

A Quasi-Experimental Study to Assess the Effectiveness of an Information Booklet on Knowledge and Expressed Practices Regarding Health Hazards of Plastic Uses and Its Disposal Among Women in Selected Rural Areas of Shimla (H.P.)

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Abstract: ***Background:** Rapid modernization and population growth have led to an exponential increase in plastic consumption, presenting severe environmental and public health challenges- particularly in rural areas with limited waste infrastructure. Women, as primary domestic managers, play a crucial role in handling household plastics. **Objective:** To evaluate the effectiveness of an Information Booklet on knowledge and expressed practices regarding the health hazards of plastic use and disposal among rural women in Shimla, Himachal Pradesh. **Methodology:** A quantitative approach with a non-randomized two-group pre-test/post-test quasi-experimental design was conducted among 100 rural women (50 experimental, 50 control) selected via convenience sampling from Bharara and Kiaritoo villages in Shimla. Data were collected using a self-structured knowledge questionnaire (30 items) and a 3-point Likert scale (20 items) for expressed practices. The experimental group received an Information Booklet intervention, followed by a post-test after 7 days. **Results:** At pre-test, 98% of the experimental group and 96% of the control group had poor knowledge. Post-intervention, 68% of the experimental group achieved good knowledge and 32% achieved moderate knowledge, whereas 98% of the control group remained at a poor level. The mean knowledge score in the experimental group increased significantly from 9.92 $\pm$ 2.55 to 24.96 $\pm$ 3.73 ($t = 23.709$, $p < 0.001$). Mean expressed practice scores in the experimental group also improved significantly from 43.24 $\pm$ 3.53 to 47.68 $\pm$ 3.39 ($t = 6.250$, $p < 0.001$). **Conclusion:** The Information Booklet was highly effective in raising awareness and improving self-reported plastic handling practices among rural women.*

Keywords: Information Booklet, Plastic Disposal, Health Hazards, Knowledge, Expressed Practices, Rural Women, Community Health Nursing

1. Introduction

Plastic pollution is a global crisis. The accumulation of synthetic polymers in ecosystems poses documented risks to biological health, including respiratory dysfunction, endocrine disruption, and carcinogenic exposures due to toxic additives such as Bisphenol A (BPA) and phthalates.

In India, municipal solid waste management in rural and hilly terrains remains a persistent ecological challenge. In the state of Himachal Pradesh, non-biodegradable waste generation in rural areas threatens local drainage, soil quality, and livestock health. Women frequently handle household waste, food storage, and cooking utensils, making them key agents for environmental health interventions. Educational strategies tailored to rural communities are essential to bridge the gap between awareness and safe disposal practices.

2. Methodology

1) **Research Design:** Quasi-experimental, non-randomized

two-group pre-test post-test design ($NR_{E O_1} X O_2$ vs. $NR_C O_1 - O_2$).

2) **Setting:** Rural communities of Bharara (Experimental) and Kiaritoo (Control) in District Shimla, Himachal Pradesh.

3) **Sample & Sampling:** 100 rural women aged 18 years and above (50 in Experimental, 50 in Control), selected via convenience sampling.

4) **Instruments:**
Section I: Socio-demographic profile (Age, Education, Occupation, Income, Water Storage, Waste Collection).
Section II (a): Self-Structured Knowledge Questionnaire (30 items; Score range 0–30: Good 23–30, Moderate 15–22, Poor 0–14).

Section II (b): 3-point Likert Scale for Expressed Practices (20 items; Score range 20–60: Good 48–60, Moderate 34–47, Poor 20–33).

5) **Reliability & Validity:** Content validity was established by 14 experts in nursing and community health. Tool reliability was confirmed via Karl Pearson's test ($r = 0.90$).

6) **Intervention:** An illustrated Information Booklet

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covering plastic types, health risks (leaching, toxicity), safe alternatives, and proper disposal methods was distributed to the experimental group following the pre-test.

and engaged in farming or domestic work with monthly household incomes under ₹20,000. Notably, 46% of experimental participants reported no formal local waste collection service.

3. Results

1) Baseline Demographic Characteristics:

Participants in both groups were comparable at baseline: the majority fell into the 26–33 age group (42% Experimental, 38% Control), held secondary or graduate-level education,

2) Pre-Test vs. Post-Test Knowledge Scores:

At pre-test, baseline knowledge was overwhelmingly poor across both groups (98% Experimental, 96% Control). Post-intervention, knowledge levels improved markedly in the experimental group.

Group	Phase	Poor f (%)	Moderate f (%)	Good f (%)	Mean $\pm$ SD	t-value	p-value
Experimental (n=50)	Pre-Test	49 (98%)	1 (2%)	0 (0%)	9.92 $\pm$ 2.55	23.709	<0.001*
	Post-Test	0 (0%)	16 (32%)	34 (68%)	24.96 $\pm$ 3.73		
Control (n=50)	Pre-Test	48 (96%)	2 (4%)	0 (0%)	9.76 $\pm$ 2.50	1.763	0.084 ^{NS}
	Post-Test	49 (98%)	1 (2%)	0 (0%)	10.14 $\pm$ 2.40		

Between-group post-test comparison (Unpaired t-test): $t = 23.627$, $p < 0.001$.

Pre-Test vs. Post-Test Expressed Practice Scores

Group	Phase	Moderate f (%)	Good f (%)	Mean $\pm$ SD	t-value	p-value
Experimental (n=50)	Pre-Test	44 (88%)	6 (12%)	43.24 $\pm$ 3.53	6.250	<0.001*
	Post-Test	23 (46%)	27 (54%)	47.68 $\pm$ 3.39		
Control (n=50)	Pre-Test	38 (76%)	12 (24%)	44.40 $\pm$ 4.04	1.339	0.187 ^{NS}
	Post-Test	42 (84%)	8 (16%)	43.38 $\pm$ 3.76		

Between-group post-test comparison (Unpaired t-test): $t = 6.004$, $p < 0.001$.

4. Discussion & Conclusion

The findings demonstrate that structured instructional materials like Information Booklets significantly enhance community health literacy regarding environmental hazards. Before the study, baseline awareness was minimal despite widespread daily plastic usage, reflecting a common trend in rural settings where public health messaging around solid waste is limited.

Following the intervention, the experimental group showed statistically significant gains in both knowledge ($p < 0.001$) and expressed practices ($p < 0.001$), supporting the research hypotheses (H_1). Integrating structured educational modules into primary healthcare and community health nursing workflows offers an effective, low-cost approach to reducing environmental plastic exposure and encouraging safer domestic disposal habits.

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