Mothers' Knowledge, Attitudes, and Practices regarding Antibiotics among Children

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Abstract

Background: Children under five years of age represent a highly vulnerable population with unique developmental, nutritional, and health needs. Their well-being is strongly influenced by biological, environmental, and sociocultural factors, as well as parental behaviors and caregiving practices. Ensuring good health, adequate nutrition, appropriate stimulation for learning, and a clean, safe environment is essential for optimal growth and resilience during early childhood. However, the burden of infectious diseases—particularly respiratory tract infections, diarrheal illnesses, and malnutrition—remains high globally and contributes significantly to under-five morbidity and mortality. This high disease burden drives a substantial proportion of antibiotic use in young children, much of which occurs in community settings and is influenced by maternal decision-making.

Antibiotic misuse has emerged as a major public health challenge, especially in low- and middle-income countries where access to antibiotics without prescription is common. Misuse includes inappropriate self-medication, incorrect dosing, premature discontinuation, and using antibiotics for viral illnesses such as common colds. Mothers play a central role in managing childhood illnesses, and their knowledge, attitudes, and practices (KAP) substantially shape antibiotic use patterns. Limited understanding of antibiotics, misconceptions about their effectiveness, cultural norms, and barriers to accessing formal healthcare contribute to irrational use. These practices accelerate the development of antimicrobial resistance (AMR), reduce treatment effectiveness, increase healthcare costs, and pose long-term risks to child health.

Community health nurses occupy a strategic position in addressing antibiotic misuse among households. Through education, counseling, advocacy, collaboration with healthcare teams, research, and effective case management, they can strengthen maternal health literacy, promote rational antibiotic use, and improve child health outcomes. Their role in surveillance, community engagement, and timely referral further enhances antimicrobial stewardship efforts at the community level.

This review examines antibiotic misuse among children under five from the perspective of maternal KAP, synthesizes evidence on contributing factors, and outlines the essential roles of community health nurses in mitigating misuse and resistance. Understanding these dimensions is critical for designing effective interventions that protect child health and combat the growing threat of antimicrobial resistance.

Keywords: *Antibiotics, Children , Mothers, Knowledge, Attitudes, and Practices*

Introduction

Children under five years old represent a critical developmental group whose health trajectories are shaped by biological, environmental, and social determinants. During these early years, children experience rapid physical, cognitive, and emotional growth, making them particularly vulnerable to infections, nutritional deficiencies, and environmental hazards. Global estimates show that under-five morbidity and mortality remain significant, particularly in low- and middle-income countries (LMICs), where preventable infectious diseases such as respiratory tract infections and diarrheal illnesses remain prevalent despite global health efforts. According to the Global Burden of Disease (GBD) 2020 analysis,

infectious diseases continue to account for a substantial proportion of disability-adjusted life years (DALYs) among young children worldwide [1].

The widespread prevalence of childhood infections contributes to frequent antibiotic exposure in this age group. While antibiotics are essential for treating bacterial infections, their misuse has become a global health threat. The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have repeatedly highlighted that inappropriate prescribing, over-the-counter access, incorrect dosing, and use for viral illnesses are major drivers of antimicrobial resistance (AMR) in community settings. These factors are particularly problematic for children under five, who often receive antibiotics based on parental decision-making before seeking formal healthcare [2,3].

Mothers, as the primary caregivers in most households, play a pivotal role in early illness recognition and treatment decisions for young children. Their knowledge, attitudes, and practices (KAP) regarding antibiotic use profoundly influence patterns of antibiotic consumption within the family. Studies across Asia, Africa, and the Middle East show that misconceptions—such as antibiotics curing viral infections, or the belief that fever always requires antibiotic treatment—are common among mothers and strongly associated with misuse [4]. Cultural norms, access to pharmacies, previous experiences with antibiotics, and limited healthcare access further shape maternal behaviors.

Despite growing global research on antimicrobial resistance, **a significant gap persists in understanding how maternal KAP specifically contributes to antibiotic misuse among under-five children**, especially within community settings. Existing literature often examines antibiotic misuse at the population or healthcare-provider level, with insufficient focus on caregivers' decision-making dynamics and sociocultural influences. Furthermore, few studies integrate these findings with the practical roles of community health nurses—key frontline professionals responsible for health education, antimicrobial stewardship, early detection of misuse, and community-level intervention.

