

Impact on Dental Treatment Procedures in Dental OPD Attendance and Emergency Care of Non-COVID-19 Patients during COVID-19 Pandemic: A Study from Meghalaya, India

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ABSTRACT

Introduction: Dental emergency situations such as trauma of oral and maxillofacial region due to road traffic accident might require immediate intervention. But due to an outbreak of COVID-19 pandemic and a phase-I lockdown all the private dental clinics were temporarily closed the only hope for dental emergency patient's care was a Government run hospital dental set-up during this time of pandemic.

Aim: To find out the impact of COVID-19 pandemic on the dental OPD attendance and its emergencies in dental care to non-COVID-19 patient by comparing a three months data of recent past, pre and COVID-19 pandemic.

Materials and Methods: It's a comparative study where number of patients attending the daily dental OPD patient services comprising of new cases, follow-up cases, in-patient case services for three months from March 2020-May 2020

and also compare with the previous years' (2019 and 2018) of three months (March to May).

Results: The data shows that there was a tremendous decrease in total number of patients in the dental OPD services during this pandemic and phase-I lockdown. The statistical analysis of the data shows that the overall changes in flow of the patients during the pandemic were 39.35***, 33.52*** and 39.07*** for a new patient/week, follow-up patient/week and total no. of patient/week respectively with an ANOVA, where 'p' is significant at <0.01, <0.001.

Conclusion: The study shows that COVID-19 pandemic and phase-I lockdown had impacted overall patient flow in the daily routine dental OPD services within these three months (March to May) of 2020 as compared to three months (March to May) from the previous year of 2019 and 2018.

Keywords: Dental emergency, Dental surgery, Dental trauma

INTRODUCTION

The effects of COVID-19 pandemic was not only restricted to a health status of a nation rather the intensity of its impact was so much and it involves all course of directions irrespective of sectors which are inexpressible especially in terms of its loss to human race. It has been said that, the routes of transmission are direct contact, droplets and possible aerosol transmission [1]. Many observations have also reported that even asymptomatic patients in the incubation phase or healthy carriers can transmit the virus [2,3]. So an infection can be spread either from a COVID positive Dental Health Care Personnel (DHCP) or from patient itself during incubation periods if they remain asymptomatic. Some studies have also reported that the infected subjects, both with and without clinical signs of COVID-19, can transmit the virus. The common routes are through mouth, nose and eyes; dentistry is one such practice with high risk of infection due to the frequent production of aerosols and the presence of saliva [4]. More importantly most of the dental procedures involves a lot of aerosol generating instruments. These bioaerosols are commonly contaminated with bacteria, fungi and viruses, and have the potential to float in the air for a considerable amount of time and be inhaled by the dentist or patients [5,6]. Knowing the facts of the present situation, which are prevailing at this time, a non-COVID-19 individual who are very much in need of the dental emergency care and treatment are not willing to visit the dental OPD during this phase-I lockdown of the pandemic due to the fact that they might get infected unnecessarily by getting any form of dental treatment procedure. Moreover during this phase most of the private dental clinics were temporarily

closed thereby affecting the oral healthcare status of the people in total.

The objectives of the present study was to compare how COVID-19 pandemic and phase-I lockdown had impacted on the usual dental OPD attendance and its dental emergency care to non-COVID-19 patients by comparing a data of three months from March to May of year 2019 and 2018 to the same three months of the current year 2020. And how COVID-19 virus poses a risk to the DHCP during dental procedure and what was the strategic way of patient management during COVID-19 pandemic and phase-I lockdown.

