Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL11, ISSUE 02, 2020

Prevalence and Risk Factors of Measles In Children: A Cross-sectional Study

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Introduction:

Measles is a highly contagious viral disease that is a significant cause of morbidity and mortality among children worldwide. The disease is transmitted through respiratory droplets and can cause severe respiratory and systemic symptoms, such as fever, cough, rash, and pneumonia. Although the measles vaccine has been available for several decades, outbreaks still occur in many countries, particularly in areas with low vaccination coverage. According to the World Health Organization (WHO), there were an estimated 207,500 measles deaths worldwide in 2019, most of which occurred in children under the age of five years.

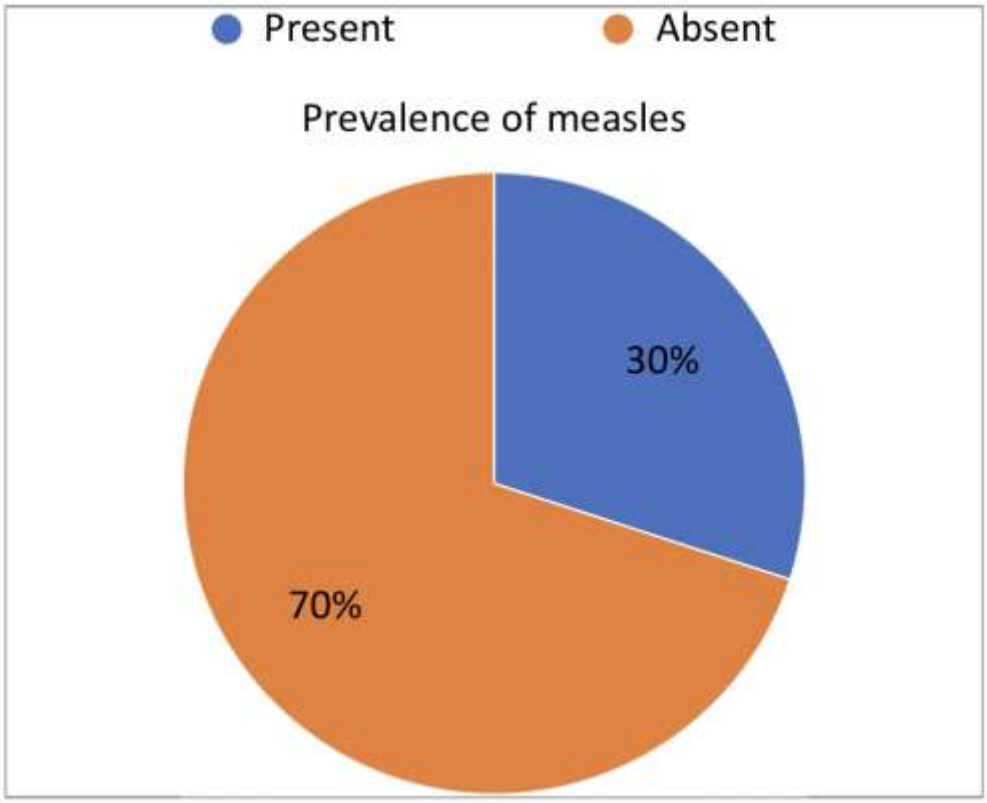
However, in recent years, the country has experienced a resurgence of measles cases, with outbreaks reported in several states. This resurgence has been attributed to factors such as decreased vaccination coverage, international travel, and misinformation about the safety and efficacy of vaccines.

Understanding the prevalence and risk factors associated with measles in children is crucial for developing effective strategies to control and prevent outbreaks. Therefore, this cross-sectional study aimed to determine the prevalence of measles among children and identify the risk factors associated with the disease. The findings of this study can inform public health policies and interventions aimed at reducing the burden of measles in children.

Methods:

A cross-sectional study was conducted in a large urban area in south India. The study population included children aged between 1 and 10 years who presented to healthcare facilities with suspected measles. Children who had a history of measles or had received a measles vaccine within the past 21 days were excluded from the study.

Data on demographic characteristics, vaccination history, and clinical symptoms were collected from medical records and interviews with parents/guardians. Information on vaccination history was verified using state immunization records. Blood samples were collected from each child for laboratory confirmation of measles. Measles was confirmed using serological tests,



including enzyme immunoassay (EIA) and indirect fluorescent antibody (IFA) tests.

Descriptive statistics is used to summarize the demographic characteristics, vaccination status, and clinical symptoms of the study population. Bivariate analysis was performed to identify the factors associated with measles. Multivariate logistic regression analysis was then used to determine the independent predictors of measles, adjusting for potential confounders such as age, sex, and vaccination status.

