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**Raj Vishnoi**  
P.G. Tutor (Child Health  
Nursing), Dev Bhoomi  
Uttarakhand University, India

## **Non-pharmacological pain management measures related to intravenous therapies among infants: A Narrative Review**

**Raj Vishnoi**

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### **Abstract**

Pain is a multiplex phenomenon for involving psychological biological and sociological factors. Intravenous therapies are the common cause of pain in hospitalized child. Pain is one of the most overlooked, misdiagnosed, and undertreated diseases, especially in infants. One of the most challenging responsibilities for medical staff caring for infants is to properly assess and manage their discomfort. Infants may feel severe pain when receiving an intravenous therapy. Atraumatic care is a sort of restorative treatment that does not create distress to the infant, while providing care in the emergency department focuses on minimizing stress or maximizing the growing of infant. Atraumatic care is provided by behavior such as implementing diversional treatment, which may lessen the physical and psychological effects of pain in infants while they are hospitalized. Non-pharmacological comforting measures when implemented are important to relieve pain related distress in children during intravenous therapies.

**Aim:** This literature review aimed to check the effectiveness of non-pharmacological measures to reduce intravenous procedural related pain and avoid potential drugs side effects.

**Method:** An extensive search and numerous evaluation of the peer-reviewed literature was conducted for narrative review. Journal article were retrieved from three database (PubMed, Medline, Embase & Research gate) using the search terms 'intravenous therapies' 'infants' and 'non-pharmacological pain management measures'

**Result:** The search yielded ten studies of India related to non-pharmacological measures to reduce pain during intravenous therapies among infants. Subsequent review identified emergent themes of non-pharmacological pain management measures for intravenous therapies.

**Conclusion:** There is a lack of quality evidence regarding the practice of non-pharmacological pain management measure during intravenous therapies for infants. To date, in this area has been limited. Further research is therefore recommended.

**Keywords:** Multiplex phenomenon, intravenous therapies, sociological factors

### **Introduction**

Children are our civilizations future and wonderful presents for mankind. They deserve easily available, ongoing, thorough, coordinated, and kind treatment that emphasizes on the children's increasing physiological and psychological requirements. Sickness or hospital stays exposing babies with new or discomforting experiences. In hospitals, babies are often exposed to a variety of procedures, a number of them upsetting, painful, and unpleasant. Pain is a particularly common and unpleasant feeling during hospitalization. Babies in pain tend to display pain in their facial expression, arm, and leg movement as well as in cry. Treatment with atraumatic care focuses on minimizing the pain impact that appears in the children during hospitalization while doing intravenous therapies. Atraumatic care is a form of therapeutic care that does not cause trauma to the child, whereas providing care focuses on preventing trauma and maximizing the growth and development of children in the hospital. Non-pharmacological treatment or techniques to reduce procedure-related discomfort and limit probable pharmaceutical side effects include frequently less expensive, as well as a nurse could give it alone. These techniques are said to complement traditional drug pain management. Non-pharmacological treatments aim to address the emotive, cognitive, behavioral, and sociocultural elements of pain whereas pharmaceuticals are used to treat the somatic child (physiological and psychological) elements that cause distress.

**Corresponding Author:**  
**Raj Vishnoi**  
P.G. Tutor (Child Health  
Nursing), Dev Bhoomi  
Uttarakhand University, India

Therefore, atraumatic care is one of pediatric nursing intervention in minimizing the impact of pain among infants during hospital stay.

**Search strategy for identification of studies**

The search strategy was designed to access published and were comprise three stages

- A limited search of PubMed Medline, Google Scholar

and Research Gate to identify relevant keywords contained in and subject the title, abstract descriptors.

- Terms identified in this way, and the synonyms used by respective databases, was used in an extensive search of the literature.
- Reference lists and bibliographies of the articles collected from those identified in stage two above was searched.

**Table 1:** Literature search details table

Search Strategy	List of databases and e-journals searched
<p><b>Keywords used:</b> Non-Pharmacological pain management, Infants, Intravenous Therapy &amp; Atraumatic Care. Used with MESH terms OR, AND Search was limited to publication year 2013 – 2023</p>	<p>Pub Med. Research Gate. Indian Journal of Public Health. Google scholar. Medline. Indian Journal of Nursing Sciences. Sudanese Journal of Paediatric. International Journal of Pediatrics.</p>

