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LAMPIRAN

Lampiran 1. Artikel yang Ditelaah



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Review

Systematic Review on Outbreaks of SARS-CoV-2 on Cruise, Navy and Cargo Ships

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Abstract: The confined environment of a ship promotes the transmission of the severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) due to close contact among the population on board. The study aims to provide an overview of outbreaks of SARS-CoV-2 on board of cruise, navy or cargo ships, to identify relevant outbreak management techniques, related problems and to derive recommendations for prevention. Four databases were searched. The study selection included reports about seroprevalences or clinically/laboratory confirmed infections of SARS-CoV-2 on board ships between the first of January, 2020 and the end of July, 2020. A total of 37 studies were included of whom 33 reported outbreaks of SARS-CoV-2 on cruise ships (27 studies referred to the Diamond Princess). Two studies considered outbreaks on the Grand Princess, three studies informed about

Epidemiology of Coronavirus Disease Outbreak among Crewmembers on Cruise Ship, Nagasaki City, Japan, April 2020

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In April 2020, a coronavirus disease (COVID-19) outbreak occurred on the cruise ship Costa Atlantica in Nagasaki, Japan. Our outbreak investigation included 623 multinational crewmembers onboard on April 20. Median age was 31 years; 84% were men. Each crewmember was isolated or quarantined in a single room inside the ship, and monitoring of health status was supported by a remote health monitoring system. Crewmembers with more severe illness were hospitalized. The investigation found that the outbreak started in late March and peaked in late April, resulting in 149 laboratory-confirmed and 107 probable cases of infection with severe acute respiratory syndrome coronavirus 2. Six case-patients were hospitalized for COVID-19 pneumonia, including 1 in severe condition and 2 who required oxygen administration, but no deaths occurred. Although the virus can spread rapidly on a cruise ship, we describe how prompt isolation and quarantine combined with a sensitive syndromic surveillance system can control a COVID-19 outbreak.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported from Wuhan, China (1), and led to outbreaks of coronavirus disease (COVID-19), which was declared a pandemic

by the World Health Organization on March 11, 2020. COVID-19 also has been affecting global economies, leading to several recessions (2). Japan experienced an outbreak of COVID-19 on the cruise ship Diamond Princess during the early stages of the epidemic in February 2020 (3–5). The government of Japan prohibited entry into the country at the end of March, declaring a state of emergency in 7 prefectures on April 7, which became a nationwide policy on April 16. Against this backdrop, the Italian cruise ship Costa Atlantica had remained docked at Nagasaki City since January 2020 for full maintenance. In April 2020, we identified an outbreak of COVID-19 on this cruise ship.

COVID-19 spreads easily on cruise ships because of the “3 Cs”: crowded places, close-contact settings, and confined and enclosed spaces (6–9). Given the specialized setting of a cruise ship and its closed population, a cruise ship can offer important insights about infectious disease epidemiology and transmission dynamics (10). How to manage an outbreak of COVID-19 on a cruise ship is a matter of debate, especially in a resource-limited situation. To improve our understanding of COVID-19 and prepare for outbreaks to come, studies of outbreaks on cruise ships are valuable. In this article we describe the epidemiology of the COVID-19 outbreak on Costa Atlantica and approaches taken for

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Cruise ship travel in the era of COVID-19: A summary of outbreaks and a model of public health interventions

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RESEARCH

COVID-19 outbreaks among crew on commercial ships at the Port of Rotterdam, the Netherlands, 2020 to 2021

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Background: During the COVID-19 pandemic, international shipping activity was disrupted as movement of people and goods was restricted. The Port of Rotterdam, the largest port in Europe, remained operational throughout. **Aim:** We describe the burden of COVID-19 among crew on sea-going vessels at the port and recommend improvements in future infectious disease event notification and response at commercial ports. **Methods:** Suspected COVID-19 cases

lives and more than 760 million cases have been reported worldwide [1]. To control and mitigate viral spread, countries were forced to adopt unprecedented public health measures including restriction of movement that resulted in the disruption of trade flows, supply chains and international shipping activity [2]. In 2020, world merchandise trade declined by 5.3% [3].

Pre-pandemic, around 11 billion tonnes of goods, annu-

Epidemiology of COVID-19 Outbreak on Cruise Ship Quarantined at Yokohama, Japan, February 2020

Expert Taskforce for the COVID-19 Cruise Ship Outbreak¹

To improve understanding of coronavirus disease (COVID-19), we assessed the epidemiology of an outbreak on a cruise ship, February 5–24, 2020. The study population included persons on board on February 3 (2,666 passengers, 1,045 crew). Passengers had a mean age of 66.1 years and were 55% female; crew had a mean age of 36.6 years and were 81% male. Of passengers, 544 (20.4%) were infected, 314 (57.7%) asymptomatic. Attack rates were highest in 4-person cabins (30.0%; $n = 18$). Of crew, 143 (13.7%) were infected, 64 (44.8%) asymptomatic. Passenger cases peaked February 7, and 35 had onset before quarantine. Crew cases peaked on February 11 and 13. The median serial interval between cases in the same cabin was 2 days. This study shows that severe acute respiratory syndrome coronavirus 2 is infectious in closed settings, that subclinical infection is

totaling 3,711 persons. On February 3, health authorities in Japan reviewed logs at the onboard clinic for symptomatic (febrile or respiratory) patients and obtained respiratory specimens from them. On February 5, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was detected through real-time reverse transcription PCR (rRT-PCR) in 1 of these specimens.

