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Mothers' Knowledge and Practices Towards Pneumonia to Children Under Five Years of Age in Makambako Town-Njombe

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Abstract

Background: Pneumonia is an acute respiratory infection caused by several infectious agents, such as viruses, bacteria, and fungi. It affects the lungs. This study aimed to assess mothers' knowledge and practices regarding pneumonia in children under five years of age in Makambako town. The study focused on exploring knowledge, awareness, practices, and the extent to which mothers understand the disease and measures taken to protect children to prevent and reduce the disease prevalence.

Methodology: A community-based descriptive cross-sectional study design was used, employing random and purposive sampling techniques to obtain 106 respondents in the study area who filled out the structured questionnaires. All questionnaires were checked for completeness and then entered into SPSS for analysis. The prevalence is high, as there were 2647 cases of pneumonia in 2017 compared to 1938 cases in 2016.

Results: Based on the study findings, the high prevalence of childhood pneumonia in Makambako town council is caused by low knowledge and poor practices of mothers concerning childhood pneumonia, as 70.8% of mothers do not know what pneumonia is about, 72.6% of mothers do not know health risk factors associated with childhood pneumonia, and 77.3% do not know how pneumonia is transmitted. Some mothers perform cultural and traditional beliefs, while others perform self-medication and take a child to the hospital when the conditions worsen. Most do not know if proper nutrition and immunization, as signified by 99% and 81%, respectively, are the most effective ways to protect a child against pneumonia.

Conclusion and recommendations: The study concludes that mothers' knowledge and practices associated with improper nutrition and immunization contribute much to children's pneumonia. Therefore, the study suggests proper nutrition and immunization education should be done appropriately to protect children from pneumonia.

Keywords: Knowledge, Practice, Pneumonia, Prevalence, self-medication, under-five

Introduction

Pneumonia is a form of acute respiratory infection that affects the lungs. Several infectious agents, including viruses, bacteria and fungi, cause pneumonia. The most common are *Streptococcus pneumonia* (the most common cause of bacterial pneumonia in children), *Haemophilus influenzae* type b [Hib] (the second most common cause of bacterial pneumonia), respiratory syncytial virus is the most common viral cause of pneumonia, in infants infected with

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HIV, *Pneumocystis jiroveci* is one of the most common causes of pneumonia, responsible for at least one-quarter of all pneumonia deaths in HIV-infected infants. Pneumonia is the number one infectious disease killer of children under five globally, killing more children than HIV, malaria, and TB combined (UNICEF & WHO, 2015).

Pneumonia is the leading cause of mortality in children aged less than five years worldwide (Sazawa & Black, 2023; Black, et al., 2010). The incidence of pneumonia in this group is estimated to be about 156 million episodes each year, of which approximately 151 million are in developing countries and 35 million are in Africa. Estimates indicate that 7-13% of these episodes are possibly life-threatening and require hospitalization (Rudan, et al., 2008). Pneumonia is responsible for about 1.6 million deaths among children aged 0 to 5 years of age. Pneumonia is the single largest infectious cause of death in children worldwide. Pneumonia killed 920,136 children under the age of 5 in 2015, accounting for 16% of all deaths of children under five years old. Pneumonia affects children and families everywhere but is most prevalent in South Asia and sub-Saharan Africa (UNICEF, 2015).

Tanzania is among the top 15 countries facing clinical pneumonia, with 1.9 million new cases predicted yearly. Childhood clinical pneumonia is caused by exposure to risk factors related to the host, the environment and infection. Among these are malnutrition, low birth weight, lack of measles immunization, parental smoking, zinc deficiency and indoor pollution (WHO, 2013). It is the leading cause of death in children under five. Pneumonia is the leading cause, accounting for 15% of others, such as diarrhoea, malaria and AIDS. Pneumonia contributes to over 20% of deaths in children under five. Only 22% of children with pneumonia receive antibiotics for treatment (Opendata.go.tz, 2013).

In Makambako district, there is a high prevalence of Pneumonia among children under five as the statistics trend shows that there is an increase in several children suffering from Pneumonia, accounting for 45% among other diseases (Ministry of Finance, National Bureau of Standards & Makambako Town Council, 2017). It is the top infectious disease which frequently affects children under 5 years of age. Indoor air pollution has been mentioned as the most common cause of disease in children in the Makambako district. Although some measures are undertaken by society to combat Pneumonia caused by indoor air pollution, the disease persists. There is a large number of childhood pneumonia occurring each year, and it has been a serious problem for children under 5 years.

