# Analysis of Data Use and Data Quality for Acute Respiratory Infections (ARIs) Disease Prevention at the Uatolari Community Health Center, Uatolari Administrative Post, Viqueque Municipality, 2024

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#### Abstract:

## > Introduction:

This study rigorously investigates the use and quality of data for preventing Acute Respiratory Infections (ARIs) at the Uatolari Community Health Center in Viqueque Municipality, Timor-Leste. ARIs are a significant global health challenge that disproportionately affects vulnerable populations, particularly children and the elderly.

#### > Objective:

The primary aim of this analysis is to evaluate the utilization and quality of data for preventing ARIs at the Uatolari Community Health Center in Viqueque Municipality. This evaluation seeks to uncover critical gaps in data use and quality that impede effective disease prevention efforts.

#### > Method:

The research utilizes a quantitative cross-sectional methodology, collecting detailed data from 54 health personnel through well-structured questionnaires, interviews, and direct observations.

#### > *Results and Discussion:*

The findings indicate that 56% of respondents perceive data usage as ineffective, highlighting a substantial gap in the application of data for disease prevention. Statistical analysis reveals a significant relationship between effective data utilization and improved prevention strategies, with a p-value of 0.033. Additionally, 65% of respondents rate the quality of health data as inadequate, reflecting global trends where approximately 60% of countries lack sufficient health monitoring systems. Our analysis confirms that data quality significantly influences ARI prevention efforts, evidenced by a p-value of 0.016. The study emphasizes the urgent need for enhanced training for health personnel in data management and effective communication strategies to engage the community in health promotion actively. It is essential to continuously assess health promotion activities to adapt strategies effectively and reduce ARI incidence drastically. The results underscore the critical need for a robust health data infrastructure to inform policies and drive improvements in health outcomes.

#### > Conclusion:

A considerable portion of respondents acknowledge challenges in data usage and quality, underscoring the necessity for immediate action. This study emphasizes the urgent need for enhanced training programs focused on data analysis and quality management. Addressing these critical issues is vital for developing effective disease prevention strategies within community health settings.

Keywords: Acute Respiratory Infections, Data Quality, Disease Prevention, Health Personnel, Uatolari Community Health Center, Quantitative Research, Health Education.

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## I. INTRODUCTION

Acute Respiratory Infection (ARI) represents a major public health issue globally, impacting people of all ages. Multiple pathogens, including viruses and bacteria, can cause ARIs and result in serious health complications. Typical signs of ARIs include influenza, adenovirus infections, and a range of symptoms from cough and fever to more critical issues like pneumonia (Khaidirmuhaj, 2008). The World Health Organization (WHO) highlights that ARIs are a primary cause of illness and death, especially among at-risk groups such as children and the elderly (WHO, 2018).

The global burden of Acute Respiratory Infections (ARIs) is immense, claiming the lives of millions each year. In low-income countries, ARIs account for one in three deaths among children under five, highlighting the urgent need for targeted health interventions (Kemenkes, 2013). According to the World Health Organization (WHO), ARIs are the fourth leading cause of death worldwide, emphasizing the critical necessity for effective prevention and treatment strategies (WHO, 2018).

Pneumonia, a severe complication of ARIs, poses a particular threat to young children. The WHO estimates that pneumonia accounts for over 800,000 deaths among children annually, representing a significant portion of the global health burden (WHO, 2018). The incidence of pneumonia is notably high in South Asia and Sub-Saharan Africa, where healthcare resources are limited (WHO, 2018).

In Indonesia, acute respiratory infections (ARIs) rank among the top ten most common diseases, particularly impacting children under the age of five. A mortality survey indicated that ARI is responsible for more than 32% of deaths in this age group, underscoring its significance to child health (Ministry of Health of the Republic of Indonesia, 2013). The health report from 2011 showed a troubling increase in ARI cases, with millions affected by related illnesses (Ministry of Health of the Republic of Indonesia, 2011).

The occurrence of acute respiratory infections (ARIs) in Indonesia is significantly associated with environmental factors like pollution and inadequate living conditions. These elements worsen respiratory diseases, especially in highly populated regions (Maryunani, 2014). The World Health Organization (WHO) acknowledges environmental determinants as critical factors in the transmission of ARIs, highlighting the necessity for integrated public health strategies (WHO, 2008).

