



## A Survey on the Perceived Impact of the COVID 19 Pandemic on Dental Undergraduate Students in the North Gujarat Region, India

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### ABSTRACT:

**Aim:** This study aimed to assess and compare the perceived impact of covid 19 pandemic on dental undergraduate students in the north Gujarat region.

**Objective:** To assess & compare the percentage difference in impact of covid 19 on dental undergraduate students based on their academic year.

**Material and method:** This questionnaire study utilized a validated 28 questions survey. The questionnaire distributed to 200 dental undergraduate students. The questions were divided into categories : demographic and academic information, study career, knowledge about covid 19 infection, risk perception and psychological reactions. The survey was administered through online google form and all the responses kept confidential. The impact of covid 19 on students were recorded.

**Result:** The questionnaire was completed by 160 students (80%). Responses were from all the academic years in which majority of respondents were interns. Most of the students experienced difficulties in clinical training during and post COVID-19 emergency due to lack of patients' OPD and reduced training hours. For over half of them online teaching could replace traditional face-to-face lessons. The negative impact on the study career was particularly high by interns. The level of concern of contracting COVID-19 during clinical activities were higher among students. Most of the students showed symptoms related to high to moderate levels of fear and anxiety.

**Conclusion:** The data showed that the students perceived the COVID-19 pandemic as a negative impact on their study career and their future practice with higher impact on interns compared to other years. Most of the students showed high to moderate levels of fear and anxiety related to effect of pandemic on their study career. This data could help universities to implement communication modalities to reduce students' fear and anxiety.

**KEY WORDS:** Anxiety, COVID-19, Coronavirus, Dental undergraduate students, Risk perception

### INTRODUCTION

COVID-19 (SARS-CoV-2) is a contagious disease caused by a newly discovered Coronavirus. This virus is originated in Wuhan, a major city in China's Hubei province, in December 2019 [1]. Strain of the virus that causes COVID-19 was initially called as 2019-nCoV and, later, experts of the International Committee on Taxonomy of Viruses (ICTV) called it as SARS-CoV-2 ( Severe acute respiratory syndrome coronavirus 2) [2].

The World Health Organization (WHO) declared this COVID 19 outbreak a pandemic public health emergency on March 11, 2020 as its outbreak spread rapidly all across the world affecting many major countries[3]. Direct transmission through droplets releasing through cough or sneeze or exhalation and contact transmission through contact with contaminated surfaces are the common route for human to human transmission of COVID 19 [4].

The main symptoms are represented by fever, dry cough, shortness of breath, myalgia[5] but also anosmia, ageusia, headache and, in few cases, diarrhea have been reported[6].



The incubation period of COVID-19 has been estimated to be 1–14 days [7] [8]; it has been reported that even asymptomatic people can spread the virus[9], and, in this way, they may be fueling the spread.

Dental professionals are at high risk of transmission because of aerosols droplets production during the majority of dental therapies, frequent exposure to saliva, and blood[10]. Aerosols droplets are smaller in size and they are seen in the air for a longer period of time before they get settled on an environmental surface of the dental set up or enters through inhalation in the respiratory tract[4].

Globally, as of 20 September 2022, there have been 609,848,852 confirmed cases of COVID-19, including 6,507,002 deaths, reported to WHO. As of 12 September 2022, a total of 12,613,484,608 vaccine doses have been administered[11].

In India, from 3 January 2020 to 20 September 2022, there have been 44,543,089 confirmed cases of COVID-19 with 528,370 deaths, reported to WHO. As of 12 September 2022, a total of 2,156,706,574 vaccine doses have been administered[11].

Another most important aspect of COVID 19 pandemic is the psychological impact on students' mental health, effect on their academics and their future. As their major time were spent in quarantine or distant education, undoubtedly students are suffering from anxiety at different levels[12] [13] [14].

On the other hand, many factors influences the general preparedness of dental students, such as; training model; methods of teaching, curriculum scheme and the overall environment of education. Although, with the fact that the current lack of adequate undergraduate training might due to quarantine, post-quarantine situation, distant education and lack of clinical exposure reflect on the confidence of the students and their overall preparedness for future endeavors.

