

Individual factors contributing to increased cases of pneumonia among children below five years admitted on the paediatric ward, Kayunga Regional referral hospital, Kayunga, district.
A cross-sectional study.

Byamukama Nobert, Prosper Mubangizi*
Kampala School of Health Sciences

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Abstract.

Background.

Globally, Individual factors such as age, nutritional status, immunization status, and underlying health conditions significantly influence the susceptibility of children to pneumonia. The aim of the study is to determine the individual factors contributing to increased cases of pneumonia among children below five years.

Methodology.

A quantitative cross-sectional study design using a purposive sampling technique. A sample of 50 respondents was used, and self-administered questionnaires were used as a data collection tool. Data was entered into tally sheets and later exported to Excel to generate tables, figures, and pie charts.

Results.

Most caregivers had no formal education and completed primary school (30%). The majority, 29(58%), were male. The majority (60%) of the children of the respondents were exclusively breastfed up to 6months. Most (70%) were up to date with immunization. The majority (62 %) had pneumonia but were well nourished. Most (72%) of children who had pneumonia did not have other respiratory illnesses before acquiring pneumonia.

Conclusion.

Individual factors contributing to increased cases of pneumonia among children below five years admitted at Kayunga regional referral hospital were: exclusive breastfeeding up to 6months, underlying respiratory illnesses before getting infected with pneumonia, and nutritional status.

Recommendations.

Caregivers should boil drinking water for their children to address the issue of contaminated water, and community members should do spring water protection to prevent contaminated water sources.
Household prevention of smoke by use of a non-soot-producing source of heat for cooking.

Keywords: *Individual factors, Increased cases of pneumonia, Children below five years*

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Corresponding Author: Byamukama Nobert

Email: byamukamanobert@gmail.com

Kampala School of Health Sciences

Background

Globally, Individual factors such as age, nutritional status, immunization status, and underlying health conditions significantly influence the susceptibility of children to pneumonia. The World Health Organization (WHO) reports that undernutrition is associated with nearly 45% of deaths among children under five, including those due to pneumonia. Globally, malnourished children are 2.5 times more likely to develop pneumonia compared to their well-nourished counterparts (WHO, 2019). Several studies in East Africa have identified individual factors that contribute to the increased incidence of pneumonia among children under five. In Kenya, malnutrition was found to be a

significant risk factor, with studies showing that 35% of children admitted with pneumonia were underweight or had stunted growth (Ngari et al., 2017). Immunization status also plays a crucial role. In Tanzania, incomplete vaccination schedules were associated with 45% of pneumonia cases in children (Moore et al., 2018). In Rwanda, HIV exposure and infection significantly increased the risk, with HIV-positive children being three times more likely to develop pneumonia compared to their HIV-negative counterparts (Rusine et al., 2018). In South Sudan, vitamin A deficiency was highlighted, with 50% of children with pneumonia showing signs of vitamin A deficiency (Mayai et al., 2019). Individual factors include age, nutritional status, and

underlying health conditions. For instance, studies have shown that younger children, especially those under 24 months, are more susceptible to pneumonia due to their underdeveloped immune systems. A study made in Uganda, by Kanya et al. (2017), found that 35% of children admitted with pneumonia were malnourished. Furthermore, immunization coverage is crucial in preventing pneumonia. Data from UNICEF (2020) indicated that in Uganda, 40% of pneumonia cases in children under five were due to a lack of vaccination against Haemophilus influenzae type b (Hib) and pneumococcal bacteria. Kayunga District Level: Specific data for Kayunga is limited, but the district reflects the national trends. Local health reports suggest a high prevalence of malnutrition and low immunization rates, contributing significantly to pneumonia cases among children under five. The aim of the study is to determine the individual factors contributing to increased cases of pneumonia among children below five years.

Methodology

Study design

A quantitative cross-sectional study design was used to conduct the study due to the fact that it allowed the determination of independent and dependent variables at the same point in time, with no follow-up of the participants.

Study area

The study was carried out at Kayunga Regional Referral Hospital, Kayunga district. Kayunga district is located in the central region of Uganda. The coordinates of the town are 0.7014° N, 32.9029° E. The study area was chosen because it receives many pneumonia cases; hence, the sample population and size were obtained.

