INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P158

Comparing Stressful factors among dental students pre and during COVID-19 pandemic

Ali S Radeef[1] , Ghasak G Faisal[2] , Mohamad F. Khaled[3*]
1. Department of Psychiatry, Faculty of Medicine, International Islamic University Malaysia, Kuala Lumpur 50728, Malaysia
2. Department of Basic Medical Sciences, Faculty of Dentistry, International Islamic University Malaysia, Kuala Lumpur 50728, Malaysia
3. Kulliyyah of Dentistry, International Islamic University Malaysia, Kuala Lumpur 50728, Malaysia

INTRODUCTION

- COVID-19 pandemic has negatively affected higher education due to the sudden need to shift to online mode of teaching and learning
- Dental students are impacted by this type of teaching and learning as a considerable portion of their curriculum requires clinical training on real patients
- Other challenges included were enforcement of social distancing practices in laboratories and the clinic, which may affect the competency of the graduating student

AIMS AND OBJECTIVES

To compare the stressful factor among dental students during COVID-19 pandemic with stressors assessed before the pandemic

MATERIALS AND METHOD

- Total sample : 224
- Sampling method : Convenience Sampling
- Methods of distribution: Google forms given to representative of each year of study
- Participants were Student of Kulliyyah of Dentistry session 2020/2021 during Covid-19 pandemic

PARAMETERS AND ANALYSIS

- Questionnaire based on commonly perceived stressors of Kulliyah of Dentistry students.
- Data was analyzed using SPSS version 25.0
- Means and SD were calculated and compared with previous data

RESULTS AND DISCUSSION

Table1: Source of stressors pre Covid-19 Pandemic

NO.	Stressor	Mean (SD)
1.	Time management problems	2.39 (1.06)
2.	Fear of failing or unable to catch up	2.38 (1.13)
3.	Examination and grades	2.19 (1.03)
4.	Feeling of incompetence	2.17 (1.12)
5.	Study pressure and obligations	2.06 (1.05)
6.	Lack of motivation to learn	1.98 (1.09)
7.	Academic overload	1.98 (1.07)
8.	Lack of time for relaxation	1.92 (0.99)
9.	Reduced holidays	1.90 (1.05)
10.	Fear of unemployment after graduation	1.80 (1.32)

Table1: Sources of stressors during Covid-19 Pandemic

No	Stressors	Mean (SD)
1.	Fear of failing or unable to catch up	3.10 (1.056)
2.	Lack of motivation to learn	2.83 (1.049)
3.	Feeling incompetent	2.82 (1.022)
4.	Academic Overload	2.81 (1.052)
5.	Time management problems	2.75 (1.010)
6.	Fear of unemployment after graduation	2.59 (1.257)
7.	Fear of graduating late	2.50 (1.408)
8.	Understanding lecturers during online classes	2.33 (1.104)
9.	Cannot catch up with online learning	2.30 (1.283)
10.	Fear of not completing clinical requirements/logbook	2.23 (1.642)

- There are consistent stressors before and during COVID-19 pandemic such as 'lack of motivation to learn', 'Fear of failing or unable to catch up', 'feeling incompetent', 'Fear of unemployment after graduation' however the ranking and mean score of these stressors increased during COVID-19 pandemic.
- New stressors emerged during the pandemic which were ' Understanding lecturers during online classes', 'Cannot catch up with online learning', ' Fear of not completing clinical requirements/logbook'
- A recent study conducted among dental student throughout all dental schools in Malaysia exhibits dental students are fear of their examination and clinical performance together with poor motivation.

CONCLUSION

- Academic related stressors consistently exist among dental students however their severity increased during COVID-19 pandemic
- Academic institutions need to adopt strategies to alleviate the newly emerging stressors related to the effect of pandemic on teaching and learning

ACKNOWLEDGEMENT

REFERRENCES

1. Ali Sabri Radeef Al-Ani, Ghasak Ghazi Faisal (2018). Stressors and their association with symptoms of depression, anxiety and stress in dental students. Makara Journal of Health Research, 22 (2). , 0 pp. 58-62. ISSN 2356-3664
2. Ali Sabri Radeef, Ghasak Ghazi faisal, Firdaus Khaled,Student COVID 19 source of stressors questionnaire 2021
3. Ismail, Azlini, Nur Hanisah Ismail, Nur Yasrin Maisarah Abu Kassim, Widya Lestari, Ahmad Faisal Ismail, and Cortino Sukotjo. "Knowledge, Perceived Risk, and Preventive Behaviors amidst Covid-19 Pandemic among Dental Students in Malaysia." Dentistry Journal 9, no. 12 (2021): 151.

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P160

Conference ID: 160

Tocilizumab as a treatment for Cytokine Storm in Covid-19 patients: A systematic review

Muhammad Huzaimi Haron[1], Mohamad Rodi Isa[2*], Hanisa Syahirah Mohd Rashid[3], Nur Amanina Adam[3], Nur Aliah Awang[3], Muhammad Hairul Faez Halip[3]

[1] Department of Pharmacology, Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia
[2] Department of Public Health Medicine, Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia
[3] Faculty of Medicine, Universiti Teknologi MARA, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia

Introduction

- Coronavirus disease 2019 (COVID-19) is a contagious illness caused by a novel coronavirus which is now known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Cron R.Q et al., 2021).
- The virus spreads primarily by droplets of saliva or discharge from the nose when an infected person coughs or sneezes (WHO, 2021)

- 'Cytokine storm' - is a severe immune reaction in which the body releases too many cytokines into the blood too quickly and can be harmful when it released in a large amount simultaneously in the body (National Cancer Institute, 2021).
- In COVID-19, approximately 2% of mortality is due to cytokine storms throughout the world (Cron R.Q et al., 2021).

- Tocilizumab (TCZ) is a humanized monoclonal antibody is needed in several invasive mechanical ventilation and ICU intervention in moderate to severe COVID-19 cases.
- It was designed to inhibit the JAK-STAT or MAPK/NF-κB-IL-6 signaling pathway and finally stops the cytokine storms syndrome (Saha et al., 2020).

Problem statement & Objective:

- Since there were many studies conducted individually on the impact of TCZ for Cytokine Storm in Covid-19 patients.
- This review was conducted to determine the impact of the use of TCZ on inflammatory marker level, ICU stay duration, mechanical ventilation requirement and mortality rate among patients with COVID-19 related cytokine storm.

Material & Method

Performing scoping search & identifying a review question

Writing protocol & Registration
PROSPERO registration no: **CRD42022303727**

Comprehensive Literature Review

Search strategy
Databases: Web of Science (WoS), Scopus, and PubMed

The Boolean search: **("COVID-19" OR "COVID19" OR SARS-CoV-2") AND "tocilizumab" AND "cytokine storm" AND "inflammatory markers" AND ("ICU stay duration" OR "intensive care unit stay duration") AND "mechanical ventilation requirement" AND (mortality OR death)**

Eligibility Criteria
- Inclusion criteria: research article, human study, clinical trial stud, and article in English.
- Exclusion criteria: review articles, systematic review, case report, early access, editorial materials, letters, short survey, in vivo or in vitro study, and other languages.

Screening Titles and Abstract
- The relevant articles were downloaded into the Endnote Software.
- Study screening was conducted by two independent researchers.
- The articles which did not fulfil the criteria were excluded from the study.

Obtaining Full text Published Articles Studies
- All published are free articles were searched.
- The articles without full text were excluded from the study.

Selecting Suitable Full text Published Articles
- Articles were then organized into Endnote Software.
- Duplication of the articles was identified and removed by Zotero software.
- Then articles were assessed for eligibility independently by two reviewers in two stages.

i. first stage: the title and abstract of search results were screened and assessed for relevance.
ii. second stage: the full text of potentially relevant publications was retrieved and reviewed for inclusion.

- Both stages of the study selection were performed independently and cross-validated to assess for disagreements.
- If there was disagreement between both reviewers a third reviewer was assigned. Only full-text articles were included in the review to enable quality assessments.

