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Plastic Surgery

PARADIGM SHIFT IN BURN SCENARIO DURING COVID 19 PANDEMIC – A REPORT FROM A TERTIARY BURN CENTRE

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ABSTRACT The Covid 19 (Corona virus disease) pandemic has affected drastically our health Care practices and burn care worldwide. Though there is high risk of viral transmission, the goal of the health care system was to provide, safe and proper treatment to the patients and to ensure the safety of the healthcare professionals. Man power which was available during the COVID era had to be efficiently used. Aim of Our study is to analyze how COVID 19 affected the characteristics and outcome of burn injury patients. **Methodology:** This is a retrospective study conducted in the Department of Burns & plastic surgery in a tertiary burn care centre in Chennai, Tamil Nadu. Patient data were collected from Jan 2019 to February 2022. During the COVID 19 pandemic which had three different waves, burn scenario in the burn care Centre is analyzed and compared with non COVID or pre COVID year burn scenario (2019). First COVID wave in Tamil Nadu was from April 2020 to August 2020. Second COVID wave was between March 2021 and June 2021. Third wave was from November 2021 to February 2022. **Result:** During the first wave of COVID 19 infections a total of 345 patients (OP 84 & IP 261) attended our burns unit. There was a drastic reduction in both outpatient and inpatient numbers when comparing to the (38 % & 51 %) previous year (2019). During the Second Wave of COVID 19 pandemic (March 2021 to June 2021) analysis shows that there was reduction of (OP 54 % & IP 59 %) burns patients comparing pre COVID years .Third wave of pandemic which started from November 2021 there was a gradually increasing trend in burn census which was seen up to the end of February 2022 (OP-71 %-IP 64%) Reduction in burns patients was seen during the first wave due to lock down enforcement of strict stay at home orders , with no public transport , the patients who were with higher TBSA, deep burns, inhalational burns with co morbidities were only admitted. All minor burn injury patients reporting with less TBSA involvement were treated as outpatient. **Conclusion:**Our study showed a gross reduction in the number of both inpatients and outpatients during the COVID 19 pandemic.

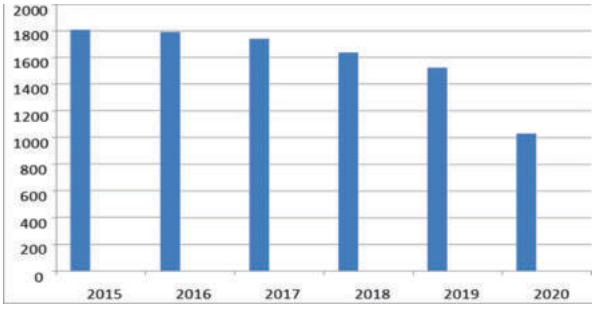
KEYWORDS : COVID 19, Burn injury during pandemic

INTRODUCTION:

Burn injuries are acute and is an emergency which needs uninterrupted care at all times even during COVID 19 pandemic where lock down and stay at home orders were enforced 2,3. Though COVID -19 has changed the life style 1 wearing mask shield, use of sanitizers, social distancing and work from home pattern for all departments other than medical fraternity, the healthcare system had to function with a new strategies like less outpatient service, no elective surgeries and limited admissions. Only higher degree burns or complicated burn cases were given admission as health care workers were diverted to COVID 19 care and general measures to avoid COVID 19 or SARS CO V cross infection had to be ensured. [6]

Total number of Burns Cases

Years	Total No of Burns admission
2015	1806
2016	1790
2017	1731
2018	1633
2019	1522
2020	1027
2021	985



METHODOLOGY

It is a retrospective study conducted in a tertiary burn care center in Chennai –Tamil Nadu , Data taken from March 2020 to February 2022 was compared to 2019 Jan to Dec2019. Comparison were done between COVID pandemic burn ward statistics of pre COVID census of 2019. Due to COVID 19 pandemic burn injury with higher percentage of involvement, burn of moderate and severe degree ,inhalation burns and burns with complicated injuries like trauma, electrical ,chemical and blast injures were admitted and treated .Other burn victims with less TBSA ,superficial, mixed degree burns were treated as Out Patients.