**Table 2:** Studies related to non-pharmacological pain measure related intravenous therapies among infants

Author	Country	Study Design/ Method	Sample	Result	Discussion
L. Barati et al, (2023) [1]	India	Randomized controlled clinical trial	60 infants (30 in each experimental and control group)	The mean (±standard deviation) age of infants in the intervention and control groups were 6.37 (2.96) and 9.03 (3.10) months, respectively (P<0.05).	Using 2 ml of 10% oral dextrose 2 minutes before venipuncture has a weak and non-significant effect on the pain of infants.
R. Gayathri (2022) [2]	India	Experimental approach, quantitative experimental post-test only control group design.	sample size of 40 infants, 20 of whom were in the observation group and 20 of whom were in the intervention group.	The mean pain level in the observation group was 5.3 SD of 1.42, however mean pain level within intervention group were 2.4 with SD of 1.28.	Diversion therapy was found to be effective for reduction of pain of infants receiving injections.
Megha Gahlawat et al., (2021) [3]	India	Prospective open-label parallel-group randomised control trial	60(30 in each intervention and control group)	The final cohort included 60 patients (45 males and 15 females), and the mean age of children in the intervention group was 8.80 + 2.90 as compared 8.10 + 2.41 years in the control group	The study supported the Buzzy device as an emerging non-pharmacological pain management tool for minimizing pain during IV cannulation
Yahia Mohamed Sayed et al., (2020) [4]	India	Descriptive research method	60 infants	there were statistically significant negative correlations between children's age and the total mean score of the CHEOPS and Face Pain Rating Scale before the application of cryotherapy (r=-.490, P=)	The current study results concluded that the total mean scores of Wong-Baker Faces Pain Scale and CHEOPS among children were decreased significantly after the application of cryotherapy on the venipuncture site.
Pratibha Jadhav (2019) [6]	India	Quasi-experimental research approach with one group pre-test-post-test research design	60(30 in each experimental and control group)	Overall, mean pain score in the experimental group is 3.63 and mean pain score in the control group is 5.70. It is proven that cartoon videos are effective in reducing pain in infants during vaccination	Study concluded that cartoon videos are effective distraction strategy to reduce pain and distress among children during intramuscular injections.
Thirimurgana A (2018)	India	Quantitative of evaluative approach quasi experimental posttest only control group design	60 newborns (30 in each group)	The mean level of pain for control group it was 11.6+1.17. The difference in mean Percentage was 24 indicating decreased level of pain in the experimental group.	Estimated t value of 13.33 was more than the table value and demonstrated that oral sucrose was successful in lowering pain in the intervention group.
Neha Sunil Gaikwad et al, (2017) [5]	India	Evaluatory research approach and Post-test only control group design	60 infants between the ages of 6 and 12 months	According to the findings, there was a statistically significant distinction amongst child's mean scores for pain in both the control and interventional (P 0.05)	Ice application can be used as practical modality of choice that promotes comfort and cost elective, means of reducing intravenous pain in children.
Abimathy F (2016) [7]	India	Quasi experimental design	50 preterm newborns	The paired test t value for feeding pattern was 20 and for sleeping pattern was 12.28 at P < 0.05 revealed	Music therapy was effective in improving the physiological parameters, feeding pattern and

				that there was a significant improvement in maintaining the physiological parameters, improved feeding and sleeping pattern after the music therapy.	sleeping pattern among the premature newborns, in the hospital setup.
Aswathi, Venugopal (2015) <sup>[8]</sup>	India	Nonrandomized control group posttest only design	30 experimental and 30 control group children	The t value is 13.04 (P =0.05, 58 DF, T= 1.96) which is statistically significant.	Shows the evidence that local cold application is effective in reducing the pain during intravenous cannula insertion in children.
Minu Abraham (2014) <sup>[9]</sup>	India	Post-test only design	60 infants, with 30 being entrusted for observation group or thirty for interventional group.	The averages and standard deviations of the infants in the control and interventional were 11.36, 3.77, 5.6, & 12.44, in that order. At p 0.001, the t value of 21.3 is very significant.	With the emerging health care trends, nursing education must focus on non-pharmacological innovation to enhance the nursing care all institutions and should be supported and encouraged this kind of interventions during IV cannulization