Study population

The study was conducted among children below five years by getting information from their mothers and caregivers on the pediatric ward at Kayunga Regional Referral Hospital, Kayunga district. This is because there was continuous registration of cases of pneumonia among children below five years at Kayunga Regional Hospital despite the improved quality of care.

Sample size determination

The sample size was determined using the Kish and Leslie formula, as stated below

$$N = \frac{z^2 pq}{e^2}$$

Where

n = the desired sample size

Z = the standard normal deviation, usually set at 1.96

P = 50%

Therefore $P = 0.5$ $Q = (1-P)$ $d =$ absolute error allowed (10%)
 $= 0.1$

Substitution into the above equation

$$Q = (1-p) = (1-0.5) = 0.5$$

$$\text{Thus, } n = \frac{(1.96)^2 (0.5 \times 0.5)}{(0.1)^2}$$

$$n = 96$$

Therefore, n = 96 Respondents; however, due to resource limitations, the researcher used 50 respondents.

Sampling technique

A purposive sampling procedure was employed in the study to select the participants. This is because the sampling method was easy to administer for a big, homogenous population.

Sampling procedure

A purposive sampling procedure was employed in the study to select the participants, where mothers and caregivers of patients who attend the pediatric department on that day and their children had pneumonia were informed of the purpose of the study, and those who consented were selected to participate in the study.

Data management

Filled questionnaires were checked for accuracy and validity before the researcher left the data collection site. The gathered information was coded manually and then entered into the computer correctly, and the questionnaires were properly kept to avoid access by unauthorized persons and to avoid losses.

Data collection tool.

Data was collected using a questionnaire as a tool for data collection. The tool was divided into four sections. Section A contained demographic data, Section B contained individual factors, Section C contained community factors, and Section D contained health facility factors.

Data collection procedure

The study was approved by the Kampala School of Health Sciences (KSHS) research ethics committee. An introduction was obtained from the KSHS research coordinator, which introduced the researcher to the director of Kayunga Regional Referral Hospital, and the Director introduced the researcher to the pediatric ward on research days. The health workers on the pediatric ward helped the researcher identify caregivers with children below five years on the ward who had pneumonia.

Care givers of children below five years and having pneumonia were included in the study upon giving their consent to participate after a thorough explanation by the researcher on the purpose of the study, and they were requested to consent. Participants were assured of maximum

confidentiality and were told that there was no hidden intention behind the study, but the research purpose only.

Inclusion criteria

All guardians of children with pneumonia attending the pediatric ward at Kayunga Regional Referral Hospital at the time of the study, who were willing to consent, were recruited in the study.

Exclusion criteria

All caretakers of children with pneumonia who declined to consent were excluded from the study.

Data analysis and presentation

Data was cleaned, sorted, and checked for completeness, and then entered into Microsoft Office. It was presented in the form of tables, pie charts, and graphs for easy derivation of conclusions from the findings.

Ethical considerations

The researcher introduced the topic, purpose, and significance of the study to the respondents. The respondents were assured confidentiality in the study as no names were used, and thereafter were asked to sign a consent form. No respondent was forced to participate in the study. Each respondent was interviewed alone, and information obtained from any respondent was not shared with other colleagues. The data collected was kept in a locked cupboard.

Results

Demographic data of respondents.

Table 1: Shows the distribution of demographic data of respondents. (N=50)

Response	Frequency(F)	Percentage (%)
Age		
1-12 months	7	14
1-2 years	8	16
3-4 years	25	50
4-5 years	10	20
Total	50	100
Sex:		
Male	29	58
Female	21	42
Total	50	100
Address		
Rural	40	80
Urban	10	20
Total	50	100
Mother/ Guardians' level of education:		
No formal education	15	30
Primary	15	30
Secondary	17	34
Tertiary	3	6
Total	50	100

Table 1, Most 25(50%) were of the age bracket of 3-4 years, Majority 29(58%) were male, while 21(42%) were female. The majority, 40 (80%), were from rural areas; most caregivers, 17 (34%), had attained secondary level of

education, 15 (30%) had attained primary level education, 15 (30 %) had no formal education, and 3(6%) had attained tertiary level education.

Individual factors contributing to increased cases of pneumonia among children below five years.

Table 2: Shows the distribution of how long children who had pneumonia were exclusively breastfed. (N=50)

Response	Frequency	Percentage (%)
For only 1-2months	2	4
For only 3-4months	18	36
Up to 5-6months	30	60
TOTAL	50	100

Table 2, the majority (60%) of children of the respondents were exclusively breastfed up to 6months, while the minority (4%) did not breastfeed up to 6months.