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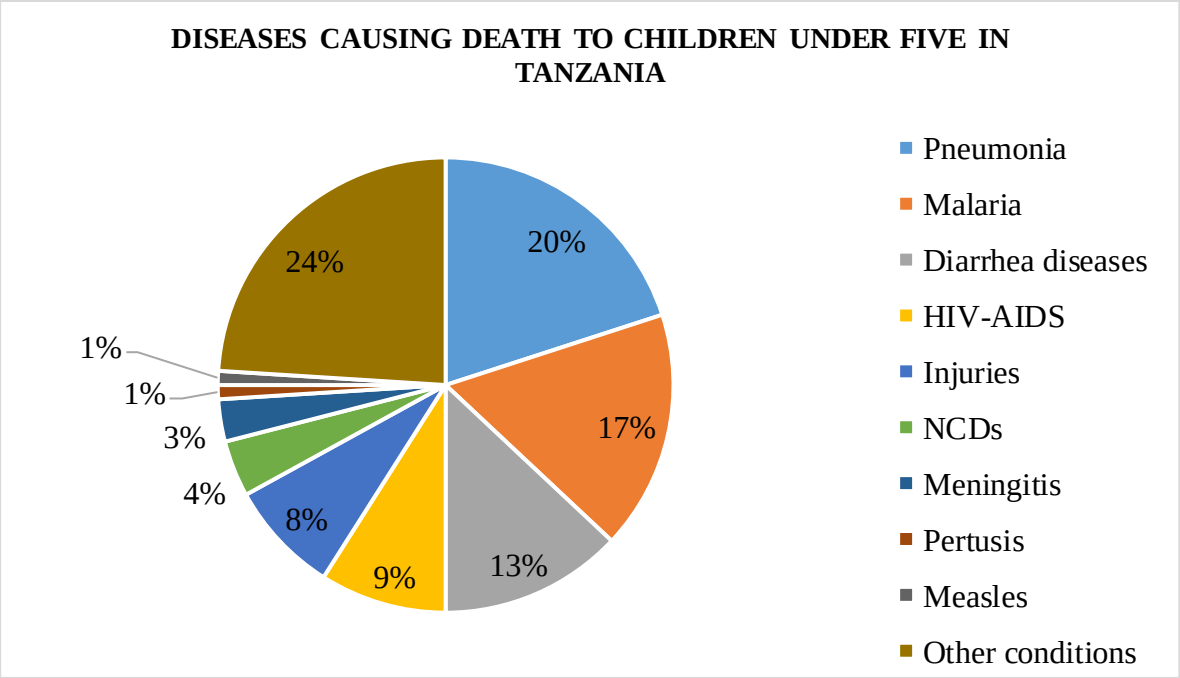

Figure 1. Pneumonia situation about other diseases (Source: UNICEF/WHO, 2013).

As observed above, pneumonia is the leading disease-causing death in children under five in Tanzania.

Materials and Methods

Research Design and Approaches

A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 2011). It is a conceptual structure within which research is conducted. Therefore, both cross-sectional study design and case study design were employed. Research approaches are plans and procedures that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation (Bruce, 2000). The study used a mixed-method approach, using both qualitative and quantitative approaches.

Study Area

The study was conducted in Makambako town council. Makambako town council is a medium-sized town in the Njombe region of the Tanzanian Southern Highlands, located 40 miles north of Njombe city. It is located at the junction of the A104 and B4 roads between Njombe, Iringa, and Mbeya. According to the 2012 Tanzanian census, its population was 93,827, where males account for 44,031 and women account for 49,796. Makambako town council contains the settlements of Ubena, Mahongole, Utengule Kitandililo, Mlowa, Lyamkena, Mwembetogwa and Mjimwema. Makambako Plateau is one of three agroecological zones in the Njombe region, the other two being the Eastern Highlands and Njombe Plateau. Maize is commonly grown on plateaus, while Makambako is notable for tomato cultivation and trade as its economic activities.

The largest ethnic group in Makambako town is the Bena. Their living arrangements include large, polygamous, extended families and on average, there are more than five children in a

household. Farming responsibility is left to women, with almost all of them following an occupation.

Female-headed households depend more on subsistence food, operating as "street hawkers" or with mobile fast-food kitchens. The residents speak Kisovi, a variation of Kibena. Under the Archdiocese of Songea, there are two health services dispensaries in the Makambako District: The Makambako Dispensary in the town of Makambako and the Kitanewa Dispensary in the town of Kitanewa.

Study Population, Sample Frame and Sampling Procedure/Techniques

The study population refers to the people involved in the research. The study population was the community living in the Makambako district, specifically mothers with children under five years of age. The sample frame of the study included mothers with children under five years of age and healthcare workers. Both probability and non-probability sampling techniques/procedures were employed. In probability sampling, a researcher used simple random sampling where everyone was given an equal chance to be selected. In non-probability sampling, a researcher used purposive sampling, meaning that the researcher's judgement was used to select the cases that make up the sample, together with convenience sampling, where cases were selected randomly on the basis that they were easiest to obtain. This ensured maximum accuracy in obtaining needed information.

