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A SYSTEMATIC REVIEW OF COMPLETE REPORTING ON NOTIFIABLE INFECTIOUS DISEASE

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Abstract

Background: Notifiable infections are those that must be reported to public health authorities because they are widespread worldwide health hazards. This review examines the issue of the completeness of notifiable infectious disease reporting and its impact on public health.

Methodology: This work used the methodology described by Tawfik et al. (2019), which consists of the following steps: formulating a research question; establishing criteria; creating a search strategy; investigating pertinent databases; registering a protocol; screening titles, abstracts, and full texts; manual searching; extracting data; evaluating quality; confirming data; double-checking data; and writing a manuscript.

Result: The results explore the key findings from various studies focusing on notifiable diseases, their factors, control measures, diagnostics, challenges, and recommendations for infectious disease reporting. The studies encompass a range of infectious diseases such as leptospirosis, COVID-19, rabies, and dengue.

Conclusion: The study contributes to our understanding of the current situation and sheds light on the strategies employed in reporting infectious diseases in the country. The study is based on a realization of the need for comprehensive and accurate reporting to effectively combat and control infectious diseases.

Keywords: Notifiable Infectious Disease, Rabies, Dengue, Covid-19.

Introduction

Notifiable infectious disease reporting is a crucial component of public health surveillance because it facilitates the detection and tracking of outbreaks, the estimation of the disease burden, and the development of preventative and control measures. For many nations across the world, guaranteeing the accuracy and completeness of notifiable disease reporting is still a major concern. The influence of incomplete reporting of infectious diseases on public health is examined in this report.

First, a study that was published in BMC Public Health identifies several obstacles that prevent Chinese healthcare providers from fully reporting disorders that are reportable, such as a lack of coordination between various health system levels, insufficient funding, and poor provider training (Baterna et al., 2019). Similarly, a review that was published in the Journal of Epidemiology and Global Health found that several factors, including inadequate data management, limited laboratory capacity, and weak surveillance systems, contribute to the underreporting of diseases that require reporting in low- and middle-income countries (Tabo et al., 2019). According to a different study that was published in The Lancet Digital Health, in resource-constrained settings, using digital technologies like mobile applications and electronic health records might enhance the timeliness and completeness of notifiable disease reporting (Mendoza et al. 2019)

Notifiable disease reporting is not without difficulties, though. According to a study that was published in the Journal of Public Health Management and Practice, there is a dearth of a centralized surveillance system and insufficient laboratory capacity for rabies testing in the Philippines, which contribute to the underreporting of human rabies cases (Sharon et al., 2020). Comparably, to improve the completeness of notifiable disease reporting, the review published in

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journal BMC Medicine notes the need for improved communication between public health authorities and healthcare providers, standardization of case definitions, and better integration of data sources (Quiambao et al., 2020).

Methods

A thorough and systematic review of academic literature was carried out using four databases: Google Scholar, ProQuest Science, Web of Science Core Collection, and MEDLINE via OVID. Using a keyword-based strategy, the search concentrated on peer-reviewed journal publications published between January 2013 and June 2023. During the review process, papers with available full texts were extracted, and then the papers that met the exclusion criteria were selected for inclusion. The study examined communicable diseases that need to be reported on an obligatory basis using a wide range of research approaches. Systematic designs were used in several research to examine patient data related to leptospirosis, COVID-19, rabies, dengue, and sexually transmitted illnesses (STDs).

Research Design

To obtain a thorough understanding of infectious diseases, this study used a systematic review research design, which entails synthesizing and analyzing the body of current literature from reliable sources. Since airborne transmission is acknowledged as a major method of illness dissemination, the study focuses on diseases spread by air.

Following Tawfik et. al.'s procedure allowed the researchers to keep a methodical approach (2019). There are several steps involved in the process, such as formulating a research question, setting criteria, creating a search strategy, looking through pertinent databases, registering a protocol, screening titles, abstracts, and full texts, manual searching, extracting data, evaluating quality, validating data, double-checking data, and writing a manuscript.

Search Strategy

This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page, 2020). The PRISMA checklist is available in the Supplementary Materials. An electronic search of Google Scholar, SCIRP, PubMed/MEDLINE, ScienceDirect, MDPI, ERS, BMC, CMJ, and Liebert databases yielded the relevant studies. The following terms were used in the search: “notifiable infectious disease” or “infectious disease”. The evaluation covered all articles from the beginning until January 2023.

