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# Knowledge regarding household waste disposal among people living in rural areas.

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## ABSTRACT

Background: Household waste management is an important component of environmental sanitation. Improper segregation, storage and disposal may contribute to soil, water and air pollution and create conditions that support vectors and disease transmission. Knowledge among community members is important for promoting safer waste-management practices.

**Aim**: To assess the knowledge regarding household waste disposal among people living in selected rural areas and to examine the improvement in knowledge following health education.

**Methods:** The supplied project report describes a quantitative approach and a pre-experimental one-group pre-test and post-test design. Thirty participants from a selected rural area of Ganapathy were selected by non-probability convenience sampling. A structured questionnaire was used to assess the knowledge regarding household waste disposal among people living in rural areas. Health education on household waste management was provided between the pre-test and post-test. The reported analysis included frequency, percentage, mean, standard deviation, paired t-test and chi-square.

**Results**: In the pre-test, 19 participants (63.3%) had inadequate knowledge, 6 (20.0%) had moderately adequate knowledge and 5 (16.7%) had adequate knowledge. In the post-test, all 30 participants (100%) were classified as having adequate knowledge. The mean knowledge score was increased from 9.23 (SD 4.88) to 19.23 (SD 1.07). The project reported a paired t value of 12.04 at the 0.05 significance level.

**Conclusion**: The project findings indicate a marked improvement in knowledge after health education. Community-based teaching on segregation, composting, recycling and safe disposal may support environmental sanitation. The report contains limitations in the measurement of practice and in the reported association statistics; these should be checked against the original data before formal publication.

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**Keywords**: household waste disposal; rural community; knowledge; health education; environmental sanitation; nursing.

## INTRODUCTION

Household waste is generated through routine domestic activities such as cooking, cleaning and personal care. It may include biodegradable materials, such as food remnants and garden waste, as well as non-biodegradable materials, such as plastics, glass and metals. The way waste is separated, stored, collected and disposed of influences environmental cleanliness and community health.

Improper disposal methods include open dumping, uncontrolled burning and disposal into drains or water bodies. Accumulated waste can attract flies, mosquitoes and rodents, while burning mixed waste can expose nearby residents to smoke and harmful pollutants. Waste entering drains and water sources can contribute to environmental contamination. These concerns make household waste management a relevant subject for community health education.

Rural communities may face barriers such as limited waste collection services, inadequate disposal facilities, low awareness and long-standing household practices. Even when individuals understand the value of segregation, they may find it difficult to practise it consistently if suitable containers, collection services or community facilities are unavailable.

Knowledge is one factor that can support appropriate practice. Understanding the difference between biodegradable and n  mnbyvtc4ron-biodegradable waste, using separate containers, composting suitable organic waste, reusing or recycling materials and avoiding open burning can help households manage waste more safely. Community health nurses can contribute through health education, demonstrations, family visits and coordination with local services.

## NEED FOR THE STUDY

The supplied project identifies a need to assess knowledge and existing practices regarding household waste disposal among rural residents. A local assessment can identify areas where people require further explanation and can guide a structured health education programme. The project was conducted in a selected rural area of Ganapathy, Coimbatore, among 30 participants.

The pre-test results in the project showed that nearly two-thirds of participants had inadequate knowledge. This finding supports the importance of focused education on waste segregation, storage, recycling, composting and safe disposal. The present manuscript summarizes the reported study and its educational findings.

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## STATEMENT OF THE PROBLEM, OBJECTIVES AND HYPOTHESES

### Statement of the problem

"A study to assess the knowledge regarding household waste disposal among people living in selected rural areas."

### Objectives

• To assess the level of pre test knowledge regarding household waste disposal among people living in selected rural areas.

• To provide health education regarding household waste disposal among people living in selected rural areas

• To assess the level of posttest knowledge regarding household waste disposal among people living in selected rural areas.

To associate the level of Knowledge regarding household waste disposal with selected demographic variables among rural people

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### Hypotheses as stated in the project

**Research hypothesis (H1):** There will be a significant association between pre test and post test knowledge regarding household waste disposal among people living in selected rural areas and their selected demographic variables.

**Null hypothesis (H2):** There will be no significant association between pre test and post test knowledge regarding household waste disposal among people living in selected rural areas and their selected demographic variables.

