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RESEARCH ARTICLE

Prevalence of Pneumonia and its Associated Factors among Under Five Years Old Children at Tertiary Hospital in Mogadishu Somalia

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Abstract:

***Introduction*:** A major cause of morbidity and mortality for children under five is still pneumonia. Even with advances in medical science, the illness continues to pose a serious threat to public health, especially in developing nations. This study sought to determine the prevalence of pneumonia and risk factors for the disease in children under five at a tertiary hospital in Mogadishu, Somalia, in order to help develop successful intervention strategies.

***Methods*:** Between February and June 2024, a descriptive, cross-sectional study was carried out in a hospital. The Cochran formula was used to determine a sample size of 384 children. The selection of participants was done by simple random sampling. In-person interviews with caregivers and a structured questionnaire modified from reliable sources were used to gather data, as was a review of medical records. Descriptive statistics and bivariate analysis with chi-square tests were used in the data analysis, which was conducted using SPSS software. A P-value of less than 0.05 was deemed statistically significant.

***Result*:** In total, 356 children under the age of five had their data examined. Children ages 1 month to 1 year made up the majority (n=121,34.0%). There was a 42.1% prevalence of pneumonia. Aspiration incidents were reported in 19.9% of cases, and nearly half of the children had not received any vaccinations. The risk of pediatric pneumonia was significantly higher in children younger than one month (AOR: 2.3, 95% CI:1.59-3.58, p<0.1001), those older than one to two years (AOR: 1.9, 95% CI: 1.31-2.74, p=0.001), those older than three to four years (AOR: 1.9, 95% CI: 1.24-1.80, p=0.003), and those older than five to seven years (AOR: 1.9, 95% CI: 1.19-3.00, p=0.007). Additionally, there was a significant correlation between pediatric pneumonia and unvaccinated children (AOR: 0.8, 95% CI: 0.60-0.99, p=0.048) and family members with allergic diseases (AOR: 0.7, 95% CI: 0.58-0.96, p=0.020).

***Conclusion*:** The study identifies important risk factors that contribute to the prevalence of pneumonia and emphasizes the substantial burden of the disease among Mogadishu's children under five. These results highlight the critical need for focused public health initiatives, such as increased vaccination rates and better caregiver education. Reducing pneumonia-related morbidity and mortality in this susceptible population requires addressing these factors.

Keywords: Prevalence, pneumonia, under five years old children.

