

Home-Based Management of Acute Upper Respiratory Tract Infections in Preschoolers of Virac, Catanduanes: Analysis of Caregivers' Knowledge

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Abstract

Background: Health extends beyond the mere absence of illness; it encompasses holistic well-being, including physical, mental, and social dimensions [1]. **Objective:** This study investigates the knowledge of caregivers regarding the home-based management of Acute Upper Respiratory Tract Infections (AURTIs) in preschoolers in Virac, Catanduanes. **Methods:** Using a descriptive correlational design, the study surveyed 319 caregivers of children aged 3 to 5 years enrolled in Day Care Centers from 52 barangays out of 63 of Virac, Catanduanes. The research aimed to profile the respondents, assess their knowledge and determine barriers faced in managing AURTIs at home, and examine correlations between these factors. Data were collected using a questionnaire and analyzed using percentage techniques, weighted means, and Pearson correlation coefficients. **Results:** Key findings include a predominance of female caregivers, significant diversity in marital status, and varying levels of education and household income among respondents. **Conclusion:** The study highlights the crucial role of caregivers in child health management and proposes strategies to improve their knowledge. The insights gained aim to guide future interventions to enhance caregiver education, ultimately improving child health outcomes and reducing the burden of AURTIs on families and healthcare systems.

Keywords: caregiver, preschoolers, knowledge, acute upper respiratory tract infection

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INTRODUCTION

Health extends beyond the mere absence of illness; it encompasses holistic well-being, including physical, mental, and social dimensions [1]. Acute upper respiratory tract infections (AURTIs) remain a significant health challenge globally, with young children being particularly vulnerable [2]. In the Philippines, the morbidity rate for AURTIs was approximately 652.9 cases per 100,000 individuals in 2020, highlighting the substantial burden of this condition [3]. Specific challenges faced by mothers and families in Virac necessitate a focused examination emphasizes collaborative efforts, increased health funding, and convergence for health initiatives in the province of Catanduanes [4]. Understanding and improving home-based management of AURTIs can lead to better health outcomes for children and reduce the strain on healthcare systems [5].

Internationally, the World Health Organization (WHO) emphasizes the importance of caregiver education in preventing and managing infectious diseases. The latest data from the second quarter of 2022 underscores the persistent prevalence of acute respiratory infections, impacting 340,031 individuals. Children bear a significant burden, with 92,350 cases reported among one to four-year-olds, 48,225 among five to nine-year-olds, and 39,070 among infants aged 29 days to 11 months [6].

Article 15 of the Philippine Constitution mandates the state to protect and promote health rights, but current social protection policies are insufficient to address health disparities faced by indigenous communities, requiring a comprehensive, inclusive approach [7], yet there are disparities in healthcare access and quality, particularly in rural areas like Virac. Addressing these disparities through targeted interventions can enhance the health and well-being of young children and support the broader goal of equitable healthcare [8].

Despite existing research on infectious disease prevention and management, there is a paucity of studies focusing on the specific knowledge and barriers of caregivers in rural Philippine settings. 20% of mothers had strong prevention knowledge [9]; 33% competent in management. Highlights the need for tailored

interventions to improve knowledge in Virac, Catanduanes.

The Health Belief Model (HBM) is a key theoretical framework that explains and predicts health behaviors, particularly in understanding the impact of perceptions of health issues and preventive measures [10]. This model will help analyze caregivers' knowledge and practices regarding AURTIs, and identify the factors that facilitate or hinder effective home-based management.

The conceptual model for this study integrates elements of the HBM with variables specific to the context of Virac Catanduanes. These include:

- a. Caregivers' Knowledge: Understanding of AURTIs, prevention, and management.
- b. Perceived Severity and Susceptibility: Caregivers' beliefs about the seriousness of AURTIs and their children's vulnerability.
- c. Perceived Benefits: Beliefs about the effectiveness of home-based management strategies.
- d. Perceived Barriers: Factors such as limited access to healthcare, financial constraints, and lack of educational resources.

Previous studies have highlighted significant variations in caregivers' knowledge and barriers concerning home-based management of AURTIs. High levels of knowledge regarding cleanliness and infection prevention among parents, but also identified misconceptions and inconsistent practices, particularly among those with lower socioeconomic status [11]. The importance of improving maternal education and providing practical guidance to enhance home-based care [9]. These studies underscore the need for targeted educational interventions tailored to the specific needs of caregivers in different socioeconomic and educational contexts. However, the unique challenges faced by caregivers in rural settings. Treatment decisions often influenced by cost and accessibility [12]. Families reported decisions based more on these factors than illness severity. Treatment decisions were influenced by beliefs about illness and medicine. There was a notable overuse of inappropriate medications [13].