Therefore, it was very important to gain some insight on the impact of COVID-19 on perceptions and psychological state of dental undergraduate students. The purpose of this study was to investigate the perceived impact of the COVID-19 pandemic on emotions, concerns of the students, and impact on their careers the following the spread of the epidemics and the restrictive measures introduced by the Indian government during quarantine and lack of clinical skills development post-quarantine, along with the their level of awareness, the level of concern of being infected during their teaching and training activities and their knowledge of infection during clinical practice for dental practitioners and patients[15]. Our study was mainly focused on the dental undergraduate students enrolled in the Sankalchand Patel University, Visnagar, North Gujarat.

## AIM OF THE STUDY

The aim of this questionnaire study is to assess and compare the perceived impact of covid 19 pandemic on dental undergraduate students in the north Gujarat region.

## OBJECTIVES OF THE STUDY

The main objective of this questionnaire study is to assess & compare the percentage difference in impact of covid 19 on dental undergraduate students based on their academic year of under graduation.

## MATERIALS AND METHODS

**Inclusion criteria:** Undergraduate students enrolled in Bachelor of Dental Surgery at the Sankalchand Patel University in the North gujarat Region, who are older than 18 years of age.

**Exclusion criteria:** Undergraduate students studying a non-dental course, students of unrelated courses and training centres courses that are not designated as universities.

## Data Collection

The sample population consisted of the undergraduate students studying the Bachelor of Dental Surgery course in the Sankalchand Patel University of North gujarat region. The total number of students participated in this study was 160.

The questionnaire was formed using the free-access Google Forms service and the direct link to the online questionnaire was sent through WhatsApp and Email to all dental undergraduate students from all academic years. This questionnaire study utilized a validated 28 questions survey. The questionnaire distributed to 200 dental undergraduate students. The questions were divided into categories :



demographic and academic information, study career, knowledge about covid 19 infection, risk perception and psychological reactions. The survey approximately took 3-5 minutes to fill the form completely.

The first category demographic and academic information included questions about their age, sex and their academic years. The second category study career included questions on their opinion on distant learning vs traditional learning, difficulties in study due to pandemic, impact of COVID 19 on their study and future career. The third category included their knowledge about COVID 19 infection, (e.g, how infection occurs?).

The forth category included questions on their level of concern on contracting COVID 19 infection by them or by their family members and their risk perception on normal daily activities and clinical training activities, their opinion on dentist or patient contracting covid 19 during dental treatment and their knowledge on preventing covid 19 infection during daily as well as clinical activities. The fifth category included questions on psychological reactions regarding their emotions and feelings during COVID 19 pandemic.

### Ethical considerations

This questionnaire survey was anonymous. Responders received the direct link to the google form by WhatsApp and Email and accessed it directly by clicking on the given link. At the beginning of the survey participants were informed that their participation was voluntary, their responses were kept anonymous and confidential. They were asked if they are willing to participate in the study before starting the online survey.

### Statistical Analysis

Data analysis was done using the SPSS version 20.0 statistical software. Statistical analysis was performed using Chi Square test, Fisher's Exact test and One way ANOVA with statistical significance defined as  $p < 0.05$  and comparison was done according to academic years of sample population.

## RESULTS

### Demographic and academic information

A total sample population of 160 undergraduate students' responses to the online questionnaire were taken. Out of 160 students, 29 (18.2%) were studying in 1<sup>st</sup> year, 30 (18.7%) in 2<sup>nd</sup> year, 30 (18.7%) in 3<sup>rd</sup> year, 30 (18.7%) in 4<sup>th</sup> year and 41 (25.6%) in internship (Table 1). They were composed of 51 (31.9%) male and 109 (68.1%) female students. Age ranged from 18 to 24 years

**Table 1 :** Academic year wise distribution

Study year	Number	Percentages
1 <sup>st</sup> year	29	18.2
2 <sup>nd</sup> year	30	18.7
3 <sup>rd</sup> year	30	18.7
4 <sup>th</sup> year	30	18.7
Interns	41	25.6
Total	160	100

### Study career

Majority of the interns (92.7%) completed the preclinical/clinical training hours which was more than students of other academic years. Statistically significant difference was observed among students of all the study years.

Majority of the 3<sup>rd</sup> year (70%) encountered lack of patient OPD as a major difficulties they were facing. Statistically, significant difference was observed among students of all the study years.