Critical Appraisal
- The critical appraisal of articles was performed using the Consolidated Standards of Reporting Trials (CONSORT) checklist for randomized controlled trials and Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) for epidemiological observational study.
- The agreement between the two independent research was assessed using Kappa statistics.

Data extraction
- Data extractions were performed by all two independent researchers to establish inter-rater reliability and to avoid data entry errors.
- Lists of included studies were created stratified by: study name. study design, patient type, dose, sample size and result independently.

Flowchart of the study
The process of article searches and selection that was performed in this study is shown in Figure 1:

Data Management
All relevant articles were manually coded in Google Docs as described in evidence tables. The electronic Google Docs were utilised to import the data into word form for data analysis.

Statistical Analysis

Data were analysed using descriptive statistics.
- Numerical outcome was presented using mean and standard deviation.
- Categorical outcomes was presented using frequency and percentage.

Results

Flowchart

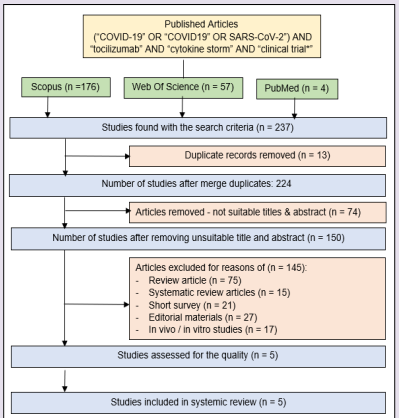


Figure 1: Flowchart of the study

Study Name	Study Design	Patient Type	Dose	Sample Size	Result
Tsai A et al. (2020)	Single-centre matched cohort study	Severe COVID-19 patients	All patients received hydroxychloroquine and azithromycin in both groups + for TCZ group: -10 (15.1%) received TCZ 800 mg -3 (4.5%) received TCZ 600 mg -53 (80.3%) received TCZ 400 mg. -4 patients received a second dose of tocilizumab·	Total 132 patients: -66 TCZ treated (50%) -66 no-TCZ treated (50%)	- Inflammatory markers: a. Ferritin – TCZ: 1432.30 (1307.96); 848.35 (684.84), p<0.001 b. CRP – TCZ: 13.01 (7.79); no-TCZ: 9.95 (5.71), p=0.002 c. LDH – TCZ: 42905 (154.50); no-TCZ: 331.19 (128.75), p<0.001 - Ventilator use – TCZ: 16 (24.2%); no-TCZ: 12 (18.2%) , p = 0.450 - Intubation - TCZ (9 patients) - Mortality – TCZ: 18 deaths (27.3%); no-TCZ: 18 deaths (27.3%) (OR: 1.0; 95% CI: 0.465–2.151; p = 1.00).
Capra et al. (2020)	Multicentre, retrospective case-control study	COVID-19 related pneumonia and respiratory failure, not needing mechanical ventilation patients	- Standard care: hydroxychloroquine (400 mg daily) + lopinavir (800 mg daily) ritonavir (200 mg daily) - Treated group: Standard care + TCZ (did not mention dose)	Total of 85 patients: -62 treated (73%) with TCZ -23 controls	- Survival rate - greater in patients received TCZ, with (hazard ratio for death, 0.035; 95% confidence interval [CI], 0.004 to 0.347; p = 0.004) - Death - 2 (3.22%) - treated group; 11 (47.8%) - control group - Recovery rate - 92% - treated group (discharged after 12,5 days); 42.1% - control group. - Improvement in respiratory function - 64.8% in hospitalized TCZ group while none from the control group - Conclusion: TCZ results have a positive impact if used early during Covid-19 pneumonia with severe respiratory syndrome in terms of increased survival and favourable clinical course.
Wang D et al. (2021)	Multicentre, A randomized, controlled trial, open-label study	Moderate (bilateral pulmonary lesions) or severe COVID-19	2 doses given: -1st dose: TCZ 400 mg, diluted in 100 ml of 0.9% saline -2nd dose is given if the patients still febrile for 24 hours	Total of 65 patients: -33 treated (51%) with TCZ -32 controls.	- Cure rate - TCZ (94.12%); control (87.10%) (p=0.4133, 95%CI: -7.19%, 21.23%) - Hypoxia - a. severe patients: TCZ - higher from day 4 onward and statistically significant from day 12 (P = 0.0359). b. Moderate diseases: TCZ (8.33%); control 66.67%) (p=0.0217; 95%CI: -99.17%, -17.50) - Mild temporary adverse effect - TCZ (58.82%); control (12.90%). - Conclusion: TCZ improves hypoxia without an unacceptable side effect profile and significant influences on the time virus load become negative. For patients with bilateral pulmonary lesions and elevated IL-6 levels, tocilizumab could be recommended to improve outcome
Tian J et al. (2021)	Multicentre, retrospective cohort study	Severe COVID-19 patients with extensive lung lesions	- IV 400 mg up to a maximum of 800 mg. Dilution was to 100 ml with 0.9% normal saline, and the infusion time was more than 1 h. - If fever continues within 12 hours an additional dose is given	Total of 195 patients: -65 treated (33%) with TCZ -130 did not receive	- In-hospital death - TCZ group (21.54%): non-tocilizumab group (32.31%) (p = 0.012); hazard ratio = 0.47; 95% CI: 0.25, 0.90; p = 0.023) - ICU stay - TCZ (10 days); non-TCZ (12.00 days) (p=0.27) - Hospital stays - TCZ (40 days); non-TCZ (26.5 days) (p = 0.001) - Incidence Respiratory distress syndrome - TCZ (36.92); non-TCZ (70.77%) (p < 0.001); Adj OR: 0.23 (95%CI: 0.11, 0.45; p < 0.001) (odds ratio = 0.23; 95% CI: 0.11, 0.45; p < 0.001) - Inflammatory markers: a. IL-10 - TCZ (5.00pg/ml); non-TCZ (7.35 pg/ml) (p = 0.013) b. C-reactive protein – TCZ (1.52mg/l); non-TCZ (22.55 mg/l) (p < 0.001) - Conclusion: - TCZ improves clinical symptoms and represses the deterioration of patients (prolonging survival) with severe COVID-19. - TCZ was associated with a lower risk of the in-hospital proportion of death. - TCZ improves inflammation and immune cell function
Ramiro S et al. (2020)	Single-centre, Retrospective case-control study	Severe COVID-19 associated cytokine storm syndrome	- IV 250mg high methylprednisolone (MP) (D1) + 80mg (D2–D5). - If the respiratory condition had not improved, the interleukin-6 receptor blocker TCZ (8mg/kg body weight, single infusion) was added.	Total of 172 patients: -86 treated (50%) -86 control (50%)	- Improvement respiratory status - 79% higher likelihood (HR: 1.79; 95%CI: 1.20, 2.67), 7 days earlier. - Hospital mortality - 65% lower (HR: 0.35; 95% CI: 0.19, 0.65) - Ventilation: a. 71% less invasive mechanical ventilation (HR: 0.29; 95% CI 0.14 to 0.65). b. Among patients not mechanically ventilated at baseline, the daily incidence of mechanical ventilation (new start) was 1.3% vs 5.4% (p=0.0003). c. Once mechanically ventilated, the duration of mechanical ventilation was not significantly different. - Conclusion: strategy involving a course of high-dose MP, followed by TCZ in case of insufficient improvement, may accelerate respiratory recovery, lower hospital mortality and reduce the likelihood of invasive mechanical ventilation

Discussion

- TCZ is a key cytokine leading to an inflammatory storm act by inhibiting the IL-6 receptor which may result in increased alveolar-capillary blood glass exchange dysfunction (Yang Xiaobo et al., 2020).
- In this review, the survival rate was greater in the treated group with a 92% recovery rate and discharged after 12.5 days (Capra et al., 2020) and Gokhale Yojana et al. (2021) and it was concluded that the warranted improvement was due to a hyperinflammatory state.
- ARDS is frequently characterized by high levels of plasma IL-6, which will stimulate lung epithelial cells and inflammatory cells response thus leading to pulmonary damage COVID-19 patients with cytokine storm syndrome treated with TCZ had 71% less used and incidence of invasive mechanical ventilation (Ramiro S et al., 2020)
- Mortality in COVID-19 patients has been linked to the presence of the so-called "cytokine storm" induced by the virus due to an excessive production of pro-inflammatory cytokines which leads to ARDS aggravation and widespread tissue damage (Ragab Dina et al., 2020).
- The majority of the studies reviewed found that TCZ can reduce death, lower hospital mortality or in-hospital death (Capra et al., 2020; Ramiro S et al., 2020; Tian J et al., 2021).

