

Comparison of the Incidence of Orthopedic Trauma Cases Managed in A Tertiary Hospital in Western Visayas During The Pre Covid and Covid Period and Its Effect on The Different Orthopedic Residency Training Program In The Region: A comparative study

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Abstract: To determine the incidence of Orthopedic Trauma cases during the pre-Covid versus Covid period in tertiary hospitals in Western Visayas and its effect on each orthopedic training programs in the region.

Keywords: COVID 19, Trauma Cases, Pre- covid period, Covid period

I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is defined as an illness caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 formerly called 2019-nCoV), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China. It was initially reported to the World Health Organization (WHO) on December 31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic, its first such designation since declaring H1N1 influenza a pandemic in 2009 (Cennimo, D. J et al 2019). As of April 2021, there have been 145 million cases, 83.5 million recoveries, and 3.08million deaths worldwide and such a number increases every day. The United States of America ranks on the top followed by India and Brazil on the top three countries affected by this pandemic.

Among the other countries affected by Covid 19, the Philippines ranks 25th worldwide with a total of 1.36M cases, 23, 621 deaths, and 1.2M recoveries as of June 2021. In the Philippines, the Department of Health (DOH) created some strategies and implement minimum health protocol since the start of this pandemic. The Philippine government announced the entire country will be placed under a state of calamity for a period of six months. The declaration will enable national and local governments to quickly access relief funds to curb the spread of the disease.

The Philippines' government started announcing local lock-downs (home quarantine) following the increase in global coronavirus cases. The entire Luzon Island was locked down affecting more than 50 million people. Subsequent quarantines (lock-down) and curfews were imposed in the Philippines barangays, municipalities/cities, and provinces which made streets, barangays, and the city more likely a ghost town.

The impact of COVID-19 on surgical practice is widespread, ranging from the workforce and staffing issues, procedural prioritization, viral transmission risk intraoperatively, changes to perioperative practice, and ways of working alongside the impact on surgical education and training (Al-Jabir, et al 2020). In his letter dated March 20, 2020, Jose Antonio Salud, MD FPCS, president of the Philippine College of Surgeons stated "limit the surgical procedures to emergent and urgent cases" only as a precautionary protection to health workers. Also, on April 4, 2020, Paul Raul Camiña, MD, FPOA, president of the Philippine Orthopedic Association wrote a letter calling orthopedic surgeons to perform urgent or emergent orthopedic surgery or in cases that are not life or limb-threatening but needing early care to prevent major complications may be classified as urgent in nature and may need to be considered on a case to case basis.

One significant change noted was the decrease in the number of trauma cases in each training institution brought by strict quarantine lockdown on each region, curfews in each barangays and even liquor ban in each city and decrease in hospital beds because their institution was converted to Covid Center. Covid 19 affected each training institution and came up with strategies to cope up with the requirements set by the Philippine Board of Orthopedics.

General Objectives: To determine the incidence of Trauma cases during the pre-Covid versus Covid period in tertiary hospitals in Western Visayas.

Specific Objectives:

1. To determine the incidence of Trauma cases during the pre-Covid versus Covid period in three Orthopedic training institution in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital
2. To determine the incidence of Trauma cases monthly during the pre-Covid versus Covid period in three orthopedic training institutions in Western Visayas monthly.
3. To determine what changes and coping strategies were done by each Orthopedic training institution in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital
4. To determine the effects of this pandemic on their training program during the pre-covid and the covid periods.

II. RESEARCH AND COLLECT IDEA

This study is multicenter involving three Orthopedic training institution in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital.

Research Design

A Descriptive Cross Sectional Study was employed in this study.

Study Setting

This study is multicenter involving three Orthopedic training institution in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital

Duration of the Study

This study was conducted from July 2021 to September 2021.

Participants/Subject/Respondents

All trauma cases of Orthopedic training institution in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital during the Covid period (January 1 2020 to December 31, 2020) and pre Covid period (Jan 1, 2019, to December 31, 2019) will be included in this study

Inclusion Criteria

1. Trauma cases both major and minor operated and logged in the PBO Elogbook.

Exclusion Criteria

1. Hand, Pedia, and Spine Cases admitted by each institution
2. Hand, Pedia, and Spine Cases comanage by another department in each institution.

