

Community 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.

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Abstract.

Background.

The aim of the study is to determine the community factors contributing to increased cases of pneumonia among children below five years admitted to the pediatric ward, Kayunga regional referral hospital, Kayunga, district.

Methodology.

The study employed 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.

The majority, 25(50%), were 3-4 years. The majority, 29(58%), were male. The majority (62%) of children who had pneumonia were exposed to smoke. Most children (58%) who had pneumonia lived in crowded houses, whereas the fewest (42%) of children who had pneumonia lived in spacious houses. More than half (56%) of the homes of the respondents had adequate ventilation, while less than half (44%) of the homes of the respondents had inadequate ventilation. Most (50%) were using borehole water, whereas less than half (10%) were using spring water. The majority (46%) of caregivers of children who had pneumonia were peasants, while the least (4%) had government jobs.

Conclusion.

Community factors contributing to increased cases of pneumonia among children below five years admitted to the pediatric ward were: exposure to environmental and household smoke, unemployed caregivers, crowded housing, poor ventilation, and use of contaminated water sources.

Recommendations.

Unemployment, which predisposes caregivers of children who have pneumonia to poverty, should be addressed by encouraging them to start vocational activities to eradicate poverty and to be able to afford essential needs for their children.

Keywords: *Community factors, Increased cases of pneumonia, Children below five years, Pediatric Ward Of Kayunga Regional Referral Hospital.*

Submitted: 2025-03-15 **Accepted:** 2025-08-20 **Published:** 2025-09-30

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Background

At the global Level, community factors such as household air pollution, overcrowding, and socioeconomic status play pivotal roles in the prevalence of pneumonia. Approximately 50% of pneumonia cases in children under five are associated with exposure to smoke from solid fuels used in cooking and heating (Smith et al., 2014). Overcrowding significantly increases the risk of respiratory infections, with children in such environments being 1.8 times more likely to develop pneumonia (Luby et al., 2018). Community-level factors also contribute significantly to the burden of pneumonia. Poor living

conditions, including overcrowding and indoor air pollution, were prevalent in Kenya, where 60% of households used biomass fuels for cooking, leading to higher rates of respiratory infections (Munyambu et al., 2018). In Tanzania, lack of access to clean water and proper sanitation was identified as a major contributor, with 55% of communities lacking adequate water and sanitation facilities, thereby increasing the spread of infectious diseases (Ngowi et al., 2019). In Rwanda, socio-economic status played a critical role, with children from lower-income families being twice as likely to develop pneumonia (Mugeni et al., 2018). In South Sudan, ongoing conflicts and displacement have

exacerbated the situation, with 70% of displaced families living in conditions that heighten the risk of pneumonia (OCHA, 2020). Community-related factors encompass environmental and socio-economic conditions. Indoor air pollution from biomass fuels, poor housing conditions, and overcrowding are critical risk factors. In Kenya, research indicated that children living in households using biomass for cooking had a higher incidence of pneumonia. Similarly, socio-economic factors such as low parental education and poverty exacerbate the risk by limiting access to proper nutrition and healthcare. In Uganda, the reliance on biomass fuels for cooking is widespread, especially in rural areas, contributing to indoor air pollution. A study by Jones et al. (2015) found that in rural Ugandan households, nearly 60% of children below five were exposed to high levels of indoor air pollution, correlating with increased pneumonia. In Kayunga district, the situation is exacerbated by high poverty levels, mostly in rural villages, leading to inadequate housing and reliance on biomass fuels. Local health surveys indicate that around 55% of households use biomass fuels for cooking, and overcrowding is prevalent in low-income communities, significantly contributing to the high incidence of pneumonia. The study aims to determine the community factors contributing to increased cases of pneumonia among children below five years admitted to the pediatric ward, Kayunga regional referral hospital, Kayunga, district.

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

Results

Demographic data of respondents.

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.

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. The majority, 25(50%), were 3-4 years.

