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Original Research Article

The effectiveness of educational package on knowledge regarding harmful effects of use of polythene and plastic materials on environment & health among school age children

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ABSTRACT

Introduction: Plastics are a wide range of synthetic or semi-synthetic materials that use polymers as a main ingredient. Their plasticity makes it possible for plastics to be molded, extruded or pressed into solid objects of various shapes. This adaptability, plus a wide range of other properties, such as being lightweight, durable, flexible, and in expensive to produce, has led to its widespread use.
Materials and Methods: Research approach: an evaluative research approach, research design: in this study pre experimental one group pre test post test design was be used. this design is widely used in educational research, research sample: in this study sample was the school age children in community rural area of Indore, sample size: 50 school age children, sample techniques: non probability purposive sampling technique.
Result: The mean pre test and post test 11.8 and 17.9 and mean difference 6.1 that there was a significant difference between pre test and post test knowledge score hence H0 rejected and H1 is accepted.
Conclusion: So it can be concluded that the school age children residing in Bawliya Khurd community have inadequate knowledge regarding harmful effects of polythene and plastic materials on environment and health and Structured teaching programme is an effective teaching strategy to increase their knowledge regarding harmful effects of polythene and plastic materials on environment and health.

1. Introduction

Dozens of different types of plastics or produced today, such as polyethylene which in widely used in produced packing and polyvinyl chloride, used in construction and pipes because of its strength and durability. Many chemists have contributed to the materials science of plastics, including Nobel caureate Hermann Standinger, who has been called “the father of polymer chemistry” and Hermann mark, known as““ the father of polymer physics.[1]

The International Union of Pure and Applied Chemistry (I U P A C) defines plastic as “Polymeric materials that may contain other substances to improve performance and\or reduce costs”. The word plastic originates from the Greek word plastikos meaning “capable of being shaped““ and “plastos“ meaning “moulded. Typically synthetic, plastics are most commonly derived forms petrochemicals exhibit high molecular mass and plasticity.[2]

2. Harmful Effects of Plastics on Health

The chemicals used in the production of plastic are toxic and detrimental to the human body. Chemicals in plastic like lead, cadmium & mercury directly can come in contact with the humans. These toxins can cause cancer, congenital disabilities, immune system problems & child development

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issues. The other toxins like BPA or bisphenol-A are found in plastic bottles & food packaging materials. When the polymer chains of BPA break down and enter the human body through contaminated water or fish, it could lead to some fatal damage to our body. BPA can decrease thyroid hormone receptor which can lead to hypothyroidism.[3] Apart from these severe effects, human can also develop some health conditions because of plastic. Here are some adverse health effects caused by plastic: Asthma, Pulmonary cancer due to inhalation of poisonous gases, Liver damage, Nerve and brain damage, Kidney disease.

3. Harmful Effects of Plastics on Environment

Littering of plastics in open spaces creates unhygienic conditions, as it acts as a breeding ground for insects and mosquitoes that cause diseases like malaria and dengue. Due to burning of plastic waste some poisonous gases such as carbon dioxide & Carbon monoxide are release in environment.[4] These poisonous gases are responsible for air pollution. Plastics do not undergo degradation, thus, stay in the soil for many years, which affects soil fertility and degrades the soil quality. When plastic artifacts enter the drainage and sewerage system, they block the pipes and the drains causing water logging. The waste from the plastic manufacturing industry is thrown directly into the water bodies, thus affecting the chemical property of water, causing hazards on a very large-scale. The landfill plastic waste release harmful chemicals which affects quality of ground water.

4. Need of The Study

Like much of the world India is struggling to dispose its growing quantities of plastic wastes given how ubiquitous it has became from our tooth brushes to debit cards.

India generates close to 26 thousand tones of plastic a day according to CPCB (Central Pollution Control Board) Estimate from 2012. Worse a little over 10,000 tones a day remains uncollected. Uncollected plastic waste eventually ends as up in natural environment in our seas & Oceans and pilling up on our lands.[5]

By 2050, the amount of plastic in seas and oceans across the world will weigh more than the fishes, says a headline-grabbing estimate by the Ellen MacArthur Foundation. At less than 11 kg, India"s per capita plastic consumption is nearly a tenth of the US, at 109 kg. Since plastic is very useful in our day to day lives and we seemingly cannot do without it. It has a significant contribution to the environmental pollution, wildlife deaths, human health hazard and other detrimental impacts. Online Delivery Problem Apart from the plastic we consume through traditional retail, the popularity of online retail and food delivery apps, though restricted to big cities, is contributing to the rise in plastic waste, say waste management experts.[6] "There is no data on this yet but the kind of packaging generated with every food order is huge, considering these apps allow you to even order a single gulab jamun," says Swati Singh Sambyal, programme manager of municipal solid waste at Centre for Science and Environment (CSE), a New Delhi- based think tank.

While there are no updated and accurate numbers on the quantity of plastic waste generated through online food delivery, the grim situation in China might serve as a warning. When online food orders in China jumped to 4.6 billion in the first half of 2017, total plastic waste also rose to 1.5 million tonnes (MT) in 2017 from 0.2 MT in 2015, according to researchers at Shenzhen University and University of Michigan.[7–11]

Appropriate knowledge of plastic disposable would be a soul step in controlling harmful effect of use of polythene & plastic material on health & environment. Thus the investigator felt that a educational package for rural community school age children on harmful effects of use of polythene & plastic materials on health & environment will enhance their knowledge. Hence there is a need for assessing the knowledge on harmful effect of use of polythene & plastic materials on health & environment among school age children residing in rural community areas of Indore city.[12–15]

5. Objective of The Study

1. To assess the pretest knowledge score regarding harmful effects of use of polythene and plastic material on health & environment among school age children residing in community areas of Indore city.
2. To assess the posttest knowledge score regarding harmful effects of use of polythene and plastic material on health & environment among school age childrten residing in community areas of Indore city.
3. To evaluate the effectiveness of educational package on knowledge regarding harmful effects of use of polythene and plastic material on health and environment among school age children residing in community areas of Indore city.