Conclusion:

- It can be concluded that TCZ was associated with cytokine storm syndrome.
- It may reduce mortality rate, mechanical ventilation requirement, ICU stay duration, and IL-6 level if it is administered before entering the moderate to severe inflammatory state as a treatment for COVID-19.
- It can be suggested to use TCZ for the treatment of Cytokine Storm in COVID-19 patients.

References

- Tsai A, Diawara O, Nahass RG, & Brunetti L. (2020). Impact of tocilizumab administration on mortality in severe COVID-19. *Scientific Reports*, *10*, 19131
- Capra, R., De Rossi, N., Mattioli, F., Romanelli, G., Scarpazza, C., Sormani, M. P., & Cossi, S. (2020). Impact of low dose tocilizumab on mortality rate in patients with COVID-19 related pneumonia. *European Journal of Internal Medicine*, *76*, 31–35.
- Wang D, Fu B, Peng A, Yang D, Han M, Li M, Yang Y, Yang T, Sun L, Li W, Wei H, & Xu X. (2021). Tocilizumab in patients with moderate or severe COVID-19: a randomized, controlled, open-label, multicenter trial. *Frontiers of Medicine*, *15*(3), 486–494
- Tian J, Zhang M, Jin M, Zhang F, Chu Q, Wang X, Chen C, Yue H, Zhang L, Du R, Miao X, & Zhang H. (2021). Repurposed tocilizumab in patients with severe COVID-19. *Journal of Immunology*, *206*(3), 599–606
- Ramiro S, Mostard RLM, Magro-Checa C, Van-Dongen CMP, Dormans T, Buijs J, Gronenschild M, De-Kruif MD, Van-Haren EHJ, Van-Kraaij T, Leers MPG, Peeters R, Wong DR, & Landewé RBM. (2020). Historically controlled comparison of glucocorticoids with or without tocilizumab versus supportive care only in patients with COVID-19-associated cytokine storm syndrome: Results of the CHIC study. *Annals of the Rheumatic Diseases*, *79*(9), 1143–1151

JCHS
INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P163

Otorhinolaryngology service with ongoing COVID-19 pandemic in Hospital Melaka A single center, retrospective, descriptive study.

163

Mohamed Iliyas Sultan Abdul Kader[1,2*], Nadia Syafeera Naserrudin[2], Abd Razak Ahmad[2].

1.Department of Otorhinolaryngology- Head and Neck Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia
2.Department of Otorhinolaryngology- Head and Neck Surgery, Hospital Melaka, Jalan Mufti Haji Khalil, 75400, Melaka, Malaysia.

INTRODUCTION

- Malaysia had its **first** COVID-19 case on **25th January 2020**
- **First** nationwide Movement control order in **March 2020**
- Hospital Melaka caters for **930,000** population.
- Department of Otorhinolaryngology – Head & Neck Surgery **(ORL-HNS**) heavily involved in managing **upper aerodigestive tract** conditions.
- These are **potential sites** with **high** COVID-19 **viral load**.

METHODS

Retrospective description of data obtained from Clinic, Operation theatre and Ward registry.

RESULTS

- In the year 2020, total number of **18,317** outpatient visits were made,
- **10,107** clinic procedures were done.
- Total number of **592** surgeries with **366** elective, **192** emergency, **34** daycare surgeries was performed.
- There were **942** inpatient admissions.
- There was **no COVID-19 cross-infection** occurred between patients and ORL-HNS HCW in 2020.

STRATEGIES

1. Telephoning to **extend and postponed** non-urgent appointments.
2. Performing **COVID-19 tests** prior to **Aerosol generating procedures**.
3. **Screening** every patient using standardised questionnaires and COVID-19 risk **declaration** form, and **temperature** taken at two intervals (hospital entrance and clinic).
4. **Limiting number** of visitors to the **clinic.**
5. Maintaining social distancing of **at least 1 metre**.
6. **Limiting number** of personnel in the **clinic** and **procedure rooms.**
7. **Deferring all endoscopies** and **microscopies** unless necessary.

Doctors, nurses, medical assistants should wear **full personal protection equipment (PPE)** during **procedures** (gown, N95 mask and face shield)

8. **Drive-thru pharmacy** service and **postal delivery medication** collection services

CONCLUSION

Despite working in **high-risk environment** and **performing aerosol generating procedures**, ORL-HNS health care workers were able to **reduce** the **risk** of **cross-infection of COVID-19** by adhering to the **strict policies** laid down by Ministry of Health of Malaysia and Hospital Melaka.

ACKNOWLEDGEMENT

Ministry of Health Malaysia, Director General, Director of Hospital Melaka. All healthcare professionals.

REFERENCES

1. Ministry of Health. COVID-19: otorhinoaryngolgoy services. Ministry of Health Malaysia [Internet]; 2020 Mar 24. Available at: https://www.moh.gov.my/moh/resources/Penerbitan/Garis%20Panduan/COVID19/Annex_30_COVID_19_ORL_Services_22032020.pdf
2. Ministry of Health Malaysia. Guidelines on management of corona virus disease 2019 (COVID-19) in Surgery [Internet]. Ministry of Health, Malaysia; 2020 [Retrieved 2020 Mar 24]. Available at: http://covid-19.moh.gov.my/garis -panduan/garis-panduan-kkm/Annex_22_COVID -19_Guidelines_Surgical_22032020.pdf
3.. Sultan Abdul Kader MI, Razak SS, Ramanna VR, Esa NK, Ahmad [illegible] Moha mad I. Challenges and adaptation in otorhinolaryngology practice during [illegible]ic lockdow n: experience from a Malaysian COVID-19 hospital. Malays J Med [illegible];28(3):14[illegible] 150. https://doi.org/10.21315/mjms2021.28.3.13

JCHS
INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

171

Non typhoid salmonella mycotic aneurysm presents with obstructive uropathy

Ngah Mohamed N [1], Awad SNA [2], Mohd Shah NA [3]

[1]Clinical Diagnostic Laboratories (CDL), Department of Microbiology and Parasitology, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia.

INTRODUCTION

Mycotic aneurysm (MA) is a serious clinical condition in which without prompt diagnosis and management leads to severe complications, the signs and symptoms however are nonspecific, which pose a challenge in diagnosing the condition.

CASE

- A 76-year-old lady known case of hypertension, diabetes mellitus presented with malaise and pain over the left lumbar region for 2 weeks.
- On admission she was hemodynamically stable, non-febrile, there was tenderness at the right hypochondrium, epigastric and positive renal punch. Blood test showed increased white cell count and CRP.
- Blood culture was positive on second day of admission revealed Salmonella spp.
- Ultrasound kidney showed left hydronephrosis due to proximal hydroureter and ultrasound abdomen showed focal soft tissue density around the left common iliac artery (CIA), internal iliac artery (IIA) and external iliac artery (EIA). CT abdomen revealed severe atherosclerosis of the abdominal aorta and small saccular aneurysm at the proximal left (CIA) with surrounding soft tissue mass. The appearance and raised infective marker is suggestive of MA
- She was treated with iv ceftriaxone and responded well to the antibiotic therapy. She was then referred to vascular team for left IIA coiling and CIA stenting.