By addressing the identified gaps in the literature and applying the Health Belief Model, this study seeks to enhance the understanding

of caregivers' knowledge and practices in managing AURTIs in preschoolers in Virac Catanduanes. The findings will inform the development of targeted interventions to improve caregiver education and support.

OBJECTIVE

The study focuses on the caregivers' knowledge and barriers of home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes specifically aimed to address the following objectives:

1. Determine the profile of the respondents.
2. Assess the level of knowledge of caregivers on home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes.
3. Identify the potential barriers caregivers face in home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes.
4. Test the correlation between caregivers' knowledge and the barriers caregivers faced in home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes.
5. Propose a plan to improve the caregivers' knowledge in home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes.

METHODS

Design

This study employs a descriptive cross-sectional design to assess the knowledge and barriers of caregivers in managing acute upper respiratory tract infections (AURTIs) in preschoolers in Virac Catanduanes. The cross-sectional approach allows for the collection of data at a single point in time, providing a snapshot of the current state of caregivers' knowledge and barriers.

Sample, sample size and sampling technique

The sample for this study consists of caregivers of preschool-aged children 3-5 years residing in Virac Catanduanes. There are 1,560 enrolled students in Day Care Centers in Virac, Catanduanes. To ensure a 95 percent confidence level in the study, a sample of 319 respondents was determined through Slovin's technique and selected through a stratified random

sampling method with a confidence level of 95%, a margin of error of 5%, and an estimated [14].

Slovin's formula:

$$n = N / (1 + Ne^2)$$

Where:

n = Number of samples,
N = Total population and
e = Error tolerance (level).

Solution:

$$n = 1,560 / (1 + 1,560 * 0.05)$$

$$n = 318.36 \text{ or } 319$$

A stratified random sampling technique was employed to ensure a representative sample of caregivers from various barangays. Stratified random sampling enhances research accuracy by dividing populations into homogeneous strata, minimizing biases and enhancing representativeness through the use of symmetry in the sampling process [15]. Stratification was based on the barangay, ensuring that each area within Virac was proportionately represented. This method was chosen to enhance the generalizability of the study. The procedure involved dividing the population into strata based on barangay, and then randomly selecting respondents from each stratum.

The inclusion criteria of the study such as caregivers of children aged 3-5 years; residents of virac catanduanes, and willing to provide informed consent. The caregivers who do not primarily reside with the child was excluded in this study.

Instrument for Data Collection

Instrument Development

The instrument used in this study is a structured questionnaire developed based on previous studies and guidelines on AURTIs management. The questionnaire is self-made to suit the local context of Virac Catanduanes.

Components of the Instrument

The questionnaire consists of three sections:

1. Demographic Information: Age, gender, educational level, occupation, and household income.

2. Knowledge about AURTIs: This section contains 10 items measuring caregivers' knowledge of AURTIs, their causes, symptoms,

prevention, and management, using Likert scale (1- not knowledgeable at all, 5- most knowledgeable)

3. Barriers in Managing AURTIs: This section includes 10 items assessing the practical measures taken by caregivers to manage AURTIs, using a Likert scale (1 = strongly disagree, 5 = strongly agree).

Validity and Reliability

The content validity of the questionnaire is assessed by a panel of experts in pediatric healthcare and public health. The reliability is evaluated through a pilot study involving 10 caregivers, with the results analyzed to determine the Cronbach's alpha coefficient. The overall Cronbach's alpha for the knowledge section is 0.82 and for the barriers section is 0.78, indicating acceptable internal consistency. Cronbach's alpha coefficient is a widely used measure of internal consistency. It assesses the reliability of Likert scale statements, ensuring validity and consistency in questionnaire instruments [16].

Data Collection Process

Data Collection

Data collection takes place over a three-month period from January to April 2024. Researchers visited the selected households to administer the questionnaire through a questionnaire. The researchers received training on the study protocol, ethical considerations, and techniques to ensure consistency and accuracy in data collection.

Researchers Roles

Researchers are also responsible for administering the questionnaires, obtaining informed consent, and ensuring the confidentiality of the participants' responses. Including oversees the data collection process, provides support to the research assistants, and ensures adherence to the study protocol.

Data Analysis

Data are analyzed using SPSS software version 26. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, Descriptive correlation research method organizes, summarizes, and presents data clearly, focusing on numerical data for central tendency and dispersion, and

categorical data for relative numbers [3]. These are used to summarize the demographic characteristics, knowledge, and barriers of caregivers. Inferential statistics, including Pearson correlation coefficient was employed to examine associations between caregivers' knowledge and barriers faced by caregivers in home-based management of AURTI.