Aim:

This review aims to examine antibiotic misuse among children under five years with specific focus on mothers' knowledge, attitudes, and practices, while highlighting factors that drive irrational antibiotic use. Additionally, it outlines the critical roles of community health nurses in reducing misuse and preventing antimicrobial resistance at the community level.

1. Children Under Five: Developmental Needs and Health Foundations

1.1 Overview of Children Under Five

Children under five represent a critical developmental group requiring comprehensive support to achieve optimal growth and development. During these early years, rapid maturation occurs across physical, cognitive, emotional, and social domains. The first 1,000 days—from conception to age two—are especially influential, laying the foundation for lifelong health, immunity, and learning capacity. UNICEF identifies this period as central for determining future wellbeing, with inadequate care, poor nutrition, and repeated infections contributing to long-term developmental delays and increased vulnerability to disease. Ensuring holistic support for children in this age group is therefore a global public health priority [5,6].

1.2 Good Health Requirements

Good health in early childhood depends on adequate nutrition, immunization, sanitation, responsive caregiving, and access to quality health services. The WHO emphasizes routine immunization as one of the most cost-effective interventions for reducing childhood morbidity and mortality, protecting against diseases such as measles, pneumonia, and pertussis. Access to clean water and hygiene facilities further contributes to preventing infectious diseases, particularly diarrheal illnesses that disproportionately affect young children. Children also require timely healthcare for acute conditions, early detection of developmental problems, and continuous monitoring to ensure they remain on appropriate growth trajectories [7,8].

1.3 Adequate Nutrition

Adequate nutrition is fundamental for child survival, healthy development, and immune function. Exclusive breastfeeding for the first six months and continued breastfeeding alongside complementary

foods up to two years are strongly recommended by WHO to support optimal growth and protect against infections. Malnutrition—whether undernutrition, micronutrient deficiency, or overweight—significantly increases the risk of morbidity and mortality in children under five. The 2022 UNICEF/WHO/World Bank Joint Malnutrition Estimates reported that approximately 149 million children under five experience stunting, highlighting the immense global burden and the critical need for adequate nutritional interventions [9].

1.4 Opportunities for Learning and Early Childhood Stimulation

Early learning opportunities promote cognitive and emotional development, language acquisition, and social skills. Evidence shows that children exposed to enriched environments—such as responsive interactions, play-based learning, and early education—achieve better academic and psychosocial outcomes later in life. The Nurturing Care Framework by WHO underscores early stimulation as essential for brain development, with neglect or lack of stimulation associated with cognitive delays and poor school readiness. Supportive caregiving and structured learning experiences thus play a central role in shaping future competencies [10].

1.5 Security, Safety, and a Clean Environment

A safe and clean environment protects children from injuries, infectious diseases, and exposure to environmental toxins. Poor housing conditions, indoor air pollution, inadequate sanitation, and unsafe play areas pose significant threats to child health. Studies indicate that environmental hazards contribute to over one-quarter of global childhood deaths, largely through respiratory infections, diarrheal diseases, and vector-borne illnesses. Ensuring safe physical environments also reduces risks of accidents, burns, and poisoning, which remain leading causes of preventable injuries in young children globally [11,12].

1.6 Realization of Personal Autonomy and Resilience

Early childhood is a formative period for establishing autonomy, emotional regulation, and resilience. Supportive parenting that encourages exploration, problem-solving, and independent decision-making strengthens children's confidence and coping abilities. Psychosocial stability during early years has been shown to reduce long-term risks of mental health disorders and behavioral problems. Building resilience is especially important in settings where children are exposed to socioeconomic stressors, chronic illness, or unstable environments, as supportive relationships and secure attachments can buffer adverse experiences and improve developmental outcomes [13,14].

2. Factors Affecting the Health and Well-being of Under-Five Children

2.1 Nutritional Factors

Nutrition remains one of the most influential determinants of health in children under five. Adequate intake of macronutrients and micronutrients is crucial for normal growth, immune function, and cognitive development. Undernutrition, including stunting, wasting, and micronutrient deficiencies, increases susceptibility to infections and contributes significantly to global childhood morbidity and mortality. Conversely, overnutrition and early introduction of unhealthy foods predispose children to obesity and non-communicable diseases later in life. The 2021 Global Nutrition Report underscores that poor dietary patterns in early childhood are strongly linked to impaired development and increased health risks across the life course, emphasizing the need for nutrition-sensitive interventions [15,16].