DISCUSSION

- In this case we illustrate the obstructive effect of the MA which lead to the patient atypical signs and symptom.
- Non typhoid salmonella MA which is prevalent in Asian population are associated with older age and atherosclerosis commonly present with unremitting fever, which was absent in this case, probably indicates patient is in bacteraemia stage which then lead to metastatic infection.
- Although she present with atypical symptoms, with the aid of radiological imaging the diagnosis was confirm in the early phase

CONCLUSION

Investigation on the underlying cause of obstructive uropathy in patient with positive blood culture of non typhoid salmonella is important to exclude the diagnosis of MA

References

1. M. Fisk, L.F. Peck, K. Miyagi, M.J. Steward, S.F. Lee, M.B. Macrae, S. Morris-Jones, A.I. Zumla, D.J.B. Marks, Mycotic aneurysms: a case report, clinical review and novel imaging strategy, *QJM: An International Journal of Medicine*, Volume 105, Issue 2, February 2012, Pages 181–188, https://doi.org/10.1093/qjmed/hcq240
2. Nagrodzki, J., Sharrocks, K.E., Wong, V.K. *et al.* A mycotic aneurysm related to *Salmonella* Rissen infection: a case report. *BMC Infect Dis* **20,** 97 (2020). https://doi.org/10.1186/s12879-020-4819-0
3. Guo, Yiqun & Bai, Yu & Yang, Chunxia & Wang, Peng & Gu, Li. Mycotic aneurysm due to Salmonella species: clinical experiences and review of the literature. Brazilian journal of medical and biological research. (2018)51(9). https://dx.doi.org/10.1590/1414-431X20186864

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P172

PUBLIC STIGMATIZATION TOWARDS COVID-19 PATIENTS IN MALAYSIA

Siti Nurul Aini Mohd Rodzi, Nurul Aida Harun , Dr Noraznira Abd Razak, Joeaiza Juhari,, Norfaezah Shahren, Siti Musliha Mohd Idris, Khairunnisa' Yussof
Faculty of Business and Management, Universiti Teknologi MARA, Alor Gajah Campus, Melaka, Malaysia.

Abstract ID 172

Abstract

Public stigma can be defined as the ways in which the general public stigmatize people. People are being discriminated against or treated separately and in some situation experience loss of status because of a perceived link with a disease. Some specific population had become a victim of public stigmatization and being stereotype due to their condition which related to COVID-19 either as patient or close contact of the patient. Due to this stigmatization and stereotyping situation, some people choose to hinder for specific treatment although they had symptoms or being the close contact with the positive COVID-19 patient. In relation to current situation of COVID-19, this situation will lead to ongoing transmission and the action to control the infection become more vulnerable. This study evaluated the factors influence stigmatization towards the patient of COVID-19 in Malaysia. In this cross-sectional study involving 215 respondents, the association between level of stigma with controllability, responsibility and blame were examine using Pearson correlations. The analysis carried out by using *Statistical Package for the Social Sciences (SPSS) software*. Controllability, responsibility and blame are the three attributions used to determine stigmatization. Only responsibility and blame indicated positive relationship with stigmatization. **Conclusion:** The result shows that, the respondent have stigmatization towards the patient of COVID-19. Majority of respondent agree that the patient infected with COVID-19 is awful and will keep the distance although they are fully recovered. However, patient infected to COVID -19 is not considered as a burden to the society at large. Therefore, it is necessary of creating awareness about stigmatization and its' implications towards the patient infected with COVID-19.

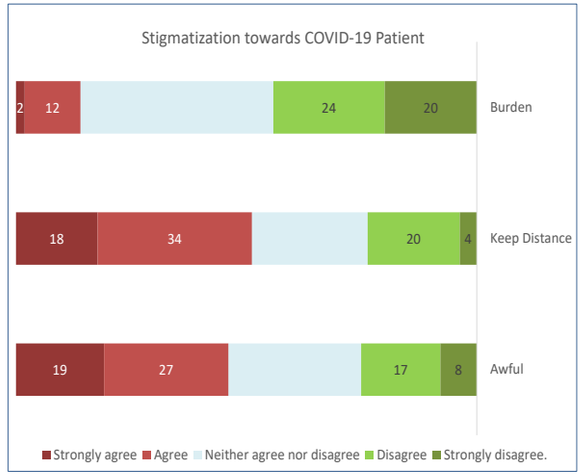
Introduction

Managing the thread posed by the pandemic risk is very crucial to ensure the survivability of the country especially to the people therein. Understanding people behaviors toward COVID-19 will help the government to get the idea to manage the risk effectively. Some people believe that those infected by COVID-19 have not follow the standard operation procedure (SOP) as highlighted by the authority. Thus, they become the victim of public stigmatization by social rejection, source of gossiping, physical ferocity and denial of using some amenity (Sulistiadi, Rahayu and Harmani, 2020). This kind of reaction somehow will affect the government initiative to manage the risk as people will opt to do something in contrast with the government plan to mitigate the risk. Therefore, this paper is intended to determine the Malaysian stigmatization and identify factors influence stigmatization towards the patient of COVID-19 in Malaysia.

Methods and Materials

This is a cross sectional study carried out to study the Malaysian stigmatization towards patient of COVID -19. The questionnaires distributed online targeting Malaysian using convenient sampling. The items of the questionnaire was adopted and modified from a study carried out by (Mak et al., 2006) and (Mantler, Schellenberg and Page, 2003). The stigmatization towards the patient convicted with COVIC-19 is the focus of the study. The items to measure stigmatization are controllability, responsibility, and blame. The mode value is used to determine the perception of public stigmatization towards patient convicted with COVIC-19. The association between level of stigma with controllability, responsibility and blame were examine using Pearson correlations. The analysis carried out by using Statistical Package for the Social Sciences (SPSS) software.

Results



- The respondents agree that the patient of COVID-19 do not a burden to the society (Affective).
- However, they will still keep a distance although the patient of COVID-19 is fully recovered (Behaviour).
- Majority of respondent agree that the patient infected with COVID-19 is awful (Cognitive).

		Controllability	Responsibility	Blame
Stigma	Pearson Correlation	.124	.261**	.441**
	Sig. (2-tailed)	.071	.000	.000

- Responsibility and blame indicated positive relationship with stigmatization, (p value < 0.005).
    - The level of stigmatization will be higher once people put the blame and responsibility towards the patient of COVID-19.

Conclusions

Only responsibility and blame indicated positive relationship with stigmatization. Most of the respondents still will put a distance with recovered patient and have an awful feeling towards them. This study is consistent with the finding by Chew and Rajan, (2021) indicated that individuals recovered from COVID-19 and their families underwent experience of social stigma. However, majority of the respondents do not feel that the patients of Covid-19 are the burden to the society.

The result indicate that there are stigmatization towards the patient infected by COVID-19. Therefore, it is necessary of creating awareness about stigmatization and its' implications towards the patient infected with COVID-19 Future researchers could analyse demographic profile with various factors affecting stigmatization and the result might help the country to focus on specified group for awareness program.

References

Chew, C. C. and Rajan, P. (2021) 'Experiences of Social Stigma Among Patients Tested Positive for COVID-19 and Their Family Members : A Qualitative Study', *Research Article*, pp. 1–18. Available at: https://www.researchsquare.com/article/rs-153721/latest.pdf.

Culp, W. C. (2020) 'Coronavirus Disease 2019', *A & A Practice*, 14(6), p. e01218. doi: 10.1213/xaa.0000000000001218.

Earnshaw, V. A. and Quinn, D. M. (2012) 'The impact of stigma in healthcare on people living with chronic illnesses', *Journal of Health Psychology*, 17(2), pp. 157–168. doi: 10.1177/1359105311414952.

Mak, W. W. S. *et al.* (2006) 'Comparative stigma of HIV/AIDS, SARS, and Tuberculosis in Hong Kong', *Social Science and Medicine*, 63(7), pp. 1912–1922. doi: 10.1016/j.socscimed.2006.04.016.

Mantler, J., Schellenberg, E. G. and Page, J. S. (2003) 'Attributions for serious illness: Are controllability, responsibility, and blame different constructs?', *Canadian Journal of*

Sulistiadi, W., Rahayu, S. and Harmani, N. (2020) 'Handling of Public Stigma on COVID-19 in Indonesian Society', (1), pp. 70–76. doi: 10.21109/kesmas.v15i2.3909.