Ethical Considerations

Ethical approval for this study is obtained from the Ethics Committee of the Camarines Sur Polytechnic Colleges, Nabua, Camarines Sur, Philippines. All participants provide written informed consent prior to their participation. The study ensures confidentiality and anonymity of the participants by assigning unique identification codes to each questionnaire and storing data in a secure database accessible only to the research team. Participants are informed of their right to withdraw from the study at any time without any consequences [17].

RESULTS

Demographic Profile of the respondents

The study revealed that of the 319 respondents, 115 or 36.05 percent were aged 26-32 years old; 84 or 26.33 percent were 33 to 39 years old; 47 or 14.73 percent were 40 to 46 years old; and both got 10 or 3.13 percent for 18 years old and below and 47 to 54 years old, respectively.

The result revealed a significant sex disparity among the respondents. Females make up 256 or 80.25 percent and males account for 63 or 19.75 percent. The data on the marital status of preschoolers' caregivers reveals a significant diversity in family structures. Results showed that those who were married were composed of 131 or 41.07 percent; single with 100 or 31.35 percent; cohabiting with 69 or 21.63 percent, divorced with 12 or 3.76 percent; and separated with seven or 2.19 percent.

Number of Children. Results showed that 169 or 52.98 percent had 1 to 2 children; 125 or 39.18 percent had 3 to 4 children; and 23 or 7.21 percent had 5 or more children. Number of Household Members. The data on the number of household members among preschoolers' caregivers reveals varying living arrangements and potential caregiving dynamics. Of the 319 respondents, 170 or 53 percent live in

households with 5 or more members; 138 or 43.26 percent with 3-4 members; and 11 or 3.45 percent with 1-2 members.

Educational Attainment. The caregivers of preschoolers have diverse educational backgrounds. The majority are either high school graduates' 32.92 percent or hold bachelor's degrees 32.92 percent. Other levels include Elementary Undergraduate 0.62 percent, Elementary Graduate 1.57 percent, High School Undergraduate 10.66 percent, Vocational/Technical School 9.72 percent, Bachelor's Undergraduate 8.78 percent, and Postgraduate Degree 2.82 percent.

Occupation. The survey reveals the diverse professional backgrounds and daily routines of caregivers of preschoolers. Housewives make up 216 or 67.71 percent of respondents, focusing on household duties and caregiving for their children. Other occupations include 55 or 17.24 percent, self-employed with 43 or 13.48 percent, and studying with five or 1.57 percent).

Monthly Household Income. The table provides a breakdown of respondents in terms of monthly household income. The highest frequency and percentage were observed for the income category "Below Php 10,957.00", while the lowest frequency and percentage were for the category "Php 43,829.00 and above".

Relationship to the Preschooler. The data on the relationship between caregivers and preschoolers reveals a strong emphasis on parental care, with a majority of caregivers being parents with 274 or 85.69 percent; 17 or 5.33 percent were siblings; 16 or 5.02 were grandparents; five or 1.57 were nanny or yaya; four or 1.25 percent were aunt or uncle; and three or 0.94 percent were cousin.

Table 1: Profile of the Respondents

| Profile | Indicator | F | % |
|----------------|------------------|-----|-------|
| Age | 18 yrs and below | 10 | 3.13 |
| | 19 - 25 yrs old | 36 | 11.29 |
| | 26 - 32 yrs old | 115 | 36.05 |
| | 33 - 39 yrs old | 84 | 26.33 |
| | 40 - 46 yrs old | 47 | 14.73 |
| | 47 - 54 yrs old | 10 | 3.13 |
| | 55 yrs & above | 17 | 5.33 |
| Sex | Male | 63 | 19.75 |
| | Female | 256 | 80.25 |
| Marital Status | Single | 100 | 31.35 |
| | Married | 131 | 41.07 |
| | Separated | 7 | 2.19 |

