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RESEARCH ARTICLE

A REVIEW ON STUDIES AND RESEARCH ON USE OF PLASTIC, ITS HAZARDS AND SAFE DISPOSAL

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Abstract

The community has been described together of the foremost fruitful areas for improving the health of the people. It is an incontrovertible fact that social, physical and cultural aspects of the community have a serious influence on an individual's health status. One among the most risky assembling is the plastic which are used on a day to day throughout the planet. The "plastic" may be a common word that's used for several materials that are synthetic and semi- synthetic in nature. Use of plastic bag and bottle are common. The disposal of plastic waste is major problem due to non biodegradable nature of plastic. It's used for road construction, packaging, protecting, serving, and even removing all types of commodity. The current review summarized the research on use of plastic, its hazards and safe disposal.

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Introduction:-

Review of literature is one of the most important steps in the research process. It is an account of what is already known about particular phenomena. The main purpose of literature is to convey to the readers about the work already done and the knowledge and ideas that have been already established on a particular topic of research. A literature review is an account of the previous effort and achievements of scholars and researchers on a phenomenon.

- S.K. Sharma, (2005)

The review of literature in a research report is a summary of current knowledge about a particular problem and includes what is known and not known about the problem. The purpose of the review was to obtain information about the use of plastic, its hazards and safe disposal. The relevant literature reviewed has been organized and presented under the following broad heading;

Review of Literature:-

1. Hazards of plastic use.
2. Knowledge of plastic waste management and safe disposal.
3. Attitude regarding use of plastic, its hazards and safe disposal.
4. Generation of plastic waste in various households and cities.
5. Effectiveness of planned teaching program

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Hazards Of Plastic Use:

Aachal Sirsat, Vaishnavi Bhandwalkar et al, conducted a quasi-experimental study to assess the effectiveness of information booklet on knowledge regarding hazards of plastic usage and its safe disposal among community people in a selected area at Nagpur district. The objective of this study was to assess the existing knowledge regarding hazards of plastic usage and its safe disposal among community people in a selected area at Nagpur district. This study was conducted on 30 parents of Basic B.Sc. Nursing 3rd year students of Suretech College of Nursing, Nagpur. Probability simple random technique and quasi experimental one group pre-test post-test research design was use in this study to assess knowledge regarding hazards of plastic usage and its safe disposal. In this study descriptive and inferential statistics were adopted to analyze data. Findings of this study revealed that the overall post-test mean score was 17.15 (57.16) with standard deviation 4.58 and the respondent knowledge were significantly higher than, the overall mean pre test knowledge score 16.5 (55%) with standard deviation 3 and computed paired ‘t’ value 3.03 is higher than the table value 2.05 at $p < 0.05$ level. Hence the information booklet on knowledge regarding hazards of plastic usage and its safe disposal was effective and statistically significant. And the study reveals that there is no significant association between selected demographic variable with post-test knowledge score at $p < 0.05$.¹

Chitrakshi Khairnar, et al, conducted a descriptive study to assess the awareness regarding hazards of plastic bag use among adults of selected areas of Pune City in 2018. The objective of this study was to assess the awareness regarding hazards of plastic bag use among adults and associate the awareness scores with the selected demographic variables. A non-experimental research design was used to conduct the study among 200 adults in selected areas of pune city with non-probability sampling technique. A semi-structured questionnaire was used to evaluate the awareness regarding the hazards of plastic bag use among adults. The reliability of structured questionnaire was determined by test-retest method. The data was collected by non-probability sampling method. The collected data was analyzed and interpreted based on the given objectives. In this study descriptive and inferential statistics were adopted to analyze data. The findings of the study showed that 95% of the samples were aware regarding hazards of plastic bag use and 5% samples were unaware regarding hazards of plastic bag use. Out of demographic variable such as age, gender, education and occupation there was a significant association between awareness score of adults and their education ($p < 0.05$) of the sample.²