According to the Basic Health Survey (Riskesdas) conducted in 2013, the highest rate of ARIs was found in

children aged 1-4 years, with a prevalence of 25.8% (Riskesdas, 2013). Some provinces, including East Nusa Tenggara and Papua, reported particularly high incidences of ARIs, indicating a need for focused health initiatives in these areas (Riskesdas, 2013).

In Timor-Leste, acute respiratory infections (ARI) remain a significant health concern, especially among young children. Recent statistics reported more than 111,000 instances of ARI, underscoring the necessity for enhanced health services and preventive strategies (WHO Timor-Leste, 2023). This scenario necessitates an immediate response from health officials to tackle the elevated occurrence of respiratory infections.

Implementing effective prevention methods is crucial for tackling ARI. These methods encompass health education, vaccination campaigns, and improvements in environmental conditions (KBBI, 2007). Nevertheless, the current strategies in Timor-Leste have not produced satisfactory outcomes, highlighting the need for more comprehensive and evidence-informed approaches to disease prevention (WHO, 2020).

Health promotion and education are essential for enhancing community awareness and encouraging healthy behaviors. Initiatives by the Ministry of Health aim to change community behaviors related to the prevention of Acute Respiratory Infections (ARIs); however, various barriers hinder these efforts (WHO, 2020). A strategic plan for health education is necessary to ensure effective communication and engagement with the community.

Using reliable data is crucial for informing health policies and programs aimed at combating ARIs. Datadriven approaches facilitate the development of effective guidelines and interventions, ensuring that health promotion activities have a meaningful impact (WHO, 2020). Establishing a robust health data infrastructure is vital to support these initiatives.

Ensuring the quality of health data presents a significant challenge in public health. Approximately 60% of countries lack adequate health monitoring systems capable of producing reliable data (WHO, 2020). Improving the quality of health data is critical for effective clinical decision-making and for evaluating health programs.

Despite ongoing efforts to address ARIs, the persistence of cases at the Uatolari Community Health Center highlights the need for improved evaluation and monitoring of health promotion activities. Continuous assessment of prevention programs is essential for effectively adapting strategies and reducing the incidence of ARIs in the community. Future research should focus on strengthening data collection and implementing evidenceISSN No:-2456-2165

based interventions to combat ARIs in Timor-Leste and beyond.

#### II. METHOD

This research adopts a quantitative, cross-sectional study approach to focus on the health personnel at the Uatolari Community Health Center in Viqueque Municipality. By utilizing a combination of questionnaires, interviews, observations, and documentation, the study aims to collect both primary and secondary data (Riduwan, 2013; Sugiyono, 2013). The sample comprises all 54 health personnel, positioning this study as a comprehensive population study that provides valuable insights into the health workforce in the community.

The data analysis utilizes quantitative descriptive techniques, leveraging SPSS version 21 for comprehensive bivariate analysis (Sugiyono, 2015). Primary data will be gathered through direct interviews and questionnaires, complemented by secondary data sourced from pertinent institutional reports and documents (Sugiyono, 2018). This systematic and structured approach aims to ensure reliable outcomes, effectively evaluating the established hypotheses concerning ARIs disease prevention within the studied population.

#### III. RESULTS

The distribution of health personnel by sex reveals that there are 30 males (56%) and 24 females (44%) at the Uatolari Community Health Center. This indicates a maledominated workforce, which may influence the dynamics of healthcare delivery and team interactions. Gender diversity in healthcare professions can enhance the quality of care through varied perspectives; thus, the current imbalance may warrant attention to ensure a more inclusive environment.

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The age distribution shows that the majority of health personnel (37 out of 54, or 68.5%) fall within the 30-39 age range. This suggests a relatively young workforce, which may bring energy and adaptability to the health center. However, the small representation of older employees (only two over 59 years) could lead to a lack of experienced personnel, which is critical for mentorship and guidance within the team.