At 7:00 AM on February 5, all persons on board were ordered to remain in their cabins for 14 days and were informed that this period could be extended if they had had close contact with someone who had a confirmed case. As of March 8, a total of 696 COVID-19 cases had been reported from this ship (2). Our objective was to characterize the epidemiology of this cruise ship outbreak to improve global understand-

Original research

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Evaluating strategies for global respiratory pandemic control at ports: a modelling study

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ABSTRACT

Background Heavy reliance on container shipping during the COVID-19 pandemic with lockdown implementation and air travel bans placed substantial pressure on shipping crews and ports. Long waiting times at ports, substantial economic losses and massive supply chain disruption of essential and medical goods were observed. To minimise this for future pandemic preparedness, we explore the use of quarantining and testing of crews preboarding instead of quarantining at port calls or during voyages.

Methods Using a microsimulation model of 10 000 vessels and 300 000 crew, we examine the effectiveness of nine predeparture control strategies in reducing COVID-19 outbreak sizes, from no control to the use of 7-day and 14-day quarantining, and addition of polymerase chain reaction (PCR) or antigen rapid test (ART) testing. To assess different infection parameters, we explored three variants (Alpha, Delta and Omicron), four prevalences (0.1%, 0.5%, 1% and 2%) and three quarantine compliances (50%, 90% and 100%).

WHAT IS ALREADY KNOWN ON THE TOPIC

⇒ Studies have shown our great reliance on maritime transportation and cargo vessels during the COVID-19 global pandemic, and the risks its large workforce faced from disease exposure and being stranded at sea without medical care amidst vessel outbreaks.

WHAT THIS STUDY ADDS

⇒ A universal predeparture quarantining and testing framework for shipworkers in future pandemics to protect ship workers and port workers, many of whom are temporary migrant workers.
⇒ Establishing that shipworkers originating from high prevalence settings require 14 day predeparture quarantining minimum at the worker's place of origin, which can substantially reduce the risk of outbreaks occurring on ships.
⇒ Estimations of modelled outbreak sizes among car-

Successful Control of an Onboard COVID-19 Outbreak Using the Cruise Ship as a Quarantine Facility, Western Australia, Australia

Tudor A. Codreanu, Sera Ngeh, Abigail Trewin, Paul K. Armstrong

Onboard quarantining has been only partially effective to control outbreaks of coronavirus disease on cruise ships. We describe the successful use of the ship as a quarantine facility during the response to the outbreak on the MS Artania, which docked in Western Australia, Australia. The health-led 14-day quarantine regime was based on established principles of outbreak management and experiences of coronavirus disease outbreaks on cruise ships elsewhere. The attack rate in the crew was 3.3% (28/832) before quarantine commencement and 4.8% (21/441) during quarantine on board. No crew members became symptomatic after completion of quarantine. Infection surveillance involved telephone correspondence, face-to-face visits, and testing for severe acute respiratory syndrome coronavirus 2. No serious health issues were reported, no response staff became infected, and only 1 quarantine breach occurred among crew. Onboard quarantine could offer financial and operational advantages in outbreak response and provide reassurance to the shore-based wider community regarding risk for infection.

ill but who may have been exposed to an infectious agent or disease" [7]) has been a cornerstone of infectious disease control for centuries. Quarantine ensures the early detection of cases by monitoring for illness onset and isolating infected persons from others until they are no longer infectious (8). In modern times, the period of quarantine is normally set at the maximum incubation period of the disease of interest (9). Quarantine has been used, in conjunction with other measures, to control infectious disease outbreaks on cruise ships (10–12).

