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Programme: MSc Public Health and Social Care in Practice

Module: Practice-Based Research

**Assessment of Risk Factors and Incidence of Pneumonia in Children
Under Five Years in the United Kingdom: Systematic Review**

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Prevalence of the problem

In the United Kingdom, pneumonia is a recurrent and high-level health issue that affects children under five years of age even with the improved healthcare facilities, immunization, and medical facilities access. It remains among the most common causes of pediatric morbidity and avoidable hospitalization, which has imposed significant burden on primary care, emergency departments, and pediatric units (Luo et al., 2025). There is evidence that pneumonia is a significant cause of the total respiratory disease burden in early childhood that demonstrates the persistent susceptibility of this population.

There have also been recent changes in the trends of respiratory infections with immunity gaps, viral rebounds, and variability of seasons, worsened by post-COVID-19 immunity gaps. These changes have led to the rise in incidences, and unreliable outbreaks of pediatric respiratory illness. Moreover, pneumonia continues to be unevenly spread as children in socio-economically deprived communities, overcrowded housing, or those living in households with environmental hazards like bad air quality or tobacco smokes have higher rates. All these inequalities indicate that biological vulnerability and social determinants intersect, which makes the disease burden more complex (Hughes et al., 2025). Combined, these considerations outline that pneumonia is a highly widespread and urgent problem in the UK health and social care systems, and it needs to be mitigated and preempted with specific and focused strategies.

Introduction

Adults' Pneumonia is one of the principal causes of morbidity and preventable death of children aged under five years all over the world. Contrary to expected results, pneumonia remains a significant contributor to the population of hospitalized children and healthcare expenditures in the United Kingdom, despite relatively low rates of mortality caused by well-established vaccination schemes, ready access to healthcare, and well-developed healthcare systems of the health (Gadsby and Musher, 2022). The persistence of pneumonia in high-income environments underscores the need to understand the interactions among clinical, environmental, and socio-economic factors in the occurrence and intensity of pneumonia.

Children below the age of five are especially susceptible because their immune systems have not developed fully, and their contact with environmental pathogens is increased because of their age. In recent years, the need to synthesize evidence on the risk factors of pneumonia in the UK has resurfaced due to changes in vaccine coverage, respiratory pathogen emergence, climate

change, and health inequalities. Systematic qualitative review thus gives a chance of synthesizing available results, finding patterns between studies as well as informing early-intervention strategies among clinicians, policymakers, and practitioners of public health.

Background

Though the world has made huge step in the medical care of children, immunization and clinical treatment, pneumonia is still considered one of the most serious causes of disease in children below the age of five. Although the number of children dying of pneumonia around the world has decreased in the last 20 years, the percentage of this disease remains high in terms of hospitalization and morbidity in the developed world, the United Kingdom being no exception. UK possesses well-developed healthcare facilities and effective immunization programs but childhood pneumonia remains an avoidable disease that overburdens the general practice, emergency department and pediatric services (Free et al., 2021). This brings to light the multi-factorial interaction between clinical, environmental, and social conditions that keep on affecting the patterns of diseases despite the availability of resources.