MATERIALS AND METHODS

The present data of subjects for the comparative study were obtained from the daily dental OPD attendance register of our hospital; Department of Dentistry, NEIGRIHMS (Meghalaya) which was recorded on daily basis during normal working days from the month of March 2020-May 2020. There is no criteria for inclusion or exclusion of the subject, unlike interventional study. The present study also excluded patient consent form since the study does not involve any form of intervention to the subjects. All the subjects who had attended to dental OPD during the pandemic and phase-I lockdown were included, to seek a relief from any dental related pain of three months i.e., from (March 2020-May 2020). The current data of the subject's attendance was compared with the previous year of 2019 and 2018 of the same months from March to May which is considered to be a normal flow of patients in daily dental OPD services in normal days. The data does not include the management part of the previous year 2019 and 2018 since the present study

was to know how the COVID-19 pandemic and phase-I lockdown impacted non-COVID-19 dental patients and their emergency care during this pandemic.

Management Strategies of a Patient during Pandemic at Dental OPD

Since this district had already detected a few positive cases so each and every patient coming to the hospital was mandatory to screen for COVID-19 for the safety of entire staff working in the hospital. There is a system of initial screening facilities at the hospital which comprises of TEAM where an initial screening is done with the help of thermal scanner followed by proper history taken by COVID-19 management team outside the main OPD entrance before entering to the main OPD building or MRD section of the hospital. History includes cough, cold, fever or any travel history in past 14 days as shown in [Table/Fig-1]. During this pandemic the dental OPD patient hall was arranged in such a way that at least six feet distance was maintained from unaffected patients [7]. Since infection can occur as a result of close direct interpersonal proximity (distance less than 2 m and duration greater than 15 minutes or following contact with hands which have come into contact with contaminated surfaces or airborne particles [8]. The patient was not examined in the dental OPD room or in dental chair just to contain the spread of this contagious virus during this phase unless we were in need of air rotor for emergency cases of a patient. While examining, a distance was maintained between examiners and the patient as much as possible, but dental profession is such that it has to be examined from a close distance to get a clear view of the problem inside the oral cavity. But if the patient is having partial or complete trismus it becomes more difficult for the dentist to examine the patient properly. If patient does not need an immediate requirement as per his/her complaints, just do consultation and defer till things get normalised. If a patient had an acute case of pain with swelling which needs to be examined in the procedure room individual patient are allowed to enter the procedure room (in the case of minor patient) single companion for minor (especially mother) had to attend along with a patient in the procedure room [4]. Most importantly we never use dental chair in this time of crisis to avoid and prevent the contamination of the procedure room as well as dental chair. We had used the patient waiting area for consultation with the help of torch light as shown in the [Table/Fig-2a,b,c].

Pre-registration checklist for COVID-19, NEIGRIHMS, Shillong.

Date: 10/5/2020
 Patient Name: [Redacted]
 Age: 34
 Sex: M
 Address: [Redacted]
 Phone: 9793006
 Email: [Redacted]
 Mobile: 9863209700
 Occupation: [Redacted]

What Problem do you have?

A. Fever AND Cough
 B. Fever AND Shortness of breath
 C. Fever and any of the following
 D. Other Problem, I do not have fever, cough or Shortness of breath
 E. Do you have any other pre-existing condition (Tick below)
 Heart disease, high BP, kidney disease, lung disease, liver disease, diabetes, post transplant, immunosuppressant use.

C. Have You Travelled from anywhere in last 30 days? (Please Tick)

From Foreign country? No
 From State outside Meghalaya? No
 Inter district travel inside Meghalaya? No
 I have not travelled in last 30 days. Yes
 Did you have contact with any one of the following in last 30 days?
 Suspected/Confirmed COVID-19 cases? No
 Any patient who is quarantined? No
 Have you visited any hospital with COVID cases? (eg. Dohbah Hospital Shillong, GBCH, SBCH etc.) No

Handwritten notes:
 Closed from COVID-19 screening.
 Completed home Quarantine for weeks.
 Advised by Vijay.
 Attended Dental OPD

[Table/Fig-1]: Proforma to be filled by the patient.

Once the examination or consultation was done for each patient, the examination gloves were discarded and the hands were washed properly with soap. The torch light and face shield were scrubbed after every patient with alcohol-based hand sanitiser.



[Table/Fig-2]: Examination done in the patient waiting area.