On January 7, 2020, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified as the causative organism of an infectious respiratory disease affecting residents of Wuhan, China. Coronavirus disease (COVID-19) rapidly spread around the world and was declared a pandemic on March 12, 2020 (13). Outbreaks of COVID-19 on cruise ships were an early feature of the pandemic,

Morbidity and Mortality Weekly Report

Notes from the Field

Cruise Ship Norovirus Outbreak Associated with Person-to-Person Transmission — United States Jurisdiction, January 2023

Carolyn A. Crisp, PhD^{1,2}; Keisha A. Jenkins, DrPH²; Ian Dunn, MPH³; Andrew Kupper, MPH²; Jona Johnson, PhD²; Stefanie White, MPH²; Erin D. Moritz, PhD²; Luis O. Rodriguez, MS²

CDC's Vessel Sanitation Program (VSP) monitors cases of acute gastroenteritis (AGE) on board cruise ships traveling to a U.S. port (1). Persons who have ≥ 3 loose stools (or more than normal for that person) within a 24-hour period or vomiting plus one other sign or symptom (e.g., fever, diarrhea, bloody stool, myalgia, abdominal cramps, or headache) meet the case definition for reportable AGE (2). When the percentage of passengers or crew members with AGE is $\geq 2\%$ and the ship is due to arrive at a U.S. port within 15 days, the Maritime Illness Disease Reporting System alerts VSP and activates an investigation (1). During the first week of January 2023, VSP was notified of cases of AGE affecting $>2\%$ of passengers on board a ship that had completed three voyages in Europe and was within 15 days of arriving at a U.S. port (voyage 4)* (Figure). Ship medical crew members submitted stool samples from ill travelers for testing. All samples tested positive for norovirus genotype II. While the ship was sailing to a U.S. port, VSP monitored AGE cases on board and reviewed case data. By mid-January, passenger AGE prevalence reached 3.4%.

Among 410 reported cases during November 2022–January 2023 (voyages 1–5), 356 (87%) occurred in passengers and 54 (13%) in crew members. The index case likely occurred in a food and beverage crew member sailing on a crew-only voyage (voyage 1). In general, crew members with AGE reported to onboard medical personnel in a timely manner and were isolated until 48 hours after symptoms subsided. Crew member transmission was followed by passenger transmission on voyages 3, 4, and 5. Vomiting and diarrhea were the predominant symptoms among cases. Approximately 70% of crew members with AGE interacted with passengers (i.e., housekeeping and food and beverage services). VSP partnered with the United States Agency for Toxic Substances and Disease Registry's Geospatial Research, Analysis, and Services Program to create four-dimensional visual models of the ship. These models helped visualize continued norovirus transmission and sources of potential exposure (e.g., contaminated surfaces in cabins of persons with AGE and high-touch surfaces in common areas).

Preliminary Conclusions and Actions

During this investigation, VSP used surveillance data and environmental and spatial analyses to improve field responses and quickly identify sources of norovirus exposure and transmission. Public health response to maritime AGE outbreaks involves robust and timely monitoring of AGE cases and collaborations with cruise companies. To prevent illness transmission across voyages, cruise ship personnel and regulars should

Article

Prevention and Control of COVID-19 Pandemic on International Cruise Ships: The Legal Controversies

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Abstract: During the COVID-19 pandemic in 2020, a number of international cruise ships were infected, thereby resulting in serious public health and human rights problems. Multiple difficulties were encountered in the prevention and control of the coronavirus disease onboard ships, while rule-based international cooperation in this regard appeared inefficient and ineffective. By applying interdisciplinary methodologies, including empirical research of law, policy science, and health studies, this research reviewed the legal difficulties in the prevention and control of COVID-19 on international cruise ships and sought solutions from a policy-making and strategic perspective. We found that, apart from the inherent nature of cruise ships such as crowded semi-enclosed areas, shared sanitary facilities and limited medical resources, there are also nonnegligible legal reasons affecting the effectiveness of containment measures on board. In particular, there is ambiguity and even inconsistency of relevant international norms and domestic regulations, and some of the key rules are neither mandatory nor enforceable. We conclude by suggesting that rule-based international cooperation on this issue must be strengthened with respect to information sharing and management, a more effective supervisory mechanism, clarification of key rules over jurisdiction and distributions of obligations among the port states, flag states, nationality states, and cruise ship companies.

Keywords: COVID-19; infectious disease; international cruises; health policy and regulation; control strategies; international cooperation; global health governance



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1. Introduction

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Infectious diseases on passenger ships: Port preparedness and response - A narrative systematic review^{*}

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ARTICLE INFO

Keywords:
Communicable disease
Passenger ships
Port capacities
Preparedness
Contingency plan
Public health

ABSTRACT

Background: Ships are environments conducive to the spread of infectious diseases among passengers and crew members. In this context, it is essential to establish effective prevention and control measures to protect the health of passengers and crew members while ensuring that shipping minimizes its contribution to the global spread of disease via ship-to-shore interactions. The aim of this review is to provide knowledge on the impact of infectious diseases on board large passenger ships on the port, the port community and other land-based operations.

Methods: A systematic literature review was conducted, searching the PubMed, Scopus and Cochrane Library databases and including additional articles from hand searches up to July 2024. Peer-reviewed studies of infectious disease outbreaks related to large passenger ship travel that described ship-shore interaction, port preparedness and impact on the port community were included. Article selection and data extraction were conducted by two independent reviewers.