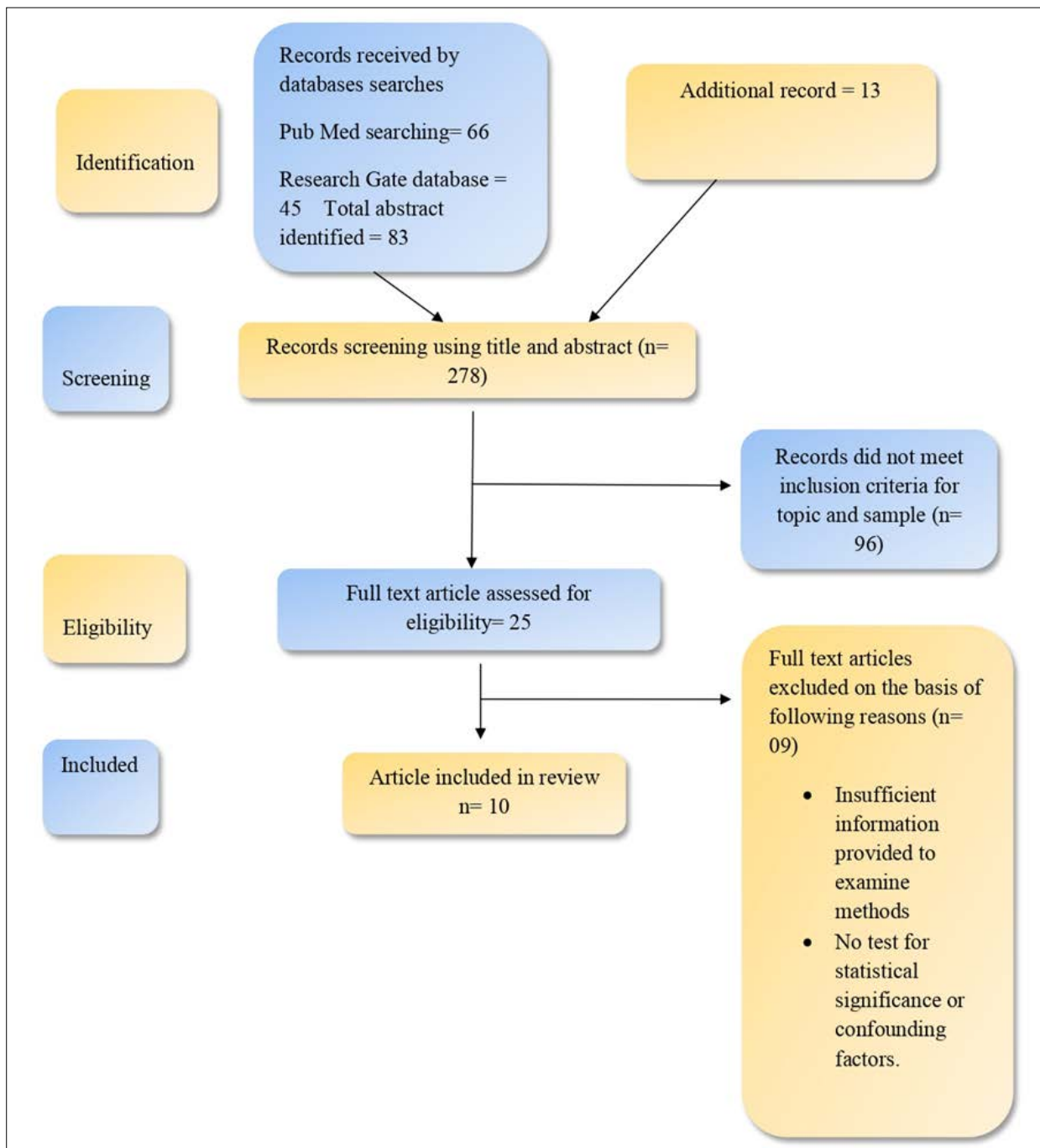


Fig 1: Flow diagram of screening and selection of reviews

## Conclusion

Intravenous therapy is the common cause of pain in hospitalized child. WHO asserts that, pain relief is basic fundamental right and requires multidisciplinary approaches. Non-pharmacological comforting strategies when implemented are important to relieve pain related distress in children during venflon insertion. Non-pharmacological therapies aim to treat the affective cognitive All infants undergo painful procedures involving skin puncture as part of routine medical care at present, pain from needle puncture procedure in sub-optimally managed numerous non- pharmacological interventions are available that may be utilized for these painful procedures including swaddling/containment, pacifier/non-nutritive sucking, breastfeeding and breast milk, skin to skin care, sweet tasting solutions, music therapy, sensorial saturation and parental saturation and parental presence are important. Non pharmacological techniques to reduce procedure related pain and avoid potential drugs side effects are generally less expensive and can be performed independently by a nurse. Behavioral and socio-cultural dimensions of the pain.

## Conflicts of Interest

The author declares that they have no conflicts of interest.

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