Prevalence of Long COVID-19 Sequelae Among Malaysian Armed Forces Personnel – A Descriptive Introduction

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ABSTRACT

Introduction: COVID-19 infection has taken on the world rampantly since December 2019 by a wave of catastrophe with global prevalence crossing 490 million cases and mortality reaching a count of 6 million deaths. Malaysian Armed Forces (MAF) military personnel were not spared from the pandemic and also contributed to the statistics. The aim of this study was to know the prevalence of long covid sequelae among military personnel and to describe the sociodemographic and employment characteristics of respondents. **Methodology**: This is a cross sectional study, which looks into prevalence of long COVID-19 sequelae or symptoms among MAF soldiers who were tested positive for COVID-19. Sampling method was convenience sampling. A self-administered questionnaire in Malay language was used to collect information needed. **Results**: As of December 2021, there were 10,061 MAF personnel tested positive for COVID-19. Among them a total of 3117 personnel (31%) participated in this research. The prevalence of long COVID-19 sequelae among them was 5.8% (n=181). Otherwise, 94.2% (n=2936) reported they have fully recovered from the disease without any morbidity. **Conclusion**: This study shows only a small percentage of MAF personnel are affected by long COVID-19 sequelae after 12 weeks of the initial COVID-19 diagnosis. More studies and statistical analysis is needed to determine the associations and predictors of long COVID-19 among MAF.

KEYWORDS: COVID-19, Long COVID, Malaysian Armed Forces, Post-acute COVID-19 syndrome

INTRODUCTION

COVID-19 infection has taken the world on rampantly, raging fire since its earliest outbreak in the humble rural province of Wuhan, China.[1] This outbreak which commenced since December 2019 took on the world with waves of catastrophic shock sending shuddering impact across all continents resulting in an unstoppable pandemic. As of this writing, the global prevalence has crossed 490 million cases with an increasing trend in morbidity and mortality, reaching a count of more than 6 million deaths over the past 2 years1. Among the affected cases, 80% of them were in mild to moderate category, 10%-15% in severe and 5% in critical category[2,3].

Many countries have widely deployed their military personnel and its assets during this pandemic to help cope with overwhelmed civilian resources, due to the unique capabilities of militaries during a crisis. They are not only used in the medical field but also in many other sectors such as transportation, logistics, disinfection of hospitals and public places and more. Besides that, military personnel were also deployed to enforce lockdown initiatives to curb the spread of the disease.[4] The nature and exposure of military personnel in performing their respective duties increased the risk of them contracting the infection.[5] Therefore, military personnel were not excluded from contributing to the statistics of COVID-19 cases.

"Post-acute COVID-19 syndrome", "Post COVID-19 syndrome", "Long COVID-19 syndrome" are all synonymous to one another and are interchangeably used in the healthcare scenario[6]. They come under the umbrella of Post COVID-19 infection syndrome affecting a broad range of major systems hoisted within the normal human body function namely neurological manifestations (33%), respiratory complications (19%), and psychological manifestations (13%). The most common symptoms of long COVID-19 syndrome are fatigue and dyspnoea. Besides that, symptoms such as cognitive and mental disorders, headache, myalgia, chest and joint pains, smell and taste dysfunctions, cough, hair loss, insomnia, wheezing, rhinorrhoea, sputum, and cardiac and gastrointestinal issues have also been documented.[7] This has broken the norm of an acute viral infection pathophysiology resulting in long standing morbidity in affected individuals.

As the wide array of variants and virulence coexists, it is still a grey area of debate when it comes to identifying which group of patients are vulnerable to be affected by the syndrome as it is noted that even asymptomatic patients suffer consequences after the active phase of their infection. Moreover, there are also schools of thoughts associating the predisposition of such chronic syndrome based on various factors namely genetic phenotype and genotype. Guidelines and close monitoring systems are now being established to identify and help such affected patients in order to optimise their quality of daily living. As we speak, groundworks are being formulated to further curb both long term and short-term effects of the infection.

As our focus of study highlights the impact of the infection on the Armed Forces, this study hopes to find out the prevalence of long COVID among MAF military personnel.

OBJECTIVE/AIMS

This is a study to obtain the prevalence of Long COVID-19 sequelae among military personnel in the Malaysian Armed Forces who have been tested positive throughout the pandemic ending 31st December 2021 and to describe the sociodemographic and employment characteristics of respondents.