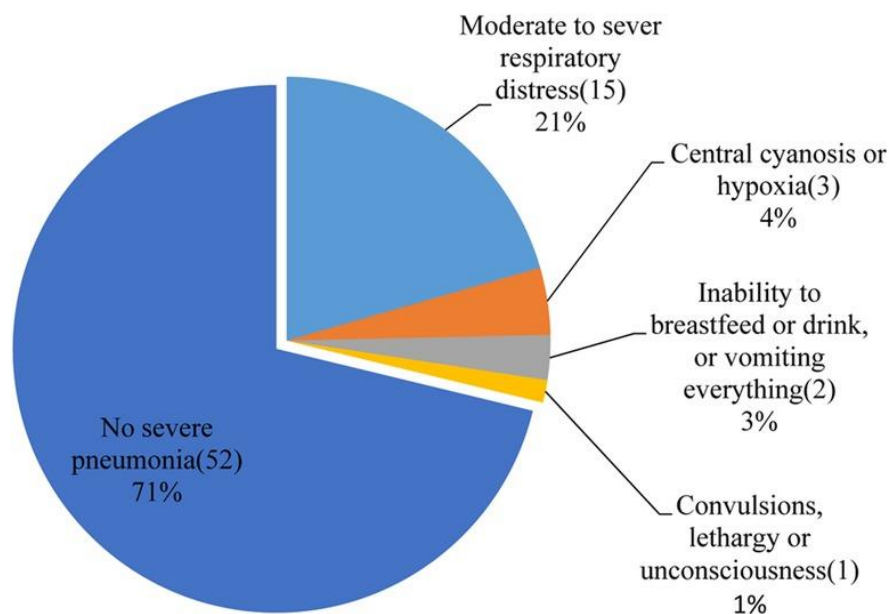


Figure 1. Pneumonia in Children Under Five Years

Source (Solomon et al., 2022)

Over the last few years, the trend of pediatric respiratory infections in the UK has been fluctuating and this pattern has been further exacerbated in the post-COVID-19 era where there has been increased respiratory illness in children due to altered patterns of viral circulation and immunity gaps. The factors that have contributed to the pneumonia incidence are seasonal instability, viral rebound, and delayed exposure to normal respiratory pathogens (Xu et al., 2021). The above trends highlight the importance of reevaluating the current evidence, with previous research possibly being not as representative of the evolving epidemiological situation. These trends are important to understand in order to inform the preventive strategies, control the demand on the healthcare, and direct the clinical decision-making process in the community and hospital environment.

In addition to biological predisposition, socioeconomic influences are also immensely important in defining the risk of pneumonia in the early childhood stage. There is a large difference in the burden of respiratory infections in children who live in deprived neighborhoods, overcrowded housing, or in areas where there has been a poor quality of the air (Xiao, Zeng and Kou, 2025). Vulnerability is further compounded by exposure to tobacco smoke, lack of access to healthcare, unstable homes and stress experienced by the parents. The UK is still witnessing the increasing health inequalities and one of the groups that are highly patterned by the socioeconomic deprivation is respiratory illnesses. By directly looking at the intersection of these social determinants and biological and environmental risk factors, it may be possible to find out what groups of children are still at disproportionate risk (Holdroyd et al., 2022).

Clinical risk factors are also said to play a role in the differences in pneumonia levels and prevalence among UK children. It is well known that preterm birth, low birth weight, congenital heart disease, asthma, recurrent respiratory infections, and incomplete vaccination status are contributing factors (Kawamoto et al., 2019). Also, the vulnerability and health-seeking behavior of parents depend on their nutritional status, breastfeeding, and parental awareness of the early symptoms. Studies have demonstrated that the delay of medical care or difficulty of identifying the initial signs of respiratory distress is a factor that is likely to lead to complications and hospitalization. Integrating evidence of these clinical determinants is thus vital towards reinforcing the procedures of early-intervention and parental education (Lansbury et al., 2024).

However, although a lot of literature is available on childhood pneumonia, available research studies have disjointed results in different fields such as the public health field, pediatrics, epidemiology as well as social sciences. The various differences in language, approach, and research subjects make it difficult to implement those findings in a consistent and evidence-based fashion to practitioners (Marangu and Zar, 2019). This heterogeneous evidence thus necessitates a systematic qualitative review to integrate the various evidences and find important recurrent themes as well as place the factors that contribute to the risk of pneumonia amongst children under five in the United Kingdom into perspective. This kind of synthesis will facilitate the formulation of specific interventions, policy, and the formation of preventive approaches that respond to clinical vulnerability as well as social disparities more generally.