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1. BACKGROUND

Pneumonia is a leading cause of child mortality globally, especially in low-resource settings with limited healthcare access. It is an inflammatory lung disease that causes fluid and pus accumulation in the alveoli, impairing breathing. Pneumonia can be caused by bacteria (*e.g., Streptococcus pneumoniae*), viruses (*e.g.,* influenza, respiratory syncytial virus), and fungi [1-3]. In underdeveloped countries, severe pneumonia in children is often caused by bacterial infections like *Streptococcus pneumoniae* and *Haemophilus influenzae* type b (Hib). Pneumonia can be classified as hospital-acquired or community-acquired, and by lung involvement into acute interstitial, bronchial, or lobar pneumonia. It is also categorized by severity into "no pneumonia," "pneumonia," or "severe pneumonia" [4-6]. Pneumonia in children under five can cause fever, chest pain, cough, and difficulty breathing. Children with cold and cough but no pneumonia symptoms were treated at home. Those with rapid breathing were diagnosed with pneumonia and treated with oral cotrimoxazole, while cases with chest pain were treated as severe pneumonia with injectable penicillin. Children showing danger signs were diagnosed with severe or very severe pneumonia. Pneumonia remains a leading cause of morbidity and mortality in this age group. [2,5,7,8]. Preventive strategies including regular pneumococcal immunization, exclusive breastfeeding, and proper supplemental feeding can shield kids from pneumonia. Furthermore, pneumonia mortality in underdeveloped nations can be considerably decreased by treatment approaches that emphasize on community capacity [2,9]. Pneumonia still causes almost 20% of all pediatric deaths globally, even though safe, efficient, and reasonably priced therapies have decreased the number of deaths from the disease from 4 million in 1981 to just over one million in 2013 [7]. Pneumonia in children under five can cause fever, chest pain, cough, and difficulty breathing. Children with cold and cough but no pneumonia symptoms were treated at home. Those with rapid breathing received oral cotrimoxazole, while severe cases with chest pain were treated with injectable penicillin. Children with danger signs were diagnosed with severe or very severe pneumonia. Pneumonia remains a major cause of morbidity and mortality in this age group [10-13]. Pneumonia is responsible for 16% of mortality in children under five, mostly in underdeveloped nations, according to the World Health Organization (WHO) (WHO, 2019). Approximately 2,216 children died from pneumonia every day in 2017 (WHO, 2018). [12]. While a different research An estimated 2400 children die from pneumonia every day, making it the most common infectious cause of mortality for children under the age of five worldwide. [14-16]. The WHO estimates that acute respiratory infections (ARIs) cause 2.1 million deaths annually among children under five, accounting for 20% of pediatric fatalities. Around 151.8 million pneumonia cases occur in underdeveloped countries and 4 million in developed nations, with an incidence of 0.29 episodes per child-year. Pneumonia-related deaths are under 2% in Europe and less than 3% in the Americas. [9, 17]. Fifteen countries account for 74% of the world's annual pneumonia cases [5, 18]. Around the world, pneumonia accounts for 15% of all pediatric deaths, with newborns accounting for 2% of these deaths (UNICEF, 2014) [19]. By 2010, there were 120 million cases of pneumonia in children under five (resulting in 0.88 million deaths), and by 2015, there were 102 million cases (resulting in 0.7 million deaths) worldwide [8]. Pneumonia is the leading cause of death in children under five, with over 90% of deaths occurring in resource-limited settings. Risk factors include low birth weight, malnutrition, indoor air pollution, smoking, lack of vaccination, overcrowding, and low maternal education. UNICEF reports that pneumonia, diarrhea, malaria, measles, and AIDS account for half of under-five deaths, totaling 10.5 million annually. Severe pneumonia is a major cause of hospitalization in Bangladesh, which has made significant progress in reducing childhood pneumonia mortality by 54% from 2000 to 2014, advancing toward SDG and MDG targets [5,20-22]. 50% of pneumonia-related deaths globally occur in children under the age of five, making the African Region the region with the largest incidence of child mortality [9]. An estimated 826,000 young children in poor nations die from pneumococcal illness, with sub-Saharan Africa accounting for the majority of these deaths [10]. More than three-quarters of pneumonia deaths in children under five worldwide occur in South-East Asia and Africa combined [4]. The estimated percentage of pneumonia-related fatalities in children under five in sub-Saharan Africa ranges from 17% to 26% [14,18]. The global under-five child mortality rate dropped by about 50% between 2000 and 2019. The Sustainable Development Goal (SDG) 3.2 by 2030 is currently out of reach for 65 nations (32% of 204 countries), notwithstanding inconsistent development. Despite worldwide advancements, lowering child mortality in these regions remains difficult because the majority of these nations are

in South Asia and sub-Saharan Africa [16]. Numerous academics have looked into the prevalence of pneumonia in children under five in East African nations. Prevalence rates fluctuate widely, from as low as 5.5% to as high as 89.8%, according to their investigations [5,8]. Risk factors for pneumonia in children under five in East Africa include low socioeconomic status, maternal education, inadequate ventilation, short breastfeeding, incomplete immunization, poor hygiene, overcrowding, indoor air pollution, and environmental factors like new furniture and cockroach infestations [3,15,20,23,24]. A 2017 Save the Children report links childhood pneumonia to poverty-related factors such as pollution, poor sanitation, lack of clean water, and limited healthcare access. In Sub-Saharan Africa, pneumonia is a major health issue, with 1,621 cases per 100,000 children in 2018. Significant pneumonia-related deaths occurred in Nigeria (162,000), the DRC (40,000), and Ethiopia (32,000). In Uganda, pneumonia is the second leading cause of inpatient deaths in children under five, while Kenya has an annual mortality rate of 50.3 per 10,000 children. In Somalia, pneumonia is the leading cause of death in this age group, accounting for nearly 15% of fatalities (WHO, 2020) [3,18,24]. Pneumonia is a major health issue in Somalia, with 400,000 cases reported annually. In 2018, it caused 15,165 deaths in children under five, accounting for 21% of child fatalities. Two Somali children died every hour from pneumonia that year, with deaths rising from 14,700 in 2015. Drought and malnutrition have worsened the situation, with over 80% of cases affecting children under two, highlighting the need for urgent interventions [3,25,26]. This study aims to assess the prevalence of pneumonia and its associated factors among children under five at a tertiary hospital in Mogadishu, Somalia.