STATISTICAL ANALYSIS

The present study aims at scrutinising the changes that COVID-19 pandemic has made in the patient flow in the hospital. The study argues that COVID-19 pandemic has substantial potential to reduce flow of various patients despite prolonged morbidity and will continue to do so. In order to do that, the study looked into the patient flow per week during three consecutive years which are recent past in the year 2018, immediate pre-COVID situation in 2019 and during the present COVID-19 pandemic. To analyse the data of the present study SPSS version 26.0 with Windows 10 was used.

RESULTS

The statistical value of the patient flow which represented with X1 for new patient/week, X2 for old patient/week and X3 for total no. patient/week with t-stat value of 8.25***, 4.58*** and 6.56*** for new patient/week, old patient/week and total no. of patient/week, respectively. For F-stat (ANOVA) with a value of 39.35***, 33.52*** and 39.07*** for new patient/week, old patient/week and total no. of patient/week respectively. Where 'p' is significant at <0.01 and <0.001.

Number of patient attendance at daily OPD services during phase-1 lockdown (March 2020-May 2020) are presented in [Table/Fig-3]. Number of patient attendance at the daily OPD services during March to May 2019 are presented in [Table/Fig-4]. Number of patient attendance at our daily OPD services during March to May 2018 are presented in [Table/Fig-5]. Data showing total numbers of patients attending dental OPD services during different years (2019 and 2018) from March to May including year 2020 is shown in [Table/Fig-6].

The data from [Table/Fig-3-5] represents three consecutive years from (2020 to 2018) of three months (March to May) of patient flow in dental OPD at the hospital NEIGRIHMS (Meghalaya). The [Table/Fig-6] shows a consistency in total number of patient flow/month during two consecutive year of 2019 and 2018 at the OPD which are represented with figure of 3383 and 3111 respectively during immediate pre-COVID-19 and recent past COVID-19 year of three months from March to May. But when the data was observed during COVID-19 situation of three months from (March 2020-May 2020), the total number of patient flow/month significantly decreased to 847, as compared to the year of immediate pre-COVID-19 (2019) and recent past COVID-19 (2018) of three months. So from the above data, we can also interpret that there is a profound impact of COVID-19 pandemic on the dental OPD patient flow at the hospital during the COVID-19 pandemic.

Changes in OPD patient flow: COVID-19 pandemic has revealed a sharp contrast in OPD patient flow during pre-COVID-19 and COVID-19 situation. During the two periods (recent past in 2018 and pre-COVID-19 in 2019) preceding onset of the COVID-19 pandemic, flow of total OPD patients continued to rise. However, there was an anomaly in the increase. Though follow-up OPD patient per week continued to rise during recent past and pre-COVID-19 period yet a significant fall in the number of new OPD

Months and year	Weeks	No. of OPD patients/week		Total no. of male and female patients/week		In-patients cases/week		Total no. of patients/week
		Total no. of new patients/week	Total no. of follow-up patients/week	Male	Female	Male	Female	
March-2020	1 st week	25	133	59	99	01	03	162
	2 nd week	24	155	65	114	00	05	184
	3 rd week	43	146	91	98	00	00	189
	4 th week	14	25	21	18	00	01	40
	Total no. of patients/week	106	459	236	329	01	09	575
April-2020	1 st week	10	13	17	06	00	00	23
	2 nd week	11	14	15	10	01	00	26
	3 rd week	19	10	14	15	00	00	29
	4 th week	10	07	11	06	00	00	17
	5 th week	05	06	05	06	01	00	12
	Total no. of patient/week	55	50	62	43	02	00	107
May-2020	1 st week	02	06	07	01	00	00	08
	2 nd week	25	13	16	22	00	00	38
	3 rd week	12	21	19	14	00	00	33
	4 th week	10	30	14	26	00	00	40
	5 th week	11	35	26	20	00	00	46
	Total no. of patients/week	60	105	82	83	00	00	165
Total no. of patients for 3 months		221	614	380	455	03	09	847

[Table/Fig-3]: Data shows no. of patient attendance at OPD per week of three months during pandemic and phase-I lockdown (2020). This data are of daily OPD services cases like: new patient, follow-up patient and in-patient cases of year 2020 from March to May.

