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Assessment of the Knowledge Regarding Usage of Plastic Leading to Cancer Risk and Their Preventive Measures Among Housewives in Selected Areas of Vaniyamkulam

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Abstract

This study explores the level of awareness among housewives in Vaniyamkulam about the potential cancer risks associated with the use of plastic materials in households, along with their knowledge of preventive measures. The proliferation of plastic usage in daily life has raised significant health concerns, particularly its potential to release carcinogenic compounds such as bisphenol A and dioxins, which can leach into food and beverages. Given the critical role housewives play in managing domestic environments, their awareness and practices are pivotal in mitigating health risks. A cross-sectional survey was conducted involving 200 housewives from Vaniyamkulam, using a structured questionnaire to assess their knowledge about the types of plastics, associated cancer risks, and the preventive strategies they employ. The data were analyzed to correlate the level of awareness with demographic variables such as age, education, and socioeconomic status. Preliminary results indicate a moderate level of awareness regarding the health implications of using certain plastics; however, detailed knowledge about specific carcinogens and safer alternatives remains low. Many participants were unaware of the coding system of plastics and the significance of recycling symbols, which are crucial for identifying safer plastic options. Moreover, preventive practices such as using alternatives to plastic containers for food storage and heating were sporadically implemented, influenced heavily by socioeconomic factors. The findings suggest an urgent need for targeted educational programs that could enhance understanding of the health risks posed by certain plastics and promote safer practices. Such initiatives should focus on disseminating information about the identification of safer plastics, the importance of avoiding plastic exposure to heat, and encouraging the adoption of non-plastic alternatives in household settings. This study underscores the necessity of integrating health education into community outreach programs, particularly in semi-urban areas like Vaniyamkulam, to combat the latent health risks of everyday materials and to empower housewives in their role as primary caretakers of family health.

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INTRODUCTION

Plastics play an important role in our daily life. The cheap price and easy availability of plastics displaces many other traditional materials, also we use plastics in different ways in our day-to-day life such as food storage containers, furniture, clothes, milk bottles, carry bags, pipes and many more. Plastics are artificial materials that are not capable

of being broken down naturally, and they can be molded into different forms and sizes, ranging from rigid to flexible. The increased use of plastic and plastic material products can cause many health issues to the human population. It pollutes air and water. Many of the toxic gases produced from plastic factories are carcinogens and these are emitted to the atmosphere [1–4].

Bisphenol A, commonly referred to as BPA, is frequently used in the production of polycarbonate plastics and poses a significant health risk, particularly affecting the brain and prostate glands in fetuses, infants, and children. Moreover, infants are considered to be at greater risk, leading to bans on the use of baby bottles and other related products in some countries such as the United States, Canada, etc. BPA, recognized as an estrogenic compound, elevates the likelihood of breast, prostate, and other cancers in individuals exposed to it, contributing to the onset of hormone-related cancers. Various cancer types, such as leukemia, lymphoma, brain cancer, breast cancer, and lung cancer, are also influenced by the utilization of plastics. Polyvinyl chloride (PVC), a plastic variety composed of vinyl chloride—a substance acknowledged as a human carcinogen—is another notable example [5–7].

Workers involved in plastic handling face elevated risks of developing cardiovascular diseases, toxic metal poisoning, neuropathy, and lung cancer. Both adolescent males and females are susceptible to cancer as a result. Plastics may release minute quantities of chemicals, particularly when exposed to heat or prolonged use, and a variety of hazardous gases are emitted during plastic recycling and incineration processes.

A cross-sectional study was conducted to assess the cancer risks among workers in industries and occupations with known carcinogenic exposures, as part of a continuous monitoring program in Ontario, Canada. The study involved 81,127 individuals working in the plastics and rubber manufacturing sectors or in jobs related to materials processing and product fabrication. The findings showed that women in material processing jobs experienced a higher incidence of lung cancer (hazard ratio [HR] 1.38, 95% confidence interval [CI] 1.20 to 1.58) compared to other women in the Occupational Disease Surveillance System (ODSS) database, an increase not seen in men. Increased rates of breast cancer were also noted among female laborers (HR 1.36, 95% CI 1.01 to 1.82) and molders (HR 1.47, 95% CI 0.91 to 2.37) within the plastics and rubber product fabrication sectors.