2.2 Parental Behavior

Parental behaviors—including health-seeking practices, hygiene behaviors, and treatment decisions—directly shape child health outcomes. Parents who engage in preventive health behaviors such as immunization adherence, regular medical checkups, and appropriate home care practices reduce the risk of severe illness. Conversely, harmful behaviors such as tobacco smoking inside the home, delayed care-seeking, or reliance on unregulated medications increase exposure to infection and adverse outcomes. Evidence indicates that parental responsiveness, warmth, and consistent caregiving practices promote healthy development, while neglect, inconsistent discipline, or exposure to violence may contribute to emotional and behavioral problems in early childhood [17,18].

2.3 Parenting Factors

Parenting style influences early childhood physical and psychosocial development. Authoritative

parenting—characterized by warmth and structure—supports improved nutrition, emotional regulation, and school readiness. In contrast, authoritarian or permissive parenting has been associated with developmental delays and unhealthy behaviors. Studies demonstrate that parental stress, maternal mental health problems such as depression, and limited parenting skills can negatively impact feeding behaviors, bonding, and developmental outcomes. Strengthening parenting capacity through community education and early childhood programs has been shown to significantly improve nutritional status, cognitive skills, and social development [19,20].

2.4 Sociocultural Influences on Child Health

Sociocultural norms strongly influence health practices among families with young children. Beliefs about illness causation, traditional healing practices, and gender norms shape how parents respond to childhood illnesses and how resources are allocated within households. In many LMICs, cultural expectations may delay formal healthcare seeking or encourage reliance on home remedies or over-the-counter medicines, including antibiotics. Additionally, family structures, maternal autonomy, and social support networks contribute to differences in child-rearing and health behaviors. Research consistently highlights that sociocultural determinants are significant drivers of disparities in child health outcomes globally [21,22].

2.5 Infant and Young Child Feeding (IYCF) Practices

Feeding practices—including breastfeeding, complementary feeding, and dietary diversity—have direct impacts on child growth, infection risk, and cognitive development. WHO recommends exclusive breastfeeding for the first six months and continued breastfeeding with complementary foods thereafter; however, adherence remains low in many countries due to maternal employment constraints, cultural beliefs, and lack of support. Poor complementary feeding practices, including low dietary diversity and inadequate feeding frequency, increase risks of stunting and micronutrient deficiencies. Evidence shows that optimal IYCF practices can prevent a substantial proportion of under-five deaths, highlighting the critical need for parent education and community-based nutrition support [23,24].

2.6 Environmental Determinants of Child Health

Environmental factors—including water quality, sanitation, air pollution, and housing conditions—play a major role in shaping the health of young children. Unsafe drinking water and inadequate sanitation expose children to diarrheal diseases, which remain a leading cause of mortality in this age group. Indoor air pollution from biomass fuels significantly increases the risk of respiratory tract infections, especially pneumonia. Crowded housing and lack of clean play areas further contribute to infectious disease transmission. Global estimates indicate that over 1 million under-five deaths annually are attributable to environmental risks, underscoring the urgent need for environmental health interventions [25,26].

3. Common Health Problems Among Children Under Five

3.1 Global and Regional Burden of Under-Five Mortality (U5M)

Under-five mortality remains a major global challenge, despite significant improvements over recent decades. According to UNICEF's 2023 mortality estimates, approximately 4.9 million children under five die annually, largely from preventable conditions. The leading causes include preterm birth complications, pneumonia, diarrheal diseases, and malaria, with sub-Saharan Africa and South Asia representing the highest-burden regions. Social determinants such as poverty, limited access to healthcare, and maternal education further exacerbate mortality risks. Global initiatives such as the Sustainable Development Goals (SDG 3.2) aim to reduce under-five mortality to at least 25 deaths per 1,000 live births by 2030, highlighting the ongoing need for targeted interventions [27,28].

3.2 Respiratory Tract Infections (RTIs)

Respiratory tract infections, particularly pneumonia, are among the most common and deadly illnesses affecting children under five. The WHO estimates that pneumonia alone accounts for approximately 14% of all under-five deaths globally. Children exposed to indoor air pollution, malnutrition, incomplete immunization, and poor housing conditions are at heightened risk. Viral pathogens—such as respiratory syncytial virus (RSV) and influenza—account for a substantial proportion of RTIs, yet antibiotics are often incorrectly used to treat these viral infections, contributing to misuse and antimicrobial resistance.