2. METHODS

To determine the prevalence and contributing factors of pneumonia among children under five years of age, a cross-sectional study was conducted at the Mogadishu Somali Türkiye Training and Research Hospital, a tertiary healthcare facility in Mogadishu, Somalia. The study spanned five months, from February to June 2024. The study population comprised all children under the age of five who were admitted to or received care at the hospital's pediatric department during the study period.

Mogadishu Somali Türkiye Training and Research Hospital, also known as Somali Turkey Recep Tayyip Erdogan Hospital, opened in June 2015 under a collaborative agreement between the Turkish and Somali health ministries to enhance medical cooperation. Located in the Hodan district of Mogadishu, the hospital is a key public health resource that provides comprehensive pediatric care and plays a vital role in addressing regional healthcare needs. Data for this study were collected from respondents selected using simple random sampling. Using Cochran’s formula for prevalence studies, the sample size was calculated to be 384 participants. Data collection involved in-person interviews with the child's caregiver, conducted over five months. A structured questionnaire was used, and research assistants fluent in Somali, under constant supervision, administered the questionnaire to ensure quality and consistency in data collection. The questionnaire gathered sociodemographic information, including the child’s immunization history, as well as the caregiver’s age, gender, income, and education level. Data were entered and analyzed using SPSS software. Descriptive statistics, including median, interquartile range, percentages, and frequencies, were used to summarize the data. Bivariate analysis with chi-square tests was employed to identify factors associated with pneumonia. Both unadjusted (UPR) and adjusted (APR) prevalence ratios were calculated with 95% confidence intervals (CIs). A p-value of less than 0.05 was considered statistically significant, indicating a strong association. P-values greater than 0.05 were considered non-significant, suggesting that any observed effects may be due to chance. Confidence intervals for non-significant results were interpreted with caution, as they indicated limited evidence for a true effect.

3. RESULTS

3.1. Socio Demographic Characteristics.

In total, 356 children under the age of five had their data examined. Children ages 1 month to 1 year made up the majority (n=121,34.0%). Only 66.3% (n=236) were delivered from the hospital, and roughly

56.5% of the population were male. Of the children, over half (n=171, 48.0%) had not received any vaccinations. Aspiration episodes were documented in 19.9% of instances, while more than 80% of the children were born at term Table **1**.

Table 1. Socio demographic characteristics of the participants.

Variable	Sub variable	Frequency	Percentage
Age	<1 month	24	6.7
	1 month – 1 year	121	34.0
	>1-2 years	90	25.3
	>2-3 years	41	11.5
	>3-4 years	49	13.8
	>4-5 years	31	8.7
Gender	Male	201	56.5
	Female	155	43.5
Place of delivery	Hospital	236	66.3
	Home	109	30.6
	Others	11	3.1
Birth weight, median (IQR), kg.		3	3-3
GA	Term	295	82.9
	Pre-term	61	17.1
Vaccinated	Yes	185	52.0
	No	171	48.0
Aspiration	Yes	71	19.9
	no	285	80.1
EBF time, median (interquartile range), days		120	60-180

3.2. Characteristics of the Parents/Caregivers to the Children

Table **2.** The majority of the caregivers lived in cities (n=255) and were older than 20 (n=255, 71.6%). Approximately 20.5% of the caregivers had completed college. 11.5% of caregivers make less than $100 USD per month, 37.1% make between $100 and $500 USD, and the majority (37.4%) make between $501 and $1000 USD, according to the monthly household income distribution. Notably, 37.6% of the homes had a smoker, and 32.3% of the caregivers reported having a family history of tuberculosis, and nearly half of the caregivers reported having an allergy condition (n=175, 49.2%). Charcoal is the cooking method of choice for the majority of caregivers (n=148).

Table 2. Characteristics of the parents to the participants.