Additionally, there were higher incidences of cancers such as esophageal, liver, stomach, prostate, and kidney among specific job subgroups, including those in mixing and blending, bonding and cementing, and laboring roles. So, researchers took interest to conduct education program on usage of plastic leading to cancer risk and their preventive measures among housewives [8–10].

STATEMENT OF THE PROBLEM

To assess the knowledge regarding usage of plastic leading to cancer risk and their preventive measures among housewives in selected areas of Vaniyankulam.

OBJECTIVES

- To assess the knowledge regarding usage of plastic leading to cancer risk and their preventive measures among housewives.
- To find the association between knowledge regarding usage of plastic leading to cancer risk and their preventive measures among housewives.

METHODOLOGY

Research Approach

Quantitative approach.

Research Design

Nonexperimental cross-sectional research design.

Conceptual Framework for the Study

The study aims to evaluate the comprehension levels and awareness among housewives in Vaniyamkulam concerning the utilization of plastic and its potential implications on cancer risk. It delves into the understanding of various types of plastics prevalent in household settings, their chemical compositions, and the associated health hazards, particularly their purported links to cancer development. Additionally, the research scrutinizes the prevailing attitudes and behaviors of housewives towards plastic usage, including their disposal practices, storage methods, and heating habits. Moreover, the study explores the extent of awareness among housewives regarding preventive measures aimed at mitigating potential cancer risks associated with plastic use, encompassing strategies such as minimizing exposure to certain types of plastics, adopting alternatives, and implementing proper disposal techniques. Through this comprehensive examination, the research aims to provide insights essential for crafting targeted interventions and educational initiatives to promote informed decision-making and safeguard public health in Vaniyamkulam (Figure 1).

Sampling Technique

Nonprobability convenience sampling technique.

Inclusion Criteria

- Housewives residing in Vaniyamkulam, Panchayat, Village-2.
- Housewives in the age group of 20 to 50 years.
- Housewives who are either educated or not educated.
- Housewives who are either employed or unemployed.
- Housewives who were willing to participate in this study.

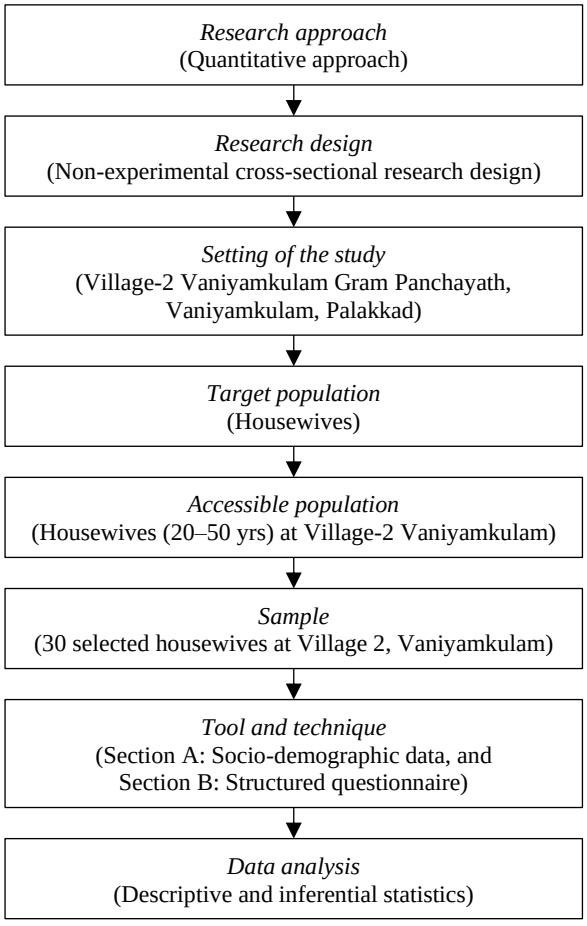

Figure 1. Conceptual framework for the study.

Exclusion Criteria

- Housewives who were not available at the time of data collection.
- Housewives who do not understand Malayalam.

Dependent Variable

Knowledge regarding usage of plastic leading to cancer risk and their preventive measures.

Demographic Variable

Age, education level, type of family, source of information in selected areas.