Priya A, Toppo M, Singh D, et al, conducted an experimental study to assess the impact of education intervention on the knowledge regarding hazards of plastic food containers in class children this study was undertaken from the month of January 2016 to March 2016 for a period of three months. The objectives of this study were to assess the knowledge regarding safe use of plastics and to assess the impact of educational intervention given to them. Study subjects-300 school students of ordinary 7-9 and 11 of two school of Bhopal. There in those present on both the times, that's the day of intervention and therefore the day when post intervention changes were assessed were only taken and students of ordinary 10 and 12 were excluded due to their upcoming board exams and also students who weren't willing to participate and absent. So, out of 300 students, 56% used plastics within the sort of Tiffin and bottle, 37.33% utilized in the shape of water bottles only and 6.66% didn't use plastic within the sort of anything. The knowledge of the respondents increased after the tutorial intervention and therefore the difference was found to be significant ($P < 0.001$) showed that the mean percent of knowledge score of plastics was 53% which increased significantly to 75% after health education intervention, < 0.05 . Hence, Children are amenable to correction, so any health education imparted is most likely to result in change in their behavior and practice.³

Simarjeet Kaur, Joseph Jeganathan, conducted a cross sectional study to assess knowledge regarding health hazards of plastic use among students. The study aimed to assess the knowledge regarding health hazards of plastic use among adolescent's girls. In this study a quantitative research approach and cross sectional research design was used to assess knowledge regarding health hazards of plastic use among 180 students who were selected through simple random technique studying in a selected private institution of district Sirmour, Himachal Pradesh. Data was collected using self-administered questionnaire and analyzed by SPSS software. The finding of this study revealed that 52% of respondents had poor knowledge, 48% had average knowledge and none of them had good knowledge regarding health hazards of plastic use. There was significant association of age with knowledge regarding health hazards of plastic use among adolescent girls ($p < 0.05$). And hence, the findings of the study showed that students had poor knowledge which emphasizes the need to create awareness regarding health hazards of plastic use among youngsters through interventional strategies.⁴

Knowledge Of Plastic Waste Management And Safe Disposal.

Lakshikantha R, Kanyadara J, Bullappa D, et al, conducted a cross-sectional study to assess the level of knowledge, awareness, and attitude on biomedical waste management among practicing dentists in Bengaluru city in 2016. The target of this study was to assess the knowledge, awareness, and attitude/behavior of BM waste generation, hazards, and legislation among the study subjects using self structured questionnaire, a self-structured questionnaire was used to obtain required data. The questionnaire was divided into three sections. The primary section of the questionnaire contained questions regarding knowledge of BM waste generation, hazards, and legislation, whereas the second section contained questions regarding the extent of awareness on BM waste management practice, and therefore the third section contained questions regarding attitude/behavior toward BM waste. Out of 337 (100%) study participants, 176 (52.2%) were males and 161 (47.8%) were females. Among 337 (100%) study participants, quite three-fourth, i.e., 291 (88.4%) knew about BM waste generation and legislation, whereas 23 (6.8%) each didn't know and weren't conscious of it. In order that there was an honest level of data and awareness about BM waste generation hazards, legislation, and management among health care personnel in Bengaluru city. Regular monitoring and training are still required in the least levels, and there's a requirement for continuing dental education on dental waste management practices to those dental practitioners.⁵

Dr. S. Ani Grace Kalaimathi¹, Dr. S. Vijayalakshmi², et al, conducted a pre-experimental study to assess the effectiveness of structure teaching programmed on knowledge regarding hazards of plastic waste and its safe disposal in Kizhatchirapattu rural village, Tiuvannamalai in 2015. The objective of this study was to assess the effectiveness of hazards of plastic waste and its safe disposal in adult, 50 subjects were selected by using convenient sampling technique. The findings showed that 34(68%) of respondents had inadequate knowledge, 12(24%) had moderately adequate knowledge and 4(8%) had adequate knowledge on hazards of plastic waste and its safe disposal with the mean score was 5.4. with standard deviation of 1.3 and the posttest mean score was 16.4 with standard deviation of 0.56. The calculated paired 't' test value was 13.8 at [P< 0.001]. The effectiveness of structured teaching programmed was statistically tested by paired 't' test and the result were found to be statistically significant at P<0.001 level. Hence the formulated hypothesis was retained. There was a significant difference in pre and post test level of knowledge on hazards of plastic waste and its safe disposal among adults.⁶

Attitude Regarding Use Of Plastic, Its Hazards And Safe Disposal.