Procedure

All data are gathered from Orthopedic training institutions in Western Visayas namely Western Visayas Medical Center, Western Visayas Stare University Medical Center, and Corazon Locsin Montelibano Memorial Regional Hospital during the Covid period (January 1, 2020, to December 31, 2020) and pre Covid period (Jan 1, 2019, to December 31, 2019).

The primary investigator made a formal letter addressed to the Philippine Board of Orthopedics (PBO) to ask permission to access all trauma census logged by each training institution in the Philippine Board of Orthopedics Elogbook in the years 2019 and 2020. This letter shall be noted and signed by the Research Coordinator of the primary investigator.

Once approved by the PBO, the researcher wrote a letter to each institution to ask for their monthly total trauma cases and overall total cases from the years 2019 and 2020 along with the approved letter from the PBO. A questionnaire will also be provided for the Chairman and Training officer in each institution to answer with regards to the strategy, effects, and on how they coped up to pursue their training program despite the pandemic.

These data are extracted from the PBO Elogbook which were submitted by each training institution in the years 2019 and 2020 with the permission of the Chairman of the Philippine Board of Orthopaedics. Only trauma cases shall be included. All data will be tabulated and a statistical tool shall be used to compare each data.

Data Analysis Procedure

All data were checked for normal distribution with the Kolmogorov-Smirnov normality test. Data were presented as totals across orthopedic training institutions, months, and period (COVID and pre-COVID period). Percent differences were also included in table presentation. Mann-Whitney and Related Samples Friedman’s Two-way Analysis of Variance by Ranks tests were used to determine if there were significant difference in the distribution of trauma cases in the training institutions included in the study between COVID and pre-COVID period. All analyses were completed and were exported from Statistical Package for the Social Sciences (SPSS) software package, version 20.0.

III. RESULTS AND FINDINGS

In this study, the number of trauma cases during COVID and pre-COVID period in the three residency training centers namely Western Visayas Medical Center (WVMC), Western Visayas Stare University Medical Center (WVSU-MC), and Corazon Locsin Montelibano Memorial Regional Hospital (CLMMRH), were gathered. The distribution of the cases was compared through percentage differences and through a statistical test. The monthly data on the distribution of the cases were also included in the analysis, however no statistical test was done to compare the distribution of cases due to incomplete pairing of the months and probable seasonality of trauma cases.

Table 1. Number of Trauma Cases during Pre-COVID and COVID Period across Training Institutions

Training Institution	Period ^a		Percent Difference	Significance ^b
	Pre-COVID = 2019	COVID = 2020		
CLMMRH	485	1,348	177.938%	0.000
WVMC	1,195	504	-57.824%	0.000
WVSU-MC	493	380	-22.921%	0.028
Total	2,173	2,232	2.715%	0.300

Note: ^a Pre-COVID Period-January to December 2019 and COVID Period-January to December 2020 ^b Significance values were of Mann-Whitney test statistics for comparison of distribution, alpha = 0.05 Presented in Table 1 were the number of trauma cases during pre-COVID and COVID period with corresponding percent differences and significance values. Out of the three training institutions, only CLMMRH had an increase of more than half (177.938%) in the number of trauma cases during the COVID period compared to pre-COVID years. While, the other two, WVMC and WVSU-MC, decreased by more than one-fourth. All three institutions had significant differences in the distribution of trauma cases between the pre-COVID and COVID period. Overall, accounting for all three training institutions, a decrease of 2.715% in the number of trauma cases was recorded which was not significant in terms the distribution.

TRAUMA CASES		
INSTITUTION	2019 –PRE COVID	2020 COVID

CLMMH	485	1348
WVSU	493	380
WVMC	1195	504

Table 2. Number of Trauma Cases during Pre-COVID and COVID Period across Months

Month ^a	Period		Percent Difference	Significance ^b
	Pre-COVID = 2019	COVID = 2020		
January	199	314	57.789%	
February	160	281	75.625%	
March	239	374	56.485%	-
April	195	175	-10.256%	-
May	212	106	-50.000%	-
June	161	174	8.075%	-
July	173	157	-9.249%	-
August	122	136	11.475%	-
September	172	121	-29.651%	-
October	184	137	-25.543%	-
November	214	120	-43.925%	-
December	142	137	-3.521%	-
Total	2,173	2,232	2.715%	0.096