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

Figure 1: Shows the statistics of children who had pneumonia and were exposed to smoke. N=50

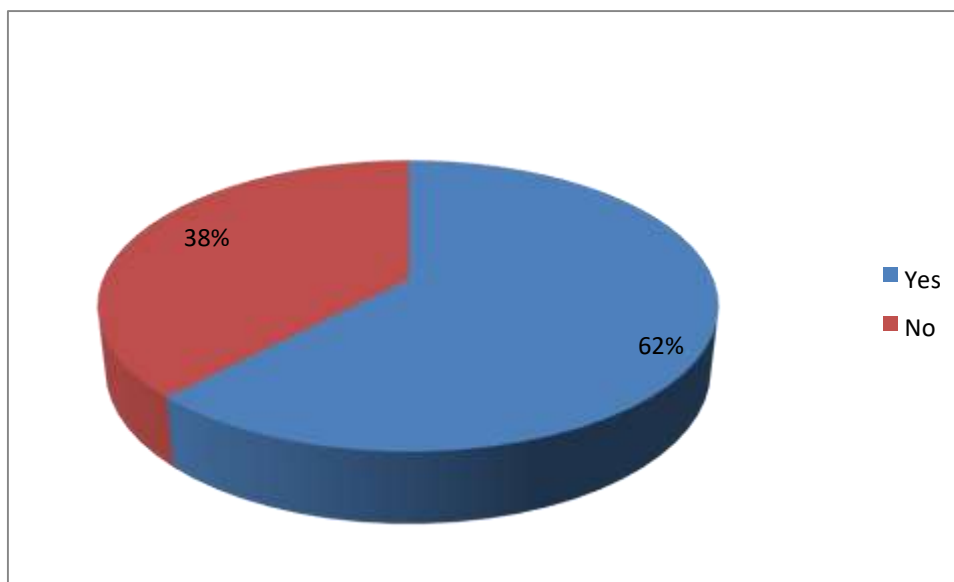


Figure 1: The majority (62%) of children who had pneumonia were exposed to smoke in their home environment, while the minority (38%) had pneumonia and were not exposed to smoke.

Figure 2: Shows the description of living in houses of children who had pneumonia at their homes. (N=50)

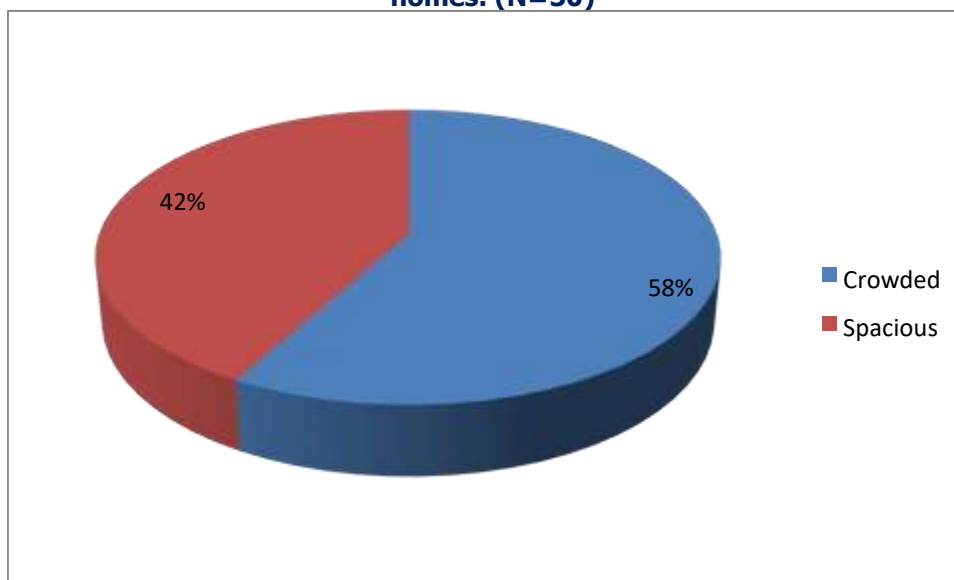


Figure 2 shows that most children (58%) who had pneumonia lived in crowded houses, whereas the fewest (42%) of children who had pneumonia lived in spacious houses.

Table 1: Show whether there was adequate ventilation of housing at homes of children who had pneumonia. (N=50)

Response	Frequency(F)	Percentage (%)
Yes	28	56%
No	22	44%
TOTAL	50	100%

Table 1 shows that more than half (56%) of the homes of the respondents had adequate ventilation, while less than half (44%) of the homes of the respondents had inadequate ventilation.

