



Knowledge regarding Pneumonia among Parents of Under-Five Children in Phedikhola Rural Municipality, Syangja, Nepal

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ABSTRACT

Background: Pneumonia is a form of acute respiratory infection that affects the lungs. Parents are the ones with whom the children spend most of their time. By having knowledge regarding pneumonia, parents can recognize potential signs such as cough, lower chest wall in drawing, rapid breathing or difficulty in breathing at an early stage. This study aims to assess the knowledge regarding pneumonia among the parents of children under five years of age in Phedikhola Rural Municipality, Syangja.

Methods: A cross-sectional descriptive study was conducted to assess knowledge regarding pneumonia among the parents of children under five years of age in Phedikhola Rural Municipality, Syangja, Nepal. Samples were selected using nonprobability purposive sampling technique among 211 parents having children aged less than 5 years. The data was collected through structured interview using semi-structured questionnaire which was made based on different literature. Collected data were entered in Epi data and analyzed using SPSS software. Descriptive and inferential statistics were used as per the nature of the data.

Results: The findings of the study revealed that, out of 211 parents interviewed in the study, less than one third (30.8%) of the parents had low level of knowledge, nearly one third (39.8%) of the parents had moderate level of knowledge and less than one third (29.4%) of the parents had high level of knowledge regarding pneumonia. The mean score of knowledge was found to be 31.5 with SD 7.228. No any significant association was found association between selected demographic variables and level of knowledge of the parents.

Conclusion: The study finding showed a high level of knowledge among less than one third of the parents, which highlights the need for targeted health education and awareness programs to improve parental understanding of pneumonia. Enhancing knowledge through structured interventions can contribute to better prevention, early detection, and management of pneumonia, ultimately reducing morbidity and mortality among young children in the community.

Keywords: Knowledge, parents, children under five years of age, pneumonia

BACKGROUND

Pneumonia, an acute respiratory infection affecting the lungs, is caused by bacteria, viruses, or fungi. It inflames the alveoli, filling them with pus and fluid, restricting oxygen intake and causing breathing difficulties.(1) WHO identifies pneumonia as a leading cause of childhood morbidity and mortality, especially in underdeveloped regions.

(2) UNICEF reports that in 2023, there were over 1,400 pneumonia cases per 100,000 children globally, with South Asia and West Africa experiencing the highest rates.(3) In Nepal, the incidence among under-five children is 55.1 per 1,000, with Gandaki Province reporting 26.8 per 1,000.(4,5)

As per the community based integrated management of Neonatal and

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Childhood illness (CBIMNCI), pneumonia is one of the 5 major killer disease of Nepal mainly for the children aged under 5 years.(6) Key bacterial causes include *Streptococcus pneumoniae* and *Haemophilus influenzae* type B, while respiratory syncytial virus is the main viral cause.(7) Risk factors such as malnutrition, low birth weight, passive smoking, and lack of breastfeeding increase vulnerability. Pneumonia spreads via airborne particles or contaminated fluids.(8)

Prevention includes vaccines like the pneumococcal conjugate vaccine (PCV), introduced in Nepal's immunization schedule in 2015.(9) Other vaccines, such as those for Diphtheria-Tetanus-Pertussis and *Haemophilus influenzae* type B, also help reduce cases. (10) Hygiene education, nutritious diets, and avoiding secondhand smoke are essential preventive measures. (11)

Research indicates inadequate parental knowledge about pneumonia. Studies in India and Nigeria reveal limited awareness of symptoms and care-seeking behaviors. Since parents are primary caregivers, their understanding of pneumonia is critical for early intervention. This study aims to assess the knowledge of parents in Nepal about pneumonia, identify gaps, and guide preventive strategies to reduce complications and mortality among children under five years of age.

METHODS

A cross-sectional descriptive research design was conducted in Phedikhola Rural Municipality, Syangja. The sample size was determined using the formula $n = z^2pq/d^2$, considering $p = 0.839$.(12) The total sample size was 211. The study focused on parents of children under five years old residing in Phedikhola Rural Municipality, Syangja, Nepal. The sampling frame consisted of all households in the municipality that had at least one child under five years of age. However, obtaining a complete and updated list of such households was challenging due to the lack of a centralized database. So, the study used non-probability purposive sampling technique. The researcher identified households with children under five years of age through local authorities. Parents who were willing to participate and were available during the data collection period were selected.

