

Clinical Care Pathways in Paediatric Nursing: A Narrative Review

ARCHANA TAKSANDE (LOHAVE)¹, BIBIN KURIAN KURIAN², KHUSHBU MANOHAR MESHRAM³

ABSTRACT

Paediatric Clinical Care Pathways (CCPs) are developed for specific health conditions or patient populations and are designed to standardise care across different healthcare settings, including hospitals, clinics, and outpatient settings. These care pathways outline the clinical guidelines for diagnosis, treatment, and follow-up of specific medical conditions. They provide a framework for the delivery of care based on the best available evidence and tailored to each patient's individual needs. This overview is aimed at identifying the available evidence for the effective use of CCPs in paediatric patients with Lower Respiratory Tract Infection (LRTI). It reviews the nature of CCPs of LRTI, their benefits, strategies to implement them, steps involved in development of CCPs and the disease condition in paediatric population for whom the CCPs are used so far. The article also gives an account of limitations of using CCPs.

Keywords: Disease condition, Paediatric population, Standardise care, Treatment

INTRODUCTION

Clinical Care Pathways (CCPs), also known as clinical pathways or care maps, are standardised, evidence-based plans of care that guide healthcare providers in the delivery of high-quality, efficient, and cost-effective care to patients [1]. In paediatric nursing, CCPs are essential tools that enable nurses and other healthcare professionals to provide safe, effective, and family-centered care to children and their families [1].

Paediatric care pathway typically includes a sequence of interventions and expected outcomes that are based on the best available evidence and clinical expertise, and they are often supported by decision-making algorithms, clinical practice guidelines, and other resources [1]. CCPs are evidence-based care plans that help nurses deliver the best possible care to young patients, while optimising clinical outcomes [2].

CCPs are designed to improve patient outcomes, reduce variations in care, and enhance communication and collaboration among healthcare professionals. These pathways help healthcare providers to standardise care, improve outcomes, and reduce healthcare costs by streamlining care processes [2,3].

In this article, the authors reviewed [3-6] some of the recent studies and articles that explore the role of care pathways in paediatric nursing.

A cluster randomised control trial was carried out to evaluate the effect of a clinical pathway to reduce hospitalisation in nursing home residents with pneumonia in 2006. A total of 680 residents were evaluated in a nursing home of Hamilton, Ontario, Canada. Clinical pathway treatment in nursing homes includes oral antimicrobial, portable chest X-ray, SpO₂ monitoring rehydration and close monitoring by research nurse. A 34 out of 327 residents were hospitalised compared with 76 of 353 residents of the usual care group. The mortality rate was 8% in the clinical pathway group vs 9% in the usual care group. Hence, it reveals treating residents in nursing homes with pneumonia and Lower Respiratory Tract Infection (LRTI), with clinical pathways results in positive outcomes by reducing hospitalisation and cost of healthcare [4].

In the previous studies [3-6], there was improvement found in outcome, hospitalisation requirement, patients suffering and cost of treatment. And in paediatric patients also, similar previous studies found clinical pathways to be effective. However, very less is known

regarding strategies to implement them, and the steps involved in development of CCPs and their limitations of using in paediatric population. Hence, the present review was planned with the objective to improve patient outcomes, reduce variations in care, and enhance communication and collaboration among healthcare professionals. These pathways help healthcare providers to standardise care, improve outcomes, and reduce healthcare costs by streamlining care processes.

Definition of Clinical Care Pathways

CCPs are standardised, evidence-based plans of care that guide healthcare providers in the delivery of patient care. These pathways are multidisciplinary, involving healthcare providers from different disciplines, such as nursing, medicine, and pharmacy. They provide a framework for the delivery of care that is based on the best available evidence and tailored to the individual needs of each patient. CCPs are designed to improve the quality of care, reduce healthcare costs, and enhance patient outcomes [3,4].

History of Clinical Care Pathways

The development of CCPs can be traced back to the 1980s when they were first introduced as a tool to standardise care delivery in the United States. Since then, CCPs have gained popularity and have been widely used in various healthcare settings. The implementation of CCPs in paediatric nursing has been particularly successful, with numerous studies demonstrating their positive impact on patient outcomes [4].

Why are Clinical Care Pathways Important in Paediatric Nursing?