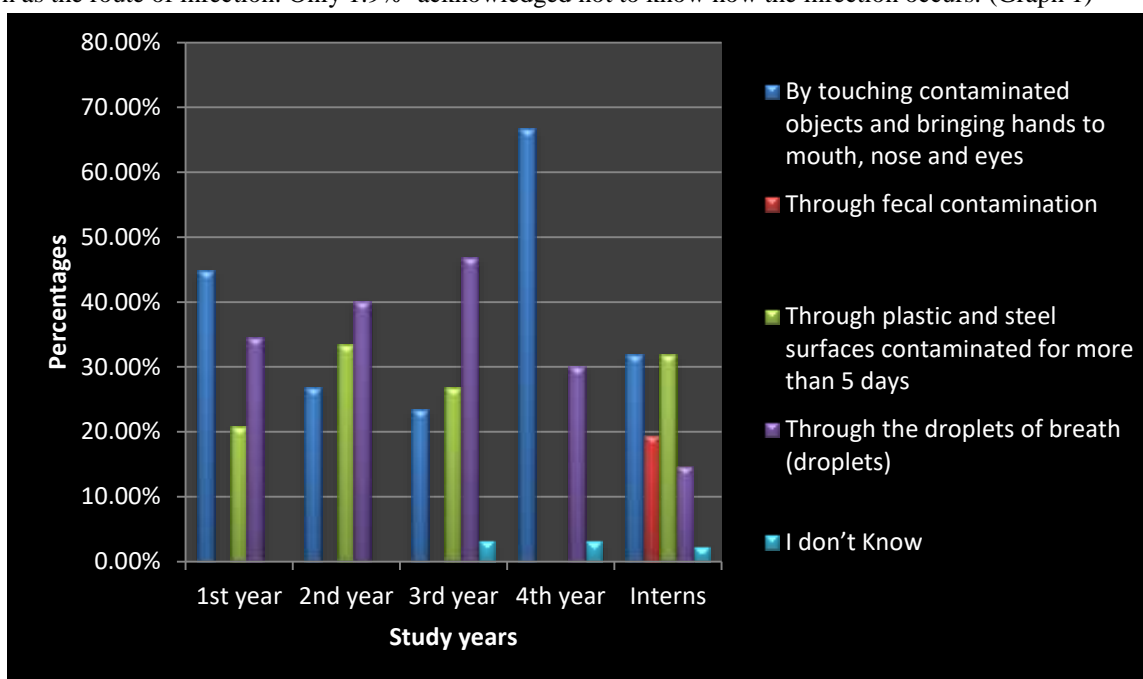
Half of respondents' were reluctant to believe that distance learning lessons represent a valid substitute for traditional face-to-face lessons. While the rest believed it to be valid substitute as they were more concerned for face- to-face lessons exposed to the risk of contracting COVID-19.

Interns ( $3.34 \pm 1.40$ ) were having a most negative impact on study career due to COVID-19 emergency than students of other years. Interns ( $3.44 \pm 1.28$ ) replied that COVID-19 emergency had a negative impact on how they would be trained for their future career. Statistically, significant difference was observed among students of all the study years.

Most of the 4<sup>th</sup> year students (53.3%) replied that COVID-19 emergency changed very worsen for their future career which was more than students of other years. Statistically, significant difference was observed among students of all the study years.

### Knowledge about covid 19 infection

38.1 % of the students selected option for the route of COVID-19 transmission was by touching contaminated objects and bringing hands to mouth, nose and eyes while 31.9 % of students selected the option through the droplets of breath (droplets) and 23.1 % of students thought contaminated plastic and steel surfaces for more than 5 days could transmit the infection. Only 5% selected faecal contamination as the route of infection. Only 1.9% acknowledged not to know how the infection occurs. (Graph 1)