A structured face-to-face interview schedule was used for data collection. The development of the tool was based on the study objectives, a review of relevant literature, and consultations with supervisors, and subject experts. The tool consisted of two parts: **Part I: Demographic Information.** This section included independent variables related to the respondents, such as age (15–24 years, 25–34 years, 35–44 years, and 45

years and above), sex (male/female), number of children (1, 2–3, 4 or more), ethnicity (Brahmin/Chhetri, Dalit, Janajati), religion (Hinduism, Buddhism, Christianity), type of family (nuclear/joint), level of education (literate, basic, secondary, higher education), occupation (private service, government service, self-employment, others), and family income (less than or equal to Rs. 50000 per month/ more than Rs. 50000 per month). It also included child-related variables such as age (years), sex (male/female), immunization status (yes/no), previous exposure to pneumonia (yes/no), and history of hospitalization (yes/no). **Part II: Knowledge Regarding Pneumonia** This section contained 20 questions assessing knowledge about pneumonia, including its causes, risk factors, signs and symptoms, diagnostic tests, preventive measures, and complications. The total score was 46. Knowledge levels were categorized based on Bloom's cut-off points: high: 36–46, moderate: 27–35 and low: 0–26. In this study, a score of "1" was assigned for each correct answer, while incorrect and missing responses were coded as "0". For assessing associations, the level of knowledge was categorized based on the mean score. Participants scoring more than and equal to the mean value were classified as having a high level of knowledge, while those scoring below the mean value were categorized as having a low level of knowledge.

Ethical approval was obtained from the Institutional Review Committee (IRC) of Pokhara University (Ref. No: 167/2080/81). Formal permission and an approval letter were received from the college and the relevant authorities of Phedikhola Rural Municipality (Ref. No: 1443). Before conducting interviews, the study's purpose was explained, and informed consent was obtained from respondents. Privacy, confidentiality, and dignity were strictly maintained throughout the study. Privacy was ensured by conducting interviews in a separate and quiet area. Confidentiality was upheld by assigning code numbers instead of respondents' names, not disclosing information, and using the data solely for research purposes. Respondents' dignity was respected by granting them the right to withdraw or discontinue participation at any time.

Data were checked for completeness and accuracy. The collected data were organized, reviewed, coded, and entered into EpiData Version 3.1 before being exported to the Statistical Package for Social Sciences (SPSS Version 23) for analysis. Descriptive statistics, including mean, frequency, percentage, and standard deviation, were used. Inferential statistics (Chi-square test) were applied to assess the association between the level of

knowledge with selected variables. We considered p-value of <0.05 as statistically significant. Odds ratio with their 95% confidence intervals (CI) were presented to determine the strengths of the associations.

RESULTS

Table 1 represents demographic information related to the parents. Among the 211 parents of under 5 years children, nearly two thirds (63.5%) were aged between 25-34 years with mean age 28.98 years and SD 5.588. The minimum and maximum age was 17 years and 54 years respectively. Majority (90%) of the parents were female. Concerning the number of children, more than half (52.6%) of the parents had 2 -3 children. Most (91%) of the parents followed Hindu religion and nearly half (45.5%) were Brahmin and Chhetri. In addition to that, more than half (60.7%) of the parents came from joint families. With respect to the educational status of the father and mother, almost two thirds (64.5%) of father and more than half (60.7%) of the mothers had completed secondary level of education. Nearly half (43.6%) of the fathers were engaged in foreign employment and about 10.2 % of fathers were engaged in others category of occupation which includes cook, retired army, Indian army, student, labor and private service. Likewise, nearly two thirds (63%) of the mothers were homemakers. Regarding the family monthly income, more than half (60.7%) of the families had a monthly income less than or equal to 50000.

Table 1: Demographic information of the parents of children under five years of age (n=211)

Variables	Number (n)	Percent
Age in complete years		
15-24 years	46	21.8
25-34 years	134	63.5
35-44 years	28	13.3
45 years and more	03	1.4
Mean ± SD: 28.98±5.588		
Sex of respondent		
Female	190	90.0
Male	21	10.0
Number of children		
1	97	46.0
2-3	111	52.6
4 and more than 4	03	1.4
Religion		
Hinduism	192	91.0
Buddhism	17	8.1
Christian	02	0.9
Ethnicity		
Brahmin / Chhetri	96	45.5
Dalit	92	43.6