### Operational definitions

**Knowledge**: Understanding and awareness of household waste disposal methods, including segregation, storage and disposal, as measured by a structured questionnaire.

**Household waste disposal**: Handling, segregation and disposal of waste generated through routine domestic activities.

**Rural people**: Individuals residing in the selected rural area and available during data collection.

### Delimitations

• The study was limited to a selected rural area and a small sample of 30 participants.

• Participants were selected based on availability and willingness.

• Assessment was conducted using a structured questionnaire within the study period.

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## REVIEW OF RELATED LITERATURE

The supplied project organizes the literature into three areas: knowledge regarding household waste disposal, household waste disposal practices, and factors influencing waste disposal in rural areas. The following synthesis retains the themes and selected citations listed in the project report.

### Knowledge regarding household waste disposal

The project review describes studies reporting gaps in rural residents' understanding of waste segregation, composting, recycling and the health effects of unsafe disposal. Kumar (2018), Sharma (2019), Verma (2020), Rao (2021), Patil (2017), Singh (2022) and Reddy (2019) are cited in the project as examples of research highlighting the need for awareness programmes and practical teaching. The review also notes that education and contact with health workers may support better awareness.

### Factors influencing waste disposal in rural areas

The review identifies education, income, occupation, access to information, community participation, local leadership and availability of waste-management facilities as factors that may influence household practices. It suggests that health education should be accompanied by practical support and community participation.

### Relevance to the present study

The reviewed themes support the assessment of local knowledge and the use of structured health education. The present study contributes a small community-based pre-test and post-test assessment from Ganapathy. The results should be interpreted as findings from this sample rather than generalized to all rural populations.

## MATERIALS AND METHODS

### Research approach and design

The project describes a quantitative research approach and a pre-experimental one-group pre-test and post-test design. The sequence is represented as $O_1 \rightarrow X \rightarrow O_2$, where $O_1$ is the pre-test assessment, X is health education regarding household waste management, and $O_2$ is the post-test reassessment of knowledge.

### Setting and population

The study was conducted among people living in a selected rural area of Ganapathy, Coimbatore, Tamil Nadu. The target population consisted of people living in the selected rural area. The accessible population comprised individuals available during the period of data collection.

### Sample and sampling technique

The sample consisted of 30 participants. Non-probability convenience sampling was used to select participants who were available and willing to participate.

### Selection criteria

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• Inclusion: residents of the selected rural area who were willing and available, able to understand the questionnaire, and willing to participate in the pre-test, health education and post-test.

• Exclusion: individuals unwilling or unavailable, those unable to understand the questionnaire, and those who had already participated in a similar waste-management educational programme during the study period.

**Study variables**

The project identifies health education regarding household waste management as the independent variable. Knowledge regarding household waste disposal are identified as dependent variables. Demographic variables include age, gender, educational status, occupation, monthly family income, type of family, number of family members and previous source of information.

## DATA COLLECTION TOOL AND PROCEDURE

**Description of the tool**

The project describes a tool with two sections. Section A collects demographic information, including age, gender, education, occupation, monthly family income, type of family, number of family members and previous source of information regarding household waste disposal. Section B is a structured knowledge questionnaire covering the meaning and types of household waste, biodegradable and non-biodegradable waste, segregation, storage, recycling, reuse, composting, safe disposal and health hazards.

**Health education intervention**

After the pre-test, health education was provided on the meaning and types of household waste; wet and dry waste; waste segregation; proper storage; recycling and reuse; composting of biodegradable waste; safe disposal of non-biodegradable waste; harmful effects of improper disposal; prevention of vector breeding; and the role of community members in environmental sanitation. Teaching methods listed in the project include lecture, group discussion, question-and-answer and demonstration. Teaching aids include charts, posters, flashcards and pictures.

**Data Collection Sequence**

| Step | Activity |
|---|---|
| 1. | Permission from the concerned authority |
| 2. | Selection of 30 participants |
| 3. | Obtaining the informed concerned |
| 4. | Pre - test assessment |
| 5. | Health education on household waste management |
| 6. | Post – test reassessment of knowledge |
| 7. | Tabulation and statistical analysis |

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### Ethical considerations

The project methodology should document permission from the relevant authority, informed consent, voluntary participation and confidentiality. The source material supplied for this manuscript does not provide the committee's name or approval number; these details should be added only if documented by the researcher.