Ethical Consideration

Ethical clearance was obtained from the institutional review board and Gram Panchayat, Vaniayamkulam, and informed consent were taken from all research participants.

Data Collection Procedure

The data were collected after taking ethical clearance and permission from Gram Panchayat Vaniayamkulam. The sample of 31 of housewives (20–50 years old) were selected on the basis of inclusion criteria using nonprobability convenience sampling technique. Informed consent was obtained from the sample prior to the study. Data were collected through a structured questionnaire.

RESULTS

The results showed that knowledge regarding usage plastic leading to cancer risk and their preventive measures among housewives (20–50 years old) was as follows: About 2 (6.45%) samples have moderate knowledge and 29 (93.54%) have good knowledge.

Regarding age, in the age-group 20–30 years, 1 (20%) sample has moderate knowledge and 4 (80%) samples have good knowledge. In the age group 31–40 years, 1 (9.09%) sample has moderate knowledge and 10 (90.90%) samples have good knowledge. In the age group 41–50 years, 15 (100%) samples have good knowledge. The chi-square value is 2.68. So, there is significant association between age group and knowledge level of housewives.

Regarding education, in women with school level education, all 16 (100%) samples have good knowledge. In women with education of degree level and above, 2 (13.33%) have moderate knowledge and 13 (86.66%) have good knowledge. The chi-square value is 2.304. So, there is significant association between education of women and knowledge level of housewives.

Regarding the source of information, from newspaper and magazines, 1 (4.16%) sample has moderate knowledge and 23 samples (95.83%) have good knowledge. From social media, 1 (25%) sample has moderate knowledge and 3 (75%) have good knowledge. From others, all 3 (100%) samples have good knowledge. The chi-square value is 2.686. So, there is significant association between source of information and knowledge level of housewives.

There was significant association between level of knowledge regarding usage of plastic leading to cancer risk and their prevention among housewives (20–50 years old) and selected demographic variables such as age, education, and idea regarding the usage of plastic leading to cancer risks and sources of information regarding usage of plastic leading to cancer risk and their prevention.

DISCUSSION

This is a nonexperimental cross-sectional research design intended to assess the level of knowledge regarding usage of plastic leading to cancer risk and their preventive measures among housewives (20–50 years old). The results of major study were discussed according to the objectives. The present study results revealed that majority, 29 (93.54%), of the samples have good knowledge, 2 (6.45%) have moderate knowledge, and none have poor knowledge among 31 samples.

- There is a significant association between the demographic variables like age, education, idea about usage of plastic leading to cancer risk, and source of information. Hence H1 was accepted.
- There is no significant association between the type of family and the knowledge regarding the usage of plastic leading to cancer risk and their preventive measures.

CONCLUSION

The assessment of housewives' awareness in Vaniyamkulam regarding the cancer risks associated with plastic use revealed both critical gaps and areas of moderate understanding. The study highlights that while there is a basic awareness of the general health risks posed by plastics, there is a substantial lack of specific knowledge about carcinogens like BPA and dioxins, which are prevalent in certain types of plastics. Most participants demonstrated limited understanding of the implications these substances have on health, particularly in relation to cancer risk. Furthermore, the survey uncovered that knowledge about safer practices, such as the selection of appropriate plastics for food storage and handling, was inconsistent. The majority of the housewives were not familiar with the plastic identification coding system, which is essential for determining the safety of plastic products in terms of food contact and overall environmental health. This indicates a crucial need for educational interventions that can deliver clear and actionable information regarding plastic use and its hazards. Preventive measures, although practiced by some, were not widespread across the community. Economic and educational barriers appear to play significant roles in this disparity.

Housewives from lower socioeconomic backgrounds displayed notably less engagement in preventive practices, likely due to constraints in accessing or affording alternative solutions to plastic use. To address these findings, it is recommended that community-based educational programs be implemented, focusing on the dangers of specific types of plastics, understanding and utilizing the plastic coding system, and promoting affordable, non-plastic alternatives. Such initiatives should ideally be supported by local health departments and community leaders to ensure broad reach and impact. In conclusion, empowering housewives in Vaniyamkulam with knowledge and resources is essential for mitigating the risks associated with plastic use. By enhancing community awareness and facilitating access to safer alternatives, we can significantly contribute to reducing potential cancer risks and promoting a healthier living environment.

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