Figure 3: Shows the responses on the sources of water used for domestic use in homes of children who had pneumonia (N=50)

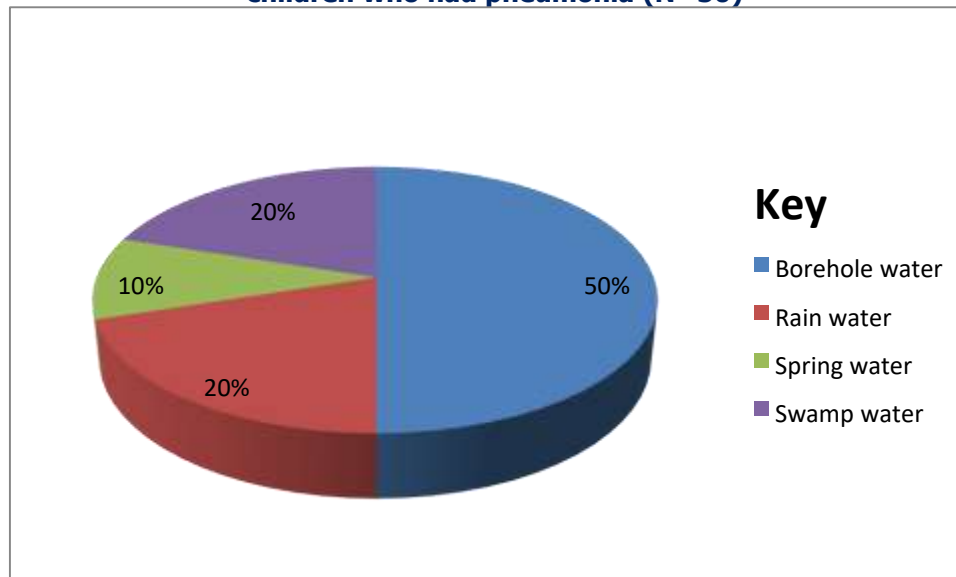


Figure 3, half of the respondents (50%) were using borehole water, whereas less than half (10%) were using spring water.

Figure 4: source of income of caregivers of children who had pneumonia who were sampled as respondents (N=50)

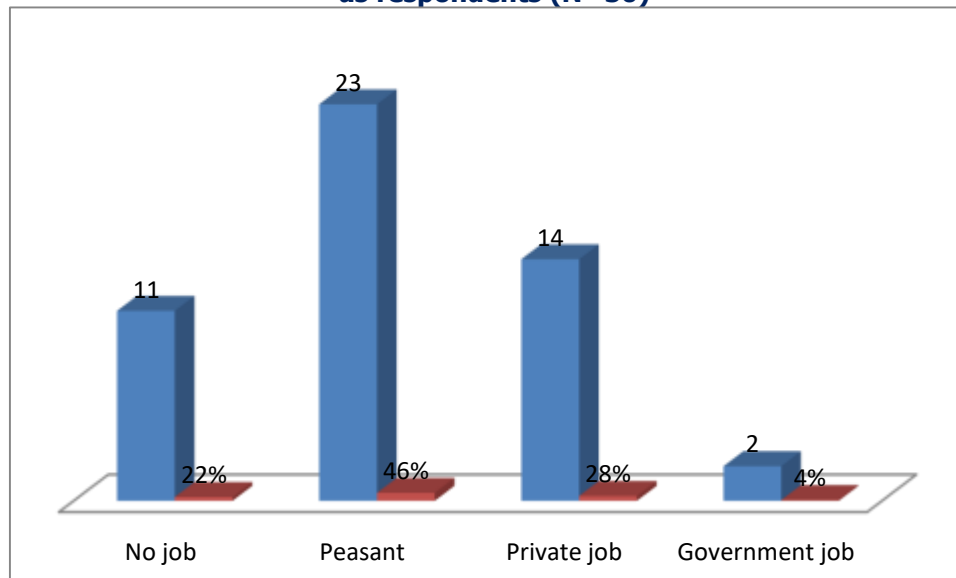


Figure 4, the majority (46%) of caregivers of children who had pneumonia were peasants, while the least (4%) had government jobs.

