

Effectiveness of Information Booklet Regarding the Proper Disposal of Refuse and Sewage on Knowledge and Practice among Housewives in a Selected Rural Area

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Abstract: ***Background:** Inadequate solid waste management compromises public health, diminishes quality of life, and contaminates local air, water, and land resources. It further contributes to global warming and climate change, affecting the whole world. Inadequate waste management is recognised as a contributor to twenty-two human ailments and leads to countless premature fatalities annually. Communities living near waste disposal sites and wetlands have environmental issues such as air contamination, conflagrations, smoke, and floods. Chronic health issues such as asthma, bronchitis, hepatitis, jaundice, malaria, elephantiasis, and typhoid have also affected populations. Waste and sewage deemed detrimental to human health if not managed and disposed of properly. **Aim of the study:** The study's aim was to evaluate the effectiveness of Information Booklet regarding the proper disposal of refuse & sewage among housewives. Objectives of present study were to evaluate the effectiveness of information booklet regarding the proper disposal of refuse & sewage on knowledge & practice among housewives. **Methods:** **Approach:** A quasi - experimental research design was used in the present study. Total 60 samples were taken (one group pretest post-test design) by purposive sampling technique. Information Booklet was developed regarding the proper disposal of refuse & sewage on knowledge & practice among housewives & given to the housewives after pretest. Tools used were socio-demographic profile & self-structured knowledge questionnaire & practice checklist to collect the data from the subjects. Pre-test & post-test method used to test effectiveness of Information Booklet. **Result:** The present study revealed that initially a large proportion 47 (78.3%) subjects had inadequate knowledge & practiced below average level or poor practiced which after posttest improved & only 17 (28.3%) left in that category however 33 (55%) reached to average level & 10 (16.7%) was in good level of knowledge. The present study results revealed that out of 60 housewives, 46 (76.7%) housewives had practiced below average level disposal practices, 14 (23.3%) had practiced average practices on proper disposal of refuse & sewage, which was improved after intervention & only 35 % left in poor category while 41.7 % reached to average level & a remarkable 23.3 % reached to good level of practices which was only 0% in pretest. On comparison of pretest & posttest knowledge & practice scores there was a significant improvement seen in mean knowledge scores 10.72 ± 3.51 [before intervention] which after post-test increased to 15.65 ± 4.33 [after intervention] & practice scores 8.95 ± 2.99 [before intervention] which after post-test increased to 13.48 ± 4.01 [after intervention]. The increase in both mean scores was highly significant [$p < 0.05$]. There is no association between knowledge & practice with the selected demographic variables. **Conclusion:** - The result of the present study indicates that there was a significant difference between the mean of pre-test & posttest level of knowledge & practice scores among housewives regarding proper disposal of refuse & sewage. This was the evident that proved that the information booklet was found effective on knowledge & practices of housewives regarding the proper disposal of refuse & sewage.*

Keywords: Effectiveness, Information Booklet, proper disposal of refuse & sewage, rural area, knowledge & practices

1. Introduction

Properly disposing of waste & sewage is not just a personal responsibility; some kinds of waste, usually hazardous, must be properly disposed of according to law set forth by the Environmental Protection agency. Toxic waste can seep into the ground & contaminate our water supplies, & sometimes causes widespread diseases. Even non-toxic waste causes pollution that contributes to global warming & a general negative impact on the public health.¹

The United States has the dubious distinction of being the world's biggest solid waste producer. With only 4.6% of the world's population, Americans produces 33% of the world's solid waste 11 billion tons each year. Every day each person in every American household tosses away an average of 4.3 pounds of refuse.³

In India we produce 300 to 400 gms of solid waste per person per day in town of Normal size but exceptionally

about 500 to 800gms of solid waste is generated per capita per day in metro cities like Delhi & Bombay.⁷ According to The Energy Research Institute (TERI). "Our limited analysis suggests that unclean air & water may be taking a toll in terms of over eight lakh deaths in the country each year & morbidity costs amounting to 3.6% of GDP," the report said.⁶