Figure 1: Shows the distribution of how children who had pneumonia attended immunization (N=50)

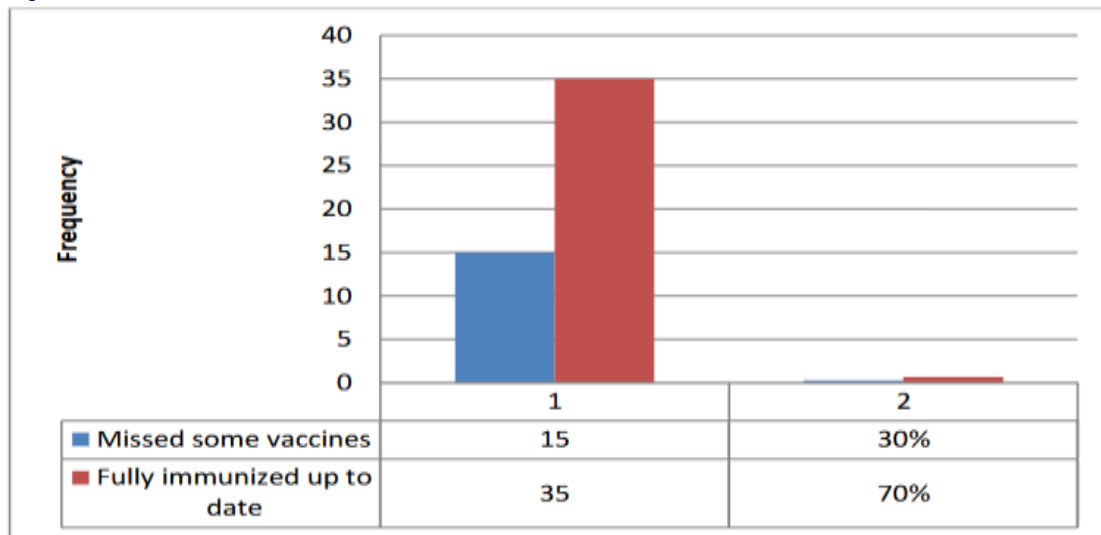


Figure 1: Most of the respondents (70%) were up-to-date with immunization, and the least (30%) missed some vaccines.

Figure 2: Shows the percentage of malnourished children who had pneumonia (N=50)

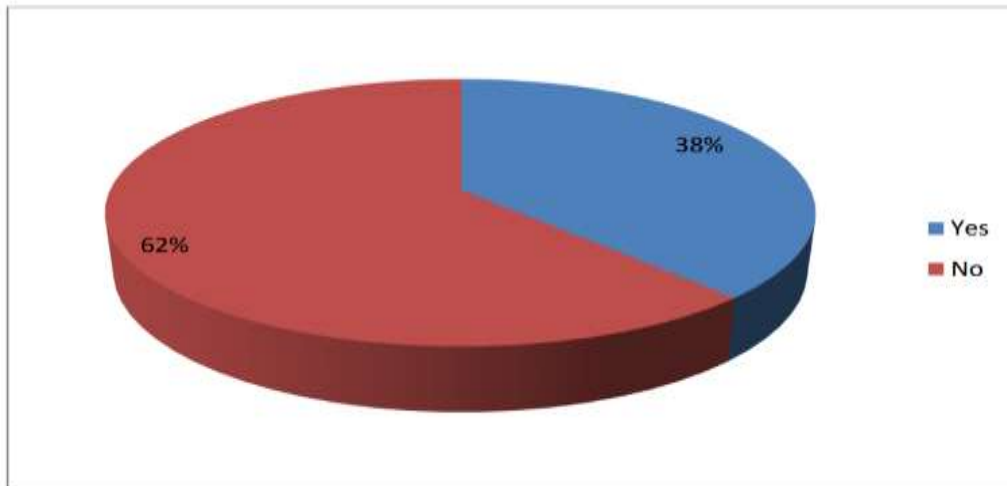


Figure 2: The majority (62 %) had pneumonia but were well nourished, while the minority (38%) of the children with pneumonia were malnourished.