First wave of COVID pandemic was from April 2020 to August 2020. Second wave was in March 21 to June 21 and the third wave was from November 2021 to February 2022. The outcome are compared between patients before and during pandemic and at the time of lock down.

OBSERVATIONS:

Our study shows that there is reduction in total number of burn patients attending outpatient clinic and admissions during the COVID pandemic waves. More reduction was noticed during the first wave due to strict rules, lockdown or stay at home order or due to fear of viral transmission. Minimal increase in number of burn patients was noted during second and third wave period when compared to first wave period but was less than the pre COVID time.

Distribution Of Burn Patients Census Comparison

First wave: April 2020 to August 2020

Year 2020	OP	IP	Year 2019	OP	IP
April 2020	36	43	April 2019	58	137
May 2020	21	45	May 2019	53	152
June 2020	19	71	June 2019	49	127
July 2020	23	66	July 2019	58	113
August 2020	21	79	Aug 2019	60	120

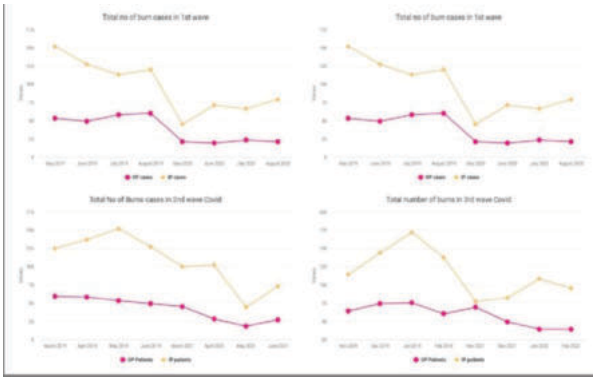
Second wave in 2021Third wave 2021-2022

2021	OP	IP	2019	OP	IP
MARCH	45	100	MARCH	59	125

APRIL	28	100	APRIL	58	137
MAY	18	44	MAY	53	152
JUNE	27	73	JUNE	49	127

Third wave 2021-2022

2021 -2022	OP	IP	2019	OP	IP
November	69	97	November	64	114
December	49	82	December	74	144
January	39	108	January	75	172
February	39	95	February	60	137



Distribution Of Burn Patients Census Comparison

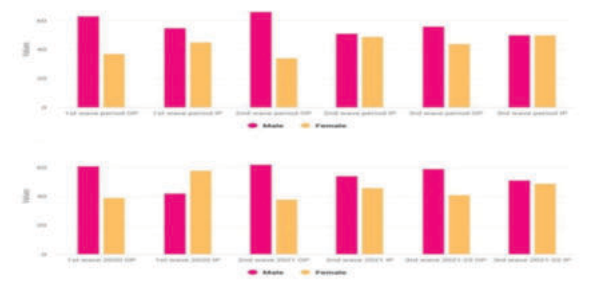
Even though there was reduction in total number of burn patients, number of male patients seeking burn wound care was more than females with burn wounds .There was no significant difference in the ratio of male and female patient distribution.

Sex Distribution In Covid

Name	Number of Male patients	Male %	Number of Female patients	Female %
1STwave 2020 OP	51	61	33	39
1STwave 2020 IP	109	42	152	58
2ND wave 2021 OP	149	62	78	38
2NDwave-2021 IP	172	54	147	46
3rd Wave -2021-22 OP	156	59	122	41
3rd Wave -2021 22 IP	185	51	177	49

Sex Distribution Comparison

Name Comparison period in 2019	Number of Male patients	Male %	Number of Female patients	Female %
Corresponding period of 1STwave in 2019 OP	143	63	83	37
Corresponding period of 1STwave in 2019- IP	271	55	225	45
Corresponding period of 2nd wave in 2019 -OP	73	66	45	34
Corresponding period of 2NDwave in 2019- IP	269	51	256	49
Corresponding period of 3rd Wave in 2019- OP	115	56	79	44
Corresponding period of 3rd Wave in 2019- IP	282	50	285	50