The occupational breakdown indicates in Table 1 that nurses comprise the largest group (22, or 41%), followed by midwives (15, or 28%). The diversity among roles, including pharmacy and medical doctors, is essential for comprehensive healthcare delivery. However, the low numbers in specialized professions such as environmental health and laboratory services (each 1 or 2%) highlight potential gaps in service provision that could affect the overall capability of the Community Health Center.

| Tuote II. | Tuble 1: Distribution of Health Ferdemer Frequency Subset on profession at the Statistic Community Freduct , year 20 |           |                |  |  |  |  |  |
|-----------|--|-----------|----------------|--|--|--|--|--|
| No        | Occupation Level   | Frequency | Percentage (%) |  |  |  |  |  |
| 1         | Environmental Health   | 1         | 2              |  |  |  |  |  |
| 2         | Malaria Technician   | 1         | 2              |  |  |  |  |  |
| 3         | Lab  | 1         | 2              |  |  |  |  |  |
| 4         | Nutrition  | 1         | 2              |  |  |  |  |  |
| 5         | Dental   | 2         | 4              |  |  |  |  |  |
| 6         | Health Information System  | 1         | 2              |  |  |  |  |  |
| 7         | Pharmacy   | 3         | 6              |  |  |  |  |  |
| 9         | Midwife  | 15        | 28             |  |  |  |  |  |
| 8         | Nurse  | 22        | 41             |  |  |  |  |  |
| 9         | Medical Doctor   | 7         | 13             |  |  |  |  |  |
|           |  |           |                |  |  |  |  |  |

Table 1. Distribution of Health Personnel Frequency based on profession at the Uatulari Community Health Center, year 2024.

Source: Primary Data from Uatulari Community Health Center, year 2024

The educational qualifications of the staff show a strong foundation, with 32 personnel (59%) holding a licentiate degree. This high level of education is likely to enhance the quality of care and the ability to engage in evidence-based practices. However, the presence of lower qualifications (Diploma 1 and School of Nursing) suggests a need for continuous professional development to ensure all staff are equipped with the necessary skills.

|--|

| No | Level of Education | Frequency | Percentage (%) |  |
|----|--------------------|-----------|----------------|--|
| 1  | Diploma 1          | 1         | 2              |  |
| 2  | Diploma 3          | 17        | 31             |  |
| 3  | School of Nursing  | 4         | 7              |  |
| 4  | Licenciature       | 32        | 59             |  |
|    | Total              | 54        | 100            |  |

Source: Primary Data from Uatolari Community Health Center, Year 2024\*\*

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The frequency distribution of data usage indicates that 30 respondents (56%) perceive data usage as ineffective. This is concerning, as ineffective data usage can hinder the understanding and implementation of disease prevention strategies, particularly for acute respiratory infections (ARIs). Only 24 respondents (44%) reported effective data usage, revealing a significant gap that needs to be addressed to improve health outcomes.

The assessment of data quality shows that 35 respondents (65%) regard the data quality as ineffective. This further highlights the challenges faced at the Uatolari Community Health Center regarding reliable data collection and reporting. Poor data quality can lead to misinformed decisions and ineffective health interventions, emphasizing the need for improved data management practices.

In evaluating ARI disease prevention measures, 29 respondents (54%) rated the efforts as good, while 25 respondents (46%) viewed them as inadequate. This indicates a generally positive outlook but also underscores that nearly half of the respondents see opportunities for improvement. Effective communication regarding prevention strategies is crucial for enhancing community understanding and engagement.

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The chi-square analysis reveals a statistically significant relationship between effective data usage and good ARIs disease prevention (p = 0.033). This finding demonstrates that when health personnel effectively utilize data, it positively influences their ability to implement effective disease prevention strategies. This correlation emphasizes the importance of training and resources to enhance data utilization.

|             | Disease Prevention "ARI" |              |       |      | Total |          | Chi-Square | p = Value |
|-------------|--------------------------|--------------|-------|------|-------|----------|------------|-----------|
| Data Use    | Go                       | ood Not Good |       |      |       | <b>1</b> | L          |           |
|             | Freq.                    | %            | Freq. | %    | Freq. | %        |            |           |
| Effective   | 15                       | 27.8         | 10    | 18.5 | 24    | 44       | 1 5 6 2    | 0,033     |
| Ineffective | 9                        | 16.7         | 20    | 37.0 | 30    | 56       | 4.562      |           |
| Total       | 24                       | 44.4         | 30    | 55.6 | 54    | 100      |            |           |

#### Table 3. Use of Data for ARIs Disease Prevention at the Uatolari Community Health Center in 2024

The analysis reveals a significant impact of data quality on the effectiveness of acute respiratory infection (ARI) disease prevention efforts (p = 0.016). Among the respondents, 35 individuals (65%) rated the data quality as ineffective. This finding suggests that enhancing data quality could lead to more successful prevention strategies. Consequently, there is a need for ongoing training and quality assurance measures in the processes of data collection and management.