METHODOLOGY

This is a cross sectional study. The inclusion criteria is any army personnel who has been tested positive of COVID-19 since the start of this pandemic. The Long COVID-19 sequelae is defined as those who are still having symptoms after 3 months post infection. This study also investigated the sociodemographic characteristics, occupational characteristics and also clinical characteristics of the long COVID-19 patients. Sampling was convenience sampling where self-administered questionnaires in Malay language using google form were used to collect information. This questionnaire was validated and built after consensus by specialists based on post-acute COVID-19 symptoms. Statistical analysis was performed using SPSS Version 27.0 statistical software package.

RESULTS

Prevalence

In this study, a total of 3117 MAF personnel with a history of COVID-19 infection participated in the research. The participants come from various services and corps in the MAF. The prevalence of long COVID-19 symptoms among them was just 5.8% (n=181) amongst which symptoms present after 3 months. Otherwise, 94.2% (n=2936) reported they have fully recovered from the disease without any morbidity.

Sociodemographic characteristics of respondent

From the data collected, the major respondents for this research were the other ranks with 94% (n=2931) meanwhile officers contributed 6% (n=186) (Figure 1).

Figure 1: Comparison of Positive COVID-19 by Rank

For age distribution, the highest number of respondents came from the age group of 20-29 which totals at 48.9% (n=1523) followed by 30-39 at 44.1% (n=1373), 40-49 at 6.6% (n=205) and >50 at 0.4%(n=12) respectively (Figure 2). There were 4 respondents who did not state their age in the questionnaire which contributed 0.1%.

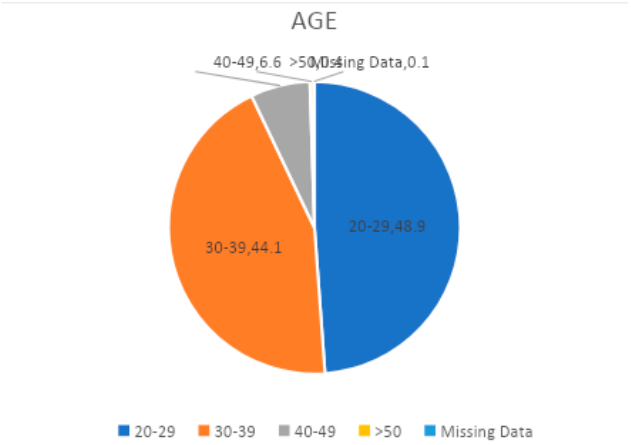

Figure 2: Age Distribution among Positive case of COVID-19

The largest number of participants of this study were males with 92.2% (n=2874) followed by females with 7.8% (n=243) respectively (Figure 3).

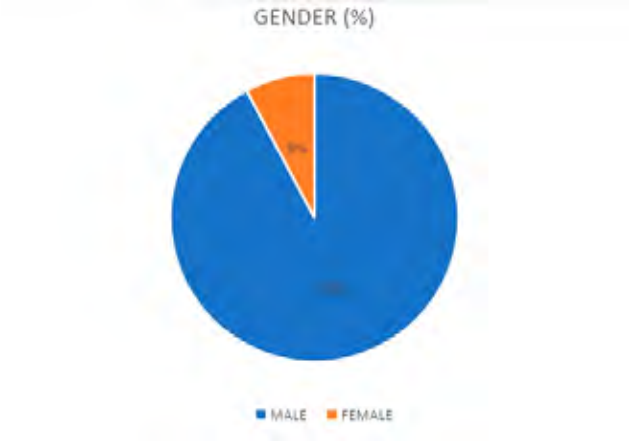

Figure 3: Distribution of Gender among the Positive Case COVID-19

The Malay ethnicity lead the study contributors as they constituted about 82.5% (n=2570). Indian and Chinese ethnicity contributed 1.4% (n=44) and 0.4% (n=13) respectively. Other ethnicities who participated in this study were 15.7% (n=490). (Figure 4)