Data Collection Methods

Data collection methods involved Documentation and structured interviews/Questionnaires.

Documentation

Available data/documents concerning the cases of children affected and died of pneumonia diseases; both the current and past information was used.

Questionnaire

This refers to a set of printed or written questions with a choice of answers devised for a survey or statistical study. Questionnaires were distributed to mothers with children under five years of age.

Data Collection Instruments/Tools

Data collection instruments are tools for gathering information and data during research conduction. An interview schedule (questionnaire), a notebook for taking the available data/information, and a pencil, ruler and pen were used.

Data Analysis and Presentation

Data analysis refers to inspecting, cleansing, transforming, and modelling data to discover useful information, suggest conclusions, and support decision-making. Statistical Package for Social Science (SPSS) will analyze the obtained data as recommended by the Environmental Health Department at RUCU. Data in tables, charts, graphs and documents were presented.

Results and Discussion

Knowledge on Pneumonia

Several questions were asked of mothers with children under five years of age to assess their theoretical and practical understanding of childhood pneumonia and determine their knowledge level concerning it. The results of the knowledge assessment are presented below.

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Information on the word pneumonia (n=106)

91 respondents (86%) have heard the word pneumonia, but 15 respondents (14%) have never heard it. Most respondents know the word pneumonia, but few do not, as presented in Figure 2 below.

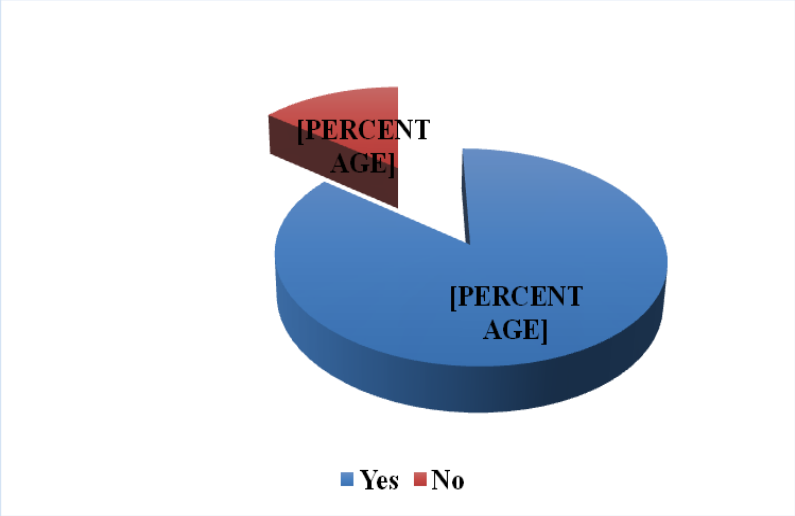

Figure 2. Understanding of pneumonia (Source: Researcher findings, 2018)

The study revealed that mothers are not aware of the disease, as some have never even heard the word pneumonia. It is difficult to prevent a disease if a person does not know. When the disease occurs, it will be new and may not know what to do and may result in death.

Of mothers aware of the disease, 12.3% do not understand what pneumonia is; this is dangerous since it is difficult to manage a disease that is not understood. Many say it is a disease caused by cold, which is not true; cold is just a contributing factor to the disease. This contradicts Black et al. (2010), who describe pneumonia as an acute respiratory infection affecting the lungs. The lungs comprise small sacs called alveoli, which fill with air when a healthy person breathes. When an individual has pneumonia, the alveoli are filled with pus and fluid, making breathing painful and limiting oxygen intake.

Children's hospital attendance (n=70)

Forty-three (43) respondents (61%) responded that a child was taken to the hospital when symptoms of pneumonia showed, but 27 respondents (39%) said that a child was not taken to the hospital. Those who said a child was not taken to the hospital proved that the child was taken to traditional healers and got treatment, and a few said that a child got home treatment and became well.

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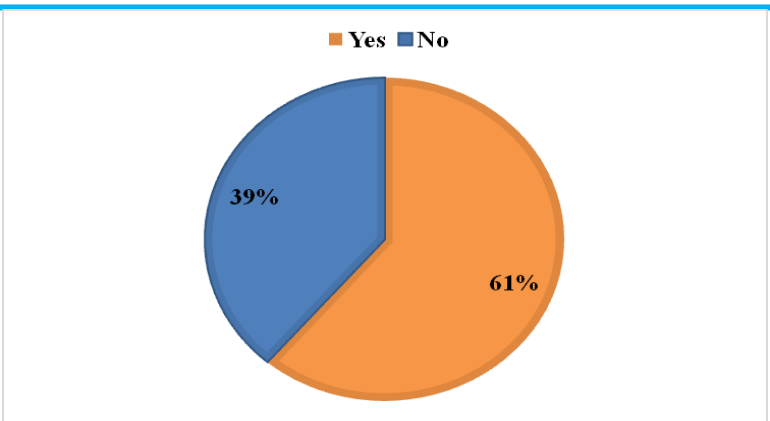