5.1. Hypothesis

RH_1 **:** There was a significant difference between pre-test and post-test level of knowledge regarding harmful effects of use of polythene & plastic materials on environment & health among school age children at the level of $P \leq 0.05$.

6. Assumption

1 It is assumed that, use of polythene & plastic materials on may be commonly affecting to children.

7. Delimitation

1. The study is limited for school age children residing in rural area of Indore city.
2. 50 school age childrens from different home residing in rural of Indore city who were available at the time of data collection.
3. The school age children residing in rural areas of Indore city who were ready to be part of the research during the time of covid 19 situation.
4. The study was limited to particular period of time

8. Materials and Methods

8.1. Research approach

An evaluative research approach.

8.2. Research design

In this study pre experimental one group pretest posttest design was be used. This design is widely used in educational research.

8.3. Variables under study

8.3.1. Dependent variable

In the present study the dependent variable is the knowledge of school age children residing in rural area of Indore city regarding harmful effects of polythene and plastic materials on environment and health.

8.3.2. Independent variable

In the present study the independent variable is the Structured Teaching Programme regarding harmful effects of polythene and plastic materials on environment and health among school age children residing in selected rural community.

8.4. Research setting

Setting of Study was Bawaliya Khurd Rural Community area of Indore.

8.5. Population

1. *Assessable population:* In this study accessible population is the School age children residing in rural area of Indore city who will fulfill the inclusion criteria of present study
2. *Target population:* In this study target population is all school age children residing in rural area of Indore city.

8.6. Sample

In this study sample was the School Age children in Community Rural area of Indore.

8.7. Sample size

50 School Age children

8.8. Sample techniques

Non probability Purposive sampling technique.

8.9. Criteria for sample selection

8.9.1. Inclusion criteria

1. School age children residing in rural areas of Indore who is interested in study.
2. School age children residing in rural areas of Indore who is available at the time of data collection..

8.9.2. Exclusion criteria

1. School age children residing in rural areas of Indore who is interested in the study.
2. School age children residing in rural areas of Indore who is physically or mentally disable.

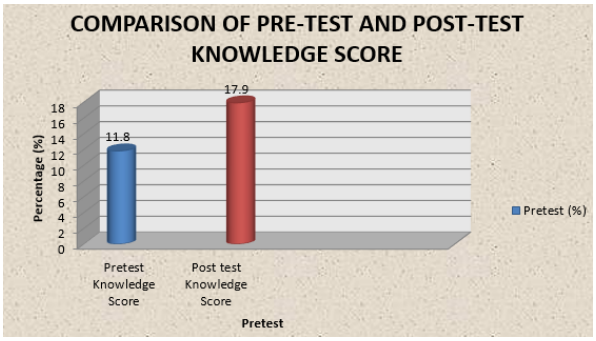

Fig. 1: Bar diagram showing mean pretest knowledge score and mean posttest knowledge score of pilot study.

8.10. Interpretation

The mean pre test and post test 11.8 and 17.9 and mean difference 6.1 that there was a significant difference between pre test and post test knowledge score hence H0 rejected and H1 is accepted. Data analysis was done using descriptive and inferential statistics. No further changes were made in the tool and Structured teaching programme after the pilot study. The investigator than proceeded for the main study.

8.11. Pilot study

After obtaining the formal administrative approval pilot study was conducted in Bawaliya Khurd, Indore. The pilot study was aimed at evaluating the evaluate the effectiveness of educational package regarding harmful effects of use of polythene and plastic materials on environment and health among School going children in Community area Bawaliya Khurd Indore.

Table 1: Mean, standard deviation and t“ value of pre test and post test knowledge score of pilot study (n=50)

Knowledge Score	Mean	Sd	Mean difference	Df	t“ value	At P≤ 0.05 level
Pre test	11.8	2.70	6.1	49	14.6	1.67
Post test	17.9	1.14				

The purpose of this study was explained to the respondents and confidentially was assured by administering the tool on day one pretest was conducted to 50 School Going children in selected community rural area of Indore city who fulfilled the sample criteria. The time taken to complete the questionnaire was 20 to 30 minutes. Educational awareness programme was given to the 50 School Going children in selected community rural area of Indore city on the same day after administering the pre-test. On the 7^{th} day post test was conducted with the same tool to access the knowledge level. The tool and Educational awareness programme was found to be feasible and practicable. Data analysis was done using descriptive and inferential statistics.

9. Conclusion

After the detailed analysis, this study leads to the following conclusions. They require further education and information because all of them need to enhance their knowledge regarding harmful effects of polythene and plastic materials on environment and health.

10. Summary

That has dealt with the analysis and interpretation of data collected from 50 school age children residing in selected Community rural area of Indore city. Descriptive and inferential statistics were used for analysis. It was found that mean post-test knowledge score of school age children residing in selected Community rural area of Indore city were higher than mean pre-test knowledge score. The t“ value computed showed significant differences suggesting that the educational package was effective in increasing the knowledge of school age children residing in selected Community rural area of Indore city regarding harmful effects of use of polythene and plastic materials on environment and health.

11. Source of Funding

None.

12. Conflict of Interest

None.

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