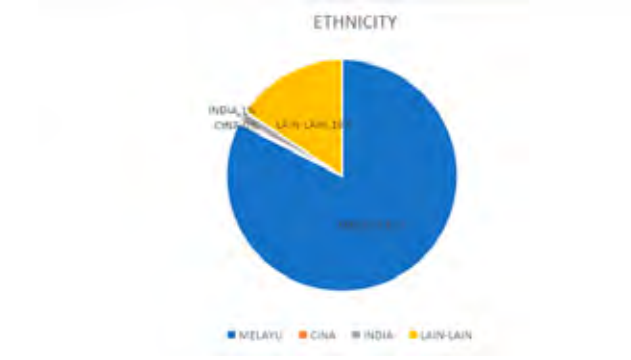

Figure 4: Distribution of Ethnicity among Positive COVID-19

Occupational Characteristics of Respondents

As this study was opened to all the formations and services, we can summarise that the Army or Tentera Darat Malaysia (TDM) responded the most with 62% (n=1928) of the total study population. Other services which joined this study were the Navy or Tentera Laut Diraja Malaysia (TLDM) 26.3% (n=820), Markas Angkatan Tentera Malaysia (MK ATM) 7.8% (n=243), Airforce or Tentera Udara Diraja Malaysia (TUDM) 2.1% (n=91) and Markas Angkatan Bersama (MK AB) 1.1% (n=35) respectively (Figure 5)

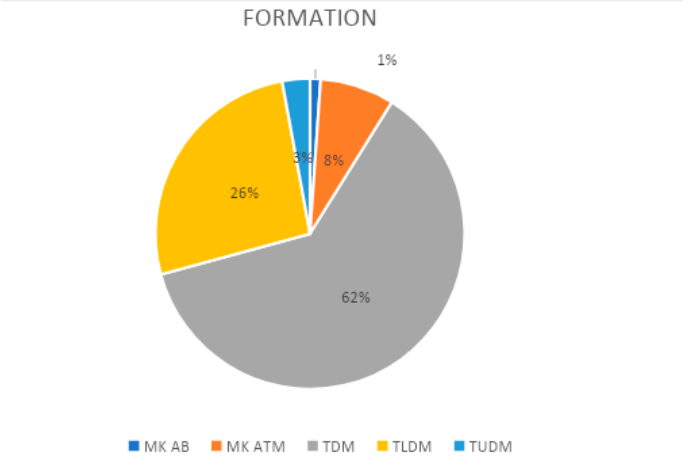

Figure 5: Distribution of Positive Case COVID-19 by Formation

As military personnel are distributed in all states to maintain the security of the nation, we also collected data on the states where these respondents are working. The highest number of respondents were from the state of Perak with 22.2% (n=693) followed by state of Johor and Sabah with 15.1% (n=470) and 15.4% (n=480) respectively (Figure 6).

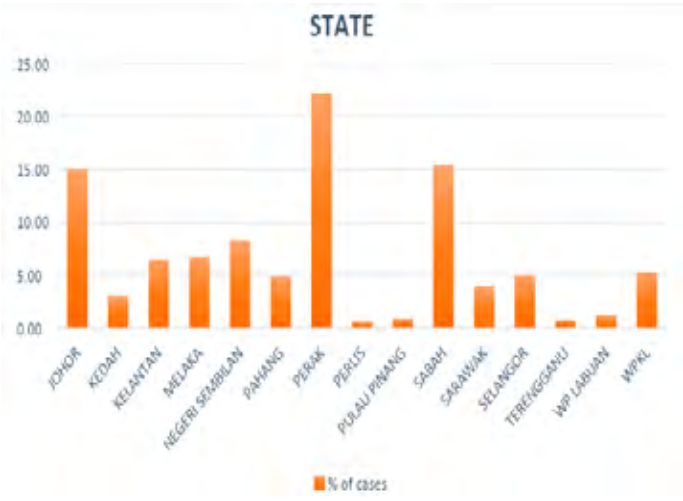

Figure 6: Distribution of Positive Case COVID-19 by State

Clinical Characteristics

In this study, only 5.8% (n=181) of the correspondents had long COVID-19 symptoms among 3117 respondents. From the questionnaire, 84.7% (n=2639) of the respondents had symptoms resolved in less than 4 weeks from diagnosis of COVID-19. Meanwhile 9.5% (n=297) had symptoms prolonged from 4 to 12 weeks and 5.8% (n=181) symptoms present more than 12 weeks (Figure 7).