Figure 3. Hospital attendance (Source: Researcher findings, 2018)

As shown in Figure 3, 39% of mothers did not take a child to the hospital when they fell sick, and some performed home treatment by giving a child paracetamol, believing that it was a normal fever and taking the child to the hospital when the condition worsened. Some took children to traditional healers, believing that it is a wonderful disease and cannot be treated in a hospital. The study is like the one conducted in Iran by Farhad et al.(2014), who explain that most mothers (43% >) do not attend early hospitals to treat pneumonia in children under five children, signifying the positive association between high mortality rates and not attending on time at hospitals. This increases morbidity and mortality of children from childhood pneumonia since home treatment and traditional healing are not scientifically based and are not effective.

Understanding of risk factors of Pneumonia (n=91)

Thirty-nine (39) respondents (43.4%) said the health risk factor of childhood Pneumonia is cold, 18 respondents (19.8%) said it is indoor air pollution, such as parental smoking and the use of biomass fuel in cooking, 5 respondents (5.7%) said crowding, 2 respondents (1.9%) said malnutrition and 27 respondents (29.2%) said they do not know the health risk factors of childhood Pneumonia.

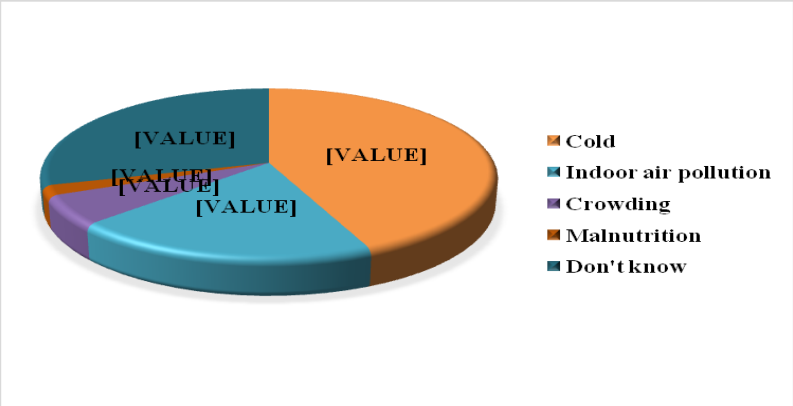

Figure 4. Risk factors of pneumonia (Source: Researcher findings, 2018)

76.2% of mothers do not understand the health risk factors contributing to Pneumonia, as 43.4% said it is cold, and 29.2% do not know anything; the major risk factors of childhood Pneumonia are Malnutrition, indoor air pollution and crowding. Most people do not know if crowding and malnutrition are health risk factors for pneumonia.

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The World Health Organization [WHO] explains that malnutrition decreases children's immunity, especially in infants not exclusively breastfed. However, other risk factors are pre-existing illnesses, such as symptomatic HIV infections and measles, also increase a child's risk of contracting pneumonia (WHO, 2018).

Understanding of Pneumonia transmission (n=91)

Twenty-one (21) respondents (22.6%) said Pneumonia is transmitted through air, 35 respondents (38.7%) said it is transmitted by cold, 9 respondents (9.4%) said it is by bacteria, and 26 respondents (29.2%) did not know how Pneumonia is transmitted.

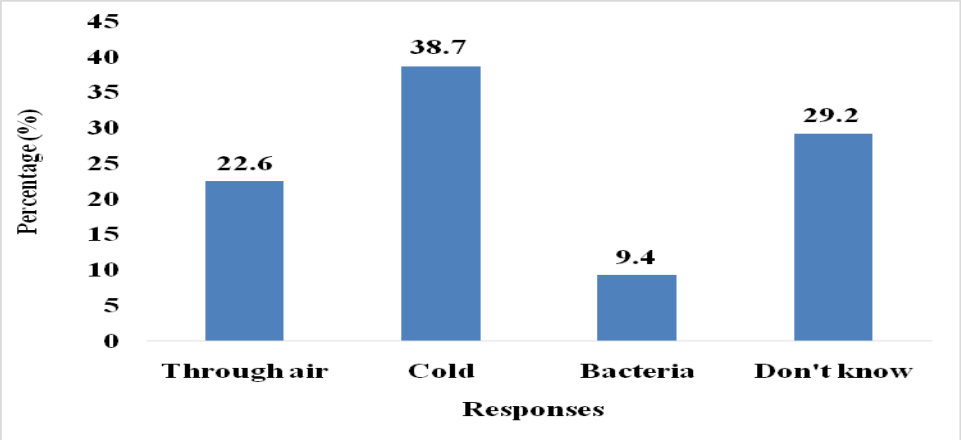

Figure 5. Pneumonia transmission (Source: Researcher findings, 2018)