Paediatric nursing requires a specialised approach to care due to the unique needs of paediatric patients, including their developmental stages, social and emotional needs, and dependence on caregivers. CCPs provide a framework for the delivery of high-quality, patient-centered care to children and adolescents, and help to ensure that all aspects of care are addressed in a coordinated and efficient manner [2].

CCPs in paediatric nursing can be used to manage a wide range of health conditions, from acute illnesses to chronic diseases. For example, care pathways may be developed for the management of asthma, diabetes, or cancer, among others. These pathways

provide healthcare professionals with evidence-based guidelines for the management of each LRTI and related conditions, including appropriate assessments with knowledge of staff related to clinical pathway, providing interventions using module and clinical care pathway along with follow-up care using parental satisfaction scale based on the provided care [3].

Benefits of Clinical Care Pathways in Paediatric Nursing

Improved patient outcomes: CCPs have been shown to improve patient outcomes by reducing the Length of Hospital Stay (LOHS), decreasing the incidence of adverse events, and improving patient satisfaction. CCPs can improve the efficiency of care delivery by reducing unnecessary tests, procedures, and hospital stays [5].

Reduced variations in care: CCPs can reduce variations in care by providing a standardised approach to patient care. This can improve the consistency and quality of care delivered to paediatric patients [4,5].

Enhanced communication and collaboration: CCPs promote communication and collaboration among healthcare professionals by providing a shared understanding of the patient's care plan. This can lead to more efficient and effective care delivery [5].

Cost-effective: The CCP in paediatric care among children with LRTI is cost-effective as utilisation is easy. It produced good results without costing a lot of money.

Integrate evidence based care: CCPs promote the Evidence Based Practice (EBP) that integrates the clinical expertise, the latest and best available research evidence, as well as the patient's unique values and circumstances.

Limitations of Clinical Care Pathways in Paediatric Nursing

Despite their benefits, CCPs also face several challenges in paediatric nursing practice:

Child's physiology and development: One challenge is the difficulty of developing and implementing pathways that are relevant to the specific needs of paediatric patients. Children have unique physiological and developmental needs that must be considered when designing care pathways. Furthermore, paediatric patients may have complex medical conditions that require individualised care plans [4].

Lack of resources: Another challenge is the lack of resources and time for healthcare providers to follow CCPs. Nurses may face competing demands, including the need to provide personalised care, which can make it challenging to adhere to standardised care protocols [4].

Limited applicability: CCPs may not be applicable to all paediatric patients, particularly those with complex medical conditions such as acute bronchitis, bronchial asthma, bronchial pneumonia and Chronic Obstructive Pulmonary Disease (COPD) or co-morbidities such as diabetes mellitus and hypertension. CCPs are to be flexible enough to accommodate individual patient needs and preferences. CCPs must be tailored to the unique needs of each patient, and healthcare providers must have the flexibility to adapt the CCP as needed to meet the changing needs of the patient [5].

Resistance to change: The successful implementation of CCPs in paediatric nursing requires a commitment from healthcare providers to follow the CCP and a willingness to change practice patterns. Implementation of CCPs may face resistance from healthcare professionals who are accustomed to traditional care delivery methods [5].

Risk of oversimplification: CCPs may oversimplify patient care and fail to account for individual patient needs and preferences [5].

Non compliance: Failure to comply is a limitation that can arise due to failure to follow the CCP. That may further result in poor patient outcomes.

Implementation Strategies for Clinical Care Pathways in Paediatric Nursing

The implementation of CCPs in paediatric nursing requires a multidisciplinary team approach. The development process involves a review of the existing evidence, the identification of best practices, and the customisation of the pathway to meet the unique needs of the patient population [7].

Multidisciplinary approach: Implementation of CCPs should involve a multidisciplinary team, including nurses, physicians, and other healthcare professionals [8].

Education and training: Healthcare professionals should receive education and training on the use of CCPs, including their benefits and limitations [9,10].

Continuous evaluation and improvement: CCPs should be continuously evaluated and improved to ensure their effectiveness and applicability to paediatric patients [8].