Rationale & Research Question/Aims

Despite the improved child health care in the United Kingdom, pneumonia is still a significant public health issue among children under the age of five years, and it is a significant cause of morbidity and preventable hospitalization. It is also imperative to have a systematic review to give a current view on its prevalence and predictors, especially in view of the fact that environmental, biological and social risk factors still dominate susceptibility and severity of the disease. The risk identification of modifiable risks can inform the early-intervention strategies to mitigate complications and long-term respiratory problems, as well, assist policymakers to enhance preventive programs, vaccination, and community-based child-health services (Johnston et al., 2019). Besides, the analysis of socioeconomic inequities is essential towards the resolution of chronic health disparities among vulnerable families. This review also aligns with national priorities and the WHO goals of reducing child mortality and enhancing respiratory health outcomes with the help of targeted, preventive measures in the sphere of population health.

Research Aim

This study aims to systematically assess the incidence and major risk factors of pneumonia among children under five years in the United Kingdom and develop evidence-based recommendations to enhance its prevention, early detection, and clinical management.

Research Objectives

The objectives of this study include:

- To analyze studies reporting the incidence of pneumonia in children under five in the UK.
- To examine and summarize the key risk factors associated with pneumonia in children under five in the UK.
- To synthesize current evidence to inform prevention strategies and public health interventions for pneumonia in children under five in the UK.
- To provide professional and public health recommendations aimed at strengthening preventive measures, early detection, and evidence-based clinical practices for reducing pneumonia incidence in young children

Research Question

The primary research question for this proposed study includes:

- What are the primary risk factors contributing to pneumonia, and what is the incidence of pneumonia in children under five years in the United Kingdom?

Research methodology

Research Philosophy

Interpretivism is a paradigm of research that holds the position that the reality is subjective and socially constructed as well as the purpose of the research is to comprehend the meaning that people attach to their experiences. It focuses on considering things in the eyes of the participants, and it applies qualitative approaches such as interviews and observations that seek to examine their individual emotions, thoughts and culture (Gelsthorpe, 2019). Contrary to positivism, Interpretivism does not believe in there being one objective truth and the social world is viewed as dynamic and founded on individual interpretations. For this study identification of risk factors Interpretivism under qualitative approach could be useful to understanding subjective findings.

Research Approach

The inductive research approach method will be implemented in which specific observations will be made to create broader theories. The researcher will collect data, analyze it for patterns and themes and form a general conclusion to explain their findings (Azungah, 2018). Inductive

research approach will help in identifying and conducting review and gathering theories for risk factors assessment in case conditions of pneumonia.

Research Design

The research paper is a systematic qualitative review design, based on the framework offered in PRISMA 2020 standards to guarantee the transparency and rigor of the methodology. The review will concentrate on the synthesis of qualitative results of peer-reviewed primary research carried out in the United Kingdom, and only mono method research will be considered, provided that it will provide qualified data on the subject applicable to the research objectives (Page, Tetzlaff and Moher, 2021). The systematic approach will guarantee that the study covers the body of existing evidence in a comprehensive manner, minimizes the likelihood of selection bias, and improves the replicability of the review process. This design is especially appropriate to the study of the contribution of various clinical, environmental and social factors to pneumonia risk in young children, so that additional interpretation is made of contextual factors that cannot be established by using quantitative synthesis.

Recruitment, Sampling and Study Participants

Since this is a secondary research study, there will be no primary participants recruited. Rather, the sample is made up of studies that have been published before and have met the specified inclusion criteria. The studies should be eligible as they should have been carried out in the UK, have a target population of children below the age of five or have extractable data about this group of children, and should utilize a qualitative design, with the evidence about the qualitative data being provided. The articles should be peer-reviewed, published in the past 2005-2025, and in English to study the prevalence of pneumonia, respiratory infections or risk factors, and the associated risk factors and be written in the English language. Non-UK-based studies, studies that use purely quantitative designs, and those with a narrow scope of interest (e.g. adults or older children, and no under-five specific data are available) will be filtered out, as will non-peer-reviewed articles. The purposive method of sampling will be necessary in order to guarantee that all evidence that is included is contextually relevant, methodologically sound and representative of the current child-health contexts in the UK.