67.9% of mothers do not know how Pneumonia is transmitted, whereas, among them, 38.7% said by cold, which is not true since coldness is a contributing factor, and 29.2% do not know anything about pneumonia transmission. Childhood Pneumonia can spread in several ways; the viruses and bacteria commonly found in a child's nose or throat can infect the lungs if inhaled. They may also spread via air-borne droplets from a cough or sneeze. In addition, pneumonia may spread through blood, especially during and shortly after birth. However, not all cases of pneumonia are caused by transmissible organisms. For example, WHO explains that pneumonia can occur when someone inhales an unwanted substance, like vomit, into their lungs (WHO, 2013). Generally, mothers' knowledge of Pneumonia disease is not enough, as some do not know anything about it. It is difficult to manage a disease that someone does not understand.

Practices on childhood pneumonia

Knowledge and practice must go together to manage childhood pneumonia. Several questions were asked of mothers with children under five years of age to assess their practices towards childhood pneumonia and determine if they have good practices concerning childhood pneumonia. The results of the practice assessment are presented and discussed below:

Cultural and traditional beliefs concerning childhood pneumonia (n=91)

Thirty-five (35) respondents (38.7%) said there are cultural practices regarding childhood pneumonia, such as taking a child to the traditional healer when the child shows symptoms of

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pneumonia and believing that the disease cannot be treated in the hospital. Meanwhile, 56 respondents (61.3%) said no cultural or traditional beliefs concerning childhood pneumonia exist.

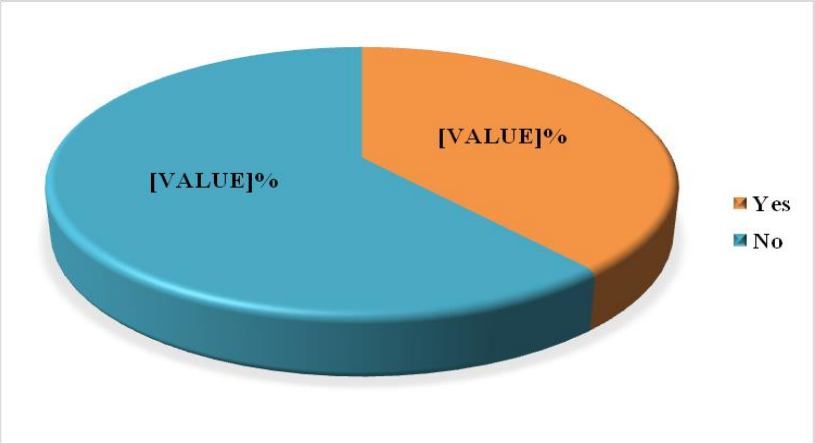

Figure 6. Cultural and traditional beliefs (Source: Researcher findings, 2018)

38.7% of mothers have bad practices towards childhood pneumonia as some perform cultural and traditional practices in order to treat the child, something which contributes in increasing morbidity and mortality since children do not get well through traditional healing. Also, other mothers said they prefer home treatment, meaning that they perform self-medication to the sick child. This is a bad practice as a child may fall sick or may even die since most mothers do not have any medical knowledge of childhood pneumonia. Even those who take children to hospitals mostly do so after self-medication, and the condition gets worse. Moreover, as failure to recognize symptoms of pneumonia may cause delays in care seeking, the World Health Organization has identified three essential steps to address pneumonia-specific mortality: ensuring that caregivers are aware of pneumonia symptoms, seeking appropriate care and treating suitably with antibiotics (WHO-Pneumonia Factsheet, 2018).

Preference for children treatment (n=91)

Fifty-two (52) respondents (57.5%) said they prefer to take a child to the hospital when he/she shows signs of Pneumonia, 17 respondents (17.9%) said they prefer home treatment, and 22 respondents (24.5%) said they prefer traditional healers. Most respondents said they prefer to take a sick child to the hospital, while some prefer home treatment and traditional healers.

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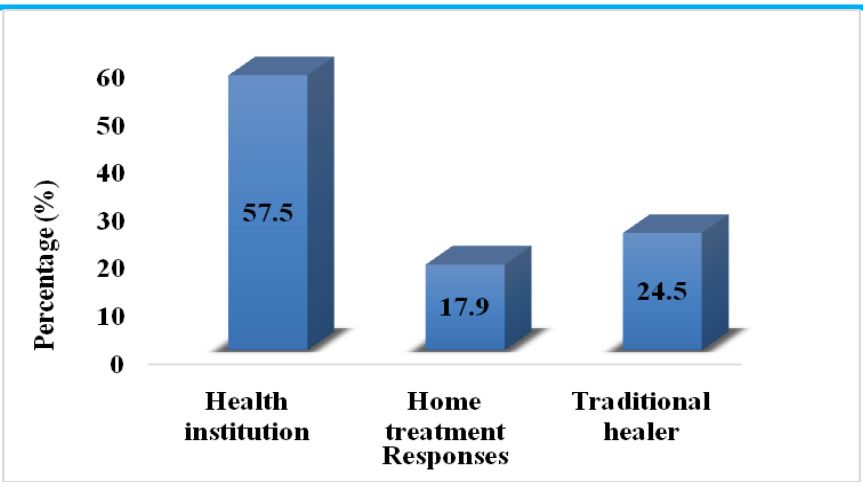