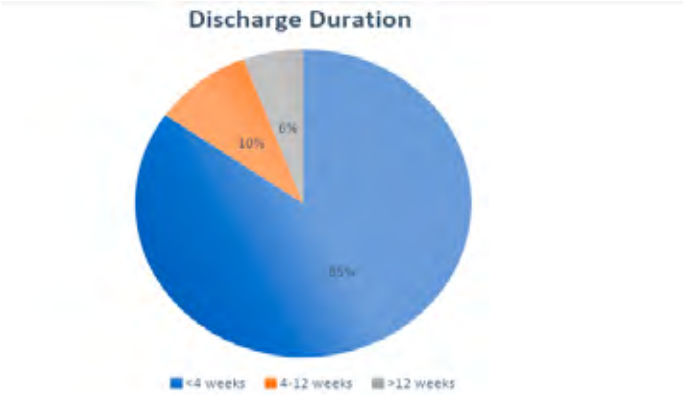

Figure 7: Symptom duration among positive case of COVID-19

Long COVID-19 sequelae were categorised by human body systems. The Musculoskeletal system scored the highest with 2.9% (n=90) followed by the Respiratory system with 2.1% (n=66). Other systems which recorded long COVID-19 symptoms were Cardiovascular 1.3% (n=39), Nervous 2.3% (n=73), Reproductive 0.2% (n=5), Integumentary 0.03% (n=1), Psychological 1.4% (n=43) and loss of weight with 0.4% (n=12) (Figure 8). There were no reported long COVID-19 symptoms reported in relation to digestive, urinary, endocrine and immune systems.

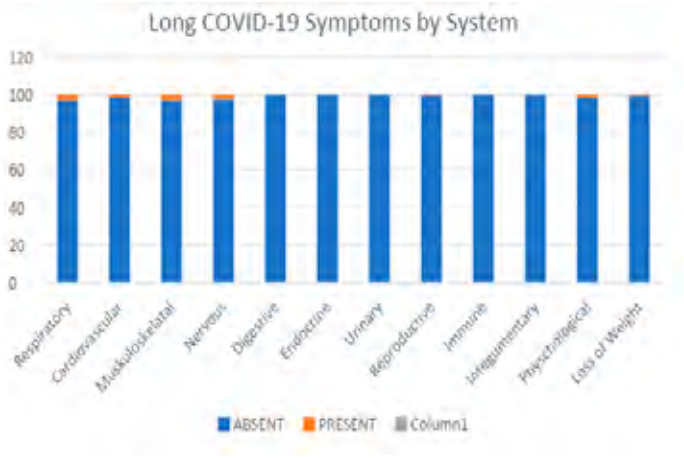

Figure 8: Distribution of Long COVID-19 Symptoms by System

From the data collected, 47.9% (n=1492) of the correspondents were unaware of the clinical category they were in when they were contracted COVID-19. On the other hand, the other half of the participants of this study who knew their clinical category responded that 32.7% (n=1020) were in Category 2, followed by Category 1 with 18.2% (n=566). There were also personnel categorised into category 3, 4 and 5 with 0.9% (n=28), 0.3% (n=8), 0.1% (n=3) respectively (Figure 9).

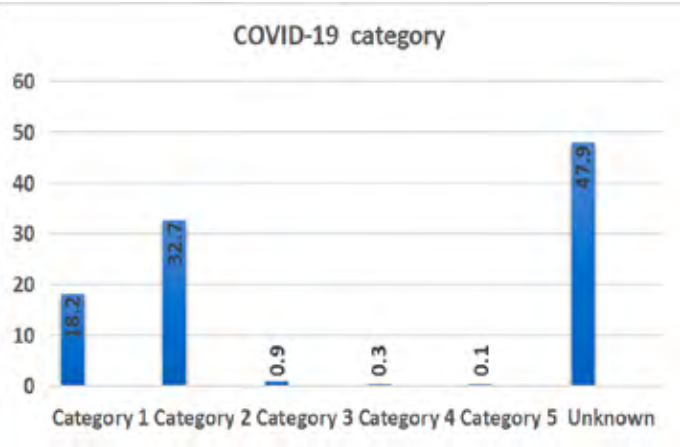

Figure 9: Distribution of Clinical Category Among Positive COVID-19

DISCUSSION

Prevalence

As this is a convenience sampling, the questionnaire link was distributed through WhatsApp among MAF personnel groups. Total of 3117 personnel responded and the data received were analysed. In our study, the prevalence of long COVID-19 sequelae among the positive COVID-19 patients was just 5.8% (n=181). This number is relatively low compared to data taken from other studies done in other countries. According to a study done in Italy, residual symptoms occurred in 35% of the patients who have been treated with COVID-19 as outpatients and 87% of patients who have been hospitalised due to COVID-192. As of the writing of this paper, there are a limited number of studies done in the military environment and this is the first studies done in MAF.