Results: A total of 593 publications were initially identified, with 23 articles included in the analysis. Most studies reported COVID-19 outbreaks on cruise ships; other communicable diseases reported were influenza, gastroenteritis, and varicella. The articles highlighted the importance of comprehensive management plans and proactive risk assessment during infectious disease outbreaks that impact ship-to-shore interactions.

Conclusions: Effective stakeholder collaboration, ship-to-shore communication, coordination of diagnostic testing and medical transport, isolation, and quarantine measures are essential components of infectious disease prevention, mitigation, and management in passenger shipping within the port environment.



Contents lists available at ScienceDirect

Science of the Total Environment

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Monitoring of indoor air quality at a large sailing cruise ship to assess ventilation performance and disease transmission risk

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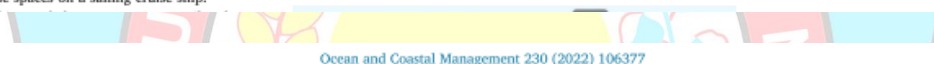
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HIGHLIGHTS

- Ventilation performance was assessed in nine spaces on a sailing cruise ship.

GRAPHICAL ABSTRACT



Contents lists available at ScienceDirect

Ocean and Coastal Management

journal homepage: www.elsevier.com/locate/ocecoaman

Quantitative analysis of the impact of COVID-19 on ship visiting behaviors to ports- A framework and a case study

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ARTICLE INFO

Keywords:
Maritime transportation
COVID-19
AIS data
Pattern recognition
Statistical analysis
Port management

ABSTRACT

Corona Virus Disease 2019 (COVID-19) outbreak leads to a significant downturn in the global economy and supply chain. In the maritime sector, trade volume slumped by 3.8% in 2020 compared with 2019. To explore the impacts of COVID-19 on ship visiting behaviors, a framework is proposed to analyze the impact of COVID-19 on port traffic using Automatic Identification System (AIS) data. Firstly, a ship travel behavior-based model is proposed to identify the vessel anchoring and berthing. Then, the diversity in vessel anchoring and berthing time are analyzed, reflecting the impact of COVID-19. The port congestion caused by COVID-19 is quantified by accounting for the number of visiting ships and their residence time. Finally, a case study is carried out on vessels in the Beibu Gulf, China, operating from 2019 to 2020. The results show that the average anchoring time and berthing time increase by 62% and 11% for cargo ships and by 112% and 63% for oil tankers after the outbreak of COVID-19 compared with that before COVID-19. And the density of ships increases in the port area in 2020. Accordingly, the relevant improvements and countermeasures are proposed to reduce the adverse impact of the epidemic on the port navigation system. The paper has the potential to provide a reference for port management and improving port navigation efficiency in the post-pandemic era.



Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon

Research article

A model for SARS-CoV-2 virus transmission on the upper deck of a passenger ship bound for a short trip

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ARTICLE INFO

Keywords:

SARS-CoV-2 transmission
Public transport
Water transport
Passenger ship
Probabilistic modeling

ABSTRACT

Public transportation plays a critical role in meeting transportation demands, particularly in densely populated areas. The COVID-19 pandemic has highlighted the importance of public health measures, including the need to prevent the spread of the virus through public transport. The spreading of the virus on a passenger ship is studied using the Computational Fluid Dynamic (CFD) model and Monte Carlo simulation. A particular focus was the context of Bangladesh, a populous maritime nation in South Asia, where a significant proportion of the population utilizes passenger ships to meet transportation demands. In this regard, a turbulence model is used, which simulates the airflow pattern and determines the contamination zone. Parameters under investigation are voyage duration, number of passengers on board, social distance, the effect of surgical masks and others. This study shows that the transmission rate of SARS-CoV-2 infection on public

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Impacts of the COVID-19 epidemic on merchant ship activity and pollution emissions in Shanghai port waters

Kun Shi, Jinxian Weng^{*}

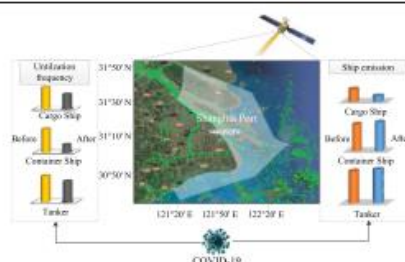
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HIGHLIGHTS

- To evaluate impacts of the COVID-19 epidemic on merchant ship pollutant emissions
- Strict COVID-19 quarantine measures cause more emissions from container ships.
- The unit ship emission cost is greatly reduced under the normal cruising status.
- Berthing and anchoring operations are associated with increased ship emissions.
- It is urgent to promote the use of shore power equipment during the epidemic period.