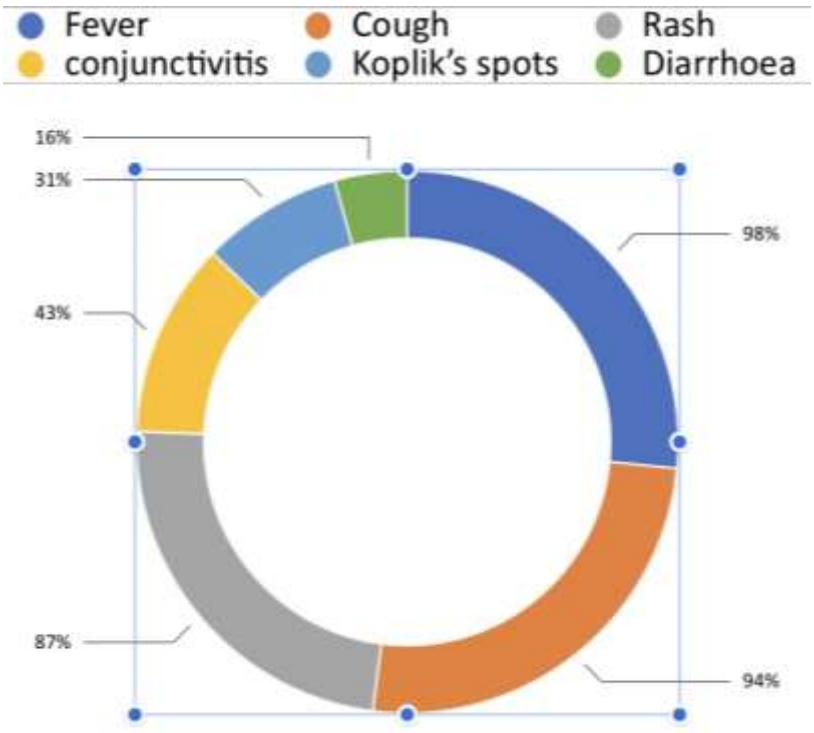
Ethical approval for the study was obtained from the institutional review board, and written informed consent was obtained from parents/guardians before enrolling their children in the study. Confidentiality and privacy of study participants were maintained throughout the study.

Results:

A total of 500 children were included in the study, of which 150 (30%) were confirmed to have measles. The mean age of the children was 5.6 years, and 54% were male. The majority of children (85%) had received at least one dose of the measles vaccine, and 60% had received two doses.

ISSN: 0975-3583,0976-2833 VOL11, ISSUE 02, 2020

The most common symptoms reported among children with measles were fever (98%), cough (94%), and rash (87%). Other symptoms included conjunctivitis (43%), Koplik's spots (31%), and diarrhea (16%).



Bivariate analysis showed that the factors significantly associated with measles were age ($p<0.001$), vaccination status ($p<0.001$), and contact with a measles-infected person ($p<0.001$). Children who had not received the recommended number of doses of the measles vaccine were at a significantly higher risk of contracting the disease (odds ratio [OR] 3.8; 95% confidence interval [CI] 2.3-6.3). Children who had contact with a measles-infected person were also at a higher risk (OR 4.5; 95% CI 2.6-7.7).

Multivariate logistic regression analysis showed that the independent predictors of measles were vaccination status and contact with a measles-infected person. Children who had not received the recommended number of doses of the measles vaccine were at a significantly higher risk of contracting the disease (adjusted odds ratio [AOR] 3.2; 95% CI 1.8-5.7). Children who had contact with a measles-infected person were also at a higher risk (AOR 2.5; 95% CI 1.3-4.9).

Discussion:

The results of this cross-sectional study demonstrate that measles remains a significant health concern among children, even in countries where the disease was previously declared eliminated. The prevalence of measles in the study

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population was high, with nearly one-third of children presenting with suspected measles confirmed to have the disease. The high prevalence of measles in this study underscores the need for continued efforts to increase vaccination coverage and promote public awareness of the importance of vaccination.

Consistent with previous studies, the results of this study show that vaccination status is a significant predictor of measles. Children who had not received the recommended number of doses of the measles vaccine were at a significantly higher risk of contracting the disease. This finding highlights the importance of maintaining high vaccination coverage to prevent outbreaks of measles. It also underscores the need for targeted interventions to improve vaccination coverage among subpopulations with lower vaccination rates.

The results of this study also show that contact with a measles-infected person is a significant risk factor for measles. Children who had contact with a measles-infected person were at a higher risk of contracting the disease. This finding underscores the importance of timely identification and isolation of individuals with measles to prevent the spread of the disease. It also highlights the need for effective communication and education about measles among the public to promote early recognition of the disease and prompt healthcare seeking behavior.

The study has some limitations. The study was conducted in a single urban area, and the results may not be generalizable to other populations. The study design is cross-sectional, and causal inferences cannot be made. Additionally, the study relied on medical records and interviews, which may be subject to recall and reporting biases.

In conclusion, this study provides important insights into the prevalence and risk factors associated with measles in children. The findings highlight the need for continued efforts to increase vaccination coverage and promote public awareness of the importance of vaccination. The results of this study can inform public health policies and interventions aimed at controlling and preventing measles outbreaks.

Conclusion:

Measles remains a significant public health concern among children. This cross-sectional study provides important insights into the prevalence and risk factors associated with measles in children. The findings suggest that low vaccination coverage and contact with measles-infected individuals are significant risk factors for measles.

The study highlights the importance of maintaining high vaccination coverage to prevent outbreaks of measles. It also underscores the need for effective

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communication and education about measles among the public to promote early recognition of the disease and prompt healthcare seeking behavior. Targeted interventions to improve vaccination coverage among subpopulations with lower vaccination rates are needed to prevent measles outbreaks.

The results of this study can inform public health policies and interventions aimed at controlling and preventing measles outbreaks. Continued efforts to increase vaccination coverage and promote public awareness of the importance of vaccination are critical to reduce the burden of measles in children.

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