The PRISMA Low Diagram of the Literature Search showed the total number of studies that were used in the systematic review. Twenty investigations in all were found through the literature search, as can be seen in the PRISMA flowchart (Figure 1). Neither duplicates nor studies that weren't relevant to the goal of the study were disregarded. After twenty records are examined, twenty of them meet the requirements for inclusion. Twenty studies underwent a comprehensive eligibility assessment. Twenty articles were included in the review after a thorough inspection; no research was eliminated. In addition to two case reports, two cohort studies, two clinical microbiological investigations, one clinical research, one cross-sectional study, five systematic analyses, and one preliminary test, there were seven (7) modeling analyses.

Data Evaluation and Quality Appraisal

The researchers themselves did the screening and analysis of the research included in this review. To identify a list of publications for full-text review, paper titles, and abstracts were independently filtered using exclusion criteria. Certain information was taken from each publication, such as its overview, context, specific infectious disease, and designs and themes used. Disagreements, such as the lack of concordance in the study selection evaluation, were resolved through discussions with other researchers to reach a consensus on how things should be carried out. During the vetting process, the titles and abstracts of the studies were evaluated to determine their applicability. If duplicates existed, Mendeley Reference Manager was utilized to remove them. The following pieces of information were gleaned from the aforementioned reference materials: the type of study design, the number of people studied, and the location of the studies. The Cochrane Risk of Bias (RoB) 2 Tool (Higgins, 2011) and the Newcastle-Ottawa Scale (NOS) (Wells, 2021) were going to be utilized to analyze the potential for bias in observational studies.

Results

From the twenty-six (26) studies included in this review, there were a total of 10941 samples, 36 cities included, 26 data points, 15 databases, 5 municipalities, and thousands of cases, with 941 discussing leptospirosis diseases, 60 documents discussing COVID, 10,000 samples discussing rabies, and 1906 samples for dengue infection. The investigations and case studies range from one to five years of follow-up.

The arithmetic mean age of the research population was comprised of children and adults. The results explore the key findings from various studies focusing on notifiable diseases, their factors, control measures, diagnostics, challenges, and recommendations for infectious disease reporting. The studies encompass a range of infectious diseases such as leptospirosis, COVID-19, rabies, and dengue. The themes are organized as notifiable

diseases reported in the studies, factors affecting infectious diseases, control of infectious diseases, diagnostics, challenges in reporting, and recommendations for improving infectious disease reporting.

The studies analyzed in this essay shed light on several notifiable diseases and their impact. Baterna et. al. (2019) and Yap et al. (2022) focused on leptospirosis, emphasizing the significance of definitive diagnostic methods like MAT and PCR. Tabo et. al. (2019) highlighted the high incidence of leptospirosis in the Philippines, while Mendoza et. al. (2019) attributed it to environmental problems. Alcaria et. al. (2020) found no clear direct association between seasonal changes and leptospirosis cases.

In terms of COVID-19, Edrada et al. (2020) discussed the variation in symptoms among individuals, while Cauton et. al. (2021) emphasized the need for improving healthcare facilities in the Philippines to combat the increasing cases. Caldwell et. al. (2021) highlighted the influence of demographics, contact structure, mobility, and MHS adherence in controlling COVID-19. Hughes et. al. (2022) emphasized the role of demographics, socioeconomic status, and culture in the global context of the disease. Sharon et al. (2020) provided insights into the impact of COVID-19 across Asian countries. These adjustments help provide a comprehensive understanding of the pandemic's impact, enabling policymakers to implement targeted interventions and control measures based on demographic, socioeconomic, and cultural factors.

Rabies and dengue were also explored in the studies. These findings can inform targeted prevention and control strategies, especially in areas with high dengue incidence. Quiambao et al. (2020) emphasized the importance of rabies programs to reduce mortality rates. Manalo et al. (2020) conducted a preliminary test related to rabies, while Dargantes et al. (2021) highlighted the effectiveness of the RabMIS program against rabies through a One Health approach. Gongal et al. (2022) and Rosero et al. (2022) emphasized the need for improved health guidelines and programs to address rabies cases. Dayrit et al. (2020) and Biggs et al. (2020) focused on dengue, while Ylade et al. (2021) studied suspected dengue patients and children admitted with dengue symptoms. Edillo et al. (2022) explored the impact of different locations on dengue transmission. These studies highlight the importance of implementing programs and interventions, like the Rabies Monitoring and Information System (RabMIS), to combat and prevent the spread of rabies in the Philippines.

The studies on Leptospirosis by Baterna et al. (2019), Tabo et al. (2019), Mendoza et al. (2019), Alcaria et al. (2020), and Yap et al. (2022) highlight the importance of adjusting for suspected or confirmed cases of Leptospirosis, and in some cases, the presence of Leptospirosis. These findings underscore the need for robust surveillance and reporting systems to effectively control and manage Leptospirosis outbreaks in different regions of the Philippines.