GRAPHICAL ABSTRACT





Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

The impacts of COVID-19 on the cruise industry based on an empirical study in China

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ARTICLE INFO

Keywords:
Cruise industry
COVID-19
Impact
China
Pandemic
Strategy
Sustainable

ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic has had an unprecedented impact on the entire cruise industry. This research aims to provide an understanding of the impacts of COVID-19 on the cruise industry from various stakeholders and recommend corresponding post-COVID recovery strategies for building a sustainable cruise industry. By conducting 22 semi-structured interviews in Shanghai, China and analysing the interview data using content analysis, this research finds five aspects of the impacts that are worth discussing, namely social, health and well-being, regulatory, operational, and financial aspects. Key findings include the impacts of different stakeholders' opinions, the problems existing in the current cruise industry, and the potential for future improvement. Recommendations and recovery strategies are proposed to mitigate the negative impacts. This research not only explores the impact of COVID-19 on cruise tourism and fosters recommendations in the most fast-developing region (China) but also facilitates researchers and policymakers to understand the effects of the pandemic and proposes future risk mitigation strategies.

1. Introduction

Cruise shipping was once a fast-developing sector of maritime transport, with an increase of 66.8% over the past decade and carrying around 17.8 million passengers in 2009–29.7 million passengers in 2019 to various destinations worldwide (Fig. 1). The year 2020 was expected to

studying COVID-19's impacts on the cruise industry is a work in progress, and many questions remain in this area. The COVID-19 pandemic can be regarded as a "black swan" event [58] – an unprecedented event that is outside the realms of known-known and known-unknown and would change the future world. As a consequence, cruise lines' future

Vaccinating international seafarers during the COVID-19 pandemic

David Lucas, Sue Stannard, Natalie Shaw, Rob Verbist, Kevin Walker, Jason Zuidema



Despite their key role in the distribution of essential goods, seafarers were often overlooked in international COVID-19 responses. Border closures isolated them at sea, often for months beyond contract. Distributing vaccines to seafarers was inconsistent and often depended on the creativity of charities and industry and labour stakeholders. Even seafarers who received vaccinations often had them unrecognised in the ports they visited. These oversights should not be repeated in preparation for future pandemics. As a vulnerable population and as key international workers, seafarers' health should be prioritised by national and international health policy.

Introduction

Seafarers are responsible for the carriage of about 60–70% of world trade by value, 80–90% in volume, and their work is especially important for economies in low-income and middle-income countries.¹ Although trade was reduced by the COVID-19 pandemic, public health responses relied on essential goods, including food and medical supplies, delivered by hundreds of thousands of international cross-border workers.

Most international seafarers perform shift work at sea on contracts of up to 11 months, continually crossing borders. Outside of the cruise industry, a typical vessel will have a crew of 20–30 seafarers. In 2020, seafarers serving on internationally trading merchant ships were estimated at 1892720: made up of 857540 ranking officers, and 1035180 so-called ratings working under their management.² The Philippines, Russia, Indonesia, China, and India were the world's largest suppliers of seafarers on merchant ships.³

COVID-19-related travel restrictions instantly changed the lives of seafarers. The most radical way was, perhaps, the crew change crisis: in October, 2020, the International Transport Workers' Federation estimated that 400,000 seafarers were stranded on forced extended

numbers at sea compounded the problem. Recognition of vaccination, such as COVID-19 vaccine passports, was also an issue as these were not internationally recognised for seafarers. Port states required and issued different information on their sanitary and vaccination certifications, for recognition of differing vaccines.

Crucially, there was no centralised coordination between port states or international agencies to effectively address these issues. Seafarer vaccination and documentation was instead undertaken provisionally by various stakeholders. Seafarers' access to health care, besides being imperative to achieve fairness and equality, is crucial for their ability to work. Most seafarers were not considered a priority for vaccination, and securing and certifying vaccinations was difficult, even when vaccinations were freely available.

Impact on health

Between social isolation, a dangerous work environment, fatigue, and limited access to care, health was already an issue for seafarers.⁴ The diverse hurdles created by the COVID-19 pandemic might have further compounded the high stress levels that maritime workplaces already experience, intensifying existing issues while adding new ones.

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12: e166–69
Seafarers Health Unit, Brest Teaching Hospital, Brest, France (D Lucas MD); North American Maritime Ministry Association, Reading, MA, USA (J Zuidema PhD, K Walker MD); International Chamber of Shipping, London, UK (N Shaw MD); International Maritime Health Association, Antwerp, Belgium (S Stannard MD, R Verbist MD)
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Ports and their influence on local air pollution and public health: A global analysis

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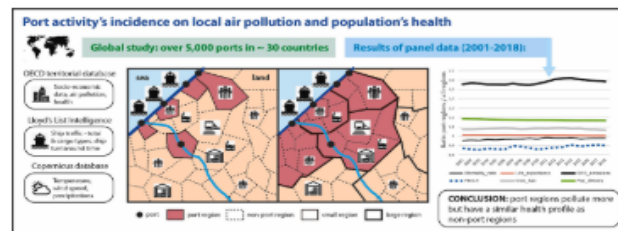
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HIGHLIGHTS

- Ship traffic data was statistically assessed against air pollution and health data.
- Port regions emit more greenhouse gases (GHG) than non-port regions.
- Berthing time accentuates air pollution, ECA and wind speed lower it.
- GHG emissions concentrate in densely populated port regions.
- Industrial port regions are the most critical for health and pollution.

