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IMPACT OF THE COVID-19 CRISIS ON AZITHROMYCIN AND ZINC PRESCRIPTIONS IN AN ICU SETTING: INSIGHTS FROM PRINCESS HAYA MILITARY HOSPITAL - JORDANIAN ROYAL MEDICAL SERVICES

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ABSTRACT

Introduction: The COVID-19 pandemic has catalyzed an urgent need for effective therapeutic interventions against respiratory infections, prompting extensive research into existing medications such as Azithromycin and Zinc. Azithromycin, a macrolide antibiotic with immunomodulatory properties, and Zinc, a micronutrient crucial for immune function, have garnered attention for their potential roles in managing respiratory illnesses, including COVID-19. Against this backdrop, Princess Haya Military Hospital stands as a pivotal site for examining medication consumption, offering valuable insights into the prevalence and implications of Azithromycin and Zinc utilization in the context of respiratory health management.

Objective: This study aims to elucidate the prevalence and implications of Azithromycin and Zinc consumption at Princess Haya Military Hospital intensive care unit, providing a comprehensive understanding of their utilization in respiratory health management during and after the COVID-19 pandemic. By analyzing these medications consumption and exploring factors influencing prescribing practices, this study seeks to inform evidence-based strategies for optimizing the use of Azithromycin and Zinc in clinical practice and public health policy.

Methodology: A retrospective analysis of intensive care unit electronic pharmacy records spanning from 2019 to 2022 will be conducted to examine Azithromycin and Zinc consumption at Princess Haya Military Hospital. The study population comprised patients who received prescriptions for these medications during the specified period. Descriptive statistics, including frequency distributions will be used to characterize consumption over time. Additionally, graphical representations such as line graphs will be employed to visually depict consumption trends and fluctuations.

Keywords: Azithromycin, Zinc, Respiratory Infections, COVID-19, Pandemic.

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1. INTRODUCTION:

The COVID-19 pandemic has presented healthcare systems with previously unheard-of difficulties, leading to a diverse reaction intended to slow the virus's transmission and lessen its effects on public health. The investigation of possible therapeutic drugs and prophylactic methods to battle respiratory infections, especially those caused by the novel coronavirus SARS-CoV-2, is at the center of this reaction. Because of their varied pharmacological characteristics and well-established roles in the treatment of respiratory ailments, Zinc and Azithromycin have emerged as viable candidates among the several therapies that were being studied [1].

Being a macrolide antibiotic, Azithromycin has antibacterial and anti-inflammatory qualities that make it an adaptable treatment for a variety of bacterial illnesses. In addition to its antibacterial activities, Azithromycin has drawn interest for its immunomodulatory qualities, which include immune cell function regulation and the suppression of pro-inflammatory cytokines. These characteristics make Azithromycin a potentially useful adjuvant treatment for respiratory infections, such as COVID-19, where immunological dysregulation exacerbates the illness [3].

In a similar vein, the nutrient Zinc is vital for immune system performance, cell communication, and antioxidant defense systems. Zinc shortage has been linked to heightened vulnerability to infections and compromised immune responses, underscoring Zinc's critical role in preserving respiratory health. It has been demonstrated that taking Zinc supplements can shorten the duration and lessen the severity of respiratory tract infections, especially in susceptible groups like the elderly and children. Zinc also demonstrates antiviral characteristics, reducing the growth of viruses and adjusting the host's defenses against viral infections [2].

In this regard, Princess Haya Military Hospital is an essential location for investigating Zinc and Azithromycin use trends, offering information on their incidence and consequences of respiratory health care. Princess Haya Military Hospital is in a unique position to study changes in medicine use because it serves a varied patient population as a tertiary care center and tracks public health priorities along with clinical practice patterns.

This study has several goals: it will clarify the frequency and trends in the consumption of Zinc and Azithromycin at Princess Haya Military Hospital; it will investigate the variables that affect consumption patterns, such as alterations in clinical guidelines, the prevalence of disease, and public health initiatives; and it will evaluate the implications of the results for public health policy, clinical practice, and future research projects.

The objective of this study is to enhance comprehension of respiratory health care during and after the COVID-19 pandemic by investigating the consumption patterns of Zinc and Azithromycin. The knowledge gained from this study could help develop effective strategies for maximizing the use of these drugs, strengthening healthcare systems' resilience and enhancing patient outcomes in the face of new respiratory threats.

2. METHOD:

Data from the intensive care unit (ICU) electronic records at Princess Haya Military Hospital from 2019 to 2022 were used in a retrospective analysis. The amount of prescriptions written each year was the main focus of the analysis of the consumption patterns of Zinc and Azithromycin. The study utilized both descriptive statistics and graphical representations to examine patterns in consumption rates across the designated timeframe.

3. RESULTS:

The analysis revealed notable fluctuations in Azithromycin and Zinc consumption patterns at Princess Haya Military Hospital ICU during and after the COVID-19 epidemic (Table 1).