Janajati	23	10.9
Type of family		
Nuclear	83	39.3
Joint	128	60.7
Educational status of father		
Can read or write	07	3.3
Basic level (1-8)	34	16.1
Secondary level (9-12)	136	64.5
Higher education	34	16.1
Educational status of mother		
Can read and write	06	2.8
Basic level (1-8)	37	17.5
Secondary level (9-12)	128	60.7
Higher education	40	19.0
Occupation of father		
Foreign employment	92	43.6
Self-employment	70	33.2
Government service	27	12.8
Others	22	10.4
Occupation of mother		
Homemaker	133	63.0
Self-employment	48	22.7
Private service	18	8.6
Government service	12	5.7
Family income (Rs /month)		
Less than or equal to 50000	128	60.7
More than 50000	83	39.3

Table 2 represents the demographic information related to the child. It indicates that more than half (60.2%) of the children were aged between 25-59 months with mean age 32.68 months and SD 18.30. The minimum and maximum age was 1 month and 59 months respectively. In addition to that, more than half (50.7%) of the children were male. Regarding the vaccination of children, more than three fourth (78.7%) of the children were vaccinated as per National Immunization Schedule. The results of the study also showed that, only 9% of the children had history of pneumonia and among those 4.7% had history of hospitalization.

Table 3 presents the knowledge scores of parents regarding pneumonia across different domains. The findings indicate that parents have a high level of knowledge regarding general information (89.2%) and management (91.8%). Awareness of signs and symptoms (72.3%), complications (64.5%) and prevention (73.9%) had moderate level of knowledge. Similarly, knowledge about causes and risk factors was relatively low (52.4%) as well as diagnosis had a lower score (58.3%).

The overall mean percentage score was found to be 68.6%. The mean score of knowledge was found to be 31.5 with SD 7.22.

Table 2: Demographic information related to children under five years of age (n=211)

Variables	Numbers (n)	Percent
Age of the child (in months)		
0-11 months	34	16.1
12-24 months	50	23.7
25-59 months	127	60.2
Mean \pm SD: 32.68 \pm 18.30		
Sex of the child		
Male	107	50.7
Female	104	49.3
Vaccination as per National Immunization Schedule		
Yes	166	78.7
No	45	21.3
History of Pneumonia		
Yes	19	9.0
No	192	91.0
Hospitalization due to Pneumonia (n=19)		
Yes	10	4.7
No	09	4.3

Table 3: Domains on knowledge score regarding pneumonia (n=211)

Domains	Maximum	Mean score	\pm S.D.	Mean %
General Information	4	3.57	0.70	89.2
Causes and risk factors	13	6.81	2.73	52.4
Signs and symptoms	12	8.67	2.41	72.3
Diagnosis	4	2.33	1.12	58.3
Management	4	3.67	0.74	91.8
Complication	2	1.29	0.52	64.5
Prevention	7	5.17	1.64	73.9
Overall, Knowledge score	46	31.54	7.22	68.6

Table 4 discloses parents' level of knowledge regarding Pneumonia. It reveals that, out of 211 parents interviewed in the study, less than one third (30.8%) had low level of knowledge, nearly one third (39.8%) of the parents had moderate level of knowledge and more than one fourth (29.4%) of the parents had high level of knowledge regarding pneumonia.

Table 4: Parent's level of knowledge regarding pneumonia (n=211)

Level of Knowledge	Numbers (n)	Percent
Low level (<60%)	65	30.8
Moderate level (60%-79%)	84	39.8
High level (80%-100%)	62	29.4

Table 5 presents the association between demographic variables and level of knowledge among parents. No any significant association was found between selected demographic variables and level of knowledge among the parents as the p value is less than 0.05.

DISCUSSION

The present study was conducted with the aim of assessing the level of knowledge regarding pneumonia among the parents of children under 5 years of age in Phedikhola Rural Municipality, Syangja. The study revealed that out of 211 respondents interviewed in the study, less than one-third (30.8%) of the respondents had low level of knowledge, nearly one-third (39.8%) of the respondents had moderate level of knowledge and more than one fourth (29.4%) of the respondents had high level of knowledge regarding pneumonia. The maximum score was 45 with the mean score of 31.54.

The result of the present study was supported by the study conducted in Pune city of India where 60% of the respondents had average knowledge regarding pneumonia.(13) Another study conducted in Selangor, Malaysia showed that 60.8% of the respondents had fair knowledge regarding pneumonia that is similar to the present study.(14) But the findings of present study was contradictory to the study conducted in Cambodia among the caregivers, which revealed that majority i.e. 77% of the respondents had good knowledge about pneumonia(15) and this contrast findings might be due to different sample size, research methodology and setting of the research study.