Discussion

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

Results from the current study found that the majority of children who had pneumonia (62%) were exposed to smoke. This implies that smoke was a risk factor for acquiring pneumonia. This is in agreement with the study, which found that approximately 50% of pneumonia cases in children below five years are associated with exposure to smoke from solid fuels used in cooking and heating (Luby et al., 2018). Results from the current study also found out that the majority (58%) of children who had pneumonia lived in crowded houses, also houses children who had pneumonia (44%). This implies there was not enough air circulation in their houses. This is in agreement with a study which found that Poor living conditions, including overcrowding and indoor air pollution, were prevalent in Kenya, where 60% of households used biomass fuels for cooking, leading to higher rates of respiratory infections (Munyambu et al., 2018).

In this study, it was found that the majority (40%) of the respondents were using rainwater and swamp water. This could have predisposed these children to pneumonia due to using contaminated water. This is in agreement with the study that was conducted in Tanzania, where lack of access to clean water and proper sanitation was identified as a

major contributor, with 55% of communities lacking adequate water and sanitation facilities, thereby increasing the spread of infectious diseases (Ngowi et al., 2019).

Results from the current study reported that the majority (46%) of caregivers of children who had pneumonia were peasants. This implies that there was unemployment of caregivers of children who had pneumonia, hence they were poor; therefore, these children were not being provided with enough physical, social, nutritional, and psychological care to prevent infections such as pneumonia due to poverty. This is in agreement with the study that was conducted in Rwanda; socio-economic status played a critical role, with children from lower-income families being twice as likely to develop pneumonia (Mugeni et al., 2018).

Conclusion.

Community factors contributing to increased cases of pneumonia among children below five years admitted to the pediatric ward were: exposure to environmental and household smoke, unemployed caregivers, crowded housing, poor ventilation, and use of contaminated water sources.

Recommendations.

Unemployment, which predisposes caregivers of children who have pneumonia to poverty, should be addressed by encouraging them to start vocational activities to eradicate poverty and to be able to afford essential needs for their children.

Acknowledgement

Great thanks to God for bestowing me with good health for the whole period of my academic journey. My deepest gratitude and appreciation go to all the patients who participated in this study; this report would not have been possible without your help and cooperation. Thank you for the time you offered me. Much thanks to my supervisor, Mr. Mubangizi Prosper, for your patience and for guiding me towards the completion of my report. I would also like to thank Madam Nabukenya Sharifah, who guided me during the research report writing, in addition to my supervisor. Appreciation goes to my parents, Mr. Bisma Erisa and Mrs. Mbindule Jane, for all the words of encouragement; it meant a lot knowing someone always believed in me and was rooting for me always. Special thanks go to my brother Sibaminy Josephat for the support you offered me. My sincere appreciation goes to the research Coordinator of Kampala School of Health Sciences, Mr. Were Amir, for his efforts in reminding us to do everything in time. Finally, my special appreciation goes to my classmates for their support in different ways; all your words of advice and encouragement during the tough times, and also for the academic support you gave me. May God bless you abundantly.

Abbreviation/acronym

DHO	:	District Health Officer
HIV	:	Human Immunodeficiency Virus
ICU	:	Intensive Care Unit

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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

References

1. Jones, N. (2015). Indoor air pollution and child health in Uganda. *Environmental Health Perspectives*.
2. Luby, S. P. (2018). Risk factors for pneumonia among children in developing countries. *International Journal of Epidemiology*.
3. Mugeni, C. (2018). Socio-economic status and pneumonia in children in Rwanda. *BMC Public Health*, 18(1).
4. Munyambu, R. (2018). Indoor air pollution and respiratory infections in Kenyan children. *Environmental Health Perspectives*, 126(4).
5. Ngowi, B. (2019). Malnutrition as a risk factor for pneumonia among children in Kenya. *Pediatric Infectious Disease Journal*, 36(8), 247-257.
6. Smith, K.R. (2014). Household air pollution and child health. *The Lancet*.

PUBLISHER DETAILS:

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