Figure 7. Children's treatment preference (Source: Researcher findings, 2018)

57.5% of mothers prefer to take their sick children to hospitals, but 17.9% prefer home treatment and 24.5% traditional healers, and those who prefer to take them to the hospital most do so after self-medication, and the condition worsens; this contributes to high morbidity and mortality to children.

Protection and prevention of a child against childhood pneumonia (n=91)

Forty-one (41) respondents (45.3%) said that to prevent and protect the child against pneumonia, they enclose children with thick clothes. One respondent (0.9%) said she would ensure a child gets proper nutrients for growth. Seventeen respondents (18.9%) said immunizing them, and 32 respondents (34.9%) said hygiene, such as keeping the indoor air clean and cleanliness in crowded homes, as shown in Figure 7 below.

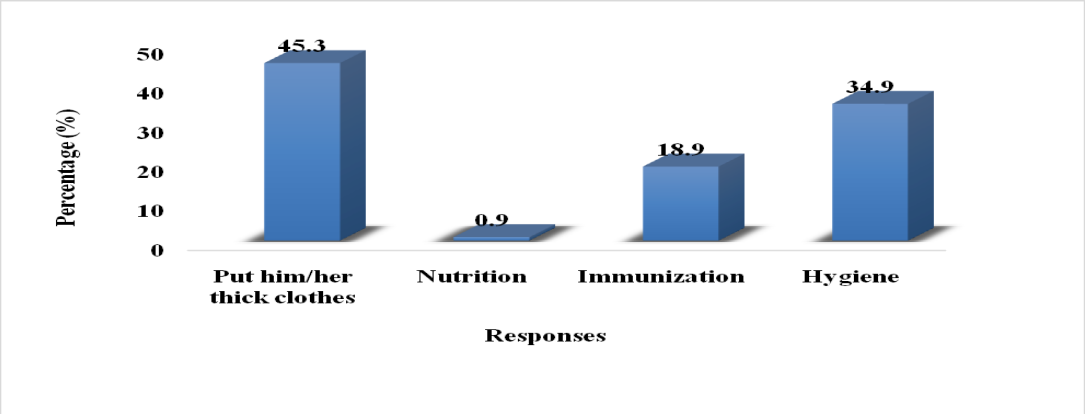

Figure8. Childhood pneumonia prevention and protection (Source: Researcher findings, 2018)

Based on the protection and prevention of a child from Pneumonia, 45.3% of mothers do not know effective ways to prevent and protect their children, many based on putting them in thick clothes. Putting on thick clothes is not an effective way of protecting a child against pneumonia since the disease has many transmission routes. Rudan et al. (2008) concurs with these findings by explaining that immunization against Hib, pneumococcus, measles and whooping cough (pertussis) is the most effective way to prevent pneumonia; adequate nutrition is key to improving children's natural defences, starting with exclusive breastfeeding for the first 6 months of life. In addition to being effective in preventing pneumonia, it also helps to reduce the length of the illness

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if a child does become ill, addressing environmental factors such as indoor air pollution (by providing affordable clean indoor stoves, for example) and encouraging good hygiene in crowded homes reduces the number of children who fall ill with pneumonia, in children infected with HIV, the antibiotic cotrimoxazole is given daily to decrease the risk of contracting pneumonia.

Sleeping room of children under five years of age (n = 91)

The sleeping room of children was assessed by asking where a child under five years of age sleeps; 28 respondents (31%) said their children under five years of age sleep in a bedroom with their brothers/sisters, while 63 respondents (69%) said they sleep with their children under five years of age in their bedrooms.

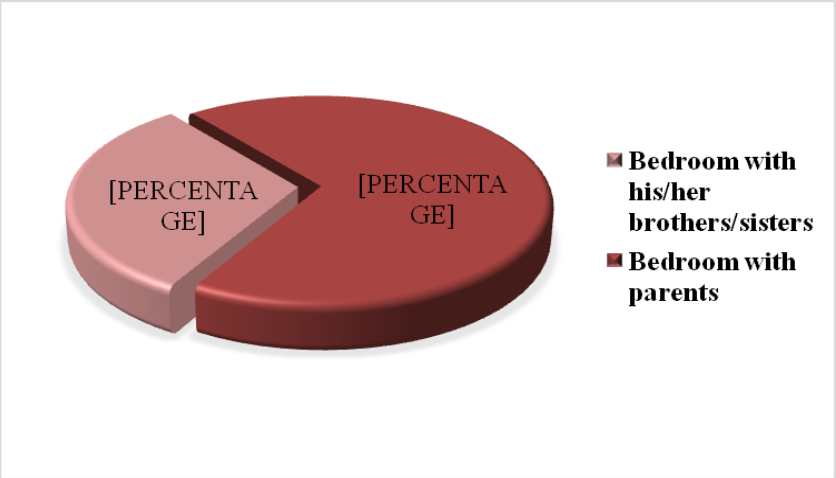

Figure 9. Sleeping rooms (Source: Researcher findings, 2018)