## RESULTS: SOCIODEMOGRAPHIC PROFILE

A total of 30 people participated in the study. The demographic frequencies and percentages below are reproduced from the supplied project report.

| Variable | Category | Frequency | Percentage |
|---|---|---|---|
| Age | Adolescents | 4 | 13.3% |
| | Adults | 25 | 83.3% |
| | Geriatric | 1 | 3.3% |
| Gender | Male | 6 | 20.0% |
| | Female | 24 | 80.0% |
| Education | Illiterate | 4 | 13.3% |
| | Up to HSC | 12 | 40.0% |
| | Degree | 14 | 46.7% |
| Occupation | Farmer | 7 | 23.3% |
| | Business | 5 | 16.7% |
| | Housewife | 12 | 40.0% |
| | Others | 6 | 20.0% |
| Monthly Income | Below 10000 | 17 | 56.7% |
| | 11000-30000 | 10 | 33.3% |
| | 31000-60000 | 3 | 10.0% |

**Interpretation:** Most participants were adults (83.3%) and female (80.0%). Nearly half had a degree (46.7%), while 13.3% were illiterate. Housewives formed the largest occupational group (40.0%). More than half of the participants (56.7%) reported a monthly family income below 10,000.

## RESULTS: PRE-TEST KNOWLEDGE

**Table 2. Frequency and percentage distribution of pre-test knowledge (n=30)**

| Knowledge Level | Frequency | Percentage |
|---|---|---|
| Adequate Knowledge | 5 | 16.7% |
| Moderately adequate knowledge | 6 | 20% |
| Inadequate knowledge | 19 | 63.3% |

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| | | |
|---|---|---|
| Total | 30 | 100% |

**Interpretation:** The pre-test findings show that 19 participants (63.3%) had inadequate knowledge regarding household waste disposal. Six participants (20.0%) had moderately adequate knowledge, while only five (16.7%) had adequate knowledge. Thus, most participants had inadequate knowledge before the health education programme.

