the 77 number of them 70 were positive cases. Second highest participants were from age group 41 – 50 years age group. Highest age was 95 year and lowest age was 3.5 years. Among total number of cases, 71% was male and 29% was female with a ratio of 2.4:1. Among the affected Male is more than female, as male goes out for work and also depend on their life style.<sup>[6,7]</sup>

After RT PCR, among 220 cases, 74% of cases was revealed positive where 26% revealed negative. Sample was collected from nasopharynx and oropharynx depending upon supply of kits where 59% sample was collected from nasopharynx and 41% was from oropharynx. Sample from nasopharynx revealed 134 (84%) positive. Sample from nasopharynx is significant in result reliabilities as virus load is more in nasopharynx.

Smoking shows predisposing factor, among 220 cases 142, (65%) were smoker. In smokers, 80% test result for RT-PCR for covid-19 was positive. Co-morbidities are hypertension was 83 (37%), bronchial asthma 50 (23%), diabetes mellites 65 (30%). This is a short-term study, more series with high sample size will be needed for further conclusion.

## CONCLUSION

Frequency of positivity of RT-PCR in swab taken from nasopharynx is significantly higher than those taken from oropharynx. So, it is recommended from this study that for RT-PCR testing swab from nasopharyngeal should be taken.

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