Materials/Data Collection Method(s)/procedure

In this study, data will be collected through a systematic, methodical search of large scholarly databases, such as PubMed, CINAHL, Scopus, Web of Science, and Cochrane Library, to obtain all the available qualitative research in childhood pneumonia in the UK. The search terms will be created with the help of the Boolean operators and the keywords, as follows: pneumonia and children and risk factors and United Kingdom and qualitative. A structured extraction form, to be filled in with the use of Excel, will help in the data extraction process and capture important information like the risk factors identified, contextual explanations, methods used, experiences of the participants, preventive measures, and aspects of the study. The extraction of the data will be grounded on the responses to the main interpretative questions that will include what clinical, environmental, or socio-economic risks were raised, what experiences related to childhood pneumonia were reported by the stakeholders, and what implications were raised by the authors.

Proposed data analysis technique

The qualitative data obtained concerning the studies included will be analysed based on the six-phase framework of thematic analysis by Braun and Clarke (2017), which is a systematic and adaptable method to recognise and interpret the patterns in the qualitative evidence into interpretation. Familiarisation will be the starting point of the analysis process, as the reviewer will be reading the extracted findings several times to develop a deep insight into the content. This will be enhanced by the systematic creation of preliminary codes, recording of significant units of text concerning the incidence of pneumonia, risk factors, and contextual factors. The process of coding will be inductive to make sure that the themes are not predetermined by the researcher, but originate from the evidence. The second step will entail clustering similar codes into possible themes, which will enable one to recognise the patterns across studies.

After the development of preliminary themes, they will be inspected to guarantee their coherence, inner consistency, and transparent attention to the research question. Themes will be narrowed down, combined or divided where needed and then defined clearly and understandably, which gives them an analytical sense. The last step will be the synthesis of the obtained themes into a consistent story explaining the role of clinical, environmental, and socio-economic determinants in pneumonia risk among UK children below five years of age with the help of the illustrative examples of the included studies. Transparency will be ensured during the process by recording the coding decisions and development of the themes, and the final synthesis will strive to give a well-balanced and rigorous interpretation of the qualitative evidence.

Ethical considerations

Secondary Data: Since the research will be based on the published research only, there will be no direct interaction with human participants. However, the question of ethical responsibility still lies to make sure that any study involved in the study was done with relevant ethical consent especially when working with children, which is a vulnerable group.

Copyright act: The copyright act is implemented in which the information cannot be used from any other sources. This act helps to ensure that study is not used by any third party without permission.

Integrity and Transparency: The review should be able to reflect the results of primary studies without any misinterpretation or selective reporting. Academic honesty and bias elimination should be ensured through transparency in search strategies and screening choices as well as data extraction (Glatke, 2020).

Honor to Original Authors: Due credence by appropriate referencing and citing of the source serves to rank the intellectual property right. This will involve the prevention of plagiarism and recognition of original ideas, quotes by participants and interpretations.

Data Handling and Confidentiality: The data are publicly available, although when handling qualitative accounts one has to observe ethical practices not to duplicate the sensitive information of a participant on a way that would jeopardize his or her anonymity (Glatke, 2020).

Reduction of Researcher Bias: When interpreting qualitative themes, the researcher has to be conscious of the possibility of bias. Reflexivity is necessary to guarantee that personal opinions, presuppositions, or anticipations do not affect coding, development of themes and synthesis (Ketefian, 2020).

Equal Representation of the Vulnerable Populations: The review must not be stigmatizing children or communities that are at more risk of pneumonia. Rather, the results must be presented with a sense of sensitivity, with structural and systemic factors being put in the limelight instead of personalization.