Early diagnosis, vaccination, and reduction of environmental risks are essential strategies for lowering RTI incidence [29,30].

3.3 Diarrheal Diseases

Diarrheal diseases remain a leading cause of morbidity and mortality among young children, accounting for roughly 8% of global under-five deaths. Major risk factors include unsafe drinking water, inadequate sanitation, and poor hygiene practices. Rotavirus, enteric bacteria, and parasites are common etiological agents. WHO recommends oral rehydration salts (ORS), zinc supplementation, and continued feeding as first-line management, yet inappropriate antibiotic use persists in many settings despite bacterial causes constituting a minority of cases. Diarrheal illnesses significantly contribute to malnutrition through nutrient loss, reduced appetite, and impaired intestinal function, creating a cycle of illness that disproportionately affects vulnerable children [31,32].

3.4 Malnutrition

Malnutrition remains one of the most pervasive health problems in early childhood, affecting millions worldwide. It contributes to nearly half of all under-five deaths by increasing susceptibility to infections and impairing immune function. Stunting, a result of chronic undernutrition, is associated with long-term deficits in cognitive development, lower school performance, and reduced economic productivity later in life. Wasting, an indicator of acute malnutrition, increases the immediate risk of mortality from infectious diseases. Micronutrient deficiencies—such as iron, vitamin A, and zinc—further compromise growth and immunity. The UNICEF/WHO/World Bank Joint Malnutrition Estimates emphasize that addressing malnutrition requires multisectoral approaches, including improved maternal nutrition, optimal feeding practices, and strengthened health systems [33,34].

3.5 Other Preventable Childhood Illnesses

Beyond infections and malnutrition, children under five frequently suffer from conditions such as anemia, parasitic infestations, skin infections, and vaccine-preventable diseases including measles and pertussis. Anemia—most commonly due to iron deficiency—affects an estimated 40% of children under five globally and contributes to impaired cognitive development and weakened immunity. Vaccine-preventable diseases resurge in regions with low immunization coverage, often due to vaccine hesitancy or health system barriers. Strengthening routine immunization, early disease detection, and community engagement are critical strategies for reducing the burden of these preventable conditions and improving child survival [35,36].

4. Antibiotics and Their Use in Pediatric Care

4.1 Overview of Antibiotics and Mechanisms of Action

Antibiotics are antimicrobial agents used to treat bacterial infections by inhibiting bacterial growth or destroying bacterial cells. Their mechanisms of action vary across classes: β-lactams disrupt cell wall synthesis; macrolides inhibit protein synthesis; fluoroquinolones interfere with DNA replication; and aminoglycosides disrupt ribosomal function. In pediatric populations, antibiotic selection must consider age-related pharmacokinetics, immature organ function, and potential adverse effects. Although antibiotics are essential for treating life-threatening conditions such as sepsis and bacterial pneumonia, inappropriate or excessive use exposes children to adverse drug reactions, disrupts the developing microbiome, and accelerates antimicrobial resistance. WHO emphasizes the importance of rational antibiotic prescribing aligned with clinical guidelines to ensure safe and effective pediatric care [37,38].

4.2 Appropriate Indications for Antibiotic Use in Children

Antibiotics should be used only for confirmed or strongly suspected bacterial infections, including acute otitis media with purulent discharge, streptococcal pharyngitis, community-acquired bacterial pneumonia, urinary tract infections, and certain skin infections. WHO and AAP (American Academy of Pediatrics) provide detailed clinical criteria for when antibiotics are warranted, stressing that many common childhood illnesses—such as viral upper respiratory infections, bronchiolitis, and uncomplicated colds—do not require antibiotics. Misinterpretation of symptoms like fever or cough often leads caregivers to expect antibiotic prescriptions, despite guidelines recommending supportive care. Strict adherence to diagnostic criteria and stewardship principles ensures that antibiotics are

reserved for cases where they provide proven benefit [39,40].

4.3 Patterns and Prevalence of Antibiotic Use Among Children Under Five

Antibiotic use among under-five children is widespread globally, with higher prevalence in LMICs where over-the-counter access is common. Studies across Asia, Africa, and the Middle East report that 50–70% of children receive at least one antibiotic course annually, often without medical consultation. Research from the WHO Multi-Country Survey found that up to 60% of antibiotics used for childhood respiratory illnesses were unnecessary because the conditions were viral in origin. Overprescribing by healthcare providers, maternal pressure, and availability of non-prescription antibiotics all contribute to rising misuse. This pattern not only increases the risk of side effects but also accelerates the emergence of resistant pathogens in pediatric populations [41,42].