Khanam N, Wagh V, Gaidhane AM, et al, conducted a cross-sectional study on topic to assess the knowledge, attitude and practice on uses of plastic products, their disposal and environmental pollution was undertaken in one of the senior secondary schools of wardha city in 2018. The objective of this study was to assess the knowledge, attitude, and practice on uses of plastic products, their disposal and environmental pollution among school-going adolescents. Purposive sampling was done by using 95 samples. A pretested semistructured questionnaire was used for data collection; Seventh standard students who were present on the day of data collection and willing to participate were instructed to fill up the proforma. In their opinion the hazards of plastics could be reduced by their reduced usage (75.78%) and reuse at home (41.05%) followed by segregation and proper disposal (12%). Students (26.32%) told that plastics were not biodegradable. (37.89%) Students had knowledge regarding plastic bags banned in wardha city. (35.79%) Students knew about fine imposed for using plastic bags. Main source of information was school. (83.15%) followed by television and radio 19 (80%) and parents (24.21%). (65.26%) Students agreed for ban on plastic bag usage, whereas 69.48% of students agreed to campaign for harmful effect of plastics in daily use. Hence, proper disposal of plastic waste reflected the habit of family is a thrust area which needs to be improved. Good thing is that students are having attitude to give up the use of plastic bags and to aware others about the ill health of using plastics.⁷

Raghavan, Manoj conducted a pre-experimental study to assess the impact of awareness about environmental hazards caused by plastic pollution, on the attitude towards governmental ban on single use plastic products among adults in the Indian City Chennai and its suburbs in 2018. The aim of this study was to understanding the relationship between awareness about plastic pollution and Attitude towards the governmental ban on single use plastic product among the adult resident of Chennai and its suburbs. 172 adults 77 male and 95 female selected through random sampling method took part in the study. The data was collected using a structured questionnaire developed for the purpose and analyzed using data analysis component of MS office 2013. The analysis of data collected was done using T test two tailed with unequal means. With related to awareness the T statistical value for difference of mean among male and female subjects is $t=-0.7$ $P>0.05$. The T value between the subject in young adulthood and middle adulthood on awareness was $t=2.3$ $P0.05$. The T value between subjects from lower middle class and those from middle class and above on awareness was $t=2.78$ $P0.05$. hence, the result showed that there is

significant relationship between the level of awareness about plastic pollution and the nature of attitude people towards stringent actions of the government to safe guard the environment.⁸

Generation Of Plastic Waste In Various Households And Cities.

Thanh NP, Matsui Y, Fujiwara T. conducted a survey study to assess plastic waste generation and its potential recycling of household solid waste. A 1-month survey of 130 household was administered in Can-Tho City, the capital city of the Mekong Delta region in southern Vietnam in 2010. The target of this study was to assess the number and composition of household solid waste, especially plastic waste to spot opportunities for waste recycling .were the household solid waste was collected from each household and classified into the ten physical categories especially plastic waste was sorted into 22 subcategories. The typical household solid waste generation rate was 281.27 g/cap/day. The compostable and recyclable shares respectively accounted for top percentage as 80.74% and 11%. Regarding plastic waste, the typical plastic waste generation rate was 17.24 g/cap/day; plastic packaging and plastic containers dominated with the high percentage, 52 95.64% of plastic waste. Plastic shopping bags were especially identified because major components accounting for 45.72% of total plastic waste. Relevant factors like household income and household size were found to possess an existing correlation to plastic waste generation in detailed composition. The household habits and behaviors of plastic waste discharge and therefore the aspects of environmental impacts and resource consumption for plastic waste disposal alternatives were also evaluated.⁹