Sociodemographic characteristics

From our study, it is noted male is the most common gender affected by COVID-19 which constitutes 92.2% (n=2874) compared to female with 7.8% (n=243). Among the participants who have long COVID-19 sequelae, male dominates with 75% (n=111) and female with 25% (n=37). These findings are coherent with the population of the Malaysian Armed Forces who are dominantly male gender. Besides that, there were studies also showing male gender having higher prevalence of getting COVID-19 compared to female due to several possible factors such as sex based immunological differences driven by sex hormone and X chromosome. The expression of certain genes enhances further formation of receptors which have higher affinity for infection[8].

Majority of COVID-19 patients are of other ranks who constitute 94% (n=2891) compared to officers 6% (n=186). This is simply by the fact that the composition of other ranks surpasses the composition of officers. Furthermore, based on previous studies, it is shown that the majority of personnel involved in operational tasks whereby they had higher chances of exposure to the civilian population were from other ranks compared to officers. They were mainly deployed as front liners and border securing duties, increasing their risk to contract COVID-19 as they were frequently involved in examining and inspecting civilians during Ops Penawar[9].

In terms of age, the most affected by COVID-19 are from the age group 20-29 with 48.9% (n=1523) As this is the median age group serving in the services, this population is the driving force that generates majority of the human resource for the armed forces, including the Naval and Air Force services. This study also shows that Malays are the most affected ethnic group compared to the other races with 82.5% (n=2570) getting infected with the disease. This is dictated by the fact that the majority of Malaysians and soldiers in the Malaysian Armed forces are Malay. The 'Others' denoted in the ethnic groups refers to other minority races not specified.

Employment characteristics

From our study it shows most of the military COVID-19 patients are from the Army (TDM) with 62% (n=1928). This corresponds to the Army being the majority composition in the MAF. In the Malaysian Armed Forces, the army comprises almost 70% of the total uniformed personnel. Furthermore, this task group was largely involved in most land operational duties considering 74% of Malaysian topographical presentations are land.

Clinical Characteristics

This study shows musculoskeletal symptoms are the most common post COVID-19 sequelae among other systems with 2.9% (n=90) followed by respiratory systems with 2.1% (n=66). These results are also tallies with studies done by Aiyegbusi et al. in 2021 whereby fatigue and dyspnoea are the most common post COVID-19 sequalae.[10] Studies show that predisposition systems concerned with presence of ACE 2 receptors were mainly involved with post COVID-19 symptoms. Various mechanisms have been associated with the pathology of myalgia and arthralgia in Post COVID-19 syndrome. The presence of ACE2 has also been demonstrated in the brain, kidney, vascular smooth muscle, and skeletal muscles. A recent article reported that lactate levels increase due to surplus cell damage during COVID-19 infection. Hyperlactatemia, the oxygen-carrying capacity of erythrocytes to the tissues is impaired and the tissues remain hypoxic. The virus can spread through the bloodstream or vascular endothelium and cause infection in all tissues containing ACE2 such as the heart and brain. Therefore, the musculoskeletal system can also undergo infection. Increasing creatinine kinase levels during COVID-19 infection proves muscle involvement[11,12].

In Malaysia, COVID-19 patients are categorised into 5 clinical groups according to the severity which are 1-asymptomatic, 2-symptomatic, 3-evidence of pneumonia, 4-oxygen supplement requirement, and 5-intubated and/or multiorgan failure. The clinical category of COVID-19 among the participants of this study is not well demonstrated and documented as 47.9% (n=1492) unsure of their category. Among the participants who are aware of their clinical categories, the highest suffered from a category 2 infection with 32.7% (n=1020). From this data, category 3,4, and 5 are the lowest, most probably due to the vaccination status of the Malaysia Armed Forces. With the Regulations set by the headquarters which made it compulsory for all Malaysia Armed Forces personnel to be vaccinated, they have reached a coverage of at least 95% fully vaccinated. The correlation between vaccination and severity of the symptoms are well documented and this also proves that vaccination reduces hospitalisation and severity of the disease[13]. The efficacy of COVID-19 vaccine of more than 50% against COVID-19 infection has been a criterion for each vaccine to be approved to reduce the infectivity and severity of the disease[14].

CONCLUSION

This is just the descriptive part of a study for long COVID-19 among Malaysian Armed Forces personnel. A followup paper on this will concentrate on associations and predictors of long COVID-19 in the MAF to understand the problem better and to intervene if necessary.

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