Months and year	Weeks	No. of OPD patients/week		Total No. of male and female patients/week		In-patients cases/week		Total no. of patients/week
		Total no. of new patients/week	Total no. of follow-up patients/week	Male	Female	Male	Female	
March-2019	1 st week	65	206	141	130	03	01	275
	2 nd week	78	174	115	137	02	00	254
	3 rd week	54	118	98	114	04	00	246
	4 th week	76	199	125	150	05	00	280
	Total no. of patients/week	273	767	479	561	14	01	1055
April-2019	1 st week	49	215	118	146	01	01	266
	2 nd week	64	162	110	116	01	01	228
	3 rd week	41	160	99	102	00	00	201
	4 th week	62	235	150	147	02	01	300
	5 th week	35	68	52	51	00	03	106
	Total no. of patients/week	251	840	529	562	04	06	1,101
May-2019	1 st week	24	153	79	98	00	00	177
	2 nd week	57	183	121	119	00	00	240
	3 rd week	48	187	121	114	02	03	240
	4 th week	83	212	136	159	03	04	302
	5 th week	41	222	131	132	04	01	268
	Total no. of patients/week	253	957	588	622	09	08	1,227
Total no. of patients for 3 months		777	2,564	1596	1745	27	15	3383

[Table/Fig-4]: Data shows no. of patient attendance at daily OPD services per week of three months. This data are of daily OPD service cases like: new patient, follow-up patient and in-patient cases of year 2019 from March to May.

patients was seen. Follow-up patient as well as total number of OPD patient/week showed an increase in 46% and 14% during recent past (2018) and pre-COVID-19 (2019) period. However, there was a significant fall in new OPD patient/week (about 34%) during same year. Nevertheless, onset of COVID-19 pandemic led to significant decrease in both the follow-up OPD patient/week and new OPD patient/week affecting overall number of patient flow/week during the COVID-19 situation as shown in [Table/Fig-7,8]. The table shows the trend in patient flow over the periods of recent past in 2018, pre-COVID-19 in 2019 and COVID-19 in 2020.

The [Table/Fig-9] shows that, there is statistically significant difference in the amount of patient flow among different group of

patients with ANOVA (F-stat) and t-stat among different group of patients during the period of recent past and COVID-19 situation as shown in [Table/Fig-10], where N is the number of observations and p is significant at $**<0.05$, $***<0.01$.

[Table/Fig-11] shows that, even knowing the fact about COVID-19 is contagious still 847 patients [Table/Fig-3] had attended the dental OPD at the hospital during pandemic because of an inevitable circumstance for a patient to relieve a pain and swelling as much as possible. Out of 847 patients, 305 patients had come with a complaint of toothache due to dental caries or caries exposure of tooth. Extraction of one lower left deciduous central incisor tooth was done at dental OPD with proper precautionary measures.

Months and year	Weeks	No. of OPD patients/week		Total no. of male and female patients/week		In-patients cases/week		Total no. of patients/week
		Total no. of new patients/week	Total no. of follow-up patients/week	Male	Female	Male	Female	
March-2018	1 st week	20	32	26	26	01	01	54
	2 nd week	52	121	95	78	05	04	182
	3 rd week	95	119	107	107	04	04	222
	4 th week	101	175	135	141	11	13	300
	5 th week	47	99	67	79	06	06	158
	Total no. of patients/week	315	546	430	431	27	28	916
April-2018	1 st week	73	173	124	122	06	06	258
	2 nd week	100	141	111	130	04	09	254
	3 rd week	81	131	100	112	10	04	226
	4 th week	69	164	131	102	06	06	245
	Total no. of patients/week	323	609	466	466	26	24	982
May-2018	1 st week	90	135	115	110	06	04	235
	2 nd week	116	98	115	99	11	08	233
	3 rd week	114	140	110	144	11	04	269
	4 th week	120	126	112	134	10	12	268
	5 th week	93	101	94	100	07	07	208
	Total no. of patients/week	533	600	546	587	45	35	1213
Total no. of patients for 3 months		1171	1755	1442	1484	98	87	3111

[Table/Fig-5]: Data shows no. of patient attendance at daily OPD service per week of three months from March to May (2018). This data are of daily OPD service cases like: new patient, follow-up patient and in-patient cases of year (2018).

