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Epidemiological, Clinical, and Occupational Characteristics of Migrant Workers Confirmed with COVID-19 at Udayana University Hospital

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has prompted Indonesian expatriates to return home. Travel history, including migrant repatriation, was thought to spread COVID-19. These factors increased COVID-19 transmission. This study examined the epidemiological, clinical, and occupational characteristics of migrant workers with COVID-19 at Udayana University Hospital. This descriptive study utilized a cross-sectional methodology. The research samples consisted of 97 migrant workers diagnosed with COVID-19 who had been treated at Udayana University Hospital from March to August of 2020, using the total sampling technique. The median age (IQR) of migrant workers is 30, and 84.53% are male. Before returning to Indonesia, many worked and visited the US (20.6%). 87.63% of respondents worked in hospitality sector, and mostly worked in 8–12-hour shifts. All respondents have insurance; most employers are provided with PPE and information regarding COVID-19 prevention. At the airport, COVID-19 screening revealed fever (70.6%) and cough (76.3%) as the most common symptoms. A 94.8% of migrant workers had no comorbidities, and 87.6% had normal chest X-rays. From this research, we discovered that amongst migrant workers, positive-COVID-19 results were mostly found in young, mobile men. Most of them worked for 8–12 hours per day, and majority worked in hospitality sector. Almost all of them did not have any comorbidities and the most common symptoms found were fever and cough. The findings suggest that male workers in their productive age with high mobility and working in the hospitality sector are at higher risk of infection.

INTRODUCTION

The occurrence and rapid spreading of the coronavirus disease 2019 (COVID-19) pandemic have startled people worldwide. In the initial phase of this pandemic, very little information was known regarding this ailment, including its mode of transmission, incubation period, treatment, vaccination, and other features, mainly because of its rapid clinical transformations.[1,2] On December 31st, 2019, Wuhan Municipal Health Commission in China reported a cluster of pneumonia cases in Wuhan, Hubei Province. These findings were eventually identified to be caused by a novel coronavirus.[3]

Some initial cases were confirmed outside mainland China in Japan, South Korea, and Thailand on January 20th, 2020. On January 30th, 2020, the World Health Organization's (WHO) General Director declared the COVID-19 outbreak an international public health emergency and issued several recommendations regarding COVID-19 prevention and treatment.[3-5]

The surprising number of deaths caused by COVID-19 put a challenge in various sectors, especially in public health, the food system, and employment. According to the WHO, economic and social instabilities caused by the pandemic threatened millions of people to fall into poverty.[4,5] These factors urged people who had previously chosen to live, study, and work abroad to return to Indonesia.

Bali has quite a large number of migrant workers. According to data from the Center for the Placement and Protection of Indonesian Migrant Workers (BP3TKI) in Bali, there were 15,436 overseas workers from Bali.[5]

COVID-19 transmission was associated with the infected patient's travelling history. Hence, the repatriation of migrant workers can increase the risk of COVID-19 transmission between fellow workers and people in their hometowns. Migrant workers' return to their country of origin significantly impacts confirmed cases. Interactions of these repatriated migrant workers may contribute to escalating confirmed COVID-19 cases.[6] Current protocols for COVID-19 prevention mandate immigrants from foreign countries to do quarantine in facilities provided by government. The protocol applied is to do a PCR swab when you arrive, quarantine for two weeks, stay safe, and always wear a mask.[7,8] Based on those facts, the authors are interested in conducting this study to understand the epidemiological, clinical, and occupational characteristics of migrant workers confirmed with COVID-19 who were treated at Udayana University Hospital.

MATERIALS AND METHODS

Materials

Samples were taken using random sampling by accessing patients' medical records to determine which patients met the study criteria. The inclusion criteria in this study were migrant workers who previously worked in foreign countries, diagnosed with COVID-19 and treated at Udayana University Hospital, and having a complete medical record. The exclusion criteria in this study were patients whom not willing to be part of the study, or cannot be contacted by phone number recorded in the medical record. Data were collected by interviewing respondents through phone, using a questionnaire filled by the researcher.

Methods

This study is a descriptive study with a quantitative method and cross-sectional design. The target population in this study is

migrant workers who were diagnosed with COVID-19 and being treated at Udayana University Hospital from March to August 2020. The sample size was determined using a sample size application by the WHO, resulting in 97 people.

RESULTS AND DISCUSSION

Epidemiological Characteristics

This study's epidemiological characteristics include age, gender, residential regency, visited countries before returning to Indonesia, and their location when confirmed with COVID-19 (Table 1). The youngest migrant worker is 20 years old, while the oldest one is 49 years old. Thus, the median age (IQR) is 30 years.

The clinical characteristics studied were the timing of COVID-19 confirmation, symptoms experienced, comorbidities, chest X-ray results, and smoking history (Table 2). No death was recorded during treatment at Udayana University Hospital.

The occupational characteristics were occupation, country of employment, working period, working duration, information related to COVID-19 prevention from employers, personal protective equipment (PPE) availability, and insurance (Table 3).

Table 1. Respondents' Epidemiological Characteristics.