5. Antibiotic Misuse and Antimicrobial Resistance in Children

5.1 Types of Antibiotic Misuse in Households

Antibiotic misuse in households with under-five children is widespread, particularly in regions where antibiotics are easily accessible without prescription. Common forms of misuse include self-medication by caregivers, administering antibiotics for viral illnesses such as colds or flu, incomplete treatment courses, sharing leftover antibiotics, and incorrect dosing. Mothers often rely on previous experiences or informal advice from family members, leading to inappropriate decision-making. Studies from LMICs reveal that 40–60% of antibiotic courses given to young children occur without healthcare consultation, contributing significantly to irrational use. Such household practices not only expose children to unnecessary medications but also create favorable conditions for antimicrobial resistance to develop [43,44].

5.2 Burden and Consequences of Antibiotic Misuse

Antibiotic misuse among children has substantial clinical, economic, and public health consequences. Clinically, inappropriate antibiotic exposure disrupts the developing gut microbiome, increasing risks of allergies, obesity, and chronic gastrointestinal disorders later in life. Misuse also leads to recurrent infections that require stronger or alternative antibiotics, increasing healthcare costs for families and health systems. At the population level, misuse accelerates the spread of resistant pathogens within communities, reducing the effectiveness of first-line antibiotics and compromising the management of common infections. WHO identifies pediatric antibiotic misuse as a major contributor to the global AMR crisis, emphasizing that early-life exposure heightens long-term risks [45,46].

5.3 Antimicrobial Resistance (AMR) Among Pediatric Populations

Antimicrobial resistance is rising rapidly among pediatric populations, with increasing reports of resistant strains of *Escherichia coli*, *Streptococcus pneumoniae*, and *Staphylococcus aureus* isolated from children. Surveillance studies indicate growing resistance to commonly used drugs such as ampicillin, cotrimoxazole, and macrolides. Infections caused by resistant organisms are associated with higher rates of hospitalization, prolonged illness, and increased mortality. According to the Global Research on Antimicrobial Resistance (GRAM) report, AMR was directly responsible for over one million deaths globally in 2019, with the highest burden among young children. These findings underscore the urgent need for stewardship across all levels of care, including household settings [47,48].

5.4 Factors Influencing Antibiotic Resistance

Multiple interrelated factors contribute to rising antibiotic resistance in under-five children. Overprescribing by healthcare professionals, inadequate diagnostic capabilities, caregiver expectations, and easy access to antibiotics without prescription are major drivers. Environmental factors—including contaminated water sources, poor sanitation, and agricultural antibiotic use—also increase exposure to resistant organisms. Moreover, low maternal health literacy contributes to misconceptions about antibiotic necessity and effectiveness. Studies consistently show that poor knowledge among caregivers significantly correlates with inappropriate use, highlighting the need for targeted education and community health interventions [49,50].

5.5 Relationship Between Antibiotic Misuse and the Development of Resistance

Antibiotic misuse directly accelerates the selection of resistant bacteria. When antibiotics are taken unnecessarily or incorrectly, susceptible bacteria are eliminated while resistant strains survive and proliferate. In young children, whose immune systems and microbiota are still developing, this process occurs rapidly and has far-reaching consequences for future treatment effectiveness. Research demonstrates that children exposed to antibiotics in early life are more likely to carry resistant organisms, contributing to community-level transmission. WHO and CDC emphasize that reducing misuse is one of the most effective strategies to slow resistance, underscoring the urgent need for improved maternal knowledge and stewardship practices in households [51,52].

6. Mothers' Knowledge, Attitudes, and Practices Toward Antibiotic Use

6.1 Mothers' Knowledge Regarding Antibiotics and Infections

Mothers play a central role in care-seeking decisions for under-five children, and their knowledge significantly influences antibiotic use patterns. Numerous studies show that many mothers lack understanding of the differences between bacterial and viral infections, leading to inappropriate expectations for antibiotics in cases such as common colds, flu, or viral diarrhea. Misconceptions—such as antibiotics reducing fever quickly or preventing complications—are common across many LMIC settings. A systematic review from 2020 found that 40–80% of caregivers believed antibiotics were effective for viral illnesses, contributing substantially to misuse in home settings. Poor knowledge is closely linked to factors such as low maternal education, limited access to health information, and reliance on informal sources of advice [53,54].