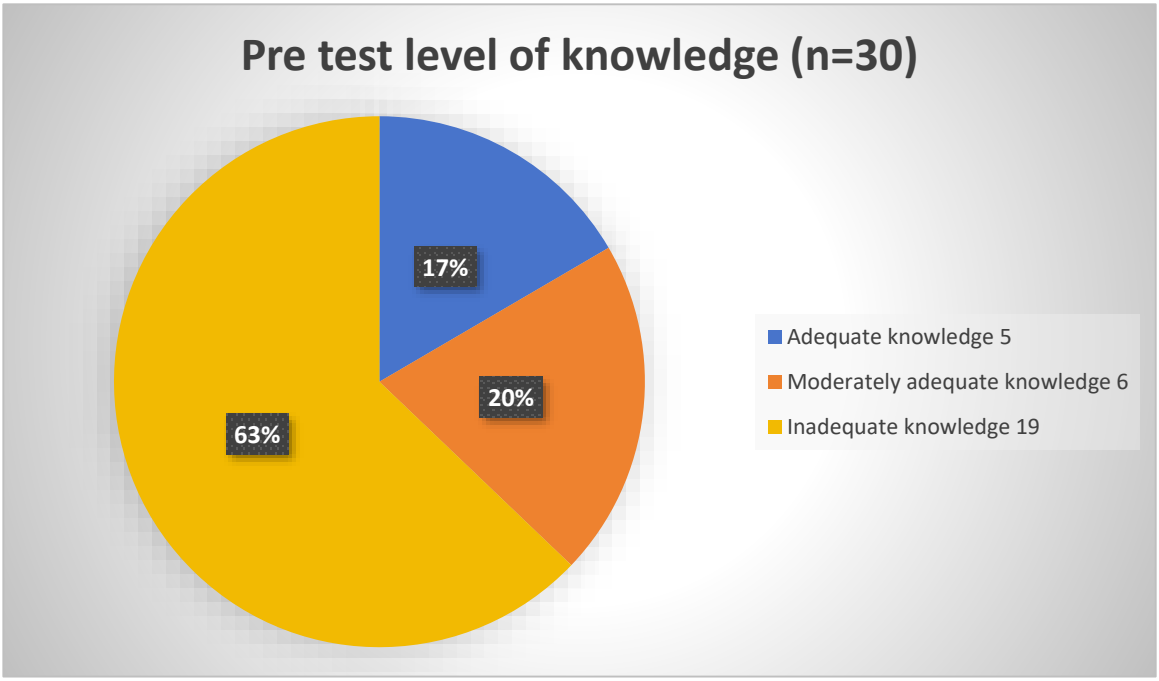



Figure 1. Pie chart showing pre-test knowledge categories

## RESULTS: POST-TEST AND COMPARISON OF KNOWLEDGE

**Table 3. Frequency and percentage distribution of post-test knowledge (n=30)**

| Knowledge Level | Frequency | Percentage |
|---|---|---|
| Adequate Knowledge | 30 | 100% |
| Moderately adequate knowledge | 0 | 0% |
| Inadequate knowledge | 0 | 0% |
| Total | 30 | 100% |

**Interpretation:** In the post-test, all 30 participants (100%) were classified as having adequate knowledge. No participant was classified as having moderately adequate or

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inadequate knowledge. This represents a marked improvement in the reported knowledge categories after health education.

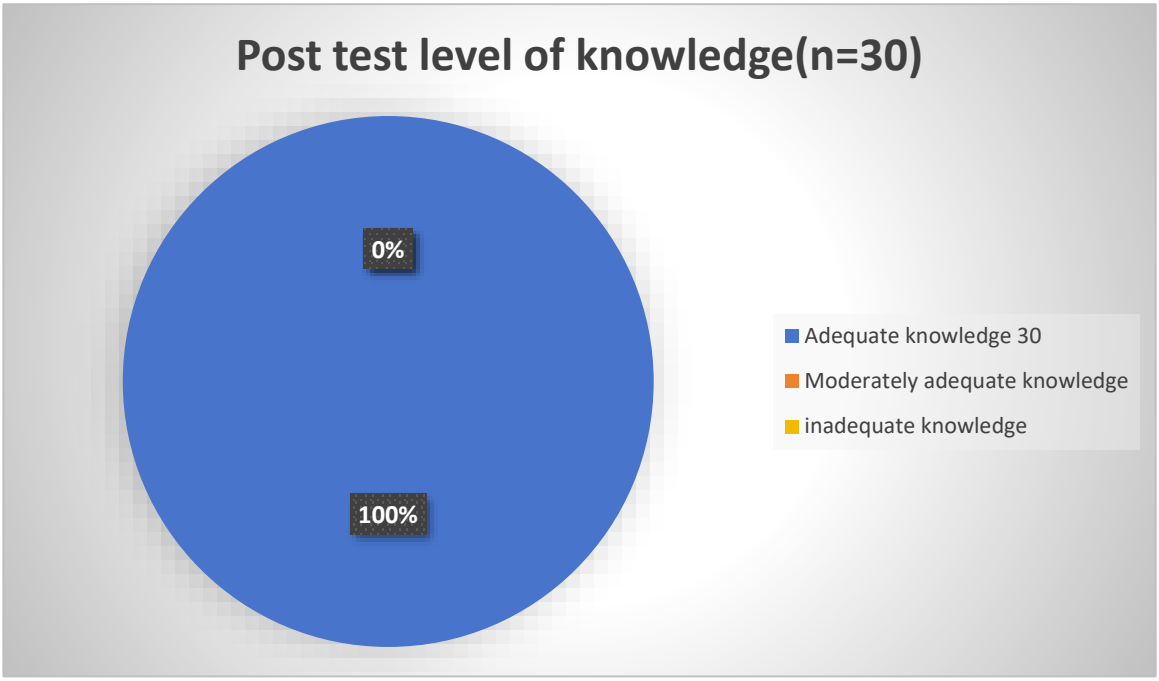



Figure 2. Pie chart showing post-test knowledge categories

**Table 4. Comparison of pre-test and post-test mean knowledge scores**

| Assessment | Mean | Standard Deviation | Paired "t" value | Significance level |
|---|---|---|---|---|
| Pre - test | 9.23 | 4.88 | 12.04 | 0.05 |
| Post - test | 19.23 | 1.07 | - | - |

**Interpretation:** The mean knowledge score increased from 9.23 in the pre-test to 19.23 in the post-test, a difference of 10 points. The project reports a paired t value of 12.04 and states that the difference was statistically significant at the 0.05 level.