Implication of research

The results of this systematic qualitative review will provide valuable information on the way of improving child health outcomes in the United Kingdom. The review will assist the healthcare

professionals to identify the high-risk groups more efficiently and provide timely intervention that can help in reducing complications, hospitalisation rates, and long-term respiratory problems, by synthesising evidence on the clinical, environmental, and socio-economic determinants of pneumonia among children under five. The findings will also give solid evidence to inform the policymakers in the area of health on how to enhance the preventative action such as inoculation programs, parental education programs, early warning programs, and health promotion at the community level (Malik et al., 2020). Moreover, the contribution of structural and social inequalities to the risk of developing a disease will be also highlighted in the review, which will allow policy-makers and social-care agencies to develop specific assistance to vulnerable families, specifically those impacted by poverty, overcrowding, or a lack of access to healthcare. To researchers, the synthesis will expose gaps in existing knowledge and limitations in methodologies of the existing studies in the UK, as a way of informing the future research priorities and stimulating the creation of more comprehensive, interdisciplinary approaches to respiratory health (Merera, 2021). In general, the study will make the pathways of pneumonia risks better understood and help in the development of the coordinated measures within the clinical, public health, and social systems to decrease the pneumonia burden in early childhood.

Plan of Work and Time Schedule (Gantt Chart)

The plan of work and schedule with a Gantt chart is developed below:

Task	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	W11	W12
Finalize research question & protocol												
Database search												

Screening (titles/abstracts)												
Full-text screening												
Data extraction												
Thematic analysis												
Synthesis & writing results												
Drafting full report												
Final editing & submission												

References

- Azungah, T. (2018). Qualitative research: Deductive and Inductive Approaches to Data Analysis. *Qualitative Research Journal*, [online] 18(4), pp.383–400. doi:<https://doi.org/10.1108/QRJ-D-18-00035>.
- Clarke, V. and Braun, V. (2017). Thematic Analysis. *The Journal of Positive Psychology*, 12(3), pp.297–298. doi:<https://doi.org/10.1080/17439760.2016.1262613>.
- Free, R.C., Richardson, M., Pillay, C., Hawkes, K., Skeemer, J., Broughton, R., Haldar, P. and Woltmann, G. (2021). Specialist pneumonia intervention nurse service improves pneumonia care and outcome. *BMJ Open Respiratory Research*, [online] 8(1), p.e000863. doi:<https://doi.org/10.1136/bmjresp-2020-000863>.
- Johnston, A., Kelly, S.E., Hsieh, S.-C., Skidmore, B. and Wells, G.A. (2019). Systematic reviews of clinical practice guidelines: a methodological guide. *Journal of Clinical Epidemiology*, 108(108), pp.64–76. doi:<https://doi.org/10.1016/j.jclinepi.2018.11.030>.
- Gadsby, N.J. and Musher, D.M. (2022). The Microbial Etiology of Community-Acquired Pneumonia in Adults: from Classical Bacteriology to Host Transcriptional Signatures. *Clinical Microbiology Reviews*, 35(4). doi:<https://doi.org/10.1128/cmr.00015-22>.
- Gelsthorpe, L. (2019). Book Review: Criminological Research: Understanding Qualitative Research Methods. *Qualitative Research*, 6(2), pp.275–277.
- Glattke, T.J. (2020). International Research Collaborations: Ethical and Regulatory Considerations. *The ASHA Leader*, 12(17), pp.19–21.
- Holdroyd, I., Vodden, A., Srinivasan, A., Kuhn, I., Bamba, C. and Ford, J.A. (2022). Systematic review of the effectiveness of the health inequalities strategy in England between 1999 and 2010. *BMJ Open*, [online] 12(9), p.e063137. doi:<https://doi.org/10.1136/bmjopen-2022-063137>.
- Hughes-Davies, H., Ukwatte, U., Fanshawe, T.R., Roberts, N., Turner, P.J., Hayward, G.N. and Bird, C., 2025. Diagnostic accuracy of point-of-care lung ultrasound for community-acquired pneumonia in children in ambulatory settings: A systematic review and meta-analysis. *Ultrasound*, 33(3), pp.197-205.
- Ketefian, S. (2020). Legal and ethical issues: Ethical considerations in international nursing. *Journal of Professional Nursing*, 16(5), p.257. doi:<https://doi.org/10.1053/jpnu.2000.9454>.
- Kawamoto, K., Houlihan, C.A., Balas, E.A. and Lobach, D.F. (2019). Improving clinical practice using clinical decision support systems: a systematic review of trials to identify features critical to success. *BMJ*, [online] 330(7494), p.765. doi:<https://doi.org/10.1136/bmj.38398.500764.8f>.
- Lansbury, L., Lawrence, H., McKeever, T.M., French, N., Aston, S., Hill, A.T., Pick, H., Baskaran, V., Edwards-Pritchard, R.C., Bendall, L., Ashton, D., Butler, J., Daniel, P., Bewick, T., Rodrigo, C., Litt, D., Eletu, S., Sheppard, C.L., Fry, N.K. and Ladhani, S. (2024). Pneumococcal serotypes and risk factors in adult community-acquired pneumonia 2018–20; a multicentre UK cohort study.