Figure 3 shows whether children who had pneumonia had other respiratory illnesses before acquiring pneumonia. (N=50)

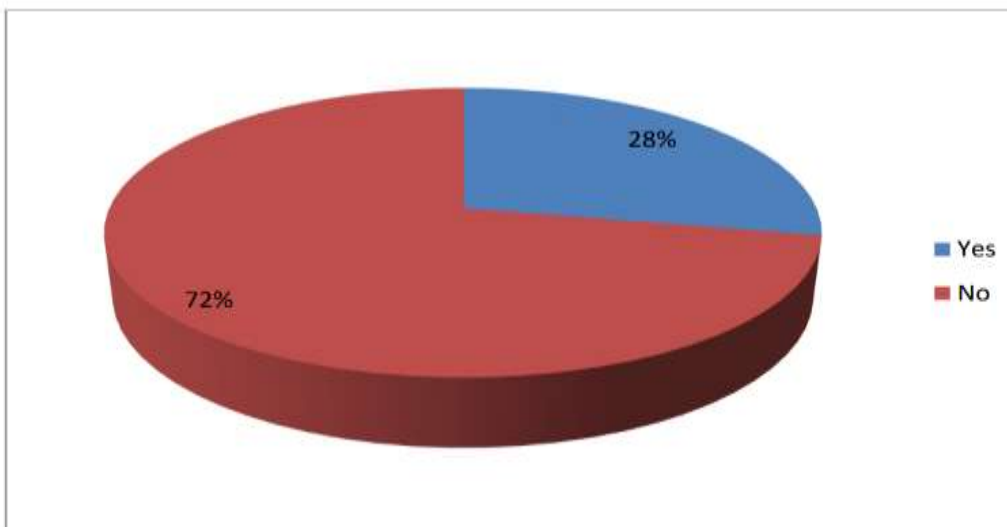


Figure 3, most (72%) of children who had pneumonia did not have other respiratory illnesses before acquiring pneumonia, whereas the least (28%) had other underlying respiratory illnesses before acquiring pneumonia.

Discussion

The individual factors contributing to increased cases of pneumonia among children below five years.

Results from the current study reported that the majority (60%) had exclusively been breastfed. This implies that pneumonia would be prevented through exclusive breastfeeding. Most of the children who had pneumonia

(70%) were up-to-date with immunization, which implies that pneumonia would be prevented through immunization. This is in agreement with the study that was conducted in Tanzania; incomplete vaccination schedules were associated with 45% of pneumonia cases in children (Moore et al., 2018). Also, data from UNICEF (2020) indicated that in Uganda, 40% of pneumonia cases in children below five years were due to a lack of vaccination against *Haemophilus influenzae* type b (Hib)

In this study it was found out that the majority (62%) of the children who had pneumonia were well nourished, this implies that malnutrition would be one of the leading underlying risk factors contributing to increased cases of pneumonia among children below five years. This agrees with findings in the study that was conducted in South Sudan, vitamin A deficiency was highlighted, with (50%) of children with pneumonia showing signs of vitamin A deficiency (Mayai et al., 2019). Results from the current study found that the majority (78%) of children did not have other underlying respiratory illnesses before acquiring pneumonia. This implies that these children who had pneumonia could have other underlying illnesses other than respiratory illnesses. This is in agreement with the findings that were found out in the study that was carried out in Rwanda, infections significantly increased the risk, but also with HIV-positive children being three times more likely to develop pneumonia compared to their HIV-negative counterparts (Rusine et al., 2018).

Conclusion.

Individual factors contributing to increased cases of pneumonia among children below five years admitted at Kayunga regional referral hospital were; children who were not exclusively breast fed up to 6months (40%) of the respondents, children who had other underlying respiratory illnesses before getting infected with pneumonia (28%) of the respondents and children who were well malnourished (38%) of the respondents.

Recommendations.

Caregivers should boil drinking water for their children to address the issue of contaminated water, and community members should do spring water protection to prevent contaminated water sources.

Household prevention of smoke by use of a non-soot-producing source of heat for cooking.

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Abbreviation/acronym

DHO	:	District Health Officer
HIV	:	Human Immunodeficiency Virus
ICU	:	Intensive Care Unit
IMCI	:	Integrated Management of Childhood Illness
Km	:	kilometer
NO	:	Number
REG	:	Registration
SPSS	:	Statistical Package for the Social Sciences
UBOS	:	Uganda Bureau of Statistics
WHO	:	World Health Organization

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Contact: +256 763 123 847

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