## ASSOCIATION ANALYSIS AND DISCUSSION

**Table 5. Association between post-test knowledge and selected demographic variables as reported in the project**

| Demographic Variables | Chi square value | df | Reported p value | Project Interpretation |
|---|---|---|---|---|
| Age | 34.20 | 2 | <0.001 | Significant |
| Gender | 10.80 | 1 | 0.001 | Significant |
| Educational | 5.60 | 2 | 0.001 | Significant |

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| | | | | |
|---|---|---|---|---|
| qualification | | | | |

**Interpretation of reported findings:** The project reports statistically significant associations for age, gender and educational qualification at the 0.05 level. These values are presented as reported in the source project and require verification against the original contingency tables and participant-level data before submission or publication.

**Discussion**

The present study assessed knowledge regarding household waste disposal among 30 rural participants and evaluated knowledge following health education. In the pre-test, 63.3% had inadequate knowledge, indicating a need for education about household waste segregation, storage, composting, recycling and safe disposal. Following the programme, all participants were classified as having adequate knowledge. The mean score increased from 9.23 to 19.23, and the project reported a paired t value of 12.04.

The findings suggest that a structured educational session can improve questionnaire-based knowledge in this group. Health education can explain practical steps such as separating wet and dry waste, using suitable containers, composting biodegradable waste and avoiding open dumping or burning. However, improvement in knowledge should not automatically be interpreted as a demonstrated improvement in actual household practices.

**Important statistical and measurement note**

the project states that post-test knowledge was adequate for all 30 participants. If the post-test outcome truly has no variation, a chi-square test of post-test knowledge against demographic categories cannot produce a meaningful association. In addition, $\chi^2=5.60$ with df=2 does not correspond to p=0.001 under the usual chi-square distribution. The reported association table therefore needs recalculation from the original data. The manuscript does not silently correct or replace those values.

## CONCLUSION AND NURSING IMPLICATIONS

**Conclusion**

Among the 30 participants in the selected rural area of Ganapathy, inadequate knowledge regarding household waste disposal was common before health education. After the educational programme, all participants were reported to have adequate knowledge. The mean knowledge score increased from 9.23 to 19.23, and the project reported a statistically significant Pré-test/post-test difference. The findings support

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the use of community health education to improve awareness regarding household waste management.

**Nursing practice**

• Community health nurses can educate families about separating biodegradable and non-biodegradable waste.

• Nurses can demonstrate safe storage, composting, recycling and reuse of household materials.

• Nurses can encourage families to avoid open dumping and uncontrolled burning.

• Community health nurses can organize environmental sanitation awareness programmes with local leaders and health workers.

**Nursing education**

• Include household waste segregation and environmental sanitation in community health nursing teaching.

• Encourage nursing students to conduct demonstrations and community awareness sessions.

**Nursing administration**

• Support periodic community education programmes and provide suitable teaching materials.

• Coordinate with local authorities and community workers to strengthen waste collection and disposal support.

**Nursing research**

• Conduct larger studies to assess knowledge and directly observe household waste-disposal practices.

• Evaluate whether knowledge gains are maintained over time and translate into sustained practice.

**Limitations**

• The study included only 30 participants from one selected rural area, limiting generalizability.

• The assessment relied on a structured questionnaire and may be affected by response bias.

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• The project does not provide post-intervention practice results or a separate practice outcome table.

• The reported chi-square findings require verification because of inconsistencies in the reported outcome categories and p values.

## RECOMMENDATIONS AND REFERENCES

### Recommendations

• Conduct similar studies with larger samples in different rural and urban communities.

• Use direct observation or a validated checklist to assess actual household waste-disposal practices.

• Compare different teaching methods, such as demonstration, video-assisted teaching and group discussion.

• Conduct follow-up assessments to determine whether knowledge is retained and adopted in daily practice.

• Work with local bodies to improve access to waste collection, segregation containers and safe disposal facilities.

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