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P174

The predisposing factors for severe COVID 19 infection among pregnant women in Selangor, Malaysia

A retrospective cohort study

Siti Hayati Mohd Nahwari, Nur Hamizah Mohamad, Lela Nadia Khalid, Mastura Sohaimi, Eunice Ng Soo Khian, Norhana Mohd Kasim, Norashikin Abdul Fuad.

Department of Obstetrics and Gynaecology, Hospital Sungai Buloh, Ministry of Health Malaysia.

ID: 174

INTRODUCTION

- The impact of the Covid-19 virus has been felt across the globe, however many of the specialized groups including the obstetrics population have been affected the most.
- The physiological changes in pregnancy especially involving the immune system means that the obstetric population inadvertently becomes more prone to severe infection. Evidence seen from other viral illnesses suggest that pregnant women are at greater risk of severe maternal and neonatal morbidity and mortality compared to the rest of the population.
- Being the designated hospital for treating pregnant women with COVID-19 in Klang Valley, Malaysia, we have seen that infected pregnant women have an increased risk of deterioration requiring supplemental oxygenation, ICU admission, mechanical ventilatory support and ultimately succumbing to death.
- No targeted treatment is available for COVID-19 in pregnancy, requiring us to rely on symptomatic and supportive measures as well as ramping up the vaccination programme which has proven to yield some noteworthy positive results.
- In view of the limitations, it is imperative that we seek to isolate common contributing factors that can be associated with severe disease progression and poor COVID-19 outcome.

OBJECTIVE

To investigate the demographic and the contributing factors leading to severe COVID-19 infection during pregnancy.

METHODS

Study Type and Design

- A retrospective cohort study was carried out in a tertiary hospital designated solely for treating COVID-19 infections.
- All patients admitted with COVID-19 infection that were pregnant or within puerperium period were included.
- The electronic medical records (EMR) of patients who were diagnosed with COVID-19 in study site from 1st January 2021 until 31st December 2021 were reviewed and all the clinical information was obtained from admission until discharge. The data was collected and extracted using the data collection form.

Inclusion Criteria

All patients admitted with COVID-19 infection who were pregnant or within the puerperium period were included.

Exclusion Criteria

Women who are neither pregnant nor within puerperium period that were admitted for COVID-19 infection during study period.

Sample Size

All pregnant women with confirmed COVID-19 infection who presented to the study site during the period beginning 1st of January 2021 to 31st of December 2021.

Statistical Analysis

Statistical Package for Social Science (SPSS) Version 22.0 was used to run descriptive analysis, relative risk, Chi-Square Test and Fisher Exact Test. A significance level of $p < 0.05$ was used.

RESULTS

- A total of 3428 data were collected with mean age of 30.250 years and SD of 5.1579.
- 297 (8.7%) of patient admitted were in severe Covid-19 infection i.e. category 4 and 5 (which required oxygenation).

DEMOGRAPHIC PROFILE

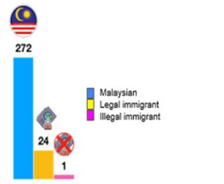


Figure 1: Nationality distribution among Covid-19 category 4 and 5 in year 2021

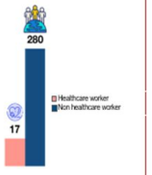


Figure 2: Number of COVID-19 category 4 and 5 cases among pregnant healthcare worker and pregnant non-healthcare worker in n 2021

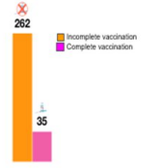


Figure 3: Vaccination status among COVID-19 category 4 and 5 cases in pregnancy

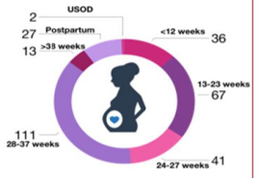


Figure 4: The gestational age upon admission among pregnant women with COVID-19 category 4 and 5 in year 2021

	Oxygenation Requirement		*p-value*
	No	Yes	
Incomplete Vaccination	1816 (58.0%)	262 (88.2%)	< 0.05
Complete Vaccination	1315 (42.0%)	35 (11.8%)	
Total	3131	297	

Table 1 : Correlation between vaccination status with oxygenation requirement in a year period

	CAT 1,2,3 (n = 3131)		CAT 4,5 (n = 297)	
	RR	CI	RR	CI
Obesity	0.959	0.924-0.995	**1.458**	**1.095-1.941**
Diabetes Mellitus	0.900	0.806-1.005	**2.080**	**1.230-3.518**
Hypertension	0.961	0.882-1.047	**1.416**	**0.760-2.639**
Asthma	0.945	0.885-1.010	**1.593**	**1.033-2.457**
Kidney disease	0.926	0.734-1.168	**1.781**	**0.495-6.402**
GDM	1.032	1.003-1.063	0.671	0.432-1.041
PIH/ pre-eclampsia	0.989	0.881-1.110	**1.118**	**0.379-3.296**

Table 1: Risks of disease progression in COVID-19 among pregnant women with comorbidity in year 2021

RESULTS

	CAT 1,2,3 (n = 3131)	CAT 4,5 (n = 297)	p-value
Organizing pneumonia			
No	3086 (94.8%)	168 (5.2%)	<0.05
Yes	45 (25.9%)	129 (74.1%)	
Pulmonary embolism			
No	3087 (94%)	198 (6.0%)	< 0.05
Yes	44 (30.8%)	99 (69.2%)	
Transaminitis			
No	3095 (92.3%)	259 (7.7%)	<0.05
Yes	36 (48.6%)	38 (51.4%)	
Sepsis			
No	3128 (91.6%)	286 (8.4%)	<0.05
Yes	3 (21.4%)	11 (78.6%)	
Death			
No	3130 (91.7%)	284 (8.3%)	<0.05
Yes	1 (7.1%)	13 (92.9%)	
Post-partum Hemorrhage			
No	3101 (91.3%)	294 (8.7%)	0.761
Yes	30 (90.9%)	3 (9.1%)	

Table 2: Complications of COVID-19 infection in pregnancy in year 2021

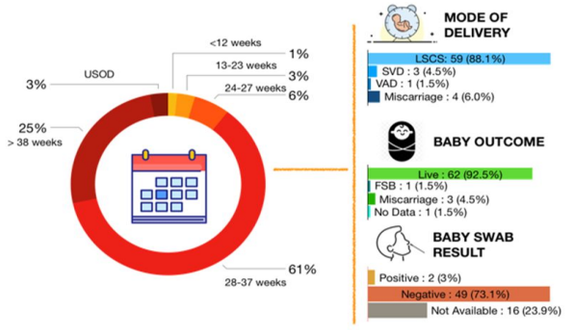


Figure 5: The gestational age upon delivery among mothers with COVID-19 category 4 and 5

DISCUSSION

•This study analyzed the demographic data, contributing factors, common maternal complication and perinatal outcomes among COVID-19 patients who were pregnant or in their puerperal period.

•In this study, a total of 3428 patients with the mean age of 30.250 (SD 5.1579) years, the majority being in their second and third trimesters (26.6% and 54.3% respectively), were studied. 8.7% (n=297) had severe COVID-19 infection (Category 4 and 5). From 297 pregnant ladies infected with COVID-19 categories 4 and 5, the majority were Malaysians, which reflects the nation's demographics. More pregnant non-healthcare workers were diagnosed with severe COVID-19 as compared to those who were in the service, possibly because healthcare workers were more aware of infection control measures and the advantages of vaccination.

•88.2% of the pregnant women who required oxygenation or invasive ventilatory support were neither vaccinated nor completed their vaccination ($p<0.05$).

•Women between 28 and 37 weeks of gestation were the most likely to have poor outcomes, most likely due to the physical and physiological changes in pregnancy during the third trimester.

