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The Impact of Table Lamp Design on Interior Lighting Efficiency and Energy Consumption in Indian Households: A Comparative Analysis

Research Team, Table Lamp Industry Association India

Abstract - This study examines the energy efficiency and design characteristics of table lamps used in Indian residential spaces. Through a comprehensive survey of 500+ households across India's tier-1 and tier-2 cities, we analyzed the performance of three lamp technologies: traditional incandescent, halogen, and LED-based table lamps.

Key Findings:

• LED table lamps consume 75-85% less energy than incandescent models

• Average annual savings: ₹2,400-3,600 per household

• Design aesthetics influence purchasing decisions in 68% of cases

• Brass and wood materials remain preferred in 71% of households

• LED lamps have 25,000+ hour lifespan vs. 1,000 hours for incandescent

METHODOLOGY

Sample Size: 500+ households

Duration: 6 months (October 2025 - March 2026)

Geographic Coverage: Mumbai, Delhi, Bangalore, Hyderabad, Pune, Chennai

Data Collection: Smart meter readings, usage surveys, design preference analysis

Variables Measured:

1. Energy consumption (kWh per month)
2. Brightness output (lumens)
3. Design materials (brass, wood, glass, ceramic)
4. Usage patterns (hours per day)
5. User satisfaction (aesthetic, functional, cost)

RESULTS

1. Energy Consumption Analysis

LED Lamps: 8-12W average

Halogen: 40-60W average

Incandescent: 60-100W average