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# Soothing Premature Infants' Pain with White Noise

A Quasi-Experimental Study on Non-Pharmacological Pain Management During Venipuncture

**Dr. FatemehSadat SeyedNematollah Roshan** Advancing Nursing and Healthcare Conference November 28-30, 2025 • Toronto, Canada



# Meet the Researcher



Dr. Fatemeh Sadat Seyed Nematollah Roshan

**Assistant Professor**, Islamic Azad University, Tehran

Dr. Roshan holds a PhD in Nursing with extensive clinical experience in emergency and critical care. Her research focuses on pediatric nursing, family-centered empowerment, and psychosocial dimensions of chronic illness.

- Led studies on empowerment of families with children facing cancer, obesity, anemia, and burn injuries
- Developed and validated multiple instruments including the Iranian Women's Quality of Life Instrument
- Contributed to moral distress questionnaire for pediatric nurses and Persian Comfort Behavioral Scale



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# The Challenge

## Premature Infants Face Significant Pain

Hospitalized premature infants routinely undergo painful procedures that negatively impact physiological stability and long-term neurodevelopment. Pharmacological interventions have limitations and potential side effects in this vulnerable population.

There is an urgent need for **safe, simple, and cost-effective non-pharmacological strategies** that nurses can readily implement.





# Research Objective



## Primary Aim

Evaluate the effectiveness of white noise in reducing pain during venipuncture in premature infants



## Clinical Impact

Determine if white noise can be integrated into routine neonatal care as a practical intervention



## Quality of Care

Support more family-centered and humane neonatal care practices while reducing pharmacological reliance



# Study Design

01

## Population

40 premature infants admitted to NICUs at pediatric hospitals affiliated with Tehran University of Medical Sciences, Iran

02

## Randomization

Participants randomly assigned to intervention group (white noise) or control group (routine care)

03

## Intervention

White noise delivered via headphones from 5 minutes before venipuncture until 10 minutes afterward

04

## Assessment

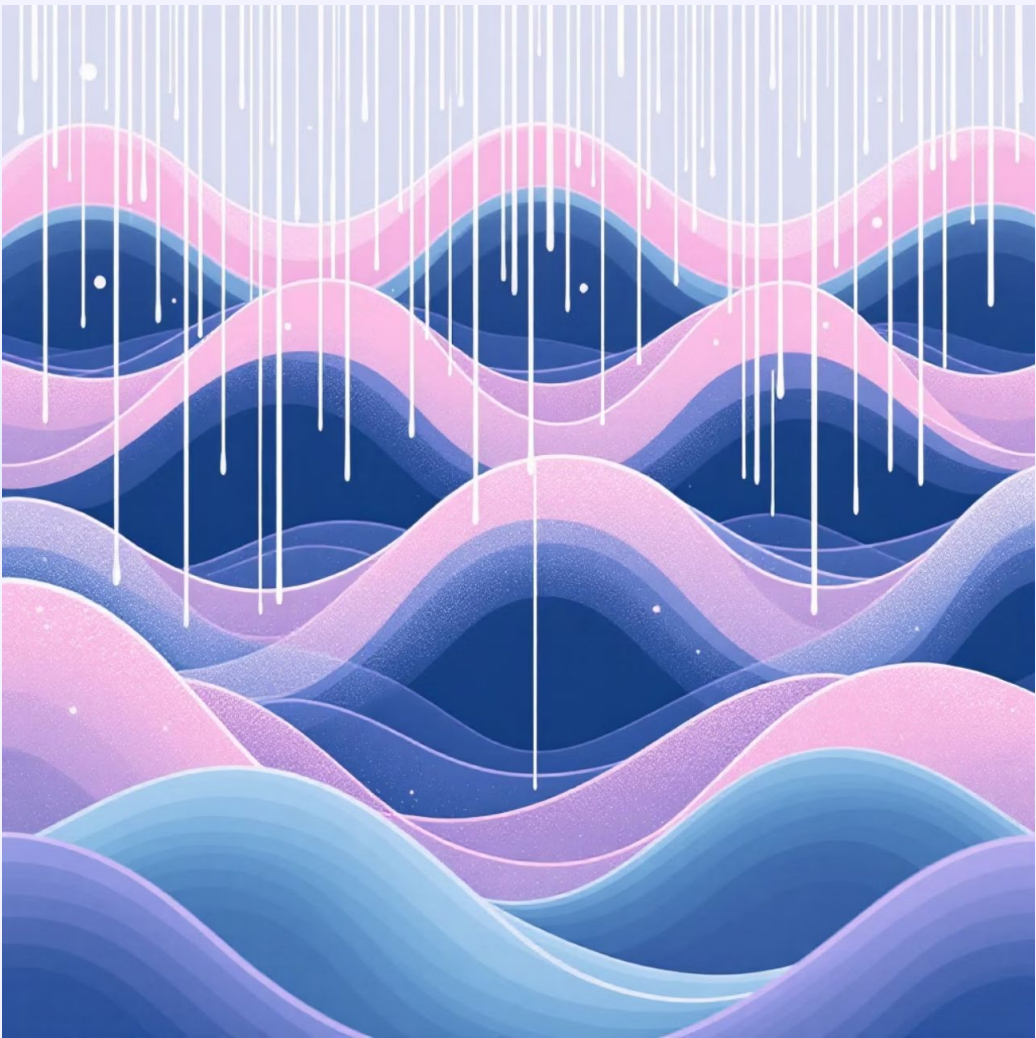
Pain intensity measured using Premature Infant Pain Profile (PIPP) at six time points