The findings of the present research study illustrated that most of (90%) the respondents correctly stated the meaning of the pneumonia as the infection of lungs that is opposed by the study conducted in Migori Referral Hospital, Kenya among caregivers in 2020 which illustrated that 55% of the respondents correctly stated meaning of the pneumonia as the infection of lungs. (16) The contrast finding might be due to the health care seeking practices of caregivers.

Regarding the cause of pneumonia, present study showed that 35.5% of the respondents correctly answered that pneumonia is caused by virus or germs which is in consistent with the study conducted in Bangladesh where 29% of the respondents answered that pneumonia is caused by virus or germs.(17) The findings of the present study was relatively higher than that of the study conducted in India among the caregivers which showed that only 9.3% of the respondent correctly answered the cause of pneumonia(18) and this difference can be due to the lack of access to the informational, educational, or communication materials among the caregivers in India but the results of the present study was not upto the satisfactory level as well.

Table 5: Association between selected demographic variables and level of knowledge among parents (n=211)

Variables	Level of knowledge		p-value	OR (95% CI)
	Low level (<31.54) n(%)	High level (≥31.54) n(%)		
Age of the respondents in complete years				
29 years and less	54(41.9)	75(58.1)	0.324	0.7(0.4-1.3)
More than 29 years	40(48.8)	42(51.2)		
Number of children				
1	44(45.4)	53(54.6)	0.827	1.0(0.6-1.8)
More than 1	50(43.9)	64(56.1)		
Type of family				
Nuclear	38(45.8)	45(54.2)	0.772	1.1(0.6-1.8)
Joint	56(43.8)	72(56.3)		
Educational status of father				
Up to secondary level	62(45.6)	74(54.4)	0.683	1.1(0.6-1.9)
Higher education	32(42.7)	43(57.3)		
Educational status of mother				
Up to secondary level	61(47.7)	67(52.3)	0.260	1.3(0.7-2.4)
Higher education	33(39.8)	50(60.2)		
Occupation of father				
Working outside the countries	35(38.0)	57(62.0)	0.095	0.6(0.3-1.0)
Working within the country	59(49.6)	60(50.4)		
Occupation of mother				
Those who do not earn	62(46.6)	71(53.4)	0.430	1.2(0.7-2.2)
Those who earn	32(41.0)	46(59.0)		
Family income (Rs /month)				
Less than and equal to 50000	63(49.2)	65(50.8)	0.090	1.6(0.9-2.8)
More than 50000	31(37.3)	52(62.7)		
Vaccination as per National Immunization Schedule				
Yes	71(42.8)	95(57.2)	0.318	0.7(0.3-1.3)
No	23(51.1)	22(48.9)		
History of Pneumonia				
No	88(45.8)	104(54.2)	0.233	0.5(0.1-1.4)
Yes	6(31.6)	13(68.4)		
Hospitalization due to Pneumonia				
Yes	3(30.0)	7(70.0)	1.000#	0.8(0.1-5.9)
No	3(33.3)	6(66.7)		

#- *fisher exact test*

In regards to the high risk group for pneumonia, current study revealed that almost all (96.7%) of the respondents addressed under-five children as a high-risk group for pneumonia which is similar to the study conducted in Nigeria in 2019 that revealed almost all (96.1%) of the respondents addressed under five children as a high risk group for pneumonia.(19)

Concerning the mode of transmission of pneumonia, present study illustrated that more than two third (76.8%) of the respondents gave correct response on the common mode of transmission of pneumonia i.e. Contact with infected person while coughing or sneezing that is in contrast with the study conducted in Jigawa, Northwest Nigeria and Eastern Uganda which revealed



that only 3.4% (19) Nigeria did not meet globally defined targets for pneumonia control, despite some scale-up of vaccinations, oxygen and antibiotics. A deliberate focus on community-based programs is needed to improve coverage of protective, preventive and treatment interventions. We therefore aimed to describe caregiver knowledge and care seeking behaviour for childhood pneumonia, in a high child mortality setting in Nigeria, to inform the development of effective community-based interventions for pneumonia control.