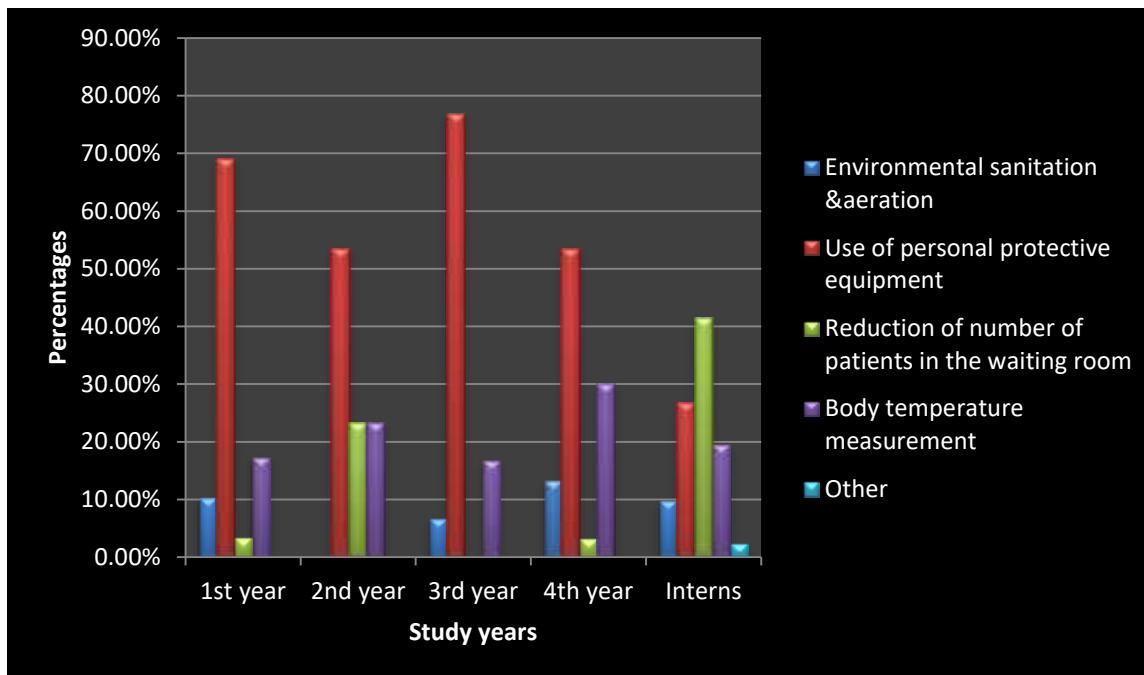


Graph 1 : Participants' Knowledge on how covid 19 infection occurs

### Risk perception

46.2 % of the students suffered from COVID-19 while 53.8 % of the students didnt contract the infection. Majority of the students (68.8 %) knew someone who contracted COVID-19.

Majority of the students (53.8%) replied that use of personal protective equipment was best method to prevent COVID-19 infection during clinical activities, followed by body temperature measurement(21.2), Reduction of number of patients in the waiting room (16.2 %), Environmental sanitation & aeration (8.1%) (Graph 2)



**Graph 2 :** Opinion on various measure to prevent COVID 19 infection during clinical activities

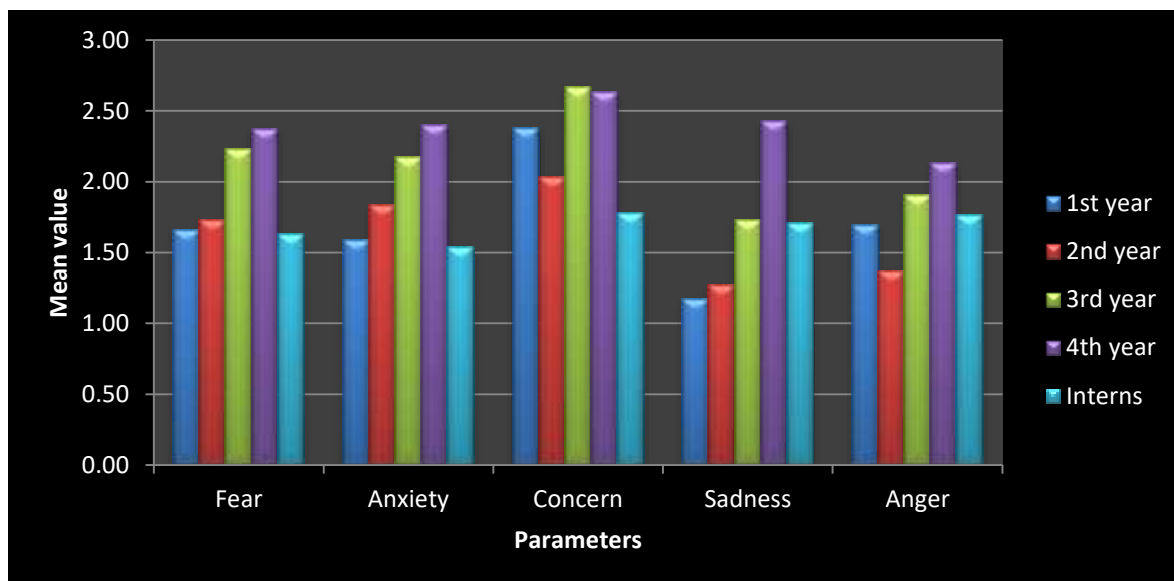
Most students (66.2%) replied that use of Gloves, N95 mask, protective glasses/face shield, disposable cap were necessary during necessary during aerosol generating procedures.