GRAPHICAL ABSTRACT



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Journal of Theoretical Biology

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Evaluating infectious disease outbreak potential and mitigation effectiveness on cruise ships

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ARTICLE INFO

Keywords:

Diamond Princess cruise ship
COVID-19 outbreak
Mask wear
Vaccination
Pre-traveling test
Ventilation

ABSTRACT

The cruise ship sector is a major part of the tourism industry, and an estimated over 30 million passengers are transformed worldwide each year. Cruise ships bring diverse populations into proximity for many days, facilitating the transmission of respiratory illnesses. The objective of this study is to develop a modeling framework to inform the development of viable disease risk management policies and measures to control disease outbreaks on cruises. Our model, parameterized and calibrated using the data of the COVID-19 outbreak on the Diamond Princess cruise ship in 2020, is used to assess the impact of the mitigation measures such as mask wearing, vaccination, on-board and pre-traveling testing measures. Our results indicate mask wearing in public places as the cheapest and most affordable measure can drop the number of cumulative confirmed cases by almost 50%. This measure along with the vaccination by declining the number of the cumulative confirmed cases by more than 94% is the most effective measure to control outbreaks on cruises. According to our findings, outbreaks are more predominant in the passenger population than the crew members, however, the protection measures are more beneficial if they are applied by both crew members and passengers. Regarding the testing measure, pre-traveling testing is more functional than the on-board testing to control outbreaks on cruises.

1. Introduction

members from a combined total of 56 countries, and the average age of passengers was 66 years. The ship departed from Yokohama Port,



Screening and early detection of communicable diseases on board cruise ships: An assessment of passengers' preferences on technical solutions

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ARTICLE INFO

Keywords:
Public health
Cruise-ships
Early detection
Communicable diseases
Technological solutions
Passengers' willingness

ABSTRACT

Background: Implementing technological solutions to screen for and detect early the most prevalent communicable diseases on cruise ships is contingent on, among others, willingness of passengers to accept use of such solutions.

Method: We surveyed passenger preferences to record their willingness to accept technological solutions for screening and early detection of communicable diseases on cruise ships. Self-reported sociodemographic characteristics, use of technology and acceptance of solutions were recorded anonymously in paper format. Multiple logistic regression analyses investigated the association of demographic and other characteristics with willingness and barriers/concerns of passengers to endorse proposed solutions.

Results: Of a total of 1344 passengers on two successive cruises on board CELESTYAL OLYMPIA, 336 (1 every 4) participated in the survey. The vast majority of passengers (92.3 %, n = 310) agreed with at least one solution. Passengers showed lower levels of acceptance for more personalized solutions, such as use of wearable devices (45.5 %) and monitoring with cameras (64.0 %), whereas they were more receptive to less personally invasive solutions, such as integration of cabins with air purifiers (89.6 %) and air quality sensors (80.4 %). Age, self-employment status, educational level, and fear of contacting a communicable disease were significantly correlated with passengers' willingness to adopt proposed solutions.

Conclusions: To successfully integrate screening and early detection technological solutions in cruise ships, it is imperative that targeted awareness and education interventions are implemented on passengers to strengthen understanding and acceptance of such solutions and assuage concerns around monitoring and handling of personal health data.

Kualitas Pelayanan Pemeriksaan Kapal Dalam Karantina Pada Kantor Kesehatan Pelabuhan Kelas III Dumai