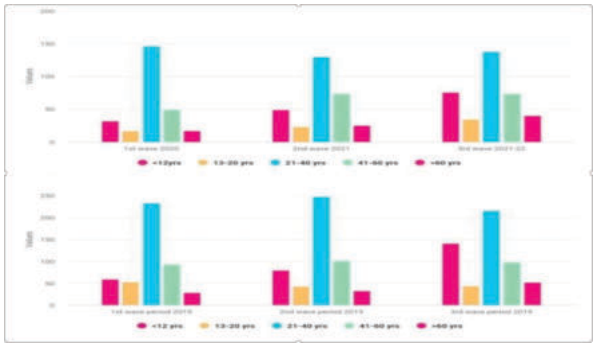


Sex Distribution Comparison

Burn patients in age group 21-40yrs (middle age) were more, thEn 41—60 yrs age group .This pattern is similar to the pre COVID period. 4

Age Group Comparison

Period	Less than 12 yrs	30-20 yrs	21-40Yrs	41-60yrs	More than 60Yrs
1ST wave 2020	32	17	146	49	17
2nd wave 2021	49	23	130	74	25
3rd Wave 2021-22	76	35	138	74	40
Corresponding period of 1st wave in 2019	59	53	233	93	29
Corresponding period of 2nd wave in 2019	80	43	248	101	33
Corresponding period of 3rd Wave in 2019	141	44	216	98	52

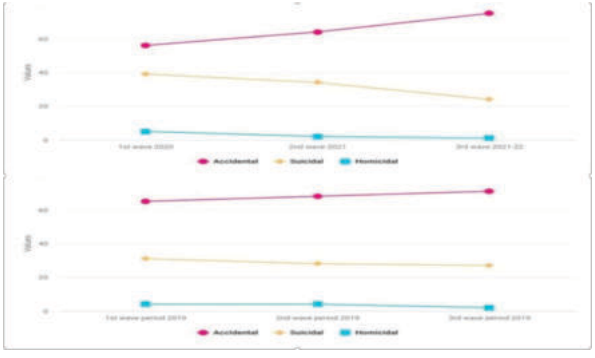


Age Group Comparison

Burns and scalds due to accident were more than due to suicide or homicide. Flame burns were the common reason for admissions in burn unit and scald burn was common in outpatients. There was no difference in this pattern between pre COVID and COVID time [4]

Mechanism Of Burn Comparision

Period	Accidental	%	Suicide	%	Homicide	%
1ST wave 2020	146	56	103	39	12	5
2nd wave 2021	204	64	107	34	8	2
3rd Wave 2021-22	270	75	87	24	5	1
Corresponding period of 1st wave in 2019	332	65	158	31	22	4
Corresponding period of 2nd wave in 2019	368	68	150	28	23	4
Corresponding period of 3rd Wave in 2019	405	71	150	27	12	2



Mechanism Of Burn Comparision

Type Of Burns Comparision

Period	Flam e		Scald s		Electrical		Cracker		chemical	
	Number of Patients	%	Number of patients	%	Number of Patients	%	Number Of patients	%	Numbe r Of patients	%

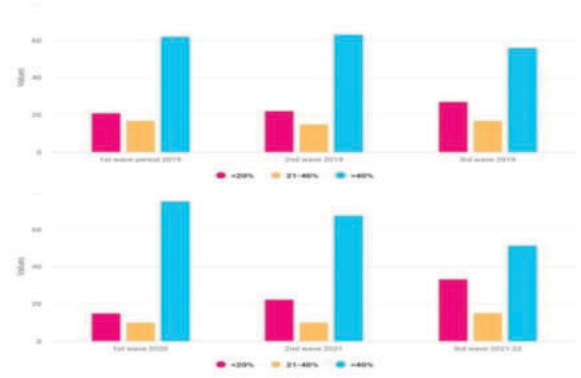
1ST wave 2020	199	76	43	16	19	7	2	1	0	0
2nd wave 2021	215	67	57	18	39	12	3	1	5	2
3rd Wave 2021-22	136	38	191	53	22	6	11	3	0	0
Corresponding period of 1st wave in 2019	381	77	76	15	40	8	5	1	10	2
Corresponding period of 2nd wave in 2019	382	71	103	19	38	7	10	2	8	1
Corresponding period of 3rd Wave in 2019	388	68	135	24	30	5	9	2	5	1

Type Of Burns Comparision

There was increase in number of scald burn in the third wave period when compared to the pre COVID years.4 In patients with more than 40 %TBSA burn involvement were more when the distribution of TBSA involvement was studied. This coincides with our previous years' data.