| | | | |
|---------------------------------|-----------------------------|-----|--------|
| | Co-habitation | 69 | 21.63 |
| | Divorced | 12 | 3.76 |
| Number of children | 1-2 | 169 | 52.98 |
| | 3-4 | 125 | 39.18 |
| | 5 and above | 23 | 7.21 |
| | None | 2 | 0.63 |
| Number of Household Members | 1-2 | 11 | 3.45 |
| | 3-4 | 138 | 43.26 |
| | 5 and above | 170 | 53.29 |
| Educational Attainment | Elementary | 2 | 0.62 |
| | Undergrad | | |
| | Elementary Graduate | 5 | 1.57 |
| | High School Undergrad | 34 | 10.66 |
| | High School Graduate | 105 | 32.92 |
| | Vocational School | 31 | 9.72 |
| | Bachelor's Undergrad | 28 | 8.78 |
| | Bachelor's Degree | 105 | 32.92 |
| | Postgraduate | 9 | 2.82 |
| Occupation | Housewife | 216 | 67.71 |
| | Self-employed | 43 | 13.48 |
| | Studying | 5 | 1.57 |
| | Others | 55 | 17.24 |
| Monthly Household Income | Below Php 10,957.00 | 188 | 58.93 |
| | 10,957.00 to Php 21,914.00 | 101 | 31.66 |
| | Php 21,915.00 to P43,828.00 | 22 | 6.90 |
| | Php 43,829.00 and above | 8 | 2.51 |
| | | | |
| | | | |
| Relationship to the Preschooler | Parent | 274 | 85.89 |
| | Sibling | 17 | 5.33 |
| | Grandparent | 16 | 5.02 |
| | Aunt/Uncle | 4 | 1.25 |
| | Cousin | 3 | 0.94 |
| | Nanny/Yaya | 5 | 1.57 |
| | Total | 319 | 100.00 |

Level of Knowledge of Caregivers on Home-Based Management of Acute Upper Respiratory Tract Infections in Preschoolers of Virac, Catanduanes

The data is about the caregivers' attitude toward home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes. The caregivers have the highest positive attitude toward "trusting the advice and recommendations of healthcare professionals when it comes to managing AURTI symptoms at home for the preschooler" with a weighted mean of 3.79. The caregivers also have a positive

attitude towards the following indicators. First “Having confidence in the expertise of healthcare providers and relying on their guidance for effective home-based care during AURTI” with a weighted mean of 3.63”. Followed by the indicator “Respecting and valuing the cultural aspects of home-based care for AURTI “with a weighted mean of 3.62. Next is the indicator “Having faith in the effectiveness of interventions such as steam inhalation or nasal saline drops in relieving the child’s respiratory symptoms during AURTI” with a weighted mean of 3.57. Followed by “Believing that proper hydration and rest are effective interventions for supporting the child’s recovery from AURTI at home” with a weighted mean of 3.55. And “Willing to blend cultural practices with proven methods, thinking that this overall approach will help the child recover from AURTI” with a weighted mean of 3.48. The last is the indicator “Trusting that over-the-counter medications, when used according to guidelines, play a beneficial role in managing AURTI symptoms in the preschooler” with a weighted mean of 3.47.

Potential Barriers Caregivers Faced in Home-Based Management of Acute Upper Respiratory Tract Infections in Preschoolers of Virac, Catanduanes

The data is the potential barriers caregivers faced in home-based management of acute upper respiratory tract infections in preschoolers in Virac, Catanduanes. The mean average of the barriers stands at 3.66, indicating a collective agreement among caregivers regarding the existence of certain obstacles in managing AURTI at home. This finding suggests a recognition among caregivers of the challenges they face, serving as a crucial starting point for understanding and addressing these barriers effectively. Among the listed barriers, "I sometimes struggle to afford the recommended medications for my preschooler's AURTI due to financial constraints" emerges as the highest-ranked concern with a weighted mean of 3.37 with an interpretation of neither agree nor disagree. Followed by “Balancing work responsibilities with caring for my preschooler during AURTI was challenging due to financial obligations with a weighted mean of 3.25 and interpreted as neither agree nor disagree. On the 3rd rank was

“Despite my best efforts, providing a nutritionally balanced diet for my child during AURTI becomes challenging at times due to budget limitations” with a weighted mean of 3.17 and interpreted as as neither agree nor disagree. “Limited internet connectivity at home challenges accessing online resources and information about AURTI management” was placed on rank 8 in terms of barriers faced by the respondents.

Placed on rank 9 was “The lack of digital devices, such as smartphones or computers, makes it difficult to participate in virtual healthcare consultations for my child's care” with a weighted mean of 2.99 and interpreted as as neither agree nor disagree. The least barrier that they encountered was “I sometimes struggle to afford the recommended medications for my preschooler's AURTI due to financial constraints” with a weighted mean of 2.80 which still falls in the as neither agree nor disagree interpretation.