Variable	-	Frequency	%
Maternal age	<16	19	5.4
	16-20	82	23.0
	>20	255	71.6
Education	Illiterate	94	26.4
	Literate	82	23.0
	Primary	47	13.2

Variable	-	Frequency	%
	Intermediate	28	7.9
	Secondary	32	8.9
	University	73	20.5
Where family live	Rural	64	17.9
	Urban	255	71.6
	Rotative	37	10.4
Household size, median (IQR).		5	4-7
Number of rooms in the house		3	3-4
Monthly family income, USD	<100	41	11.5
	100-500	132	37.1
	501-1000	133	37.4
	>1000	50	14.0
Smoker in the house	No	222	62.4
	Yes	134	37.6
Allergic disease in family	No	181	50.8
	Yes	175	49.2
Tuberculosis in the family	No	241	67.7
	Yes	115	32.3
Source of fire	Charcoal	158	44.4
	Gas	164	46.1
	Electric	23	6.5
	Wood	9	2.5
	Others	2	0.6
Usage of charcoal	Always	148	41.8
	Mostly	56	15.8
	Sometimes	71	20.1
	Rarely	55	15.5
	Never	24	6.8

3.3. Clinical Characteristics of the Children

About 42.1% of the children previously had pneumonia. Table **3**. It is noteworthy that 47.8% of the children had previously received antibiotics, with ceftriaxone being the most often used drug. Three days was the median length of stay in the hospital (interquartile range: 0 to 5 days). Fever affected more than 70% of the youngsters, coughing affected 60.1%, shortness of breath (SOB) affected 56.5%, and chest retractions affected 42.1%. 14.3% had a clean chest X-ray, whereas up to 37.4% had bilateral involvement. According to bivariate analysis (Table **4**), being a newborn ($p<0.0001$), being older than 1-2 years ($p<0.0001$), being older than 3-4 years ($p=0.001$), and being older than 4-5 years ($p=0.032$) were all significantly linked to pneumonia in children under the age of five. Other factors linked to pneumonia included the child's immunization status ($p=0.006$) and any family members who had an allergy ($p=0.023$). Neonates/<1 month (AOR: 2.3, 95% CI:1.59-3.58, $p<0.1001$), >1-2 years (AOR: 1.9, 95% CI: 1.31-2.74, $p=0.001$), >3-4 years (AOR: 1.9, 95% CI: 1.24-1.80, $p=0.003$), and >4-5 years (AOR: 1.9,

95% CI: 1.19-3.00, p=0.007) had a significantly higher risk of pediatric pneumonia at multivariable logistic regression (Table **5**). Paediatric pneumonia was also less common among children who were unvaccinated (AOR: 0.8, 95% CI: 0.60-0.99, p=0.048) and in those who had a family history of allergic disease (AOR: 0.7, 95% CI: 0.58-0.96, p=0.020).

Table 3. Clinical characteristics of the children

Variable	Sub variable	Frequency	%
Previous pneumonia	Yes	150	42.1
	No	206	57.9
Previous anti biotic use	Yes	170	47.8
	No	186	52.3
If yes, which anti biotic did you used	Alfasid	56	32.9
	ceftriaxone	74	43.5
	Macrolides	33	19.4
	Others	7	4.1
Hospitalization duration, median (IQR), days		3	0-5
Hospital cost, median (IQR)		100	50-150
Treatment type	IV	110	30.9
	IM	70	19.7
	others	176	49.4
If there is any culture	Yes	117	32.9
	No	239	67.1
Previous hospitalization	Yes	147	41.3
	No	209	58.7
Fever	No	103	28.9
	Yes	253	71.1
Cough	No	142	39.9
	Yes	214	60.1
SOB	No	154	43.5
	Yes	200	56.5
Retraction	No	206	57.9
	Yes	150	42.1
X-rays findings	Lobar	61	17.1
	1 side	47	13.2
	2 side	133	37.4
	Clear x ray	51	14.3
	No x ray	64	18.0
WBC, median (IQR), counts.		15	11-18
Neutrophils, median (IQR), counts.		7	5-10
Lymphocytes, median (IQR), counts.		4	3.7-6
CRP, median (IQR).		30	12-53

Variable	Sub variable	Frequency	%
Treatment	Intensive care unit	74	20.8
	Clinic	213	59.8
	IM treatment	53	14.9
	Oral drugs	16	4.5