Months and year	OPD patient/months		No. of Male and Female patients/month		In-patients cases/month		Total No. of patients/month
	No. of new patients/month	No. of follow-up patients/month	Male	Female	Male	Female	
March-2020	106	459	236	329	01	09	575
April-2020	55	50	62	43	02	00	107
May-2020	60	105	82	83	00	00	165
Total no. of patients during pandemic and phase-I lockdown	221	614	380	455	03	09	847
March-2019	273	767	479	561	14	01	1055
April-2019	251	840	529	562	04	06	1,101
May-2019	253	957	588	622	09	08	1,227
Total no. of patients in 3 months	777	2,564	1596	1745	27	15	3383
March-2018	315	546	430	431	27	28	916
April-2018	323	609	466	466	26	24	982
May-2018	533	600	546	587	45	35	1213
Total no. of patients in 3 months	1171	1755	1442	1484	98	87	3111

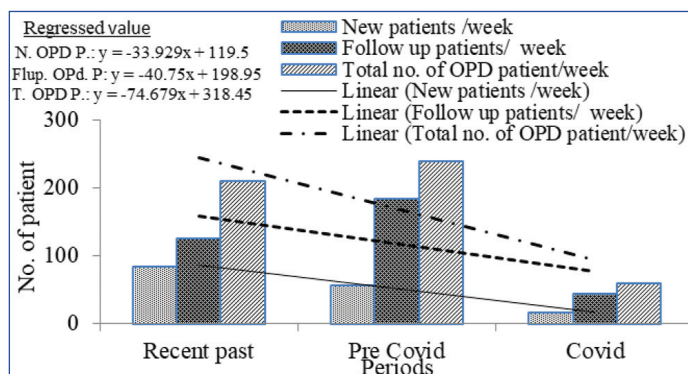
[Table/Fig-6]: Data shows total no. of patients attendance at daily dental OPD services during different year (2019 and 2018) from March to May including year 2020.

Patient flow	Growth rate (%)		
	Recent past and pre-COVID	Pre-COVID and COVID	Recent past and COVID
New patients/week	-33.65	-71.56	-81.13
Follow-up patients/week	46.10	-76.05	-65.01
Total no. of OPD patient/week	14.18	-75.01	-71.46

[Table/Fig-7]: Inflow of OPD patient per week over the periods of recent past, pre-COVID and COVID.

Recent past: 2018, Pre-COVID: 2019 and COVID: 2020

Grinding of one tooth was done tooth No.46 (Lower right first molar) at OPD as shown in [Table/Fig-6]. The patient had history of maxillofacial trauma along with fracture of tooth due to road traffic accident a week back and he was complaining of severe pain in tongue and not able to eat for almost a week. On oral examination, it was found that the tooth was severely fractured; only a portion of tooth was left with sharp edges in oral cavity. It was also found that there was ulcerated area in tongue on both side of lateral and dorsal surface too.



[Table/Fig-8]: Trend in patient flow over the periods of recent past in 2018, pre-COVID is 2019 and COVID in 2020.

