IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 7, July 2025

DOI: 10.17148/IARJSET.2025.12749

Repurposing Government Distributed Polycotton Sarees into Baby Cradles: A Sustainable Approach

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Abstract: Government-distributed polycotton sarees are often underutilized or discarded, contributing to textile waste. This study proposes a sustainable solution by repurposing these sarees into baby cradles. The cradle design integrates macramé knotting techniques and bamboo frames, ensuring safety, comfort, and cultural relevance. The research evaluates polycotton's properties, environmental impact, cradle ergonomics, and socio-economic benefits. The initiative supports waste reduction, maternal and infant welfare, and women-led microenterprises, aligning with circular economy principles.

Keywords: Polycotton sarees, baby cradles, textile upcycling, sustainable design, macramé, bamboo frame, circular economy.

I. INTRODUCTION

Government welfare programs distribute polycotton sarees to underprivileged women. Despite their utility, many sarees are unused, leading to environmental issues due to improper disposal. This research addresses this challenge by proposing an innovative repurposing model: transforming unused sarees into sustainable baby cradles. This solution bridges the gap between textile waste management and infant care accessibility, particularly in low-income communities. The objective is to reduce textile pollution and promote child safety through accessible cradle solutions made from reclaimed materials.

II. BACKGROUND AND NEED

Many rural families lack access to safe, affordable baby sleeping solutions. Concurrently, unused sarees become textile waste, posing ecological risks. This dual problem presents an opportunity to convert surplus fabric into functional cradles. The project leverages polycotton's properties—durability, breathability, and cost-effectiveness—for infant use.
The environmental impact of synthetic-blend fabrics like polycotton is significant, as they take decades to decompose. Traditional cradle-making techniques are being lost due to modern market trends. By combining sustainability with cultural relevance, this initiative encourages responsible consumption and preserves heritage.

III. MATERIALS AND METHODS

3.1 Materials Used:

- **Polycotton Sarees**: Cleaned, cut into strips, and stitched into ropes.
- **Bamboo**: Selected for its strength, flexibility, and sustainability.
- **Accessories**: Hooks, cushions, cotton tapes, padding for comfort, decorative elements.

3.2 Construction Process:

- **Rope Making**: Sarees are converted into macramé ropes using hemming and overlock stitching techniques.
- **Cradle Weaving**: Ropes are knotted into cradle nets using square knots and lark's head knots, arranged to form a hammock-like support.
- **Frame Assembly**: Bamboo poles are measured, sanded, treated for insects, and assembled into a stable frame using jute cords or eco-friendly adhesives.
- **Integration**: Ropes are suspended securely from the bamboo frame with reinforced anchoring and tested for durability under varying loads.

3.3 Safety and Aesthetic Considerations:

- Ensuring even weight distribution to avoid tipping or imbalance.

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- Double-knotting and reinforced loops to maintain structural integrity.
- Use of breathable padding and soft cushions for infant safety.
- Incorporation of traditional weaving patterns, tassels, and eco-friendly dyes.

IV. RESULTS AND DISCUSSION

The final cradle demonstrated strength, comfort, and visual appeal. The breathable nature of polycotton reduced heat retention, ensuring comfort even in warm climates. Bamboo's resilience supported the entire setup without creaking or instability.

A survey of 20 women from self-help groups (SHGs) showed 85% interest in replicating the design for local use and income generation. The cost analysis revealed that each cradle could be made under ₹500, making it highly affordable compared to market equivalents.

Focus group discussions highlighted cultural pride in using traditional knotting styles. Mothers reported feeling secure placing their babies in cradles made by their community members, creating emotional and functional value.
Further testing revealed that the cradles held up under stress tests simulating real infant movement. Wear and tear assessments confirmed a projected usable life of 6–12 months with proper care.

V. CONCLUSION

Repurposing polycotton sarees into cradles offers a dual benefit: reducing textile waste and enhancing infant care in resource-constrained settings. The design blends tradition with innovation, promoting sustainable development goals. With scalability, this model could influence policy and grassroots entrepreneurship.

The approach not only addresses environmental and childcare challenges but also empowers rural women with livelihood opportunities. The incorporation of traditional craft enhances cultural continuity while encouraging eco-conscious consumer behaviour.

VI. FUTURE SCOPE

- Expand the model to include additional products like hanging chairs, mats, or carriers.
- Partner with NGOs and government programs for training modules and funding.
- Conduct long-term impact studies on cradle safety, infant health, and economic upliftment.
- Explore biodegradable treatments for polycotton to improve its end-of-life disposal.

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