3.4. Pneumonia Risk Factors in Children

Table 4. Pneumonia Risk Factors in Children

Variable	Sub variable	Pneumonia		Unadjusted prevalence ratio (95% confidence interval).	P value
		No (n=206) n (%)	No (n=206) n (%)		
Age	<1 month	9(4.4)	15(10.0)	2.4(1.54-3.63)	<0.0001
	1 month – 1 year	89(43.2)	32(21.3)	Reference	-
	>1-2 years	44(21.4)	46(30.7)	1.9(1.35-2.77)	<0.0001
	>2-3 years	24(11.7)	46(30.7)	1.6(0.98-2.51)	0.061
	>3-4 years	23(11.2)	17(11.3)	2.01(1.35-2.99)	0.001
	>4-5 years	17(8.3)	26(17.3)	1.7(1.04-2.79)	0.032
Gender	Male	119(57.8)	82(54.7)	Reference	0.560
	Female	87(42.2)	68(45.3)	1.08(0.84-1.37)	
Place of delivery	Hospital	135(65.5)	101(67.3)	1.6(0.59-4.17)	0.366
	Home	63(30.6)	46(30.7)	1.5(0.57-4.17)	0.388
	Others	8(3.9)	3(2.0)	Reference	-
GA	Term	169(82.0)	126(84.0)	Reference	-
	Pre-term	37(18.0)	24(16.0)	0.9(0.65-1.29)	0.635
Vaccinated	Yes	94(45.6)	91(60.7)	Reference	-
	No	112(54.4)	59(39.3)	0.7(0.54-0.90)	0.006
Aspiration	Yes	38(18.5)	33(22.0)	1.1(0.85-1.51)	0.395
	no	168(81.5)	117(78.0)	Reference	-
Smoker in the house	No	132(64.1)	90(60.0)	Reference	-
	Yes	74(35.9)	60(40)	1.1(0.86-1.41)	0.430
Allergic disease in family	No	94(45.6)	87(58.0)	Reference	-
	Yes	112(54.4)	63(42.0)	0.7(0.58-0.96)	0.023
Tuberculosis disease in the family	No	144(69.9)	97(64.7)	Reference	-
	Yes	62(30.1)	53(35.3)	1.1(0.89-1.47)	0.290
Source of fire	Charcoal	93(45.2)	65(43.3)	1.6(0.54-6.39)	0.330
	Gas	90(43.7)	74(49.3)	2.03(0.59-6.98)	0.261
	Electric	16(7.8)	7(4.7)	1.4(0.35-5.40)	0.653
	Wood	7(3.4)	2(1.3)	Reference	-
	Others	0(0)	2(1.3)	4.5(1.32-15.30)	0.016

3.5. Adjusted Risk Factors for Paediatric Pneumonia

Table 5. Adjusted Risk Factors for Paediatric Pneumonia

Variable	Sub variable	Adjusted prevalence ratio. (95% confidence interval)	P value
Age	<1 month	2.3(1.59-3.58)	<0.001
	1 month – 1 year	Reference	-
	>1-2 years	1.9(1.31-2.74)	0.001
	>2-3 years	1.5(0.94-2.30)	0.089
	>3-4 years	1.9(1.24-1.80)	0.003
	>4-5 years	1.9(1.19-3.00)	0.007
Vaccinated	Yes	Reference	-
	No	0.8(0.60-0.99)	0.048
Allergic disease in family	No	Reference	-
	Yes	0.7(0.58-0.96)	0.020