Immediately, grinding was done so as to relieve the patient from the sharp edges of that particular tooth, besides that antibiotics and analgesic was also prescribed. And the rest of the patient's complaints are as shown in the [Table/Fig-12]. From this data, it can be concluded that due to the COVID-19 pandemic it had affected

Type of patient	Mean flow of patient			Std. Deviation			Difference			
							Recent past and Pre-COVID	Pre-COVID and COVID	Recent past and COVID	ANOVA: Over the periods
	a	b	c	a	b	c	t-stat	t-stat	t-stat	F stat
X1	84	56	16	29	17	11	3.14***	7.37***	8.25***	39.35***
X2	125	183	44	37	41	56	-3.91***	7.54***	4.58***	33.52***
X3	209	239	60	56	51	64	-1.46	8.17***	6.56***	39.07***

[Table/Fig-9]: Identifying changes in OPD patient flow of new patient/week, follow-up patient/week and total no. of OPD patient/week at the hospital over the period of recent past, pre-COVID and during COVID situation.

X1- New patients/week, X2- Follow-up patients/week, X3- Total no. of OPD patients/week; p is significant at **<0.01, ***<0.001

Where a=Recent past year is 2018, b=pre-COVID year is 2019, and c=COVID year is 2020

Type of patient	Groups	N	Mean	Std. Dev.	t-stat*
1. Total no. of OPD patient/week	New patients/week	42	52	34.45	-7.18***
	Follow-up patients/week	42	117	72.73	
2. Total Male and female OPD patient/week	Male patients/week	42	81	46.82	-2.43**
	Female patients/week	42	88	51.61	
3. Total in-patient and OPD patients/week	Male in-patients patients/week	41	3	3.59	0.81
	Female in-patients/week	41	3	3.41	

[Table/Fig-10]: Difference between flow of various group of patients (time independent).

Table does not estimate the differences in patient flow over the periods and thus impact of COVID pandemic on the flow of various patient groups cannot be traced in this table. It simply portrays whether there have any significant difference in the flow between the groups; *Paired t-test; p is significant at **<0.05, ***<0.01. And *t-stat is significant for total no. of OPD new patients/week at (-7.18***) and same for total no. of Male patient/week at (-2.43**); with *Paired t-test; where p is significant at **<0.05, ***<0.01 and N, is the number of observations. The table represent difference in-patient flow at dental OPD during three consecutive years of (2020, 2019 and 2018) with time independent

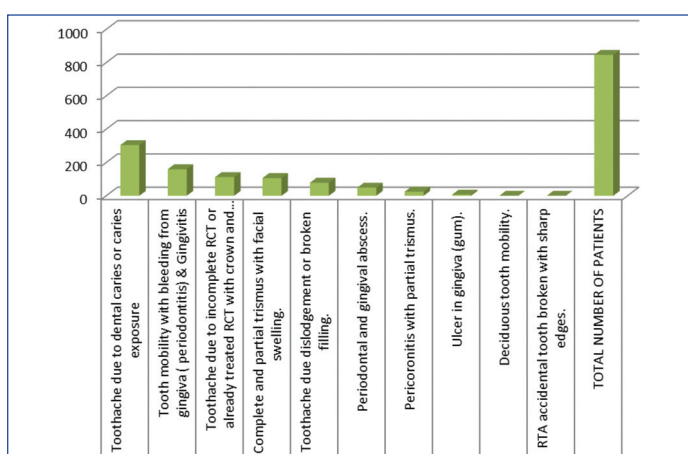
the normal routine dental services to a non-COVID-19 dental patient at the dental OPD as compared to the previous year (2019 and 2018) of three months. The data also suggests that there might be a lot of dental patients who want to visit dental OPD for their emergency care but were unable to access the dental OPD due to COVID-19 pandemic as well as phase-I lockdown.

As per the above data it also suggests that no matter what might be the situation, the DHCP are always at risk since even during the peak time of pandemic DHCP had to work in oral cavity while it remains open, where oral cavity is supposed to be one of the transmission route for acquisition of the COVID-19 virus [4]. So by the virtue of DHCP profession itself they have to work in close contact with patients as much as possible which increases the risk to them. Working in close interpersonal contact with the patient while doing the dental procedure increases the risk for disease acquisition [8]. Besides that DHCP have to work with aerosol generating dental equipments [1].