Correlation between Caregivers’ Knowledge and the Barriers Caregivers Faced in Home-Based Management of Acute Upper Respiratory Tract Infections in Preschoolers of Virac, Catanduanes

a. *Correlation between caregivers’ knowledge and the barriers caregivers face in home-based management of acute upper respiratory tract infections in preschoolers of Virac, Catanduanes.* The computed correlation coefficient (*r*-value) of 0.252 with a very low *p*-value of <0.00011 suggests a significant relationship between caregivers' knowledge and the barriers they encounter in managing Acute Upper Respiratory Tract Infections (AURTI) at home. The rejection of the null hypothesis (*H*₀) indicates that there is indeed a meaningful correlation rather than one that occurred by chance alone.

Table 2. Correlation Between Caregivers’ Knowledge and the Barriers Caregivers Face in Home-Based Management of AURTIs in Preschoolers of Virac, Catanduanes

| Indicator | Computed r-value | P-value @ 0.05 | Decision on Ho |
|-----------|------------------|----------------|----------------|
| Knowledge | 0.252 | <0.00011 | Rejected |

*P<0.05*is significant*

DISCUSSION

The study found a significant correlation between caregivers' knowledge and the barriers they face in managing acute upper respiratory tract infections (AURTIs) in preschoolers in Virac, Catanduanes. As caregivers' knowledge increases, the barriers they encounter tend to decrease, with a meaningful relationship confirmed by statistical analysis. This finding emphasizes the importance of improving caregiver education and support to enhance home-based AURTI management and improve health outcomes for preschoolers. This aligns with a similar study from Nigeria, which found that poor parental knowledge led to inappropriate antibiotic use and self-medication in children, further underscoring the critical need for better caregiver education [18].

The majority of caregivers are aged 26-32 years, typically married, and consist of high school graduates and those with bachelor's degrees. The caregiving cohort is diverse, including young parents and middle-aged individuals, each group requiring tailored support to address their specific needs and challenges in caregiving [19].

Females make up a significant majority of the caregivers responding to AURTI episodes in preschoolers. This is consistent with other studies where females represent an even higher proportion of caregivers in similar contexts [20].

Marital status is a key factor in understanding caregivers' needs. Studies, such as those on mothers self-prescribing medication for children, emphasize the importance of considering marital status when tailoring interventions to improve support systems and caregiver well-being [21].

Number of Children. Research on diarrhea management and oral rehydration therapy utilization indicates that communities with smaller family sizes may require different intervention approaches. Recognizing these differences can help tailor support for caregivers and their children [9].

Number of Household Members. The predominance of larger households in the study suggests that extended family support plays a crucial role in caregiving. In contrast, smaller households might face different challenges in managing care and resources [22].

Educational Attainment: Most caregivers have secondary education, and those with higher education levels are more proactive in seeking healthcare. Understanding caregivers' educational backgrounds is essential for developing targeted support programs that promote the health and well-being of preschoolers [23].

Occupation. Occupational status significantly influences caregiving ability. The study underscores the importance of understanding caregivers' knowledge and needs based on their occupations, emphasizing the need for tailored support and community engagement to enhance the quality of care for preschoolers [24].

Monthly Household Income. Socioeconomic status affects caregivers' ability to recognize danger signs of AURTIs. While it did not significantly impact children's health in this study, trends indicate that caregivers with higher socioeconomic status have better knowledge of AURTI symptoms, highlighting the need to address socioeconomic barriers to improve health outcomes [24].

Caregivers' Knowledge. Approximately one-third of mothers are aware of infection signs in children, with urban mothers having higher awareness due to better healthcare access and education. Efforts to improve maternal education, increase healthcare access in rural areas, and implement health promotion campaigns are necessary to bridge this gap [25]. Poverty and illiteracy are significant barriers to maternal knowledge and practices regarding childhood illnesses, as seen in studies from India. Addressing these socioeconomic barriers through education, counseling, and improved access to resources is crucial for empowering caregivers and reducing preventable childhood illnesses in vulnerable communities [26].

The study underscores the importance of education in enhancing caregivers' understanding of AURTI management and overcoming the barriers they face at home. However, regional differences suggest the need for context-specific interventions to improve healthcare outcomes for AURTI patients in various settings [9].

CONCLUSION

The health of preschoolers is a critical foundation for their long-term physical, cognitive, and emotional development. The study concludes that there is a significant correlation between caregivers' knowledge and the barriers their caregiver face in managing acute upper respiratory tract infections (AURTIs) in preschoolers in Virac, Catanduanes. As caregivers' knowledge increases, the barriers they encounter tend to decrease, highlighting the importance of targeted education. Despite caregivers generally being knowledgeable, the study emphasizes the need for comprehensive programs that address both educational and practical challenges to enhance home-based AURTI management and improve health outcomes for preschoolers.

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