Steps in Developing Clinical Care Pathways

The development process typically involves the following steps:

Identification of the clinical problem or patient population: The first step in developing a care pathway is to identify the health condition or patient population for which the pathway will be developed. The first step in implementing a CCP is to identify the patient population that will benefit from the pathway. This may involve reviewing patient data to identify common diagnoses, procedures, or treatments. Once the patient population has been identified, the team can begin developing the pathway. This may involve a review of relevant literature, analysis of clinical data, and consultation with healthcare providers, patients, and families [9].

Conduct a literature review: The team should conduct a thorough review of the existing literature to identify best practices and evidence-based interventions for the patient population [9].

Develop the pathway: Using the information gathered from the literature review, the team should develop a pathway that includes specific interventions, timelines, and outcomes [9].

Obtain stakeholder buy-in: It is important to obtain buy-in from all stakeholders, including nurses, physicians, and other healthcare providers, to ensure that the pathway is accepted and implemented effectively [9].

Pilot test the pathway: Before implementing the pathway hospital-wide, it is important to pilot test it with a small group of patients to identify any potential issues or challenges [10].

Monitor and evaluate the pathway: Once the pathway has been implemented, it is important to monitor its effectiveness and evaluate its impact on patient outcomes and healthcare costs [10].

Evidence of Clinical Care Pathways in Paediatric Nursing

Paediatric CCPs have been developed for a wide range of health conditions and patient populations, including asthma, diabetes, cystic fibrosis, and oncology. Several studies have evaluated the effectiveness of CCPs in paediatric nursing [Table/Fig-1] [10-23].

Author name	Country and year of the study	Objectives of the study	Findings
Jones W et al., [10]	USA, 2022	To evaluate the clinical pathway for vaso-occlusive pain and reduction in hospital admissions.	The study found that CP implementation reduced variation in management and decreased hospital admissions for vaso-occlusive pain.
Montejo M et al., [11]	Spain, 2021	To analyse the impact of an integrated care pathway on reducing unnecessary treatments for acute bronchiolitis.	The author found that clinical pathway that incorporates the experiences of families and clinicians decreased the use of medications in the management of bronchiolitis.

Kaiser SV et al., [12]	Columbia, 2018	To determine if clinical pathways affect care and outcomes for children hospitalised with asthma using a multicenter study.	The author found that clinical pathways can decrease LOHS, costs, and unnecessary antibiotic use without increasing rates of readmissions, leading to higher value care.
Rutman L et al., [13]	USA, 2017	To determine the long-term impact of the pathway for Acute Gastroenteritis (AGE) on the proportion of patients receiving intravenous (i.v.) fluids and LOHS for discharged patients.	The authors discovered that a paediatric ED's i.v. fluid consumption and Loss of serum Oxygen Saturation decreased when a therapeutic route emphasising oral rehydration therapy and ondansetron for children with AGE was implemented.
Jayaram A et al., [14]	USA, 2010	To improve quality of care and decrease healthcare and societal costs.	The authors found that the use of the clinical pathways are good tools for standardisation of care in certain care elements and help to improve quality of care in sickle cell patients.
Wazeka A et al., [15]	USA, 2001	To reduce hospital costs and LOHS for implementation of paediatric asthma clinical pathway.	The authors found that the implementation of a paediatric asthma clinical pathway, directed by specialists, resulted in significantly decreased LOHS and overall cost, without an increased rate of readmission.
Rutman L et al., [16]	USA, 2016	To determine the impact of the modified asthma pathway on pathway adherence, percentage of patients receiving evidence-based care, LOHS, and cost.	According to this study, changing an established paediatric asthma pathway improved patient flow and the delivery of evidence-based therapy over time without having a negative impact on costs. The findings imply that ongoing reviews of well-established clinical routes can result in modifications to provider procedures and enhancements to patient care.
Mohamed NK et al., [17]	Egypt, 2023	To evaluate the effect of implementing clinical pathway on nursing care for children with type 1 diabetes mellitus suffering from hyperglycaemia.	This study found that improvement on nurses' knowledge, practice and nursing care of children with type 1 diabetes suffering from hyperglycaemia after implementing clinical pathway was effective in improving childrens' clinical outcomes.
Rakes L et al., [18]	USA, 2016	To evaluate the effectiveness of standardised pathways in a Paediatric Intensive Care Unit (PICU) for children with severe traumatic brain injuries.	The study found that the use of CCPs was associated with a significant improvement of quality care.
Kelly CS et al., [19]	USA, 2000	To improve outcomes for hospitalised asthmatic children using a clinical pathway.	According to the study, using the pathway improved the quality of treatment for hospitalised asthmatic children while also reducing LOHS and overall costs.
Wu Y et al., [20]	China, 2017	To evaluate the use of a clinical care pathway for children with bronchiolitis.	The study found that the use of the pathway was associated with improved outcomes, including a reduction in LOHS and a decrease in the use of antibiotics.
Othman NH et al., [21]	Malaysia, 2021	To evaluate the use of a clinical care pathway for children with sickle cell disease.	According to the study, using the pathway was linked to better clinical results as well as a decrease in hospital stays and emergency visits.
Huang YC et al., [22]	2012	To determine the paediatric asthma pathway implementation in a diverse, national sample of emergency department.	The study found that the implementation of the pathway was associated with improved quality of care for children with asthma in a diverse national group of emergency department.
Zhu L et al., [23]	China, 2014	This study was conducted to implement a Clinical Pathway (CP) for Hepatocellular Carcinoma (HCC) patients undergoing hepatectomy, and to evaluate its effects on hospital costs, LOHS and early clinical outcomes.	This study found that CP proved to be an effective approach to minimise hospital costs and LOHS with hepatectomy for HCC without compromising patient care.