The aggregate population of Uttar Pradesh according to the 2001 census is 5.273 crore (52.73), with urban areas comprising 33.98% and rural areas 66.01%. The urban demographic of 285 million is centralised in several major cities, with 32 metropolitan areas representing 34.5 percent of this population, projected to rise to 341 million by 2010 (Census of India, 2001). The projected trash volumes are anticipated to rise from 46 million tonnes in 2001 to 65 million tonnes by 2010. The attributes of garbage are anticipated to evolve as a result of urban development, heightened commercialisation, and improved living standards. The current trend is that the proportion of paper and plastics will rise, whilst the organic content will

diminish. According to current methodologies and projections about trash production, over 90% of the garbage created is disposed of in landfills, necessitating around 1200 hectares of land annually at an average depth of 3 meters. Due to rapid urbanization, prevailing land use regulation & completing demands for available land, it is desirable that adequate land be earmarked at the planning stage itself for solid waste disposal. The larger quantities of solid waste & higher degree of urbanization will necessitate better management involving a higher level of expenditure on manpower & equipment.⁸

The condition of environment is of vital concern for mankind, since it is directly linked with human welfare. The sheer size of many cities & their runaway growth rates makes the growth rate alarming of wastes. A sample survey indicated that about 350-400 grams of per capita per day solid waste is generated in an average Indian town. Collection & disposal of solid waste alone already consumes upto 50 per cent of some municipal operating budgets & only 50-70 per cent of urban trash is usually collected (Kala & Khan, 1994). Organic waste is the component of solid waste which when left uncleared causes various infectious diseases (Jensen, 1990). Like any problem, human beings can maximize or minimize the problem of solid waste to a longer extent. It is out of the personal habits that our living environments can be made better or worst. Generally, people use to throw garbage all around the Municipal committee bins & not inside the bin. Some don't even bother to come near the bin & throw garbage in open spaces or parks. Most people feel that the job of keeping neighborhood clean is that of Municipal Corporation. Generally, people don't dispose the garbage properly & dump it almost anywhere outside the house. The present study was thus planned to study the mode of garbage disposal by rural families⁶.

Some waste, such as yard trimmings & wood chips, can easily turn into vital part of garden or farm through composting. Composting replenishes soil nutrients & mitigates the need to purchase soil reclamation services. Also, not only does a compost pile divert organic waste from a landfill, it can even save communities money from having to buy commercial landfill covers.

A sewage system may transport wastewater by means of gravity to a sewage treatment facility. Sewage may also be gathered using low-pressure pumps and hoover systems. A low-pressure system employs a compact grinder pump situated at each connection point, usually a residence or commercial establishment. Vacuum sewage systems use variations in air pressure to transport liquids to a central vacuum facility. Generally, a vacuum sewer station can accommodate about 1,200 residences before it is more economically viable to construct an additional station.

2. Conceptual Framework of the Study

Conceptual framework is a group of related ideas, statements or concepts which deal with concept that are assembled by the virtue of their relevance to a common theme. A conceptual framework is an analogous to the frame of a house, just as the foundation supports a house. A theoretical

framework provides a rationale for predictions about the relationships among variables of a research study.

Conceptualization refers to the process of refining general or abstract ideas, which are formulated by generalizing from particular manifestations of certain behavior or characteristics. These abstracts are referred as concepts.

Conceptual framework facilitates communication & provides for the systematic approach to nursing research, education, administration & practice. The conceptual framework for the present study is based on **Pender's Health Promotion Model (Pender, 1996)**.

The model focuses on cognitive, perceptual & modifying factors & participation in health promotion behavior. The model also identifies factors that influence the health promotion activities.

In the present study the concepts from Pender's health promotion model are utilized where the housewives with their knowledge & practice about proper disposal of refuse & sewage act as agents for improving the methods of disposal of refuse & sewage ultimately bringing up the environmental development.

The focus of the model is to explain factors that influence the knowledge & practice of housewives regarding proper disposal of refuse & sewage.

Health promotion behavior of a housewife i.e, air borne, water borne & vector borne diseases through improper disposal of refuse & sewage, Efficient use of resources, promote healthy practices of refuse & sewage disposal etc. are influenced by many factors such as housewives' age, educational status, number of family members, family income, type of family, type of house & source of information.

If the housewife has adequate knowledge & practices proper methods of refuse & sewage disposal (cognitive perceptual factors), she is likely to engage in health promotional activity. If the housewife has inadequate knowledge & practices improper methods of refuse & sewage disposal (cognitive perceptual factors), she is likely to create interruption in health promotional activity According to this model, the house wife's knowledge & practices are modified by the factors like age, educational status, number of family members, family income, type of family, type of house & source of information.