Interns ( $3.29 \pm 1.36$ ) were more worried of contracting COVID-19 during daily activities as well as during clinical training activities than students of other years. Statistically, significant difference was observed among students of all the study years. Majority of students were worried for their family members contracting COVID-19.

Interns ( $3.73 \pm 1.26$ ) were more worried that a dentist or patient could contract COVID-19 during a dental service than students of other years. Statistically, significant difference was observed among students of all the study years.

**Psychological reactions**

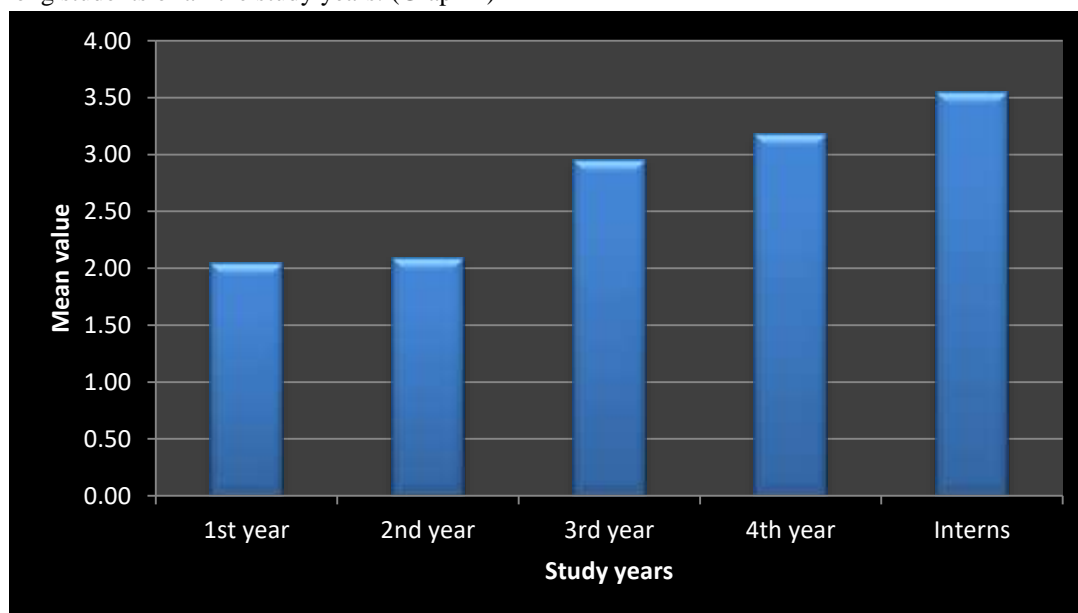
Final year students were having a more fear ( $2.37 \pm 0.99$ ), anxiety ( $2.40 \pm 0.85$ ), sadness ( $2.43 \pm 1.07$ ) and anger ( $2.13 \pm 1.07$ ) than students of other years while 3<sup>rd</sup> year students were having a more concern ( $2.67 \pm 1.15$ ) than students of other years. Result was statistically significant among students of all the study years for above mentioned parameters. (Graph 3)



**Graph 3 :** On question “Which of the following emotions do you feel when thinking about COVID-19?”

Interns were being more nervous and/or anxious ( $2.12 \pm 0.87$ ), unable to stop to worrying ( $2.17 \pm 0.86$ ), too much worried for various things ( $2.17 \pm 0.89$ ), difficulties in relaxing ( $2.27 \pm 0.92$ ), agitated and unable to stay still ( $2.15 \pm 0.85$ ) and having fear that something terrible could happen ( $2.07 \pm 0.93$ ) than students of other years. Result was statistically significant among students of all the study years for above mentioned parameters.

Interns ( $3.55 \pm 0.46$ ) were having a most negative impact for COVID 19 than students of other years. Statistically, significant difference was observed among students of all the study years. (Graph 4)



**Graph 4 :** Overall impact of COVID 19 on all academic years students



## DISCUSSION

Only a little has been published that specifically interests on the perceived impact of the COVID-19 pandemic on dental undergraduate students[12] [16] [17] [18]. This study's results gives an insight on the impact of COVID-19 on dental undergraduate students enrolled in Sankalchand Patel University of the north gujarat region.