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Abstrak

Salah satu fungsi dari kantor kesehatan pelabuhan adalah pemeriksaan kedatangan kapal dalam karantina (*In Clearance*). Hal ini sesuai dengan Undang-undang Nomor 06 Tahun 2018 tentang kekarantinaan kesehatan. kegiatan Kekarantinaan Kesehatan di Pintu Masuk dan di wilayah dilakukan melalui kegiatan pengamatan penyakit dan Faktor Risiko Kesehatan Masyarakat terhadap Alat Angkut, orang, Barang, dan/atau lingkungan, serta respons terhadap Kedaruratan Kesehatan Masyarakat dalam bentuk tindakan Kekarantinaan Kesehatan. Tujuan penelitian dari penelitian ini adalah Menganalisis kualitas pelayanan pemeriksaan kapal dalam karantina. Untuk mengidentifikasi faktor-faktor penghambat dalam pemberian pelayanan pemeriksaan kapal dalam karantina pada Kantor Kesehatan Pelabuhan Kelas III Dumai. Penelitian ini dilakukan pada Kantor Kesehatan Pelabuhan Kelas III Dumai. Informen dalam penelitian ini antar lain adalah kepala kantor kesehatan pelabuhan kelas III Dumai atau yang mewakili, Kepala Seksi PKSE Kantor Kesehatan Pelabuhan Kelas III Dumai, ketua asosiasi keagenan kapal serta agen kapal yang ikut serta dalam pelaksanaan pelayanan pemeriksaan kapal dalam karantina. Dengan hasil penelitian bahwa Kualitas Pelayanan Pemeriksaan Kapal Dalam Karantina Pada Kantor Kesehatan Pelabuhan Kelas III Dumai telah baik dan di analisa dari 5 indikator yaitu Tangibles, Emphaty, Reliability, Respinsiveness, Assurance serta hambatan dari pelaksanaan pemeriksaan kapal dalam karantina Kantor Kesehatan Pelabuhan Kelas III Dumai adalah petugas yang kurang kompeten dalam menjalankan tugas, serta Tenaga SDM yang masih kurang dan kurangnya koordinasi antara petugas dan kapal dan sarana prasarana pemeriksaan yang masih belum memadai.

Implementasi Kebijakan Kekarantinaan Kesehatan Pada Keberangkatan Kapal Di Kantor Kesehatan Pelabuhan (KKP) Kelas III Dumai

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Abstrak

Dalam rangka meminimalisir penyebaran penyakit karantina, langkah yang diambil pemerintah salah satunya adalah cegah tangkal penyakit. Tidak hanya mencegah penyakit yang masuk melalui kedatangan kapal luar negeri ataupun dalam negeri, tetapi juga melakukan pencegahan penyebaran penyakit dari keberangkatan kapal baik yang mau keluar negeri ataupun dalam negeri. Tujuan dari penelitian ini adalah menganalisis implementasi Kebijakan Kekarantinaan Kesehatan pada Keberangkatan Kapal di KKP Kelas III Dumai dan mengidentifikasi siapa yang menghambat KKP Kelas III Dumai dalam mengimplementasikan Kebijakan Kekarantinaan Kesehatan pada Keberangkatan Kapal di KKP Kelas III Dumai. Penelitian ini merupakan penelitian kualitatif dimana teknik yang digunakan dalam pengumpulan data menggunakan teknik wawancara, observasi dan dokumentasi. Penelitian ini dilaksanakan di Kantor Kesehatan Pelabuhan (KKP) Kelas III Dumai yang beralamat di Jalan Datuk Laksamana, kelurahan Buluh Kasap, kecamatan Dumai Timur, Kota Dumai. penulis menggunakan teori implementasi kebijakan publik menurut Model Charles O. Jones (1996) yang dibagi menjadi tiga dimensi antara lain. Organisasi, Interpretasi, Aplikasi serta memiliki hambatan yaitu Kurangnya tenaga Sumber Daya Manusia di Kantor Wilayah, Selalu terjadi Kesalahan Input pada aplikasi Sinarkes, dan Pemeriksaan keberangkatan kapal (PHQC) belum optimal dilakukan.

Kata Kunci : Karantina Kesehatan, Keberangkatan, Kebiasaan

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HUBUNGAN SANITASI KONDISI SANITASI KAPAL DENGAN RESIKO PENYAKIT DI PELABUHAN BONTANG

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ABSTRAK

Pelabuhan menjadi sentral aktivitas perpindahan orang dan barang antar pulau, termasuk Pelabuhan Bontang yang berada di wilayah kerja Balai Kekarantinaan Kesehatan Kelas I Samarinda. Kondisi sanitasi kapal yang buruk dapat menjadi faktor risiko terjadinya penularan penyakit di kapal. Hal tersebut menjadi dasar pentingnya untuk melakukan evaluasi terhadap kondisi sanitasi dan risiko penyakit di kapal. Tujuan penelitian ini menganalisis hubungan hasil evaluasi sanitasi dengan risiko penyakit kapal di Pelabuhan Bontang. Metode penelitian yang digunakan adalah *cross sectional*. Sampel penelitian adalah seluruh kapal yang bersandar di Pelabuhan Bontang selama periode penelitian yang berjumlah 38 kapal. Analisis data menggunakan uji *Chi Square* dengan taraf signifikansi 0,05 (5%). Hasil penelitian menunjukkan bahwa dari 38 kapal ditemukan 33 (86,8%) kapal memenuhi syarat sanitasi dan 5 (13,2%) kapal tidak memenuhi syarat. Data risiko penyakit kapal menunjukkan 26 kapal (68,4%) dengan risiko penyakit rendah, 9 kapal sedang (23,7%) dan 5 kapal (7,9%) tinggi. Analisis statistik menunjukkan ada hubungan antara sanitasi dengan risiko penyakit kapal (p value = 0,002). Tingginya persentase kapal yang memenuhi syarat sanitasi dan memiliki risiko penyakit rendah dapat mencerminkan adanya kesadaran dan kepatuhan terhadap standar sanitasi yang berlaku. Peningkatan sanitasi kapal merupakan bagian penting dari strategi Kesehatan di wilayah pelabuhan dan perairan.