These factors influence the housewives to engage in health promoting behaviors/activities like:

- Prevention of air borne; water borne & vector borne diseases through improper disposal of refuse & sewage
- Efficient use of resources
- Promote healthy practices in disposing the refuse & sewage
- Early identification of ailments resulting from improper disposal of refuse & sewage
- Regular & frequent cleaning of drainage & refuse disposal area
- Maintain good environmental hygiene

The findings of the study were aimed at the Identification of housewives' knowledge & practice regarding proper disposal of refuse & sewage.

Need of the Study

In rural areas the problems of refuse disposal are not of less concern. Unregulated dumping grounds pose a serious risk to the health of the environment. Toxic chemicals can leak from hazardous products & eventually find their way into water source & soil. The burning of garbage also contributes greenhouse gases in the atmosphere, a major part of global warming theory, according to the Environmental Protection Agency. Proper waste disposal uses liners to catch toxic chemicals that can leach into the ground, safely contain methane burned from trash.²

When people dispose of waste properly & protect the environment, this almost always carries with it added improvements to the public health. Reducing pollution lowers the chances of respiratory illness, & cleaner water lessens the risk of drinking dangerous chemicals. A good example of the potential dangers of illegal & unregulated dumping occurred in New Jersey during the late 1980's. Wind carried chromium from a nearby dump to local school & caused an epidemic of chromium poisoning. Primitive methods of excreta disposal, especially in rural areas where 80% per cent of population lives. The causes of most of the leading diseases in our country are deeply rooted in the especially with regard to disposal of waste & human excreta which is of vital importance to keep diseases away.²

Waste quantities are increasing at an alarming rate. By the year 2012 the 1 billion people in the world will be producing more than 2.5 billion tons of waste annually. Low-income countries will be contributing more than 50% of this, but their share will increase with economic growth & large cities such as China & India are already struggling with the proper disposal of large quantities of solid waste. Currently, the major expenditure is on collection & transportation but with more mechanization & with the need for proper disposal the share of disposal cost will raise. Many low-income countries are uncontrolled dumping & it might take more than 20 years to provide sanitary disposal of municipal solid waste. With the growth of trade & industries the proportion of hazardous industrial waste & its impact will also increase. Untreated sewage & Improper garbage disposal are also sources of environmental health hazards. Many First Nations & Inuit communities also lack adequate & which constitutes a health & safety hazard. Improperly disposed-of solid waste, which includes everything from bottles to plastics, appliances, oil drums & aluminum cans, may be a direct source of disease as organic material could pollute surface & ground waters that are used as drinking supplies, as well as spread disease more extensive solution such as establishing a landfill site to be used by a large number of people, or retaining services of a hydrologist or engineer may be required.²

Effective waste management is crucial for both rural and urban regions. Failing to do this may expose us to various risks, and undoubtedly, everyone is aware of this. Repeatedly, individuals are instructed on the significance of waste management; yet, this education must persist, since people tend to forget periodically. Certain children may mature, although despite having acquired the correct methods for garbage disposal, they are likely to eventually

overlook it. Sincere gratitude to those who endeavour to provide information and persist in assisting others. Indeed, it is evident that their circumstances are not straightforward, since many of them often engage in voluntary labour.

Objectives

The objectives of the study are:

- To assess the knowledge regarding the proper disposal of refuse & sewage among housewives before the intervention.
- To assess the knowledge regarding the proper disposal of refuse & sewage among housewives after the intervention.
- To assess the practice regarding the proper disposal of refuse & sewage among housewives before the intervention.
- To assess the practice regarding the proper disposal of refuse & sewage among housewives after the intervention.

Operational Definitions

- 1) **Knowledge** refers to information possessed by housewives' [before & after intervention] regarding proper disposal of refuse & sewage disposal.
- 2) **Practice** refers to a habitual or customary action or way of disposing the refuse & sewage.
- 3) **Proper disposal of refuse** refers to the collecting, treatment & disposing of solid waste or material that is discarded because it has served its purpose or is no longer useful.
- 4) **Sewage** refers to refuse liquids or waste matter usually carried off by sewers.
- 5) **Housewives** refer to married woman who dwells under same roof & composes a family.