Significance value of Related Samples Friedman’s Two-way Analysis of Variance by Ranks test statistics, alpha=0.05

As shown in Table 2, monthly number of trauma cases in the three training institutions varied. Notably, a huge slump in cases was observed during the months of May (50.000%), November (43.925%), September (29.651%), and October (25.543%). On the otherhand, rise of cases was observed in the early months. The distribution of trauma cases for the months before and during the COVID period were observed to be not significantly different. This result can be attributable to the increase of cases in the early months which balanced the decrease of cases in the late months

2019 TRAUMA CASES			
MONTH	CLMMH	WVSU	WVMC

JAN	27	47	125
FEB	36	36	88
MAR	46	37	156
APRIL	42	45	108
MAY	62	37	113
JUNE	43	34	84
JULY	33	47	93
AUG	27	32	63
SEPT	34	37	101
OCT	33	69	82
NOV	66	39	109
DEC	36	33	73
TOTAL	485	493	1195

2020 TRAUMA CASES			
MONTH	CLMMH	WVSU	WVMC
JAN	207	52	55
FEB	158	46	82
MAR	212	32	195
APRIL	132	40	3
MAY	65	28	13
JUNE	94	23	58
JULY	91	35	31
AUG	63	30	45
SEPT	81	17	24
OCT	101	21	18

NOV	57	35	28
DEC	88	21	34
TOTAL	1349	380	586

Discussion

Comparing the number of trauma cases in each training institutions, both the WVSU and WVMC showed decrease in cases compared to CLMMRH. This is brought about by changes implemented by the local government unit in accordance to the IATF ruling and the Department of Health protocols. In Iloilo City wherein both WVSU and WVMC are located, decrease in trauma cases was brought about by quarantine guidelines set by IATF, curfew hours and liquor ban both in the province and in the city. With existing 9 hospitals both private and government hospitals including WVMC and WVSU in the city and other secondary hospitals in the province, trauma cases were diverted to these hospitals and only emergency cases were catered by both institutions in Iloilo City. The increase in trauma cases in CLMMRH, was brought about by the influx of both COVID and non- COVID cases since it is the regional hospital of Negros Occidental and other hospitals had to decrease their bed capacity due to restrictions brought about by COVID 19.

Limited bed capacity due to strict protocols of physical distancing affected the number of trauma cases which each institution can accommodate as well as the conversion of the three hospitals to Covid Centers. As such, some patients avoided going to the said institutions for fear of contracting Covid 19 infection. Other factors which limited the patients are limitation of transportation and decrease number of hours in OPD services.

Each institution set its changes to cope up the number of trauma cases required by the PBO. With the decrease of OPD consults and follow ups, CLMMRH established its online consultation for their patients while WVMC created its Operation DAGYAW wherein MOA was created with other Government hospitals in the province to allow resident to do surgical operations. WVSU on the other hand coped up by following the guidelines of the Infectious Control Committee thus limiting its services to cater to extreme emergencies only.

To meet the required number of trauma cases for each resident set by the PBO, strategies have been made by each training institution. WVSU created E-consult for follow up and cater new patients while WVMC as mentioned continued its Operation DAGYAW and created MOA with a private hospital to allow its resident to do surgeries under the supervision its training consultants. CLMMRH had no problems with the required number of trauma case set by PBO since they have sufficient cases for each resident.

If this pandemic will continue until 2023 or new variants of COVID 19 will emerge thus increasing the cases of COVID 19, the uncertainty of the number of trauma cases seen by the residents in training will greatly affect their compliance with the requirements set by PBO.

IV. CONCLUSION

COVID 19 has affected all sectors including healthcare including residency training. With the frequent lockdowns and restrictions, movement of people were also affected which in turn decreased the incidence of trauma. Also, the designation of most centers as Covid 19 dedicated hospitals has affected the bed capacity and cases catered by the hospitals with preference to Covid 19 patients. This has decreased the number of trauma cases in WVMC and WVSUMC wherein patients were diverted to other nearby private hospitals and satellite hospitals. On the otherhand, CLMMRH has noted an increase in the number of trauma cases. Being the

regional hospital of Negros Occidental, most cases were forwarded to them to cater to both COVID and Non COVID cases thereby increasing their census. Different strategies were implemented to augment the number of cases and for continued patient care in order to pursue the needed case requirements for PBO. .

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