Characteristics	N	%
Age		
18-24 years	15	15.53
25-34 years	52	53.60
35-44 years	21	21.6
≥45 years	9	9.27
Gender		
Male	41	42.26
Female	56	57.7
Residential Regency		
Bangli	5	5.15
Denpasar	30	30.92
Karangasem	15	15.46
Gianyar	17	17.52
Badung	7	7.21
Buleleng	11	11.34
Jembrana	3	3.09
Lombok Tengah	6	6.18
Bandung	3	3.09
Visited Countries		
USA	20	20.6
United Arab Emirates	14	14.4
Italy	12	12.4
England	11	11.3
Qatar	8	8.3
Australia	8	8.3
Malaysia	5	5.2
Brazil	5	5.2
Spain	4	4.1
Denmark	4	4.1
Nepal	2	2.1
France	1	1.0
Barbados	1	1.0
India	1	1.0
Peru	1	1.0
Location at the time of COVID-19 diagnosis		
Airport Health Assessment	52	53.6
Medical Examination	40	41.2
Contact Tracing	5	5.2

In this study, most cases involved a male in the 25-34 years group. This phenomenon may be caused by biological differences in immunity systems between males and females and might affect the body's ability to fight infections, including SARS-CoV-2. In general, females tend to be more immune to infections than males. Potentially this theory was contributed by several factors, such as sex hormones and higher expression of coronavirus receptor (ACE 2) in males. Furthermore, higher smoking rates and alcohol consumption in males might also affect this phenomenon.

Females also tend to have more responsible behavior during the pandemic. This attitude could affect obedience to preventive manners, such as hand washing, usage of face masks, and staying at home.[9] This result was also in line with the study conducted by Ngiam (2021), which stated that some patients with COVID-19 in Singapore were healthy young workers. This study also found similarities between

Table 2. Respondents' Clinical Characteristics.

Characteristics	N	%
Timing of COVID-19 Confirmation		
March 2020	26	26.81
April 2020	18	18.56
May 2020	14	14.43
June 2020	16	16.49
July 2020	12	12.37
August 2020	11	11.34
Symptoms Experienced		
Cough	74	76.3
Fever	68	70.6
Sore throat	23	23.7
Shortness of breath	12	12.4
Headache	12	12.4
Fatigue	4	4.12
Anosmia	2	2.06
Comorbidities		
None	92	94.8
Hypertension	3	3.09
Diabetes	1	1.06
Mallory-Weiss Syndrome	1	1.06
Chest X-Ray Results		
Normal	85	87.6
Pneumonia	12	12.4
Smoking History		
Not smoking	80	82.4
1-5 years	3	3.1
5-10 years	5	5.2
>10 years	9	9.3

Table 3. Respondents' Occupational Characteristics.

Characteristics	N	%
Occupation		
Driver	4	4.12
Agriculture	4	4.12
Spa Therapist	6	6.16
Room Attendant	19	19.59
Bar Worker	12	12.4
Cook	19	19.59
Waiter	29	29.89
General Worker	4	4.12
Country of Employment		
USA	20	20.6
United Arab Emirates	14	14.4
Italy	12	12.4
England	11	11.3
Qatar	8	8.3
Australia	8	8.3
Malaysia	5	5.2
Brazil	5	5.2
Spain	4	4.1
Denmark	4	4.1
Nepal	2	2.1
France	1	1.0
Barbados	1	1.0
India	1	1.0
Working Period		
1-5 years	42	43.3
5-10 years	36	37.1
>10 years	19	19.6
Working Duration		
4-8 hours	51	52.6
8-12 hours	29	29.9
>12 hours	17	17.5
Received information about COVID-19 prevention from employers		
Yes	93	95.9
No	4	4.1
PPE provided by employers		
Disinfectant	47	48.5
Hand Soap	92	94.8
Hand Sanitizer	66	68.0
Headcap	50	51.5
Hand Glove	85	87.6
Face Shield	8	8.25
Goggles	2	2.06
Face Mask	97	100
Insured		
Yes	97	100
No	0	0
Types of Insurance		
BPJS Kesehatan	5	5.15
BPJS Ketenagakerjaan	25	25.77
Private Insurance	67	69.07
Insurance Facilitated by Employers		
Yes	38	39.18
No	59	60.82

young workers and students who returned to Hong Kong during the pandemic.[8,10]

The United States was the most visited country by respondents before they returned to Indonesia. According to a study done by Cartaxo (2021), India, United States, and Brazil were the countries with the highest risk of exposure. Rates of COVID-19 transmission in these countries were as follows: 39.5%, 19.7%, and 24.4%. The incident rates (139.7; 1449.9; 1327.6

cases per 100.000 ha) were considered medium to high.[9-12]

COVID-19 infections among these workers were confirmed mainly by detection at the airport. A study by Mouchtouri (2020) also found that 77.5% of healthcare systems that performed screening at the airport identified most imported cases.[10,12] Recently, countries worldwide implemented screening at international airports to identify import cases. This action was one of the attempts to respond to COVID-19 as an international public health emergency.[13,14-17]