Table 1: Patterns of prescriptions of Azithromycin and Zinc

	2019	2020	2021	2022
Azithromycin	47	154	491	90
Zinc	0	144	393	47

With 47 prescriptions written for Azithromycin in 2019, the drug was comparatively infrequently used; Zinc was not written for. However, in 2020, when the pandemic erupted, prescriptions for Azithromycin spiked to 154 during a period when respiratory infections were becoming more of a

worry. Prescriptions for Zinc also increased significantly to 144, indicating increased interest in immune-stimulating supplements. With 491 prescriptions for Azithromycin and 393 prescriptions for Zinc, the year 2021 saw the highest utilization. Following that, in 2022, prescription rates decreased and went back to what they were before the pandemic, with 90 prescriptions for Azithromycin and 47 for Zinc (Figure 1).

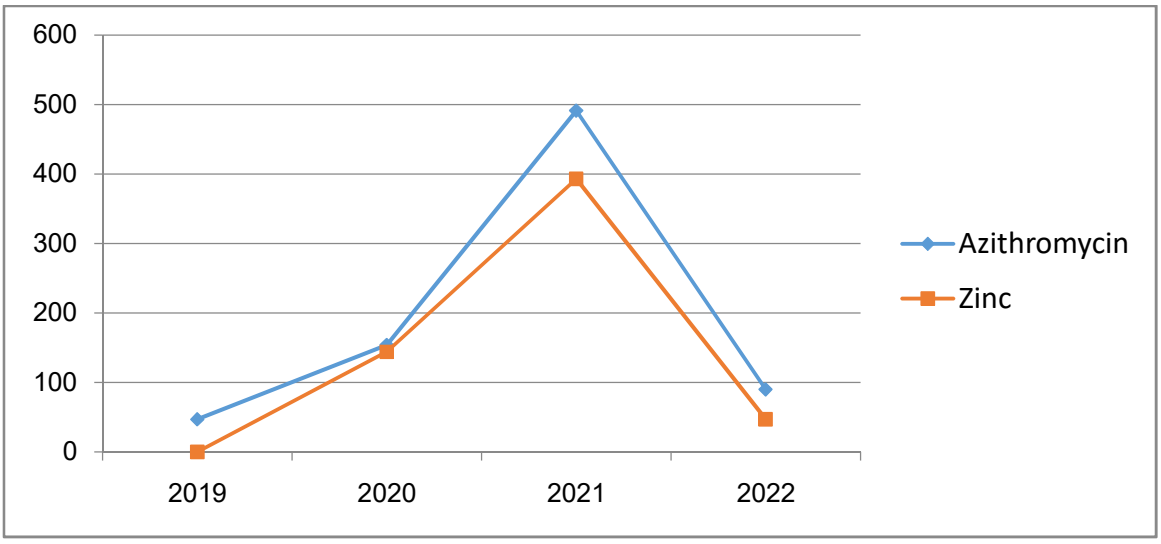

Figure 1: Variation of prescribed use of Azithromycin and Zincfrom 2019-2022

4. DISCUSSION:

The chance to explore the subtle implications of the study results and place them in the larger framework of respiratory health care is offered by the discussion section. This section seeks to provide a thorough study of the factors influencing medicine utilization at Princess Haya Military Hospital ICU and their implications for patient care and public health policy by integrating the observed consumption patterns with current research and clinical insights.

4.1 Trends in Azithromycin and Zinc Consumption:

The variations in Zinc and Azithromycin intake that were noted at Princess Haya Military Hospital ICU over the study period are indicative of the dynamic interaction between multiple factors that impact patient preferences and medication practices. The spike in demand for therapeutic interventions during the early stages of the COVID-19 pandemic is a reflection of the uncertainty surrounding disease management and available treatment choices [6,7]. The adoption of empirical treatment protocols in the absence of specific antiviral therapies, patient expectations for proactive measures to prevent or treat respiratory infections, and the perceived efficacy of Azithromycin and Zinc in mitigating COVID-19 symptoms may have contributed to this surge.

On the other hand, the following drop in consumption rates after 2021 points to a possible change in clinical practice guidelines and public health goals as the pandemic progressed and new information became available about the usefulness and proper application of Zinc and Azithromycin in the treatment of COVID-19. The deployment of specialized interventions to address certain patient populations or clinical circumstances, as well as changes in disease epidemiology and healthcare budget allocation, May possibly be contributing factors to this drop [4].

4.2 Factors Influencing Consumption Patterns:

Numerous reasons from the clinical, epidemiological, socioeconomic, and behavioral domains are probably responsible for the changes in Zinc and Azithromycin use that have been documented. Prescription practices and medication utilization may have been influenced at the clinical level by modifications to treatment guidelines, new information regarding the safety and efficacy of medications, and changing patterns of antimicrobial resistance. Prescriptions for Azithromycin and Zinc may have fluctuated as a result of changes in treatment algorithms brought about by the introduction of novel SARS-CoV-2 genotypes and the corresponding variations in illness severity and clinical presentation [6,7].