Kata kunci : kapal, penyakit, sanitasi



Analisis Kendala Balai Kekarantinaan Kesehatan Kelas 1 terhadap Pemeriksaan Penumpang Kapal Laut Internasional Pelabuhan Tanjung Balai Karimun

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Abstrak

Analisis ini mengidentifikasi berbagai kendala yang dihadapi Balai Kekarantinaan Kesehatan Kelas I Tanjung Balai Karimun dalam pelaksanaan pemeriksaan penumpang kapal laut internasional sebagai upaya pencegahan masuknya penyakit menular melalui jalur laut. Penelitian dilaksanakan selama kegiatan Praktik Kerja Lapangan dengan pendekatan deskriptif kualitatif. Data primer diperoleh melalui wawancara dengan petugas dan koordinator lapangan, sedangkan data sekunder berasal dari dokumen resmi, laporan kegiatan, serta literatur kebijakan dan pelaksanaan kekarantinaan kesehatan di pintu masuk negara. Hasil analisis menunjukkan lima kendala utama yang memengaruhi efektivitas pemeriksaan, yaitu keterbatasan jumlah dan kompetensi sumber daya manusia, ketidakcukupan sarana dan prasarana pemeriksaan kesehatan, kompleksitas prosedur administrasi, belum optimalnya sistem informasi terintegrasi, serta rendahnya tingkat kepatuhan sebagian penumpang terhadap persyaratan dan protokol kesehatan. Kondisi tersebut berdampak pada meningkatnya beban kerja petugas, melambatnya proses pemeriksaan, menurunnya efektivitas observasi terhadap kasus suspek, serta meningkatnya potensi masuknya penyakit menular dari jalur laut internasional. Untuk mengatasinya, diperlukan langkah perbaikan berupa penambahan dan peningkatan kompetensi sumber daya manusia, penguatan fasilitas dan peralatan pemeriksaan kesehatan, penyederhanaan prosedur administrasi, pengembangan sistem informasi digital terintegrasi, serta peningkatan edukasi dan pengawasan terhadap kepatuhan penumpang. Optimalisasi langkah-langkah tersebut diharapkan mampu memperkuat peran Balai Kekarantinaan Kesehatan Kelas I Tanjung Balai Karimun dalam mendukung deteksi dini dan pencegahan penyebaran penyakit menular yang berpotensi mengancam kesehatan masyarakat.

Kata kunci: Balai Kekarantinaan Kesehatan, Penumpang Kapal Laut Internasional, Pelabuhan Tanjung Balai Karimun, Analisis Kendala, Kekarantinaan Kesehatan.

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Lampiran 2. Lembar Catatan Pembimbing



YAYASAN PENDIDIKAN PAYUNG NEGERI PEKANBARU
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No	Hari/Tanggal	Materi	Komentar Pembimbing	Tanda Tangan
1	07/02/2026	Skema tugas akhir dan Judul Tugas Akhir	Persetujuan skema dan judul	
2	06/04/2026	Konsultasi penulisan tugas akhir dan jurnal	Persiapan berkas sesuai syarat dan ketentuan	
3	29/04/2026	Konsultasi Bab I, Bab 2 dan Bab 3	Perbaikan Metode Penelitian	
4	04/05/2026	Konsultasi metode penelitian	Metode sudah di perbaiki	
5	05/05/2026	Konsultasi Justifikasi Literature review	Perbaikan Novelty (Kebaruan Topik)	
6	06/05/2026	Konsultasi referensi	ACC seminar proposal	
7	01/06/2026	Kelengkapan Lembar dan Daftar penelitian	Apabila ada daftar Gambar agar dapat di lengkapi	
8	02/06/2026	Pedoman penulisan antar paragraf	Agar di sesuaikan dengan buku pedoman penelitian	
9	03/06/2026	Konsultasi Bab IV Hasil Penelitian	Kolom Temuan hasil di sesuaikan dengan tujuan penelitian	
10	06/06/2026	Konsultasi artikel yang di temukan di Pubmed,SD, GS	Agar di buatkan tabel artikel yang di gunakan dalam penelitian dari Pubmed,SD,GS di lampiran	

11	17/06/2026	Konsultasi Skema Prisma dalam penentuan artikel	Di tambahkan narasi di Bab IV	
12	19/06/2026	Verifikasi hasil revisi tugas akhir	ACC Laporan tugas akhir	

Lampiran 3. Daftar Riwayat Hidup

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