TBSA Affected- Comparison

Period	Less than 20 %		21-40 %		More than 40 %	
	Number of Patients	%	Number of Patients	%	Number of Patients	%
1ST wave 2020	39	15	27	10	195	75
2nd wave 2021	72	22.5	32	10	216	67.5
3rd Wave 2021-22	121	33.4	55	15.2	186	51.4
Corresponding period of 1st wave in 2019	104	21	82	17	305	62
Corresponding period of 2nd wave in 2019	116	22	75	15	326	63
Corresponding period of 3rd Wave in 2019	153	27	94	17	312	56

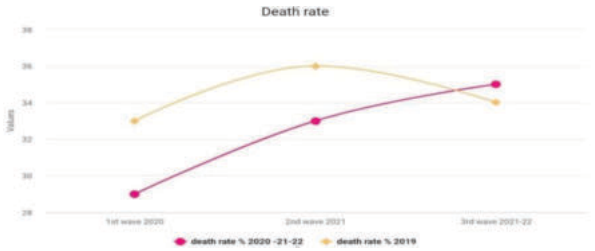


TBSA Affected - Comparison

Death rate has reduced marginally when compare with previous years except in third wave period.

Death Rate Comparison

Period	No. Cause	%
1ST wave 2020	152	29
2nd wave 2021	148	33
3rd Wave 2021-22	138	35
Corresponding period of 1st wave in 2019	226	33
Corresponding period of 2nd wave in 2019	242	36
Corresponding period of 3rd Wave in 2019	237	37



Death Rate Comaprision

Overall there is a reduction in total number of patients who were treated in the burns ward which is significant. But there was no difference in other parameters like the age groups affected, burn area affected sex distribution or mortality rate. [4]

DISCUSSION:

In this study analysis revealed that the total number of burn injuries was reduced compared to the pre COVID time. [7]

Patients who attended burns unit for scalds or contact burns in extremities were expected to have a good outcome and hence treated as outpatient,[5] Deep burns with more body surface involvement and complicated injuries like electrical , chemical , explosion injuries were admitted in BICU for treatment. Burn injury patients with late admission to hospital associated with inhalation injuries were treated with emergency management like maintenance of airway and circulation, endotracheal intubation with mechanical ventilation with adherence to pandemic safety precautions.[9]

This leads to prolonged hospital stay and more morbidity and mortality in these patients. [4] Emergency lifesaving surgeries like fasciotomy/ amputation / skin cover were carried out with adherence to pandemic protocol. Instead of surgical debridement, non surgical enzymatic debridement was done to minimize the surgical procedure in patients and heath care professionals. There was less utilization of blood products which was not available due to lack of blood donation camps). Burn wound dressings were reduced. Only heavily soaked dressings were changed with strict adherence to COVID 19 protocols. Elective surgeries were reduced during COVID wave but increased after lifting of lock down.

Burn patients are usually immune compromised due to poor nutrition, prolonged hospital stay multiple surgeries, wound infection with multi drug resistant bacteria which puts inpatients in increased risk of COVID 19 infection transmission in burns patients Early identification of COVID 19 infections in burn inpatients had to be kept in mind. Number of attenders staying with all patients were restricted. Discharge of the patients were done early to avoid cross infection. Pain management, physical, emotional, and psychological therapies were given at the time of discharge and follow up done as outpatient. Physiotherapy and rehabilitation advised at the time discharge which was to be continued at home.

CONCLUSION:

Our study concludes that number of patients attending as outpatient and inpatient services were decreased during pandemic when stay at home was ordered. The major cause of injury was accidental and flame for in patients, scalds and contact burns in outpatients. There was a shorter hospital stay. 10 Mortality rate was increased in admitted patients as they were with higher TBSA burn, deeper burn and reported late for admission.

COVID 19 pandemic was a big challenge to health care system especially to burn care system. Proper implementation and follow up of COVID 19 SOP 6 and new burn care strategies during pandemic helped us to give better care in major and minor degree burn with less incidence of COVID 19 infection rate in care providers.

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