6.2 Maternal Attitudes Toward Antibiotics and Illness Management

Attitudes toward antibiotics strongly shape how mothers respond to childhood illness. Mothers who perceive antibiotics as powerful or "fast-acting" are more likely to request them from healthcare providers or administer leftover medications at home. Fear of complications, desire for rapid recovery, and cultural norms that equate medication with good caregiving often reinforce inappropriate use. Studies in Middle Eastern and Asian contexts reveal that mothers commonly express dissatisfaction when physicians do not prescribe antibiotics, which may pressure clinicians into unnecessary prescribing. Conversely, mothers with positive attitudes toward watchful waiting, hydration, and supportive care are more likely to follow rational treatment pathways [55,56].

6.3 Practices Contributing to Antibiotic Misuse

Maternal practices play a crucial role in driving misuse among under-five children. Common behaviors include self-medicating children using antibiotics obtained from pharmacies without prescriptions, discontinuing treatment once symptoms improve, adjusting dosages without consulting healthcare providers, and sharing antibiotics among siblings. Such practices are influenced by affordability, past experiences, and structural barriers such as long waiting times in health facilities. A cross-sectional study in Jordan, for example, found that nearly half of mothers reported giving antibiotics to their children without medical consultation. These behaviors significantly contribute to increased antibiotic exposure and the spread of antimicrobial resistance within communities [57,58].

6.4 Sociodemographic Factors Influencing Maternal KAP

Sociodemographic characteristics—including maternal education, income, age, employment, and urban or rural residence—significantly influence knowledge, attitudes, and practices toward antibiotic use. Mothers with higher education levels typically demonstrate better understanding of antibiotic indications and greater adherence to prescribed regimens. Conversely, low-income households may rely more heavily on over-the-counter antibiotics due to perceived cost savings compared to physician visits. Cultural beliefs surrounding childhood illnesses also differ across communities and may encourage the early initiation of antibiotics regardless of clinical need. Evidence consistently demonstrates that addressing sociodemographic disparities is crucial for improving rational antibiotic use at the household level [59,60].

6.5 Access to Healthcare and Its Influence on Decision-Making

Accessibility of healthcare services strongly shapes maternal decision-making regarding antibiotic use. In settings where healthcare facilities are distant, overcrowded, or costly, mothers are more likely to

self-medicate their children. Pharmacies offering over-the-counter antibiotics without proper guidance further reinforce such behaviors. Delays in accessing care may lead parents to initiate antibiotic therapy prematurely, especially when a child presents with fever or cough. Conversely, strong primary healthcare systems, effective health communication, and trust in healthcare providers are associated with more rational antibiotic use. Strengthening community-based services and improving affordability can therefore play pivotal roles in reducing misuse [61,62].

7. The Role of Community Health Nurses in Reducing Antibiotic Misuse

7.1 Educator Role

Community health nurses (CHNs) play a pivotal role in educating mothers and caregivers about the appropriate use of antibiotics and the dangers of misuse. Through home visits, community outreach, and clinic-based education sessions, nurses provide essential information on differentiating between viral and bacterial infections, the importance of completing prescribed antibiotic courses, and the risks associated with self-medication. Evidence shows that caregiver health literacy directly influences rational medication use, and structured education programs delivered by CHNs significantly improve parental knowledge and reduce inappropriate antibiotic demand. By promoting preventive measures such as immunization, hygiene practices, and early recognition of illness, CHNs strengthen maternal capacity to manage childhood conditions without unnecessary antibiotic reliance [63,64].

7.2 Counselor Role

Nurses serve as counselors by guiding mothers in making informed decisions regarding childhood illness management. Many caregivers experience anxiety when their children develop symptoms such as fever or cough, often prompting unnecessary antibiotic use. CHNs can help alleviate fears by explaining illness trajectories, reinforcing the effectiveness of supportive care, and advising on when antibiotics are genuinely required. Counseling also addresses misconceptions, cultural beliefs, and past experiences that influence maternal attitudes toward antibiotics. Studies indicate that caregivers who receive personalized counseling from healthcare providers demonstrate greater trust, increased adherence to medical advice, and reduced demand for antibiotics when not indicated [65,66].