Hypotheses

- H₁:** There will be significant effect of information booklet on knowledge regarding the proper disposal of refuse & sewage among housewives.
- H₂:** There will be significant effect of information booklet on practice regarding the proper disposal of refuse & sewage among housewives.
- H₃:** There will be significant association between pre-test knowledge & practice scores & selected demographic profiles of housewives

3. Materials and Methods

A quantitative research approach with a quasi-experimental one-group pre-test-post-test design was adopted to evaluate the effectiveness of an information booklet on proper disposal of refuse and sewage among housewives. The study was conducted in Adhar Khera, Lucknow, Uttar Pradesh. A total of 60 housewives who fulfilled the eligibility criteria were selected using a non-probability purposive sampling technique.

The independent variable was the information booklet on proper disposal of refuse and sewage, while knowledge and practice of housewives were considered dependent variables. Demographic variables included age, occupation, educational status, family size, type of family, type of house, monthly family income, and source of information.

Data were collected using a socio-demographic questionnaire, a 30-item self-structured knowledge questionnaire, and a 25-item practice checklist. Each correct response was awarded one mark. The tools were validated by nine nursing experts and translated into Hindi to ensure clarity and suitability. Reliability was established through the test-retest method, with a reliability coefficient of 0.89 for the knowledge questionnaire.

A pilot study involving 10 housewives was conducted to assess the feasibility of the study. During the main study, informed consent was obtained, followed by assessment of baseline knowledge and practice. The information booklet was then provided as the intervention, and the post-test was conducted during the second week after intervention.

Ethical approval was obtained from the Ethics Committee of Atal Bihari Vajpayee Medical University, Lucknow. Confidentiality and anonymity of participants were maintained throughout the study. Data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. A paired t-test was used to determine the effectiveness of the intervention, while the chi-square test was applied to assess associations between selected demographic variables and pre-test knowledge and practice scores.

4. Data Analysis & Interpretation

The analysis & interpretation of data of this study are based on data collected through structured knowledge questionnaire & practice checklist. The data collected from 60 housewives & data was analyzed using descriptive & inferential statistics based on the objectives of the study & hypotheses to be tested.

1) Pre-test knowledge scores of housewives regarding the proper disposal of refuse & sewage

Table 1: Pre-test level of knowledge among housewives, n=60

S. No.	Level of Knowledge & Grading		Pre-Test n=60		Mean	SD
	Scores	Grading	No.	%		
1.	< 44%	Poor	47	78.3		
2.	45-65%	Average	12	20.0	10.72	3.51
3.	Above 65%	Good	1	1.7		

Maximum scores – 30*

Table 1 depicts that in pre-test majority 47 [78.3 %] of the housewives were having poor level of knowledge, 12 [20 %] were having average level of knowledge while only 1.7 % were having good knowledge.

2) Post-test knowledge scores of housewives regarding the proper disposal of refuse & sewage

Table 2: Post-test level of knowledge among housewives, n=60

S. No.	Level of Knowledge & Grading		Post-Test n=60		Mean	SD
	Scores	Grading	No.	%		
1.	< 44%	Poor	17	28.3		
2.	45-65%	Average	33	55.0	15.65	4.33
3.	Above 65%	Good	10	16.7		

Maximum scores – 30*

Table 2 depicts that housewife's level of knowledge was improved after intervention & only 28.3 % left in poor category while 55% reached to average level, 16.7 % reached to good level of knowledge which was only 1.7% in pretest.

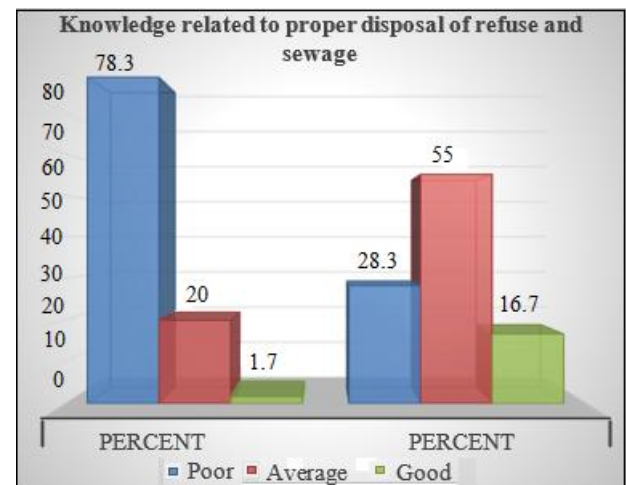


Figure 1: Category wise comparison of pre-test & post-test Knowledge scores of housewives regarding the proper disposal of refuse & sewage

3) Pre-test practice scores of housewives regarding the proper disposal of refuse & sewage

Table 3: Pre-test level of practice among housewives, n=60

S. No.	Level of Knowledge & Grading		Pre-Test n=60		Mean	SD
	Scores	Grading	No.	%		
1.	< 44%	Poor	46	76.7		
2.	45-65%	Average	14	23.3	8.95	2.994
3.	Above 65%	Good	0	0		

Maximum scores – 25*

Table 3 depicts that in pre-test majority 46 [76.7 %] of the housewives were having poor level of practices, 14 [23.3 %] were having average level of knowledge while none of them [0 %] were having good knowledge.