4. DISCUSSION

The largest age group is 1 month to 1 year (34.0%), followed by 1–2 years (25.3%), with fewer infants under 1 month (6.7%). Older age groups show a decline: 2–3 years (11.5%), 3–4 years (13.8%), and 4–5 years (8.7%). A 2023 study at Banadir Hospital found that 42.6% of pneumonia cases occurred in children aged 7 months to 1 year, correlating with the weaning period.(3). In Northwest Ethiopia (2020), pneumonia cases varied by age: 25.8% (1 year), 26.9% (2 years), 22.9% (3 years), and 24.5% (4+ years). A 2019 Ugandan study reported pneumonia frequency by age at 11–12%. Gender distribution in 2023 at Banadir Hospital, Mogadishu, showed a slight male majority (51.2% men vs. 48.8% women) [3,14,23]. In Northwest Ethiopia (2020), pneumonia was more common in male children (54.4%) than females (45.6%). A 2019 Ugandan study reported a larger gender gap (60% male, 40% female). Birth weights showed consistency in most populations (median 3 kg, IQR 3–3 kg), but a 2023 Banadir Hospital study found that 57.4% of neonates weighed 1.1–2 kg, and 32.7% weighed 2.1–3 kg [3,14,23]. Breastfeeding behaviors vary, with a median EBF duration of 120 days (IQR: 60–180 days). A 2023 study in Mogadishu found 51.2% of newborns exclusively breastfed, while a 2019 Ugandan study reported 80% of infants breastfed for over 12 months. Maternal age distribution in Mogadishu shows 71.6% over 20 years, 23.0% aged 16–20, and 5.4% under 16, contrasting with Northwest Ethiopia (2020), where 27.8% were over 32, and 19.8% under 25 [3,14,23]. In our study, 23.0% of respondents are literate without formal schooling, 26.4% are illiterate, and 20.5% have university education. At Banadir Hospital (2023), 41.4% of caregivers lacked any schooling. In Uganda (2019), 24% of mothers had secondary education, while 76% had only elementary education. In Northwest Ethiopia (2020), 17.0% of mothers were illiterate, and 23.3% had a diploma or higher. Urbanization rates show 71.6% of participants living in cities in our study versus 72.0% in rural areas in Uganda (2019), highlighting regional contrasts [3,14,23]. In our study, 37.6% of households had smokers, compared to 15% in Uganda (2019). Charcoal was the primary cooking fuel for 44.4% of families, followed by gas (46.1%) and electricity (6.5%). Wood (2.5%) and other sources (0.6%) were less common. In Uganda (2019), 30% of households used charcoal, while 70% relied on wood. In southwest Ethiopia, 59.5% used charcoal, and 55.6% used wood for cooking [9,14]. In our study, 42.1% of participants had previously experienced pneumonia, while 57.9% had not. This contrasts with a 2023 study at Banadir Hospital (33%) and a 2020 study in Northwest Ethiopia, which reported a 12% prevalence in children under five. Common symptoms in our cohort included fever (71.1%), shortness of breath (56.5%), and retractions (42.1%). X-ray results showed bilateral lung involvement (37.4%) as the most common, with some cases showing clean X-rays (14.3%) or no findings (18%). Key clinical predictors for pneumonia included cough, difficulty breathing, fast breathing, fever, and chest indrawing in children aged 2–59 months [2,3,9,14]. Our study

found higher pneumonia prevalence in newborns (<1 month) and children aged 1-2 years, with a trend towards higher prevalence in children aged 3-4 and 5-6 years. This is consistent with a 2019 Ugandan study, highlighting younger children's vulnerability. However, a Banadir Hospital study showed lower odds for 4-5-year-olds. This discrepancy could be due to differences in study design or local healthcare practices. Gender and place of delivery did not influence pneumonia risk, nor was there a difference between preterm and term infants. Unvaccinated infants had a higher risk, aligning with findings from Banadir Hospital showing a strong link between vaccination and pneumonia prevention [3,14]. Our study found no significant link between pneumonia and factors like aspiration status, household smoking, family history of allergies, or tuberculosis. However, a 2019 Ugandan study highlighted household smoking as a key risk factor for pneumonia. Research at Banadir Hospital identified factors such as birth weight, exclusive breastfeeding, and caregiver education as significant predictors of pneumonia. We also found no difference in pneumonia prevalence based on cooking fuel type. To reduce pneumonia incidence, strategies should include expanding vaccination programs, caregiver education, and improving healthcare access. Further research is needed to identify additional risk factors and improve prevention strategies [2,3,14].

5. LIMITATION OF STUDY

The study's findings may not be generalizable due to its single-site design, which could introduce selection bias. Factors unique to the hospital and region may influence the results. Future research should involve multiple sites from diverse areas to improve validity and representativeness.

CONCLUSION

The study reveals important risk variables that contribute to the prevalence of pneumonia and emphasizes the substantial burden of the disease among Mogadishu's children under five. These results highlight the critical need for focused public health initiatives, such as increased vaccination rates and better caregiver education. Reducing pneumonia-related morbidity and mortality in this susceptible group requires addressing these factors.

AUTHOR CONTRIBUTIONS

Each author contributed significantly to the idea and design, data collection, analysis, and interpretation, helped draft the article or make critical revisions for significant intellectual content, agreed to submit it to the current journal, approved the final version for publication, and agreed to take responsibility for all aspects of the work.

ETHICAL CONSIDERATION

"Ethical approval for this study (Ethical Committee N° MSTH 10898) was provided by the Mogadishu Somali Türkiye Training and Research Hospital Ethical Committee, Mogadishu, Somalia, on 04 July 2022.".

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non.

CONFLICT OF INTEREST

The author confirms that this article's content has no conflict of interest.

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