Regarding sleeping rooms, 69% of mothers said they sleep with their children, but 31% said they sleep with their brothers and/or sisters. Most of the children who sleep with their parents are under three years of age, and those above sleep with their brothers and sisters. Those under five who sleep with their brothers and/sisters who are 3 years and above are more likely to acquire pneumonia depending on how many children sleep in one room, how many beds they have, the clean level of the room and the age of a sister/brother who sleeps with a child. Most respondents said 3 children sleep in one room, and mostly, there are 1 to 2 beds. A crowded room results in the transmission of diseases, including childhood pneumonia. Similar findings were reported in studies conducted in Nigeria, Uganda, Albania, India and Pakistan, whereby fast breathing, coughing, fever and chest wall in-drawing were mentioned as commonly recognized complications resulting from the kind of sleeping rooms which favour the transmission of pneumonia disease(Aftab, et al.2018; Doracaj, et al.2015; Sougaijam, et al.2017; Tuhebwe, et al.2014 & Ukwaj, et al.2012).

Prevalence and incidence of childhood pneumonia

Incidence- refers to the number of new cases over a period or the extent to which something happens or has an effect. For example, how many new cases of pneumonia were diagnosed from January to June? Prevalence -is the proportion of individuals in the population who have a risk or disease at a point in time or the number of cases in time that are old and new existing now. Therefore, prevalence (P) is equal to the product of the incidence rate (I) and the average duration of the disease (D).

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Number of children dying of childhood pneumonia (n=91)

Fifty-one (51) respondents (55.7%) said many children are dying of pneumonia in Makambako, 23 respondents (25.5%) said they do not know, and 17 respondents (18.9%) said few children are dying of Pneumonia in Makambako.

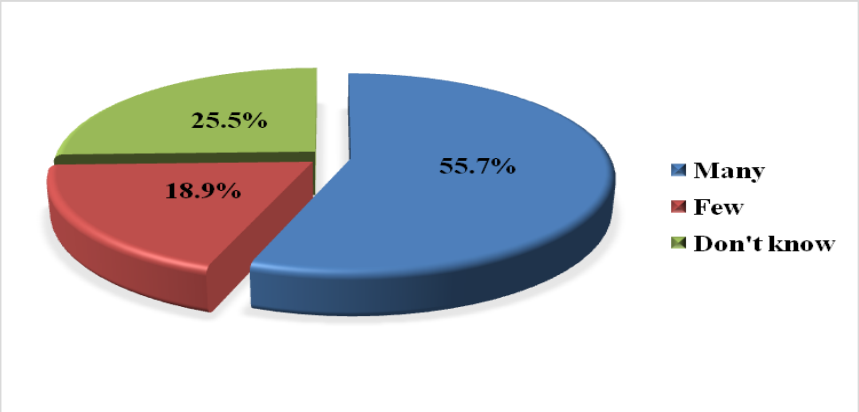

Figure 10. Pneumonic children death rate (Source: Researcher findings, 2018)

Reasons for high mortality rate

Forty-one (41) respondents (45.3%) said the reason for the high mortality rate is an environmental condition, meaning cold condition; 15 respondents (17%) said is caused by low knowledge of mothers concerning the disease and poor practices; 13 respondents (14.2%) said is caused by careless of healthcare workers, 15 respondents (16%) said indoor air pollution and the rest 7 respondents (7.5%) did not know.