Furthermore, socioeconomic variables may have an impact on a patient's adherence to recommended

regimens and use of Azithromycin and Zinc. These variables include access to healthcare facilities, insurance coverage, and the affordability of prescriptions. Access to pharmaceuticals may be impeded for patients from underprivileged backgrounds or those with limited financial resources, which could have an effect on their patterns of use and health results.

Medication utilization is also significantly influenced by behavioral factors, including patient preferences, health beliefs, and perceptions of the safety and efficacy of medications. Patients' attitudes regarding conventional treatments may be shaped by cultural norms, disinformation, and the rise of alternative medicines. This can affect their decision to start, continue, or stop taking Azithromycin and Zinc therapy.

4.3 Clinical Implications and Future Directions:

The clinical implications of the observed Zinc and Azithromycin consumption patterns for the management of respiratory health at Princess Haya Military Hospital and elsewhere are significant. Targeted interventions can be developed to optimize prescribing practices, improve patient adherence, and improve health outcomes by taking into account the factors that influence medication consumption.

Initiatives to support evidence-based practice standards and rational prescribing, for example, may help limit incorrect antibiotic usage and lower the risk of antimicrobial resistance. In a similar vein, initiatives to improve health literacy and patient education can empower people to make knowledgeable decisions about their course of care and encourage cooperative decision-making between patients and healthcare professionals.

Furthermore, by using technology and data analytics to track trends in medication use in real-time, healthcare providers can identify new patterns early and take prompt action to address issues like prescription errors, drug shortages, and unequal access to care.

In addition, future studies should aim to clarify the long-term clinical results—such as cost-effectiveness, safety, and efficacy—of Azithromycin and Zinc therapy. Insights into the best ways to utilize these drugs in various patient demographics and clinical contexts can be gained through randomized controlled trials, observational studies, and pharmacovigilance programs. These insights can then be used to inform public health policy and evidence-based clinical practice guidelines.

The discussion part concludes by outlining the intricate interactions between clinical, socioeconomic, and behavioral factors that influence drug utilization and clarifying the complicated nature of Azithromycin and Zinc intake patterns at Princess Haya Military Hospital ICU. This section provides practical insights for improving patient care, prescribing practices, and our understanding of medication utilization dynamics in the face of changing public health challenges by placing the study findings within the larger framework of respiratory health management.

5. CONCLUSIONS:

This study offers a thorough examination of the Zinc and Azithromycin use trends at Princess Haya Military Hospital ICU during a pivotal time defined by the start and aftermath of the COVID-19 epidemic. The statistics show a distinct pattern of rising consumption during the pandemic's peak years, especially in 2020 and 2021, which was followed by a fall when the world health crisis started to normalize in 2022. These results highlight how global health catastrophes affect the use of medications and provide valuable information about the dynamics of pharmaceutical demand in times of crisis.

Due to the urgent need for effective therapeutic options in the lack of a COVID-19 vaccine and targeted antiviral medicines during the early stages of the pandemic, there was an upsurge in the use of Zinc and Azithromycin during the pandemic. Zinc gained popularity due to its immune-boosting qualities, which were thought to be helpful in the prevention and treatment of the condition, while Azithromycin was thought to be a viable alternative for controlling bacterial problems linked to COVID-19 infections [8].

The decrease in the usage of these drugs in 2022 points to a return to standard prescribing procedures as more targeted COVID-19 therapies became accessible and the initial fear and confusion passed. This return to baseline demonstrates how healthcare systems are flexible in response to new information and evolving situations, which is essential for preserving responsible drug use and averting the dangers of over prescription and possible resistance problems.

The findings of this research from the standpoint of public health emphasize the need for precise

guidelines and ongoing training for medical professionals about the responsible consumption of drugs during pandemics. It also highlights the necessity of continuing to monitor medicine consumption patterns, as these can be used as a gauge to assess the reaction to public health emergencies and modify plans of action in real time.

Additionally, this study emphasizes how critical it is to improve education for the general population and healthcare professionals regarding the proper use of antimicrobials and supplements like Zinc. During times of crisis, misinformation and the quick dissemination of unauthorized treatment plans can result in the improper use of medications, which can have adverse consequences and raise healthcare expenses in addition to not producing the intended health results [9].

The long-term results of patients who got these therapies during the pandemic must be investigated for future research in order to evaluate their safety and efficacy and to provide more solid evidence for or against the usage of these drugs in situations similar to the current one. More research should also look at the psychosocial elements affecting how patients and healthcare professionals behave when taking medications during medical emergencies.

In summary, the knowledge gained from this research at Princess Haya Military Hospital will be a great asset to practitioners and healthcare policymakers as they refine strategies for managing medications both in routine and emergency situations, making sure that the application of these treatments is supported by sound research and best practices. In the end, these results support the main objective of enhancing patient outcomes and making the most use of healthcare resources during difficult circumstances.

LIMITATIONS OF THE STUDY:

The retrospective nature of the analysis, the dependence on pharmacy records, and the possibility of confounding variables impacting consumption patterns are some of the limitations of this study. Furthermore, the study's generalizability might be restricted to Princess Haya Military Hospital and might not capture patterns of use in different healthcare environments.

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