7.3 Advocate Role

As advocates, community health nurses work to ensure that policies and healthcare practices support rational antibiotic use at the population level. They advocate for stronger regulatory enforcement on over-the-counter antibiotic sales, improved access to affordable healthcare, and community-based antimicrobial stewardship initiatives. CHNs also represent the needs of vulnerable households by working with local authorities, health systems, and policymakers to address barriers that encourage antibiotic misuse, such as long waiting times, poor healthcare accessibility, and limited diagnostic services. Advocacy efforts contribute to broader public health strategies aimed at reducing antimicrobial resistance in communities [67,68].

7.4 Collaborator Role

Collaboration between CHNs and other healthcare professionals—including physicians, pharmacists, and public health officers—is essential for ensuring consistent messaging and coordinated antimicrobial stewardship. Nurses often serve as the communication link between families and the healthcare system, helping to identify children at risk of misuse and ensuring timely referrals when needed. Collaborative partnerships also support community-based surveillance, health promotion initiatives, and multidisciplinary educational campaigns aimed at improving maternal knowledge and reducing inappropriate prescribing. The integration of nursing roles within broader AMR programs has been shown to strengthen community-level interventions and enhance overall health outcomes [69,70].

7.5 Researcher Role

Community health nurses contribute to research by identifying patterns of antibiotic use, misuse, and resistance within their communities. Through data collection, surveys, and participation in operational research, nurses help generate evidence needed to inform local and national antimicrobial stewardship policies. Their close contact with families positions them uniquely to explore sociocultural factors influencing maternal behaviors and barriers to rational antibiotic use. Studies show that community

nurse-led research improves understanding of health-seeking behaviors and enhances the relevance of interventions tailored to specific populations. Engaging CHNs in research promotes evidence-based practice and contributes to ongoing surveillance of AMR trends [71,72].

7.6 Managerial Role

As managers, community health nurses oversee health programs, organize community outreach activities, and coordinate education campaigns on rational antibiotic use. They also ensure that health facilities adhere to guidelines for antibiotic dispensing and that caregivers receive consistent and accurate information. Effective management includes supervision of community health workers, monitoring antibiotic stocks, and ensuring that standard treatment protocols are implemented correctly. Strong managerial leadership enhances the efficiency of antimicrobial stewardship initiatives and strengthens the quality of primary healthcare services delivered to families with young children [73,74].

7.7 Referral Role

Timely referral is a critical aspect of the community health nurse's role in preventing complications associated with inappropriate home management of illness. When a child's symptoms indicate the need for clinical assessment—such as persistent fever, difficulty breathing, dehydration, or failure to respond to initial care—CHNs must facilitate prompt referral to health facilities. Appropriate referral reduces dependence on self-medication, prevents delayed treatment of severe bacterial infections, and ensures that antibiotics are prescribed only when clinically warranted. Nurses also educate caregivers on danger signs requiring immediate medical attention, thereby reducing inappropriate reliance on antibiotics and improving overall child health outcomes [75,76].

Conclusion

Antibiotic misuse among children under five remains a major global health concern, driven primarily by maternal knowledge gaps, misguided attitudes, and inappropriate caregiving practices. Young children are disproportionately vulnerable to infectious diseases, and while antibiotics play a critical life-saving role, their inappropriate use contributes significantly to the growing burden of antimicrobial resistance. This review highlights how social, cultural, environmental, and health system factors intersect to influence maternal decision-making, often resulting in unnecessary or incorrect antibiotic use. Misuse not only undermines treatment effectiveness but also exposes children to avoidable risks such as adverse drug effects, disruption of the microbiome, and prolonged illness due to resistant pathogens.

Addressing this challenge requires strengthening maternal health literacy, improving access to accurate information, and ensuring that caregivers are empowered to distinguish between conditions requiring antibiotics and those that do not. Community health nurses (CHNs) play a pivotal role in this effort. Through education, counseling, advocacy, collaboration, and effective referral practices, CHNs are uniquely positioned to influence household behaviors and promote rational antibiotic use. Their involvement in community-based surveillance and research further supports antimicrobial stewardship and informs health policy development.

Efforts to reduce antibiotic misuse should be integrated within broader child health strategies, including nutrition support, early childhood development programs, improved sanitation, and strengthened primary healthcare systems. A multisectoral approach that engages caregivers, healthcare providers, policymakers, and communities is essential for mitigating the risks associated with misuse and slowing the progression of antimicrobial resistance. Ultimately, empowering mothers with accurate knowledge and accessible healthcare support will contribute to safer antibiotic practices, improved child health outcomes, and more resilient communities.

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