In this study, fever and cough were the most prevalent symptoms among COVID-19-positive workers. Chen et al (2020)[11] also revealed similar results, namely that the most common symptoms among COVID-19 patients were fever (83%), cough (82%), shortness of breath (31%), muscle pain (11%), fatigue (9%), headache (8%), sore throat (5%), rhinorrhea (4%), chest pain (2%), diarrhea (2%), and nausea and vomiting (1%).[11]

Most respondents did not have comorbidities, possibly because they had undergone a series of medical examinations to ensure their physical and mental health before working abroad. The purpose of these examinations is to identify conditions that may pose a threat to public health. These evaluations were also advantageous for migrant workers, as they provided information about their health conditions.[12,18-20] Half of the employees who underwent chest X-ray examinations had normal results. This result was comparable to that of Yoon et al. (2020), who found that the majority of COVID-19 patients had normal chest X-rays.[13,19]

Most migrant workers treated at Udayana University Hospital had no smoking history (82.4%), while the remaining 17.6% did. Seven out of nine smokers who underwent a chest X-ray were diagnosed with pneumonia. This result was similar to what Berlin et al. (2020)[14] discovered in their study of intensive care unit patients who had previously cared for COVID-19 patients.[14,21,22] In their investigation, they compared several studies. One of these studies revealed that 108 of 913 COVID-19 patients with mild illness and 29 of 172 COVID-19 patients with severe illness were smokers. Other research revealed that three of 82 COVID-19 patients with mild illness severity and four of 58 COVID-19 patients with severe illness were smokers. According to another study, up to two of 67 patients with mild illness and three of 11 patients with severe illness were smokers.[14,23] This may appear small, but smoking was likely associated with the negative evolution and worse outcomes of COVID-19 illness. This theory was supported by the fact that tobacco smoke exposure was the primary risk factor for lung diseases, and smoking was a significant risk factor for both viral and bacterial infections virus.[24,25]

Mainly, respondents worked in the hospitality sector, such as waiter, cook, room attendant, and bar worker. In Indonesia, Bali Province was the principal recruitment place for hospitality sector workers because the people have pretty high rates of English fluency and secondary school graduate. Also, they have a good tolerance for people of various religions.[15,22]

These are several reasons why many Balinese residents, especially those in the productive age group, chose to work abroad. One of the popular occupations was working on cruise ships. In connection with this study, the jobs of most respondents have a high risk of spreading COVID-19 because it requires them to interact with many people, even having close contact with other people who may be infected with COVID-19.

The number of migrant workers in Bali was relatively high. Based on data collected by the Bali Province Government (Service Center for Placement and Protection of Indonesian Migrant Workers or BP3TKI Bali, and Manning Agency), 15,436 migrant workers in 2020 from Bali worked abroad.[5]

Based on working duration, most respondents worked 8-12 hours and >12 hours per day. This result resembled the finding in a study by Adhyatma and Hapsari (2021)[15], which stated that in the tourism industry, especially cruise ship charters, the primary purpose is to provide customers with exceptional personal experience and excellent service. These attempts were, to some extent, executed by room boys, spa therapists, and other service staff, who are on stand-by 24 hours a day.[15,25]

The services provided by yachts might seem similar to luxury hotel services. However, this system was a completely different experience for the staff because they were required to work longer shifts and shorter rest periods. Hence, they were more prone to exhaustion. Moreover, working in open seas, far from home, and for an extended period could make workers experience stress.[15,19]

Employers had conveyed information regarding COVID-19 properly, so most workers had already received information about its prevention. PPE provision for workers was the most crucial part of preventing COVID-19 transmission in workplaces, and employers have provided PPE, mainly in the form of face masks and hand soaps.[16,23,25] Furthermore, all migrant workers were already covered with or had insurance, varying from private ones or in the form of BPJS, whether paid personally or facilitated by their employers.

STRENGTH AND LIMITATION

The study was conducted online using Google Forms, which might have limited the participation of those who do not have access to digital devices, thus the population sample probably did not fully reflect the general population. Furthermore, respondents may have had different interpretations of the questions, which could lead to bias in the study's results.

CONCLUSIONS

This study sheds light on the characteristics of migrant workers treated for COVID-19 at Udayana University Hospital in Bali, Indonesia. The findings suggest that male workers in their productive age with high mobility and working in the hospitality sector are at higher risk of infection. Early detection, prompt treatment, and workplace safety measures such as providing PPE and information on COVID-19 by employers are crucial in mitigating the spread of the virus among vulnerable populations. The study emphasizes the need for continued efforts to protect these populations and prevent further virus transmission.

ETHICAL CLEARANCE

The research protocol was approved by Chairperson of the Research Ethics Commission, Faculty of Medicine, Udayana University with protocol number 021.01.1.0616.

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CONFLICT OF INTEREST

Competing interests: No relevant disclosures.

AUTHOR CONTRIBUTION

IMAW and CAWP contributed to the study's conception and design and critically revised the article. NPPP and CAWP were responsible for data collection, while NPPP and MF were responsible for the analysis and interpretation of the data. NPPP and MF also wrote the article, and all authors, including NPPP, IMAW, CAWP, and MF, gave final approval of the article.

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