Analysis & interpretation of post-test practice scores of housewives regarding the proper disposal of refuse & sewage

Table 4: Post-test level of practice among housewives, n=60

S. No.	Level of Knowledge & Grading		Post-Test n=60		Mean	SD
	Scores	Grading	No.	%		
1.	< 44%	Poor	21	35.0		
2.	45-65%	Average	25	41.7	13.48	4.015
3.	Above 65%	Good	14	23.3		

Maximum scores – 25*

Table 4 depicts that housewife's level of practice was improved after intervention & only 35 % left in poor category while 41.7 % reached to average level & a remarkable 23.3 % reached to good level of practices which was only 0% in pretest.

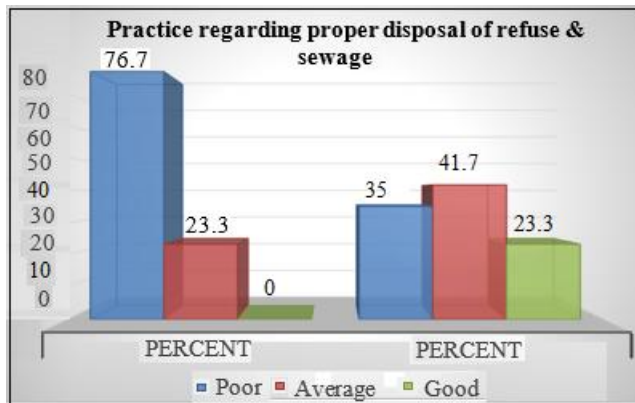


Figure 2 Category wise comparison of pre-test & post-test Practice scores of housewives

5. Discussion

The conceptual framework used in the study was based on the Pender's health promotion model (Pender 1996). It is one of the most widely used models to explain why people do or do not take preventive health actions.

In this study various literature was reviewed which includes, literature related to knowledge & practice, promotion & acceptances of proper disposal methods of refuse & sewage. The data was collected from 60 samples through purposive sampling technique. It was conducted on 60 housewives. The sample of this study comprised of 60 housewives at Adhar Khera area Lucknow. Purposive sampling technique was used to draw the sample for the study. The tool developed & used for the data collection was structured questionnaire. 11 experts validated the content of the tool & the tool was found to be reliable & feasible. The reliability of the tool was established by Karl Pearson coefficient of correlation where $r = 0.96$ & $r = 0.97$ respectively. Pilot study was conducted as a part of the major study, tool proved to be comprehensive, feasible & acceptable.

After obtaining written permission from concerned PHC authorities, Lucknow rural, to conduct the study. The data was collected by structured questionnaires & practice checklist.

The collected data were examined and evaluated in alignment with the goals. Descriptive statistics such as the mean and standard deviation, together with inferential statistics like chi-squared and paired t-tests, were used to evaluate the hypothesis at various significance levels, and the resulting data is shown graphically.

6. Conclusion

The main conclusion drawn from the present study the results of present study inferred that a systematic teaching program either it is educational or informational should be given to the housewives to impart their knowledge regarding proper disposal of refuse & sewage thus the chances of misinformation related to proper disposal of refuse & sewage could be less which allow the housewives to adapt the healthy health habits regarding proper disposal of refuse & sewage more easily. Thus, development of an information booklet for these housewives is one of the effective ways to

create awareness & improve their knowledge regarding any particular subject. As nurse play an integral role in providing health education to the housewives so, they can use these kinds of booklets or similar designed teaching programs in imparting housewives regarding proper disposal of refuse & sewage.

It may improve the self care practices among housewives & make them aware about complications related to proper disposal of refuse & sewage & reduce the chances of disease & infection. So, there is a need of providing proper information & education, its importance, benefits, & complications related to lack of knowledge regarding proper disposal of refuse & sewage.

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