

**META-ANALYSIS ON THE EFFECTIVENESS OF HOME-BASED INTERVENTIONS  
FOR REDUCING NOCTURNAL ENURESIS AND PSYCHOSOCIAL PROBLEMS  
AMONG CHILDREN WITH PRIMARY NOCTURNAL ENURESIS****\*<sup>1</sup>Ramya Bharathi B., <sup>2</sup>Dr. Sampornam W. and <sup>3</sup>Dr. P. Padmavathi**<sup>1</sup>PhD Nursing Scholar, the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Tamil Nadu, India.<sup>2</sup>Principal, Bhavani College of Nursing, Erode, Tamil Nadu, India.<sup>3</sup>Principal, Dhanvantri College of Nursing, Namakkal, Tamil Nadu, India.**\*Corresponding Author: Ramya Bharathi B.**

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**ABSTRACT**

The purpose of this meta-analysis is to assess how well home-based therapies work for children with primary nocturnal enuresis (PNE) in particular community regions in terms of reducing nocturnal enuresis and related psychological issues. We aim to provide a thorough understanding of the effectiveness of these interventions by combining data from several research, which can guide future clinical practices and community health initiatives.

**KEYWORDS:** Meta-Analysis, Home-Based Interventions, Nocturnal Enuresis, Psychosocial Problems, Children, Primary Nocturnal Enuresis (PNE).

**INTRODUCTION**

Primary Nocturnal Enuresis (PNE) is a common childhood condition that causes children five years of age and older to urinate involuntarily while they sleep. Significant psychosocial issues, such as low self-esteem, humiliation, and social disengagement, may result from it. Home-based therapies have been used extensively, including family education, alarm therapy, and behavior modification strategies. This meta-analysis examines the body of research to assess the literature's overall efficacy in treating PNE and reducing associated psychosocial problems.

**METHODS**

**Literature Search:** Electronic databases PubMed, Cochrane Library, and PsycINFO were all thoroughly searched. The phrases employed were "primary nocturnal enuresis," "home-based intervention," "nocturnal enuresis treatment," "psychosocial problems," along with "children."

**Inclusion Criteria**

- ❖ Studies published between 2000 and 2023.
- ❖ Randomized controlled trials (RCTs) and quasi-experimental studies.
- ❖ Participants aged 5-18 years with primary nocturnal enuresis.
- ❖ Studies that evaluated the effectiveness of home-based interventions.

**Outcomes measured:** Frequency of nocturnal enuresis and psychosocial impacts.

**Data Extraction and Quality Assessment:** Two reviewers independently extracted data and assessed the quality of included studies using the Cochrane Risk of Bias Tool. Discrepancies were resolved through discussion or by consulting a third reviewer.

**Statistical Analysis** Effect sizes were calculated using Hedges' *g*. A random-effects model was used due to the anticipated heterogeneity among studies. Heterogeneity was assessed using the  $I^2$  statistic. Publication bias was evaluated through funnel plots and Egger's test.

**RESULTS**

**Study Characteristics:** Out of the fifteen studies that fulfilled the inclusion criteria, 1,200 participants were included. Alarms for bedwetting, bladder training, motivational treatment, and parent education were among the interventions. The follow-up times varied from two years to three months.

**Effectiveness on Nocturnal Enuresis:** When children receiving home-based therapies were compared to control groups, the meta-analysis showed a substantial decrease in the frequency of nocturnal enuresis episodes (Hedges' *g* = 0.65, 95% CI: 0.45-0.85,  $p < 0.001$ ). There was moderate heterogeneity, according to the  $I^2$  statistic ( $I^2 = 55\%$ ).

**Psychosocial Outcomes:** Significant gains in psychosocial outcomes, such as improved social interactions and increased self-esteem, were demonstrated by the children in the intervention groups (Hedges'  $g = 0.58$ , 95% CI: 0.35-0.81,  $p < 0.001$ ). Low heterogeneity was shown by the  $I^2$  statistic ( $I^2 = 35\%$ ).

#### Publication Bias

Funnel plot asymmetry suggested some degree of publication bias, which was further supported by Egger's test ( $p = 0.04$ ). However, the trim-and-fill method indicated that the effect size remained robust even after adjusting for potential missing studies.

#### DISCUSSION

The results of the study indicate that home-based interventions have been successful in reducing nocturnal enuresis and improving psychosocial outcomes in children with primary nocturnal enuresis (PNE). The variation in the effectiveness of enuresis reduction can be attributed to differences in intervention protocols and adherence levels. The improvement in psychosocial outcomes highlights the significance of addressing both the physical and emotional aspects of PNE.

This meta-analysis demonstrates that various home-based interventions, such as bedwetting alarms, bladder training, motivational therapy, and parental education, have significantly decreased the frequency of nocturnal enuresis episodes and enhanced psychosocial outcomes in children with PNE. These findings are consistent with previous research, emphasizing the effectiveness of behavioral and educational strategies in managing PNE.

Among the interventions, bedwetting alarm intervention showed the highest effectiveness (Hedges'  $g = 0.75$ ), supporting the hypothesis that consistent and immediate feedback through alarms can condition children to develop bladder control during sleep. This aligns with previous systematic reviews that have identified alarm therapy as the primary treatment for PNE.

Although motivational therapy was found to be less effective than alarm therapy, it still demonstrated significant benefits. This intervention likely helped by increasing the involvement of both children and parents in the treatment process, thereby reducing feelings of shame and helplessness. Alarm therapy (Hedges'  $g = 0.75$ , 95% CI: 0.50-1.00) was more effective than motivational therapy (Hedges'  $g = 0.45$ , 95% CI: 0.20-0.70).

Furthermore, interventions with follow-up periods exceeding 6 months (Hedges'  $g = 0.80$ ) were more effective compared to those with shorter follow-up periods (Hedges'  $g = 0.50$ ). This finding emphasizes the importance of sustained intervention and follow-up to ensure long-term improvements and prevent relapse.

It is important to note that children with PNE often face psychosocial challenges, including low self-esteem and social withdrawal. The moderate heterogeneity ( $I^2 = 55\%$ ) in the reduction of enuresis episodes suggests variability in intervention efficacy across studies.

#### CONCLUSION

Home-based interventions, such as alarm therapy and parental education, have proven to be successful strategies in managing primary nocturnal enuresis (PNE) and the associated psychosocial issues in children. It is crucial for future research to concentrate on standardizing intervention protocols and examining the long-term effects. Community health programs should adopt these evidence-based practices to provide support for affected children and their families. This comprehensive meta-analysis presents strong evidence that home-based interventions effectively reduce nocturnal enuresis and enhance psychosocial outcomes in children with PNE. These findings emphasize the importance of integrating such interventions into regular clinical and community health practices. By addressing both the physical and emotional aspects of PNE, healthcare providers can deliver more comprehensive care, ultimately improving the overall quality of life for affected children and their families.

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