•Severe infection were more likely to occur in pregnant women with BMI >30kg/m2 with Relative risk (Rr) 1.458 (95%CI 1.095-1.941) and with pre-existing comorbidities such as diabetes mellitus Rr 2.080 (95%CI 1.230-3.518), hypertension Rr 1.416 (95%CI 0.760-2.639), asthma Rr 1.593 (95%CI 1.033-2.457), chronic kidney disease Rr 1.781 (95%CI 0.495-6.402) and pregnancy induced hypertension or preeclampsia Rr 1.118 (95%CI 0.379-3.296).

•Conversely, the increased risk of severe infection was not shown to occur in gestational diabetes mellitus on treatment Rr 0.671 (95%CI 0.432-1.041).

•These risks of disease progression are similar to the general population and supports findings from other studies. Physical and physiological changes in pregnancy may affect the response towards infections causing hyper-inflammatory response, impaired viral clearance, thus affects respiratory system, cardiovascular and hepato-renal systems. Hypercoagulable state in pregnancy increases the thromboembolic event in patient with Covid-19 infection.

•Patients with severe illness (Categories 4 and 5) were more likely to face complications such as organizing pneumonia, pulmonary embolism, transaminitis, sepsis and death. However, primary postpartum haemorrhage was not shown to have any correlation with severity of infection.

•13% of the patients delivered during active COVID-19 infection. 35.7% of deliveries were iatrogenic and preterm. Caesarean section was more likely amongst pregnant patient who required oxygenation or ventilation and most of them delivered between 28-37 weeks of gestation.
Out of 67 babies delivered, 62 (92.5%) were born alive and only 2 (3%) tested positive for COVID-19.

CONCLUSION

- Understanding the demographic distribution, predisposing factors to COVID-19 disease severity ,complications and pregnancy outcome play a key role for the development of therapeutic interventions, as well as for advancing preventative strategies in this specialized group of patient.
- The local citizens, non-healthcare workers and pregnant women between 28-37 weeks of gestation were found to be more likely to have category 4 and 5 illnesses.
- There is significant association between the vaccination status & disease progression among pregnant women who required supplemental oxygen with p value <0.05
- Based on the study, pregnant women with comorbidities were more likely to progress to severe COVID-19 infection. As well as a significantly higher to develop complications such as organizing pneumonia, pulmonary embolism, transaminitis, sepsis and death. These findings are similar to non-pregnant population.
- This study also concluded favourable outcomes women who delivered during the active phase of their COVID-19 infection. Most deliveries in the study group occurred between 28 and 37 weeks of gestation with 92% live births and negative results for COVID-19 test in all but two babies.

REFERENCES

1. Knight, M et al (2020, Jan). Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in the UK: national population based cohort study. *BMJ*2020;369:m2107
2. Wastnedge et al (2020, Sept). Pregnancy and COVID-19, *Physiol Rev* 101: 303-318
3. T. A. Khartabil, H. Russcher, Ajam van der Ven and Y.B de Rijke (2020) . A summary of the diagnostic and prognostic value of hemocytometry markers in COVID-19 patients. *Crtcl Rev in Clin Lab Sci*, 57:6, 415 - 431
4. Zambrano,L.D. (2020). Update: Characteristics of Symptomatic Women of Reproductive Age with Laboratory- Confirmed SARS-CoV-2 Infection by Pregnancy Status - United States, January 22 - October 3, 2020. *MMWR , Morb. Mortal Wkly Rep.* Vol. 69, No. 44

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P175

175

Improvement of Confidence Level Following an Interactive Real-time Online Nasopharyngeal Swabbing Training Session

Salma Yasmin Mohd Yusuf[1], Khasnur Abd Malek[1], Intan Kartika Kamarudin[2]
[1]Department of Primary Care Medicine, Faculty of Medicine UiTM
[2]Department of Otorhinolaryngology, Faculty of Medicine UiTM

Introduction

- Nasopharyngeal swab (NPS) performers need adequate training to confidently conduct effective and safe NPS procedures.
- The COVID-19 pandemic, however, had made the traditional face-to-face training undesirable due to its risk of spreading infections.
- The strategy to use readily available NPS demonstration via YouTube videos is of concern since some of the videos show improper techniques.

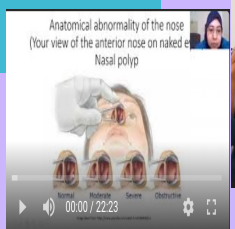
Aims: This survey aims to assess the confidence level of participants who attended a real-time online training session for nasopharyngeal swab (NPS) sampling and handling.

Methodology

- We developed an interactive, real-time online training session to train the primary care medicine providers on NPS swabbing and handling.
- The content was crafted and delivered by experts in their respective fields to include certified NPS trainers, otorhinolaryngologists, and a medical laboratory technologist.

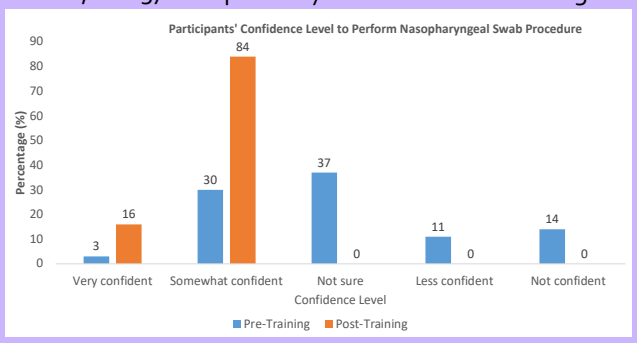
The training consists of;
1) Sequence of donning and doffing of personal protective equipment;
2) Tutorial session outlining the anatomy of the nasal cavity;
3) A live endoscopic demonstration of the nasal passage anatomy and nasal swabbing procedure, and
4) Interactive discussion on handling the samples.

- A pre- and post-training survey on participants' confidence level on performing and handling the nasopharyngeal swab was collected via the Slido® platform.



Results

- 50 participants attended the training.
- ' very confident' had increased from 3% to 16%
- 'somewhat confident' had increased from 30% to 84%.
- 'not confident', 'less confident' and 'not sure of confidence level' had all decreased to 0% from 14%, 11%, and 37% respectively after the online training.



Discussion

1. Our online training platform for COVID-19 nasopharyngeal swab was able to increase participants' level of confidence during this pandemic.
2. Evidence has shown that instructional videos and simulation-type training can enhance performers' knowledge and confidence level.
3. This method can facilitate large scale training with minimal manpower as well as reduce risk of COVID-19 transmission.

Limitations and Recommendations

1. Anonymous survey may not have been answered by all attendees and we do not know who answered the survey.
2. Perceived increased levels of confidence to perform the NPS procedure during the training may not be reflected when performing the actual procedure.

Conclusion

Online NPS training which incorporates a real-time nasal endoscopy video can be a valuable strategy to train nasopharyngeal swab performers.

REFERENCES:
1. Abud BT, Hajnas NM, Redleaf M, Kerolus JL, Lee V. Assessing the Impact of a Training Initiative for Nasopharyngeal and Oropharyngeal Swabbing for COVID-19 Testing. OTO Open 2020;4(3):2473974X20953094
2. Mark ME, LoSavio P, Husain I, Papagiannopoulos P, Batra PS, Tajudeen BA. Effect of Implementing Simulation Education on Health Care Worker Comfort With Nasopharyngeal Swabbing for COVID-19. Otolaryngol Head Neck Surg. 2020 Aug;163(2):271-274.

JCHS INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION 29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P176

ASSESSMENT OF ASTHMA AND COPD CARE PRACTICES IN A UNIVERSITY PRIMARY CARE CLINIC

Nur Nadhirah Mesran, Shafawati Akmal Adam, Nurulhana Mansoor, Rozaliekah Omar, Siti Mariam Hussain, Mohd Farid Hamid, Muhammad Shah Shaharudin, Mohd Zulfikry Ahmad, Nik Munirah Nasir

Department of Primary Care Medicine, Universiti Teknologi MARA (UiTM)

JCHS ID: 176

INTRODUCTION

- Asthma and COPD are common obstructive pulmonary diseases encountered in primary care.
- There is need to assess the current practice in delivering asthma and COPD care in this primary care setting to identify gaps that could affect the quality of care received by the patients.