Methods

We conducted a cross-sectional household survey in Kiyawa Local Government Area, Jigawa State, Nigeria between December 2019 and March 2020. We asked caregivers about their knowledge of pneumonia symptoms, prevention, risks, and treatment. A score of 1 was assigned for each correct response. We showed them videos of pneumonia specific symptoms and asked (1) and 16.6% (20) of the respondents gave correct response on the mode of transmission. The contrast difference can be due to the different levels of perception among the respondents regarding the transmission of pneumonia.

According to the results of present study it was found that most of (80.1%) the respondents answered lack of exclusive breastfeeding, more than two third (74.9%) of the respondents answered absence of immunization, more than half (53.6%) of the respondents answered malnutrition, and less than one-third (29.4%) answered crowded living condition as risk factors of pneumonia. The findings of this study contradict with the study conducted in Migori district hospital in Kenya which showed that 3.8% of the respondents answered lack of immunization, 4.4% answered overcrowding, 1% answered undernutrition and no any respondents answered exclusive breastfeeding as risk factors of pneumonia.(16) The contrast difference can be due to the lack of health awareness programs related to pneumonia in Nigeria.

The present study revealed that all most all (94.3%) of the respondents were aware of rapid breathing, most of i.e. 85.8% were aware of fever, 82.5% were aware of chest in drawing as signs and symptoms of pneumonia which is in line with the study conducted in Nigeria which revealed that 95.4% of the respondents were aware of fast breathing, 95.1% were aware of fever and 82.5% were aware of chest in drawing as signs and symptoms of pneumonia.(19)

Regarding the preventive measures of pneumonia, present study showed that all most all (99.5%) of the respondents answered protection from cold as an effective measure and most of (81.5%) of the respondents answered complete immunization for preventing pneumonia which is supported by the study conducted in Egypt and Kapsabet district hospital,

Nandi, Kenya that showed 87.2% of the respondents answered protection from cold as an effective measure for preventing pneumonia and 80.9% of the respondents answered complete immunization as a preventive measure for pneumonia.(21) But the findings of present research study regarding complete immunization as a preventive measure for pneumonia is contradictory to the study conducted in Uganda among 50 mothers which revealed 20% of the respondents answered that vaccination should be done to prevent pneumonia and this contradiction can be due to the small sample size of the mothers in whom the study was conducted in Uganda.(22)

In the present study, no association was found between the demographic variables and level of knowledge among the parents. Which was compared to the study conducted in Pune , India on 100 respondents which revealed that there was association between respondents age, family type, qualification of mother, occupation of father with the level of knowledge.23 This contrast may be due to differences in sample size, socio-economic background, educational status, or income status between the two study populations.

The overall mean percentage score was found to be 68.6%. The findings indicate that parents have a high level of knowledge regarding general information (89.2%) and management (91.8%). Awareness of signs and symptoms (72.3%), complications (64.5%) and prevention (73.9%) had moderate level of knowledge. Similarly, knowledge about causes and risk factors was relatively low (52.4%) as well as diagnosis had a lower score (58.3%). The findings indicate that parents have good knowledge of pneumonia's general information, prevention, and management but limited understanding of its causation, diagnosis and complications. This gap may be due to low health literacy, limited access to medical resources, and reliance on traditional beliefs.

The study can inform the development of targeted strategies to improve parental knowledge about childhood pneumonia. Awareness programs focusing on various aspects of pneumonia can be organized, and health workers and Female Community Health Volunteers (FCHVs) should be equipped with the necessary materials to educate parents and caregivers of children under five years old. These efforts could help address gaps in knowledge and ultimately improve health outcomes for children in the community. The study's limitations include its inability to generalize findings due to being confined to a single Rural Municipality, and the use of non-probability purposive sampling, which might not represent the broader population.

CONCLUSION

The study revealed that less than one-third (30.8%) had low level of knowledge and nearly one-third (39.8%) of the parents had moderate level of knowledge about the disease. No significant association was found between selected demographic variables and the level of knowledge among parents. These findings highlight the need for targeted health education and awareness programs to improve parental understanding of pneumonia. Enhancing knowledge through structured interventions can contribute to better prevention, early detection, and management of pneumonia, ultimately reducing morbidity and mortality among young children in the community. These findings highlight the need for targeted health education and awareness programs to improve parental understanding of pneumonia. Enhancing knowledge through structured interventions can contribute to better prevention, early detection, and management of pneumonia, ultimately reducing morbidity and mortality among young children in the community.

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Conflict of Interest

The authors declare no conflict of interest.

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