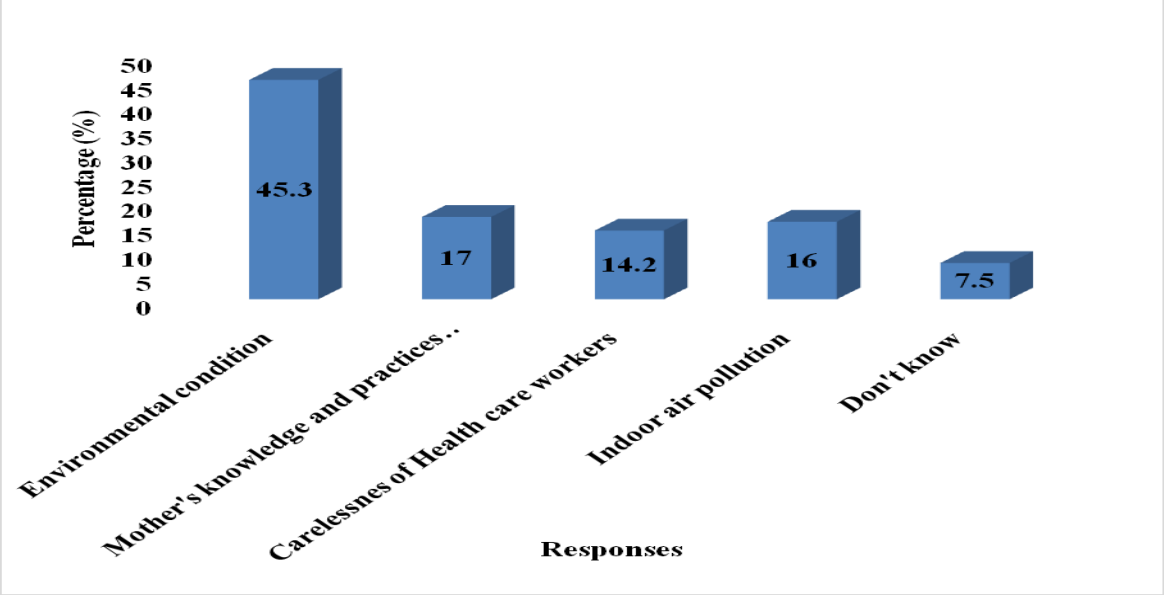

Figure 11.Reasons for high mortality rate (Source: Researcher findings, 2018)

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There is a high incidence and prevalence of childhood pneumonia in Makambako town. The findings show that most respondents said that childhood pneumonia is a common illness in Makambako (figure 11), meaning that it exists for a long period. Many children are dying of childhood pneumonia, as per respondents' responses. This is associated with mothers' knowledge and practices. The majority of the respondents said cold conditions cause high morbidity and mortality. It might be true, but there must be other associated factors because other towns have colds, but there is no high prevalence and incidence of childhood pneumonia.

Childhood pneumonia cases treated from 2014 to 2017

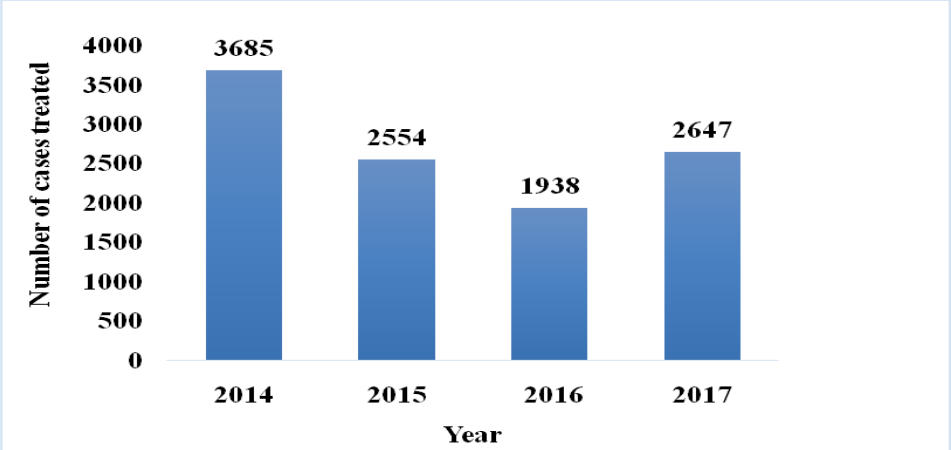

Figure 12. (Source: MTUHA Makambako Health Centre, 2018)

Figure 12 shows the number of pneumonia cases treated from 2014 to 2017. The number of cases was high in 2014, decreased to 1938 in 2016, and increased to 2647 in 2017. This indicates that childhood pneumonia is high in the study area.

Conclusion

Based on the study findings, the high prevalence of childhood pneumonia in Makambako town council is caused by low knowledge and poor practices of mothers concerning childhood pneumonia, as 67.9% of mothers do not know what pneumonia is. 72.6% do not know the health risk factors associated with childhood pneumonia. 77.3% do not know how pneumonia is transmitted. Some mothers perform cultural and traditional beliefs, and some perform self-medication and take a child to the hospital when the conditions worsen. Most do not know if proper nutrition and immunization are the most effective ways to protect a child against pneumonia.

Ethical Consideration

Ethical clearance to conduct the study was sought from Ruaha Catholic University; then, the Makambako Town Council Official provided a permission letter to collect data. The participants signed the agreement forms prior to responding to the questions. Also, verbal informed consent was given, and participant confidentiality and anonymity were clearly explained.

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Conflict of interest: None.

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