Bandara, N.J.G.J., Hettiaratchi, J.P.A., Wirasinghe, S.C. et al, conducted a case study to assess the relation of waste generation and composition to socio-economic factors and to develop an effective waste management strategy for a given region in suburban municipal area Sri Lanka in 2006. The objective of this study was to determine the solid waste generation rate and waste composition based on field survey and to determine the related socio-economic factor. The collected data was analyzed to relate waste generation and composition data to various socioeconomic factors. Over 400 sample households were selected for the study employing a stratified sampling methodology supported municipal wards and property values. A technique that considers both the number of households in a particular income group (property value range) and the standard deviation of property values within a given income group was wont to determine the acceptable sample size for every municipal ward. Through category and regression analyses, the quantities of waste and waste composition were associated with several socio-economic factors. The paper describes the basis for the sample selection by adopting methodology for data collection. The socio-economic parameters used for the analysis, 53 and the relationships developed from the analysis.¹⁰

Effectiveness Of Planned Teaching Program.

Ambily V Vijayakumar, conducted a pre-experimental study to assess the effectiveness of information booklet on knowledge regarding the health hazards of plastic waste among rural population in selected community areas at Rajkot in 2019. The objective of this study was to assess the knowledge regarding the hazards of plastic waste among rural population. To evaluate the effectiveness of information booklet on knowledge regarding the hazards of plastic waste among rural population. To find out the association between pre-test score of knowledge with selected demographic variables. One group pre-test post-test research design was adopted for this study. The sample of the study was rural population selected areas at Rajkot. The sample size of the study will be 40 living in rural areas of Rajkot, non probability convenience sampling technique was used for the study. the result showed that in Pre-test 15(37.5%) were having moderate level of data on health hazards of plastic waste and 25(62.5%) were having inadequate level of data and no one have adequate knowledge. After providing information booklet 11(27.5%) got adequate knowledge, 29(72.5%) got moderate level of data and nobody was under inadequate level of data. the pre-test mean is 10.08 and post- test mean 15.90, the mean difference is 5.82 and therefore the variance pre-test 3.73 and post-test 1.86, obtained “t” value was 10.072** with degree of freedom 39 (p=1.685) highly significant 0.05 level of significance. The main conclusion from this 54 present study is that respondent living in rural community was improper knowledge regarding the hazards of plastic waste. A continuous study packages and close monitoring, legislation and create good attitude are essential for controlling the hazards of plastic waste.¹¹

Usha Rani. R. conducted a quasi-experimental study to assess the effectiveness of structured programme on knowledge regarding hazards of plastic usage among housewives in selected community area, Bangalore 2018. The objective of this study was to assess the knowledge of house wives regarding hazards of plastic usage, to evaluate the effectiveness of structured teaching programme regarding hazards of plastic usage among house wives, To Find out the association between knowledge regarding hazards of plastic usage among subjects with their selected demographic variables were the sample and sample size was 30. The housewives were selected by purposive

sampling technique. Finding of the study revealed that the overall post-test mean score was 22.76 (75.8%) with standard deviation 1.9 and the respondent knowledge were significantly higher than, the overall mean pre test knowledge score 8.83 (29.43%) with standard deviation 3.1 and computed paired “t” value 20 was higher than table value 2.25 at $p < 0.05$ level. The study reveals that there was significant association between selected demographic variables like religion and monthly income with post test knowledge score of subjects at $p < 0.05$. Data was analyzed using descriptive and inferential statistics. Hence the teaching programme on knowledge regarding hazards of plastic usage was effective and statistically significant.¹²

Conclusion:-

After studying the above mention research the conclusion is that, though plastic is very useful in modern civilization and provide us with various useful articles, it serves as a serious danger to our environment. So we should try our best to reduce reuse and recycle plastic whenever possible to reduce the level of environment pollution. Hence, to minimize this environmental pollution all the mention study helped in improving the knowledge as well as attitude of selected sample/subjects. So any health education imparted is most likely to result in change in their behavior and practice.

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