AIM

To assess the current practice in delivering asthma and COPD care in a university primary care clinic (UiTM PCSC) and compare it against recommended practice guidelines.

METHOD

- Patient case notes from Jan to Dec 2020 were extracted from the Electronic Medical Record (EMR) system using ICD 10 codes for asthma and COPD.
- Inclusion criteria: Confirmed diagnosis for at least 1 year and attended follow up in UiTM PCSC at least twice in the past 1 year.
- Exclusion criteria: Follow up for asthma/COPD were in other centers, Asthma COPD Overlap syndrome (ACOS).
- The data were analyzed and compared to audit standards (structure, process and outcome)

RESULTS

Patient characteristics	ASTHMA (%, n=180)	COPD (%, n=15)
Age (mean)	54.6	73.67
Gender		
• Male	38.3	80.0
• Female	61.7	20.0
Smoking status		
• Smoker	3.9	33.0
• Non-smoker	58.9	20.0
• Not documented	37.2	47.0

Structure of care

- × Asthma/COPD registry
- ✓ Self management support (Asthma Booklet)
- ✓ Peak flow meter available in consultation room
- ✓ Availability of different types of inhaled therapy (SABA, ICS etc.)

Process Of Care (Asthma) (Standard set at 80%)

Not achieved	Achieved
× Peak flow reading is documented at each visit (41.1%)	✓ Documentation of ACT score at each visit (86.7%)
× Documentation of inhaler technique at least once (21.7%)	✓ Documentation of treatment adherence (86.1%)
× Documentation of asthma action plan provided to patient (47.2%)	
× Documentation of exacerbation in the last 1 year (33.9%)	

Process of care (COPD)
All not achieved (Standard set at 80%)

- × Documentation of oxygen saturation at each visit (6.7%)
- × Documentation of FEV1 after diagnosis (13.3%)
- × Documentation of MRC dyspnoea scale at each visit (46.7%)
- × Documentation of CAT score at each visit (46.7%)
- × Documentation of COPD action plan provided to patient (60%)
- × Documentation of exacerbation in the last 1 year (33.3%)
- × Documentation of treatment adherence (73.3%)
- × Documentation of inhaler technique assessment (40%)

Outcome	Standard (%)	Result (%)
ACT score 20-25 for asthma patients	70.0	78.0
Received influenza/pneumococcal vaccinations	70.0	Asthma : 0.6 COPD 6.7

RECOMMENDATIONS AND CONCLUSION

- ❑ Set up asthma/COPD registry
- ❑ Dummy inhaler available in clinic to encourage inhaler technique assessment
- ❑ Asthma/COPD charting template with checklists to improve documentation and routine assessment

References: CPG Management of Asthma in Adult, 2017
National Asthma and COPD Audit Programme (NACAP) Primary Care Queries, Royal College of Physicians, 2018

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P180

COVID-19 DETECTION USING MACHINE LEARNING IN CHEST XRAY

Anas Tharek, Soo Tze hui, Ahmad Sobri Muda, Fatimah Sidi, Iskandar Ishak, Hazeman Zakaria, Idris Ibrahim, Mohd Naim Mohd Yaakob, Mohd Fandi Al Khafiz Kamis

Universiti Putra Malaysia

INTRODUCTION

From December 2019, the first case of Covid 19 patient was detected in Wuhan, China. Covid -19 has become a pandemic nowadays. Since the first case, the disease has spread to all countries with 4 million people died and 180 million confirmed cases based on the statistics by World Health Organization (WHO)[1].

Chest X-ray has played a significant role to help the doctor to make the diagnosis of covid-19 infection. It has been used as a screening tool for detecting Covid-19 infection in addition to reverse transcription-polymerase chain reaction (RT-PCR)[3]. High number of Covid-19 infection cases in the hospital, causing significant burden to doctor to interpret all the chest x-ray in a short time. This problem could be solved with the help of artificial intelligence.

Artificial intelligence has shown great efficiency and performance in automated image classification using various machine learning methods. It has been used to help doctors make the diagnosis of various diseases such as intracranial hemorrhage detection in head CT scan[4].

Microsoft Corporation introduced its cloud platform to create machine learning algorithm called Custom Vision. Some of the machine learning algorithms have been created by medical researchers for medical image classification of a certain disease, such as MRI prostate cancer detection[5]. Our aim is to create machine learning algorithm for Covid-19 Chest X-ray classification using this platform.

OBJECTIVE

- To create algorithm model for image classification to differentiate between Covid-19 infection and non-covid infection.
- To evaluate performance of the algorithm model base on sample size.
- To evaluate clinical performance of the algorithm model by confusion matrix.

METHOD

This is a retrospective study using public dataset which allowed by the owner to use for machine learning research [6]. About 12000 images of chest x-rays within the dataset. From 12000 images, 6000 of the images are chest x-ray with covid 19 positive patient and 6000 of the images are images for negative of Covid 19. All of these samples are classified by the result of RT-PCR. In 6000 images of negative Covid-19, other lung infection diseases are included such as pulmonary tuberculosis, bacterial lung infection, and others. This inclusion aims to make the algorithm more reliable in the real hospital environment as various patients with different diseases will come to the hospital. This algorithm needs to differentiate between Covid-19 infection or non-Covid-19 infection even though the chest x-ray findings are abnormal.

All of these samples are anonymized into secondary data. The sample is divided into two folders, sample with positive Covid-19 Chest X-ray and sample with negative Covid-19 patient. This sample is further divided into train and test categories. All these samples are uploaded into the custom vision platform. The uploaded samples are manually tagged into positive Covid-19 and negative Covid-19 categories. The training process is divided into 3 different projects with 200, 2000, and 12000 samples. These 3 different projects aim to measure the performance of this algorithm model based on the number of samples.

The algorithm model performance is presented as "Performance Per Tag" after the training process. From "Performance Per Tag", we derive algorithm model precision, recall, and Mean average precision (M.A.P). Precision is the fraction of evaluated samples that are correct. For example, if the algorithm model correctly evaluates 100 samples and 98 of them are correctly evaluated, the precision would be 98%. Mean average precision (M.A.P) shows the overall precision of the image classification. Recall is the measure fraction of the algorithm model correctly identifying true positive results.

To evaluate the clinical algorithm model performance, we used a confusion matrix to measure the accuracy, sensitivity, specificity, precision, and F1 score [7]. After each training, this algorithm model evaluates different sample which is not included in the training dataset. The testing dataset is composed of 200 samples of Chest X-ray images, 100 with positive Covid-19 infection and 100 with negative Covid-19 infection. The result is classified into true positive, true negative, false positive, and false negative. The true negative (TN) model correctly predicts the negative class (prediction and actual both are negative). The false-positive (FP) model gives the wrong prediction of the negative class (predicted-positive, actual-negative). The false-negative (FN) model wrongly predicts the positive class (predicted-negative, actual-positive).

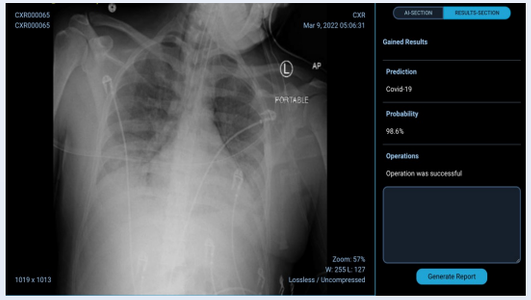


Figure 1a: Chest xray show positive result for Covid-19 infection

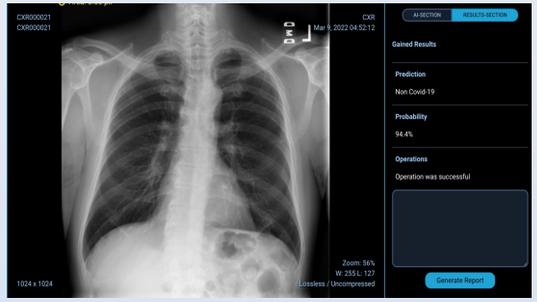


Figure 1b: Chest xray show negative result for Covid-19 infection

RESULT

This study included 12000 Chest x-ray samples. These samples are divided into 3 different project which contains different number of sample. The first project contains 200 samples, the second project contains 2000 and 3rd project contains 12000 samples. The aim is to evaluate whether increase number of samples will increase the algorithm model performance.