Type of patient	Mean flow of patient			Std. Deviation			Difference			
							Recent past and pre-COVID	Pre-COVID and COVID	Recent past and COVID	ANOVA: Over the periods
	a	b	c	a	b	c	t-stat	t-stat	t-stat	F stat
X ¹	84	56	16	29	17	11	3.14***	7.37***	8.25***	39.35***
X ²	125	183	44	37	41	56	-3.91***	7.54***	4.58***	33.52***
X ³	209	239	60	56	51	64	-1.46	8.17***	6.56***	39.07***
X ⁴	103	114	27	28	26	26	-1.08	8.96***	7.50***	44.84***
X ⁵	106	125	33	31	28	39	-1.67	7.13***	5.50***	30.32***
X ⁶	209	239	60	56	51	64	-1.46	8.17***	6.56***	39.07***
X ⁷	7	2	0	3	2	0	5.33***	3.69***	8.02***	40.64***
X ⁸	6	1	1	3	1	1	5.19***	0.93***	5.80***	26.50***
X ⁹	222	242	61	61	52	65	-0.91	8.12	6.81***	39.10***
N	14	14	14							

[Table/Fig-11]: T-stat and (F-stat) ANOVA test to identify the changes in patient flow at the hospital over the periods of recent past, pre-COVID and COVID situation among different group of patients.

X¹- New patients /week, X²- Follow-up patients/week, X³- Total no. of OPD patients/week, X⁴- Male patients/week, X⁵- Female patients/week, X⁶- Total male-female patients/week, X⁷- Male in-patients patients/week, X⁸- Female in-patients/week, X⁹- Total patients/week; Periods: a- Recent past, b- Pre-COVID, c- COVID; N is the number of observations; p is significant at **<0.05, ***<0.01



[Table/Fig-12]: Shows different type of patient complaints during COVID-19 pandemic and phase-I lockdown from (March 2020-May 2020).

DISCUSSION

The rampant spread of SARS-CoV-2 across the globe within different individuals will definitely unfurl this infectious disease at any point of time to DHCP through the COVID-19 infected individual by the virtue of their unique way in dealing with the patients as compared to other professions. Even in the phase of COVID-19 pandemic and phase-I lockdown, patients will keep on visiting the dental OPD which remain functional to get relief from the pain and other dental emergency issues. Even though it was pandemic, still 847 patients had attended Dental OPD during this pandemic and phase-I lockdown from March 2020-May 2020, which comprised of new cases, follow-up cases and in-patient cases. But when the data was compared of the total number of patients from each year of three months (March to May) of year 2019 and 2018, the overall total number of patients during pandemic year 2020 (March to May) had profoundly decreased in

the total number of patients inflow in our OPD during pandemic shown in [Table/Fig-6]. And when it comes to dental examination, intraoral examination is the only option with close contact with the patient as much as possible for proper view, unless patient developed a complete trismus of oral cavity.

Dental chair and the surrounding area of dental clinic must be taken into account as it acts as source of infection after aerosol instruments are used. Since some studies indicate that hand contact with contaminated surfaces may lead to pathogen acquisition and transfer to eyes, nose, or mouth and this could lead to SARS-CoV-2 infections, like several nosocomial pathogens [9]. There is report from the other study also [3] that the diseases can transmit during incubation periods while an infected patient remains asymptomatic. As per some studies the incubation period of this virus last up to 14 days [10]. But other studies say that the incubation period for SARS-CoV-2 range from 0-24 days [7]. This variation in an incubation period of the virus might insidiously infect susceptible individuals during an asymptomatic stage to DHCP, even to the patient and vice-versa while doing dental procedure. Other conditions like oral examination and closed contact between the patient and the dentist during procedures also poses maximum risk between the dental surgeon and a patient during asymptomatic/ incubation periods. But from the OPD data it has been found that, daily routine OPD dental patient and routine follow-up case had dropped tremendously but still even a single patient can act as a risk for a source of potential infection to other.