The undergraduate students of the Bachelor of Dental Surgery Degree of the Sankalchand Patel University of the north gujarat region were involved in the online questionnaire survey. The questionnaire survey was sent to 160 students through Email and WhatsApp and the response rate was 100%.

The survey was prepared after reviewing various literature about the psychological reaction associated with stress and anxiety among dental professionals[16] [17] [18] [19] [20] [21].

The survey included questions on demographic and academic information, study career, knowledge about covid 19 infection, risk perception and psychological reactions which approximately took 3-5 minutes to fill the form completely.

The first category demographic and academic information included questions about their age, sex and their academic years. Responses were recorded from all the academic years in which majority of respondents were doing their internship probably because they were more curious about the evolution of the pandemic considering their upcoming graduation.

The second category included questions on their study and future career. The suspension of dental colleges and reduced hours of clinical training has created a shift to a virtual learning with possibility of students to be unable to complete their clinical training before completion of their academic year[18].

During the lockdown many of the dental colleges were shut or continued to ensure only dental emergencies. Post-lockdown 3<sup>rd</sup> year students mostly faced difficulties in lack of clinical activity due to lack of patient OPD as they entered preclinical to clinical area. While 1<sup>st</sup> and 2<sup>nd</sup> year students faced difficulty in completing pre-clinical work due to reduced hours and lack of access to labs. For this reason, most of the students who judged the impact will be negative for their future career was higher among interns and decreased from the interns to the first year.

In our study half of students didn't believe that distance learning lessons represent a valid substitute for traditional face-to-face lessons. While the others believed it to be valid substitute as they believed risk of contracting COVID-19 was with face- to-face lessons.

The third category included question about their knowledge about COVID 19 infection in our study. Only 1.9% acknowledged not to know how the infection occurs, instead most of them correctly knew the transmission routes. Majority of the students selected option for the route of COVID-19 transmission was by touching contaminated objects and bringing hands to mouth, nose and eyes and through the droplets of breath (droplets).

The forth category included questions on their level of concern and risk perception. Most of them were worried for themselves as well as their family members. Students considered clinical training activities elevated to higher risk of contracting COVID-19 infection; we found a statistically significant difference across all years of students, with interns perceiving clinical training activities more riskier compared to first-year students. As stated earlier, during internship students are mostly engaged in clinical activities and therefore they feel more engaged and perceive themselves as more exposed. As prevention measures most students replied the use of Gloves, N95 mask, protective glasses/face shield, disposable cap were necessary during necessary during clinical practice.

Previous studies on the previous outbreaks of similar infections such as the SARS (severe acute respiratory syndrome) showed that exposed healthcare workers experienced fear of contracting the infection while treating an infected patient and fear of infecting family members[22] [23] [24]. According to recent studies, the COVID-19 pandemic has caused anxiety and fear not only among the healthcare workers but also among the general population[25].

The fifth category included questions on psychological reactions regarding their emotions and feelings during COVID 19 pandemic. In China, Cao et al[26]. reported that 21.3% of the students were experiencing mild anxiety, while 2.7% of the students were reporting moderate anxiety, and only 0.9% showed severe anxiety. In our study final year students were having a more fear followed by anxiety, sadness and anger than students of other years while 3<sup>rd</sup> year students showed moderate concern. Result was statistically significant among students of all the study years for above mentioned parameters. Interns were being more nervous and/or anxious, unable to stop



to worrying, too much worried for various things and faced difficulties in relaxing compared to other years. Statistically significance among students of all the study years were found for above mentioned parameters.

## CONCLUSION

To conclude, undergraduate students perceived the COVID-19 pandemic as a negative impact on their study and their future career and on how they will be trained for the future practice with higher impact on interns compared to other years. The negative impact on the study and future career was particularly higher by interns and final year students because of the lack of clinical training activities as these are the prevailing activities during the last year. Interns, 4<sup>th</sup> and 3<sup>rd</sup> years perceiving clinical training activities more riskier compared to first and second year students. In our study students showed concern while thinking of COVID-19 and most of them showed symptoms related to high to moderate levels of fear and anxiety. According other studies[26] [27] student's fear and anxiety about COVID-19 might be related to the effect of the pandemic on their study and future career. Overall, Interns were having a most negative impact for COVID 19 than students of other years with statistical significant difference was found among students of all the study years. Also, the present results shows the need for universities to implement correct communication modalities for reducing students' anxiety about their study career.

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