| Table 4. Data Quality for ARI Disease Prevention at the Uatulari Community | Health Center in 2024 |
|--|-----------------------|
|--|-----------------------|

|              | Disease Prevention "ARI" |      |          |      | Total |     | Chi-Square | p = Value |
|--------------|--------------------------|------|----------|------|-------|-----|------------|-----------|
| Data Quality | Go                       | ood  | Not Good |      | Į į   |     |            | P         |
|              | Freq.                    | %    | Freq.    | %    | #     | %   |            |           |
| Effective    | 13                       | 24.1 | 12       | 22.2 | 19    | 35  | c 771      | 0.016     |
| Ineffective  | 6                        | 11.1 | 23       | 42.6 | 35    | 65  | 5.//1      | 0,016     |
| Total        | 19                       | 35.2 | 35       | 64.8 | 54    | 100 |            |           |

Source: Primary Data from Uatulari Community Health Center, year 2024

# IV. DISCUSSION

The discussion highlights the crucial role of data in health promotion and disease prevention, particularly in addressing Acute Respiratory Infections (ARIs). According to Inmon (2005), data is a fundamental tool for processing and communicating health information, which is essential for informing public health policies and practices. The findings indicate that 56% of respondents considered data usage ineffective, revealing a significant gap in how data is utilized for disease prevention strategies. This aligns with previous studies, such as the one by Andita (2020), which emphasizes the importance of effective health information management systems in improving health services. Statistical analysis supports the claim that effective data use has a significant impact on ARI prevention efforts, as demonstrated by a p-value of 0.033 (p < 0.05). This suggests that enhancing data utilization could improve the implementation of preventive measures. The study underscores the need for the Uatolari Community Health Center to develop comprehensive data management plans and engage the community through effective communication about the benefits of prevention strategies. Improved awareness and education can empower communities to actively participate in disease prevention initiatives.

Source: Primary Data from Uatulari Community Health Center, Year 2024

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Furthermore, the quality of health data is vital for informed decision-making in public health. The findings reveal that 65% of respondents rated the quality of data as ineffective. This aligns with global challenges in health data quality, where only about 60% of countries have reliable health monitoring systems (WHO, 2020). The chi-square analysis yielded a p-value of 0.016 (p < 0.05), further confirming the significant impact of data quality on ARI prevention efforts.

The research highlights that, although data quality is perceived as inadequate, there is potential for improvement in its application for disease prevention. This reflects the findings of Mosley (2008), which emphasize that data must be accurate, complete, and timely to be effective for health interventions. The discussion calls for enhanced training for health personnel in data management and utilization, as well as investment in health data infrastructure to ensure reliable data collection and reporting. This approach will ultimately contribute to better health outcomes through more informed public health strategies.

## V. CONCLUSION

The conclusion synthesizes the key findings and implications of the research focused on the use and quality of data for preventing Acute Respiratory Infections (ARIs) at the Uatolari Community Health Center. It emphasizes the necessity of enhancing health education and the skills of health personnel, particularly through targeted training in data analysis and quality management. This focus on professional development is crucial for ensuring that health workers are equipped to effectively utilize data in their disease prevention efforts.

The conclusion highlights that a significant portion of respondents (27.8%) consider the use of data for disease prevention to be effective, showing a favorable acknowledgment of its potential. Nevertheless, it is crucial to recognize that a considerable majority (56%) believe there is still potential for improvement in how this data is applied in practice. The results of the statistical analysis, with a p-value of 0.033, indicate a significant correlation between the effective use of data and initiatives aimed at preventing ARIs. This result underscores the essential need not only to gather data but also to ensure that it is converted into practical health strategies that can lead to real advancements in disease prevention.

The conclusion underscores the importance of data quality in the study's findings. It reveals that 24.1% of respondents acknowledged the data quality as effective, while 22.2% perceived it as ineffective concerning disease prevention. The statistically significant p-value of 0.016 indicates that data quality plays a crucial role in the prevention of infectious respiratory ailments (ARIs). This suggests that, despite the potential for effective health interventions, there are opportunities to enhance the implementation by addressing challenges related to data quality and its application.

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In summary, the conclusion succinctly captures the research findings, stressing the urgent need for improved training for healthcare personnel and enhanced data management practices. It advocates for a comprehensive approach to improve both the use and quality of data, which are vital for effective disease prevention in community health settings.

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