The result shows with an increased number of samples, the "Performance Per Tag" is improved as presented in table 1. Training using 12000 samples of Chest x-ray has shown the best performance with the precision of 99.3%, recall of 99.3%, and M.A.P of 99.7 %. However, other iteration using a smaller amount of sample shows good performance with precision, recall, and M.A.P more than 90%.

For clinical performance, confusion matrix is used. 200 samples of chest x-ray which consist of 100 samples of positive Covid-19 infection and another 100 negatives of Covid-19 infection. This is set a new set of samples that are not used during the training. The algorithm module is implemented using PadiMedical system[8] for the testing purpose as shown in figures 2a and 2b. The result is plotted in confusion matrix for the 200, 2000, and 12000 sample algorithm model. From the confusion matric the sensitivity, specificity, precision, accuracy, and F1 score of the algorithm model are calculated as shown in table 7, table 9, and table 11. The clinical performance shows, the higher number of samples used for algorithm model development the higher clinical performance based on confusion matrix.

Number of sample	Precision (%)	Recall (%)	M.A.P (%)
200	**99.3**	**99.3**	**99.7**
2000	**97.3**	**97.3**	**99.5**
12000	**99.3**	**99.3**	**99.7**

Table 1: The "Performance Per Tag" of different number of sample

Measure	Value
Sensitivity	**0.9213**
Specificity	**0.8378**
Precision	**0.8200**
Accuracy	**0.8750**
F1 score	**0.8677**

Table 2: Clinical performace for 200 samples

Measure	Value
Sensitivity	**0.9700**
Specificity	**0.9900**
Precision	**0.9898**
Accuracy	**0.9800**
F1 score	**0.9798**

Table: 3: Clinical performace for 2000 samples

Measure	Value
Sensitivity	**0.9600**
Specificity	**0.9800**
Precision	**0.9796**
Accuracy	**0.9700**
F1 score	**0.9697**

Table 4: Clinical performace for 12000 samples

DISCUSSION

In this study, we evaluate the performance of the algorithm model created using Custom Vision platform by Microsoft. The variable of evaluation includes the number of samples used for training and the time of training. The evaluation of performance is calculated based on 'Performance Per Tag' which is generated by the platform and the clinical performance. The clinical performance is done by the implementation of the algorithm model using the PadiMedical system. 200 sample is manually evaluated using the system and the result is recorded in the confusion matrix.

The result shows higher number of sample contribute to the higher performance of the algorithm model. Even the 'Performance Per Tag'of 200 samples is almost similar to the 12000 samples, the clinical performance shows that 12000 samples are better than 200 samples. This is because 'Performance Per Tag' evaluates the sample that has been given during the training process. Evaluation of clinical performance is based on new sample which is not included in the training process. Clinical performance is the best indicator of the whole algorithm model performance as it represents the performance of a real healthcare environment.

CONCLUSION

Artificial intelligence has become a trend in the healthcare system. It helps doctors to make the diagnosis in fast and efficient ways. This is really helpful in the situation with the high number of patients especially in Covid-19 infection as the new variant like Delta and Omicron make the disease become sporadic and easily spread within the community[10]. With the help of artificial intelligence, miss diagnosis of Covid-19 infection can be reduced and help to prevent further spread of this infection by early recognition of the disease. With the availability of this technology, we cannot rely solely on artificial intelligence as a few other factors need to be considered before making a diagnosis. Chest X-ray should be interpreted along with radiologist in all of the cases.

REFERENCES

[1]"COVID-19 Weekly Epidemiological Update."

[2]D. Caruso *et al.*, "Chest CT Features of COVID-19 in Rome, Italy."

[4]A. Tharek, A. S. Muda, A. Baseri Hudi, and A. Baseri Hudin, "INTRACRANIAL HEMORRHAGE DETECTION IN CT SCAN USING DEEP LEARNING," *Asian Journal Of Medical Technology*, vol. 2, no. 1, pp. 1–18, Jan. 2022, doi: 10.32896/ajmedtech.v2n1.1-18.

[5]C. Aphinives and P. Aphinives, "Artificial intelligence development for detecting prostate cancer in MRI," *Egyptian Journal of Radiology and Nuclear Medicine*, vol. 52, no. 1, Dec. 2021, doi: 10.1186/s43055-021-00467-4.

[6]L. Wang, Z. Q. Lin, and A. Wong, "COVID-Net: a tailored deep convolutional neural network design for detection of COVID-19 cases from chest X-ray images," *Scientific Reports*, vol. 10, no. 1, Dec. 2020, doi: 10.1038/s41598-020-76550-z.

[7]Z. Karimi, "Confusion Matrix Some of the authors of this publication are also working on these related projects: Data Cleaning Process View project." [Online]. Available: https://www.researchgate.net/publication/355096788

[8]A. Tharek *et al.*, "Padimedical: Medical Image Sharing Portal with DICOM Viewer-User Experience," 2020.

[10]"Enhancing response to Omicron SARS-CoV-2 variant: Technical brief and priority actions for Member States View most current version A. Context."

ACKNOWLEDGEMENT

This project is supported by Grant Universiti Putra Malaysia (GP-IPM / 2021/9708300)

INTERNATIONAL CONFERENCE
POST COVID HEALTHCARE, MEDICAL RESEARCH AND EDUCATION
29-31 MARCH 2022
Faculty of Medicine, Universiti Teknologi MARA and JCHS (Journal of Clinical and Health Sciences)

Scan or click on the QR Code to watch the 3-minute video presentation

P186

186

Characteristics of COVID-19 patients referred to the HUiTM Palliative and Supportive Care Unit (PCU) Service

Dr Diana Katiman,[1] Dr Muhammad Farid Fauad,[2] Dr Muhammad Amin Ibrahim,[2] Dr Faridah Roslan,[3] Dr Alan Peter Basil.[4]

[1] Palliative and Supportive Care Unit, Hospital UiTM, [2]Respiratory Unit, Hospital UiTM. [3]Rehabilitation Department, Hospital UiTM, [4]Radiology Department, Hospital UiTM.

Background

During the pandemic, Hospital UiTM received COVID-19 positive patients, some of which were referred to the PCU. We aim to determine the characteristics of COVID-19 patients referred to the PCU between May to September 2021.

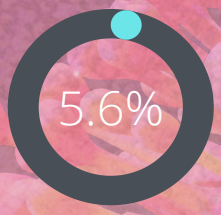
Methods

This is a retrospective cross-sectional study, reviewing records of all COVID-19 patients referred to the PCU. Descriptive statistics were used to analyse demographic and clinical data, indications for referral and patients' outcomes.

Conclusions

Half of the COVID-19 patients referred to the PCU team are still alive after at least 5 months of discharge. The palliative care approach to caring for COVID-19 patients is individualised and referral does not necessarily mean imminent death.

Results

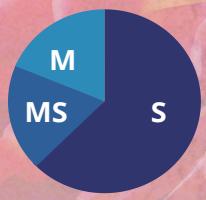


12 /215 (5.6%) COVID-19 patients were referred to PCU

10 (83%) : Cat 5
2 (17%) : Cat 4b

4/12 patients were male

Ave: 58 years
(Range: 19 - 74)



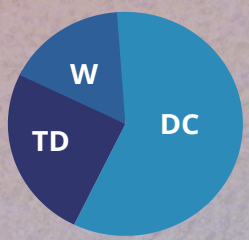
33.3% : Mod OP (M)
33.3% : Mod-Severe OP (MS)
66.3% : Severe OP (S)

50% has Pulmonary Embolism

D1 (Adm)

D53 (Discharge)

D46: Average day of referral to PCU



25% : Died in Ward (W)
17% : Terminal d/c (TD)
58% : Usual d/c (DC)

6 - Alive & well @ 5mth
1 - Died @ 2mth