Present and the Future Implications for Dental Procedure

No one can predict when the crises of this pandemic will end; even there is no surety about the infectious nature and the future status of this present COVID-19. Keeping in mind the infectivity of SARS-CoV-2 and its contagious nature to health providers, strict protocol has to be maintained to contain the virus as much as possible even during any normal dental procedure.

It is known that, unless our body develops natural herd immunity or vaccination occurs it's always a risk to any form of profession where human contact is concerned especially healthcare workers. The only way we can keep the profession going is by taking special precautions and protecting ourselves by maintaining strict protocols during any dental procedure.

CONCLUSION(S)

The actual fact about the significant decrease in the overall numbers of patient flow at the OPD during this pandemic is not known but it might be the patient's mental perception that they will acquire SARS-CoV-2 infection just by attending the dental OPD during the pandemic. So just to avoid acquisition of COVID-19 infection during the pandemic they have to go through such a tremendous burden of toothache and their dental emergencies related pain without attending any dental OPD during this period. This study was only a part of one district of North-East India at the dental OPD, Department of Dentistry, NEIGRIHMS hospital (Meghalaya) but when the entire nation or whole world is taken into consideration, an enormous number of patients in urgent need of dental treatment would be impacted by the COVID-19 pandemic.

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Appendix I: Identifying Significant Changes in Patient Flow at the Hospital over the Periods of Recent Past, Pre-COVID and COVID Situation

Type of patient	Mean flow of patient			Std. Deviation			Diff. between recent past and pre-COVID		Diff. between pre-COVID and COVID		Diff. between recent past and COVID		ANOVA: Between the groups	
	a	b	c	a	b	c	t-stat	p-value	t-stat	p-value	t-stat	p-value	F stat	p-value
X ¹	84	56	16	29	17	11	3.14***	0.00	7.37***	0.00	8.25***	0.00	39.35***	0.00
X ²	125	183	44	37	41	56	-3.91***	0.00	7.54***	0.00	4.58***	0.00	33.52***	0.00
X ³	209	239	60	56	51	64	-1.46	0.16	8.17***	0.00	6.56***	0.00	39.07***	0.00
X ⁴	103	114	27	28	26	26	-1.08	0.29	8.96***	0.00	7.50***	0.00	44.84***	0.00
X ⁵	106	125	33	31	28	39	-1.67	0.11	7.13***	0.00	5.50***	0.00	30.32***	0.00
X ⁶	209	239	60	56	51	64	-1.46	0.16	8.17***	0.00	6.56***	0.00	39.07***	0.00
X ⁷	7	2	0	3	2	0	5.33***	0.00	3.69***	0.00	8.02***	0.00	40.64***	0.00
X ⁸	6	1	1	3	1	1	5.19***	0.00	0.93	0.36	5.80***	0.00	26.50***	0.00
X ⁹	222	242	61	61	52	65	-0.91	0.37	8.12***	0.00	6.81***	0.00	39.10***	0.00
N	14	14	14											

X¹- New patients/week, X²- Follow-up patients/week, X³- Total no. of OPD patient/week, X⁴- Male patients/ week, X⁵- Female patients/week, X⁶- Total male-female patient/week, X⁷- Male in-patients patients/week, X⁸- Female in-patients /week, X⁹- Total patients/week; Periods: a- Recent past, b- Pre-COVID, c- COVID; N is the number of observations; 'p' is significant at **<0.05, ***<0.01

Appendix II: Difference between Flows of Patient of Various Groups (Time Independent)

Type of patient	Groups	N	Mean	St. Deviation	t-stat*	p-value
Total no. of OPD patient/week	New patients/week	42	52	34.45	-7.18	0.00
	Follow-up patients/week	42	117	72.73		
Total male-female patient/week	Male patients/week	42	81	46.82	-2.43	0.02
	Female patients/week	42	88	51.61		
Total in and out patients/week	Male in-patients patients/week	41	3	3.59	0.81	0.42
	Female in-patients/week	41	3	3.41		

*Paired t-test; p is significant level