The Lancet Regional Health - Europe, [online] 37, p.100812. doi:<https://doi.org/10.1016/j.lanepe.2023.100812>.

Luo, Y., Bai, H., Jiao, F., Guo, Y., Yang, X. and Wang, Y., 2025. Establishment and validation of a predictive model for Lobar pneumonia caused by *Mycoplasma pneumoniae* infection in children. *Scientific Reports*, 15(1), p.22811.

Malik, S., Pedersen, M., Mangersnes, J., Roy, B. van, Skovlund, E. and Vegard Bruun Wyller (2020). Cognitive–behavioural therapy combined with music therapy for chronic fatigue following Epstein-Barr virus infection in adolescents: a feasibility study. *BMJ Paediatrics Open*, 4(1), pp.e000620–e000620. doi:<https://doi.org/10.1136/bmjpo-2019-000620>.

Marangu, D. and Zar, H.J. (2019). Childhood pneumonia in low-and-middle-income countries: An update. *Paediatric Respiratory Reviews*, [online] 32, pp.3–9. doi:<https://doi.org/10.1016/j.prrv.2019.06.001>.

Merera, A.M. (2021). Determinants of acute respiratory infection among under-five children in rural Ethiopia. *BMC Infectious Diseases*, 21(1). doi:<https://doi.org/10.1186/s12879-021-06864-4>.

Page, M., Tetzlaff, J. and Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Value in Health*, 23(10), pp.S312–S313. doi:<https://doi.org/10.1016/j.jval.2020.04.1154>.

Solomon, Y., Kofole, Z., Fantaye, T. and Ejigu, S. (2022). Prevalence of pneumonia and its determinant factors among under-five children in Gamo Zone, southern Ethiopia, 2021. *Frontiers in Pediatrics*, 10. doi:<https://doi.org/10.3389/fped.2022.1017386>.

Xiao, S., Zeng, S. and Kou, Y. (2025). Clinical value and radiographic features of low dose CT scans compared to X rays in diagnosing mycoplasma pneumonia in children. *Scientific Reports*, 15(1). doi:<https://doi.org/10.1038/s41598-025-94006-0>.

Xu, B., Wang, J., Li, Z., Xu, C., Liao, Y., Hu, M., Yang, J., Lai, S., Wang, L. and Yang, W. (2021). Seasonal association between viral causes of hospitalised acute lower respiratory infections and meteorological factors in China: a retrospective study. *The Lancet Planetary Health*, [online] 5(3), pp.e154–e163. doi:[https://doi.org/10.1016/S2542-5196\(20\)30297-7](https://doi.org/10.1016/S2542-5196(20)30297-7).