05

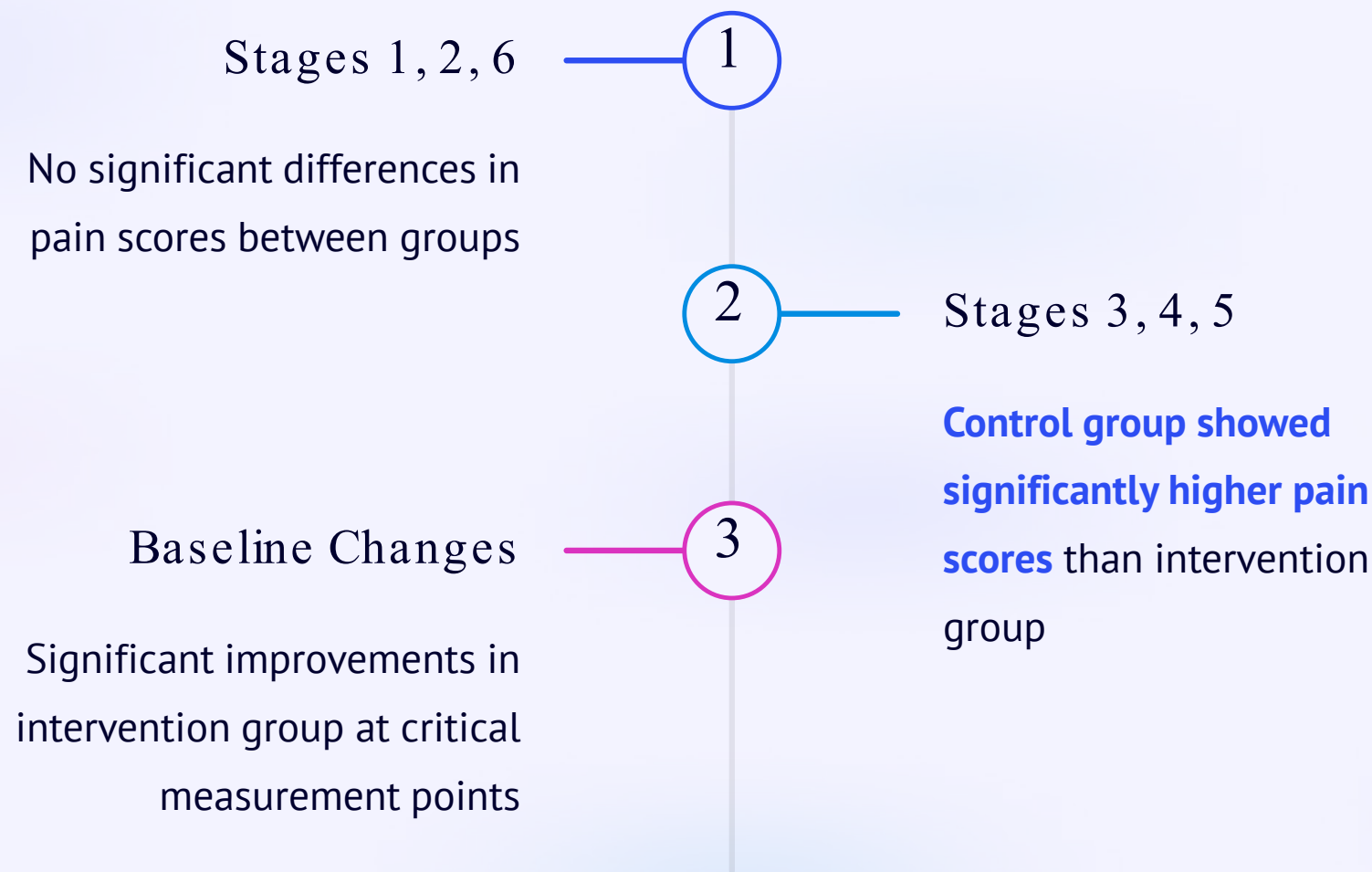
## Analysis

Data analyzed using SPSS version 27 for statistical significance

# Key Findings



## White Noise Significantly Reduced Pain



# Pain Score Comparison

The intervention group demonstrated consistently lower pain intensity during the critical phases of venipuncture





# Clinical Implications



## Safe & Simple

White noise is a non-invasive intervention with no side effects, making it ideal for vulnerable premature infants



## Nurse-Led Implementation

Nurses can readily integrate this method into routine care, enhancing their role in pain management



## Cost-Effective

Minimal resource requirements allow for easy adoption across diverse clinical settings and resource levels



## Family-Centered Care

Supports more humane neonatal practices and reduces infant stress during hospitalization





# White noise effectively reduces pain intensity during venipuncture

This simple intervention can enhance neonatal pain management and improve the overall quality of care in NICUs worldwide



# Conclusions & Next Steps



## Evidence-Based Practice

White noise, particularly gentle rain sounds, is proven effective for pain reduction in premature infants



## NICU Integration

Implement white noise protocols in neonatal units to decrease reliance on pharmacological interventions



## Global Adoption

Scale this low-cost intervention across diverse healthcare settings worldwide

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