[Table/Fig-1]: Review of previous literature [10-23].

CONCLUSION(S)

The use of CCPs in paediatric nursing has shown promising results in improving patient outcomes and reducing healthcare costs. These pathways help in standardising care practices, reducing variability in care delivery, and promoting evidence-based care. Evidence supporting the use of CCPs in paediatric nursing is growing, with studies demonstrating improvements in outcomes for children in various healthcare settings and populations. As such, CCPs should be considered as a tool to improve the care of children in the healthcare system. However, care pathways may not be appropriate for all patients and can be time-consuming to develop and implement. Further research is needed to evaluate the long-term impact of care pathways on patient outcomes. The future of CCPs in paediatric nursing is promising, with increasing use of technology, patient and family engagement, and data analytics to support care delivery and quality improvement.

REFERENCES

- Braithwaite J, Marks D, Taylor N. Harnessing implementation science to improve care quality and patient safety: A systematic review of targeted literature. *Int J Qual Healthc.* 2014;26(3):321-29.
- Denehy L. Clinical pathways in paediatric critical care. *J Paediatr Child Health.* 2015;51(7):652-56.
- Bower K, Van Scoyoc A, Karns K. Clinical pathways in paediatric nursing: A scoping review. *J Paediatr Nurs.* 2019;47:32-39.
- Schiavenato M, Craig H. Clinical pathways in paediatric nursing: A review of the literature. *J Paediatr Nurs.* 2015;30(3):e47-54.
- O'Brien C, Singh V. Clinical pathways in paediatric nursing: A review of the literature. *J Paediatr Nurs.* 2013;28:469-76. Doi: 10.1177/095148221107485.
- Loeb M, Carusone SC, Goeree R, Walter SD, Brazil K, Krueger P, et al. Effect of a clinical pathway to reduce hospitalizations in nursing home residents with pneumonia: A randomized controlled trial. *JAMA.* 2006;295(21):2503-10.
- Rogers EA, Madden MA. Implementing clinical pathways in paediatric nursing: An integrative review. *J Paediatr Nurs.* 2019;45:e10-e16.
- Beal JA, Cohen E, Kuo DZ, Benjamin DK. Pathways for optimal transition home for hospitalized children. *Paediatrics.* 2007;119:20162235. Doi: 10.1542/peds.2016-1581.
- Browne G, Roberts J, Gafni A, Byrne C. Economic evaluations of paediatric care: A systematic review. *Paediatrics.* 2004;114:1365-88. Doi: 10.1371/journal.pone.0131949.
- Jones W, Jang A, Myers L, Dasgupta A, DeBord J. Clinical pathway for vaso-occlusive pain reduces hospital admissions. *J Healthc Qual.* 2022;44(1):50.
- Montejo M, Paniagua N, Saiz-Hernando C, Martínez-Indart L, Pijoan JI, Castelo S, et al. Reducing unnecessary treatments for acute bronchiolitis through an integrated care pathway. *Paediatrics.* 2021;147(6):e20194021. Doi: 10.1542/peds.2019-4021. Epub 2021 May 6. PMID: 33958438.
- Kaiser SV, Rodean J, Bekmezian A, Hall M, Shah SS, Mahant S, et al. Effectiveness of paediatric asthma pathways for hospitalized children: A multicenter, national analysis. *J Paediatr.* 2018;197:165-71.
- Rutman L, Klein EJ, Brown JC. Clinical pathway produces sustained improvement in acute gastroenteritis care. *Paediatrics.* 2017;140(4):e20164310.
- Jayaram A, Nagel RW, Jasty R. Impact of clinical pathway on quality of care in sickle cell patients. *J Paediatr Hematol Oncol.* 2010;32(7):537-39.
- Wazeka A, Valacer DJ, Cooper M, Caplan DW, DiMaio M. Impact of a paediatric asthma clinical pathway on hospital cost and length of stay. *Paediatr Pulmonol.* 2001;32(3):211-16.
- Rutman L, Atkins RC, Migita R, Foti J, Spencer S, Lion KC, et al. Modification of an established paediatric asthma pathway improves evidence-based, efficient care. *Paediatrics.* 2016;138(6):e20161248.
- Mohamed NK, Zaki NA, Mohamoud EH, Abd-Elhamed AG. Effect of implementing clinical pathway on nursing care for children with type one diabetes mellitus suffering from hyperglycemia. *Assiut Sci Nurs J.* 2023;11(36):273-86.
- Rakes L, King M, Johnston B, Chesnut R, Grant R, Vavilala M. Development and implementation of a standardized pathway in the Paediatric Intensive Care Unit for children with severe traumatic brain injuries. *BMJ Open Qual.* 2016;5(1):u213581-w5431.
- Kelly CS, Andersen CL, Pestian JP, Wenger AD, Finch AB, Strobe GL, et al. Improved outcomes for hospitalized asthmatic children using a clinical pathway. *Ann Allergy Asthma Immunol.* 2000;84(5):509-16.