The studies highlighted various factors influencing the transmission and prevalence of infectious diseases. These factors included environmental problems for leptospirosis (Mendoza et al., 2019), symptom variation for COVID-19 (Edrada et al., 2020), demographic and cultural factors (Hughes et al., 2022), and the need for rabies programs (Quiambao et al., 2020). Factors such as contact structure, mobility, and adherence to public health measures were identified for controlling COVID-19 (Caldwell et al., 2021). The study by Edillo et al. (2022) on Aedes aegypti underscores the importance of adjusting for latitude location when studying vector-borne diseases. This adjustment helps elucidate the distribution and prevalence of Aedes aegypti, the primary vector for diseases like dengue, in different geographical areas of the Philippines.

Control measures for infectious diseases were discussed in the studies. These measures included improving healthcare facilities for COVID-19 (Cauton et al., 2021), effective rabies programs (Dargantes et al., 2021; Gongal et al., 2022; Rosero et al., 2022), and understanding dengue transmission (Biggs et al., 2020; Edillo et al., 2022).

Accurate diagnostics play a crucial role in infectious disease reporting. Baterna et al. (2019) and Yap et al. (2022) emphasized the significance of MAT and PCR for diagnosing leptospirosis. The studies also highlighted the variation in symptoms for COVID-19 (Edrada et al., 2020) and described methods of dengue transmission (Biggs et al., 2021).

Several challenges exist in infectious disease reporting, as identified in the studies. These challenges include gaps in data availability, discrepancies in reporting practices, resource limitations, and the need for effective collaboration among healthcare providers, researchers, and government agencies.

Based on the findings and challenges identified, recommendations can be proposed to enhance infectious disease reporting. These include improving data sharing mechanisms, standardizing reporting criteria and methodologies, strengthening laboratory capacities, enhancing public health

education and awareness campaigns, and fostering interdisciplinary collaborations.

The studies reviewed in this essay provide valuable insights into notifiable diseases, factors affecting infectious diseases, control measures, diagnostics, challenges, and recommendations for infectious disease reporting. By addressing these aspects, researchers and policymakers can work towards improving disease reporting systems, leading to better public health outcomes and preparedness for future outbreaks. Robust reporting systems that incorporate real-time data, evidence-based decision-making, and effective disease control measures are essential for mitigating the impact of infectious diseases on populations. These studies demonstrate the importance of organizing and adjusting data to obtain meaningful insights into notifiable infectious diseases. By considering factors such as suspected or confirmed cases, presence of pathogens, location, time, demographic characteristics, and intervention strategies, researchers and policymakers can make informed decisions and develop effective measures to control, prevent, and mitigate the impact of infectious diseases on the population.

Conclusion

In conclusion, based on the data recorded in this study on notifiable infectious diseases, several observations can be made. The study contributes to our understanding of the current situation and sheds light on the strategies employed in reporting infectious diseases in the country. The study is based on a realization of the need for comprehensive and accurate reporting to effectively combat and control infectious diseases.

In terms of the reporting strategy in infectious studies, the study highlights the importance of adhering to established rules and guidelines, such as RA 11332, which provides a framework for disease reporting and response. The knowledge and standard practices outlined in the paper contribute to a more robust and streamlined reporting system.

One notable aspect observed in reporting infectious diseases is the emphasis on contact tracing. The study underscores the significance of tracing individuals who may have been exposed to infectious agents to prevent further spread. This approach is crucial in mitigating outbreaks and ensuring timely intervention.

Through the methodology employed, including data collection and analysis, the researchers were able to achieve this objective. The total number of reported cases and their distribution across different regions and periods were part of the results, enabling a deeper understanding of the disease burden in the country.

In terms of utilizing the findings, the structures and insights presented in this study can be utilized to strengthen the existing reporting systems for infectious diseases. By aligning with the knowledge and standard practices outlined in the paper, policymakers and healthcare authorities can improve data collection, analysis, and response mechanisms. This, in turn, can lead to more effective disease surveillance, early detection, and prompt interventions, ultimately protecting public health.

This study contributes valuable information on notifiable infectious diseases, highlighting the importance of comprehensive reporting strategies and the need for ongoing efforts to combat and control such diseases. It serves as a foundation for further research and policy development in infectious disease surveillance and response in the country.

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Conflicts of Interest

The authors declare there are no significant competing financial, professional, or personal interests that might have influenced the performance or presentation of the work described in this manuscript.

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