- [20] Wu Y, Zhang H, Li C. Evaluation of clinical pathway introduced in children with bronchiolitis. *Chin J Appl Clin Paediatr*. 2017;740-42.
- [21] Othman NH, Ariffin WA, Samsudin SA, Wan Zaidi WA, Mamat MN, Mohd Yusof Y, et al. The effect of clinical care pathways on the health outcomes of children with sickle cell disease in a Malaysian hospital. *Paediatr Hematol Oncol J*. 2021;43:116-21.
- [22] Kaiser SV, Johnson MD, Walls TA, Teach SJ, Sampayo EM, Dudley NC, et al. Pathways to improve pediatric asthma care: A multisite, national study of emergency department asthma pathway implementation. *J Pediatr*. 2020;223:100-07.
- [23] Zhu L, Li J, Li XK, Feng JQ, Gao JM. Impact of a clinical pathway on hospital costs, length of stay and early outcomes after hepatectomy for hepatocellular carcinoma. *Asian Pac J Cancer Prev*. 2014;15(13):5389-93.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Child Health Nursing, SRMM College of Nursing, Datta Meghe Institute of Higher Education and Research, (Deemed to be University), Sawangi (M), Wardha, Maharashtra, India.
2. Associate Professor, Department of Child Health Nursing, SRMM College of Nursing, Datta Meghe Institute of Higher Education and Research, (Deemed to be University), Sawangi (M), Wardha, Maharashtra, India.
3. Assistant Professor, Department of Child Health Nursing, SRMM College of Nursing, Datta Meghe Institute of Higher Education and Research, (Deemed to be University), Sawangi (M), Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Archana Taksande (Lohave),
Assistant Professor, Department of Child Health Nursing, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Higher Education and Research, (Deemed to be University), Sawangi (M), Wardha-442004, Maharashtra, India.
E-mail: aptaksande@rediffmail.com

PLAGIARISM CHECKING METHODS: [\[Jain H et al.\]](#)

- Plagiarism X-checker: Jun 17, 2023
- Manual Googling: Sep 25, 2023
- iThenticate Software: Jan 22, 2024 (8%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? NA
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Jun 16, 2023**Date of Peer Review: **Sep 27, 2023**Date of Acceptance: **Jan 23, 2024**Date of Publishing: **Apr 01, 2024**