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"A DESCRIPTIVE STUDY TO ASSESS THE KNOWLEDGE REGARDING EFFECT OF PLASTIC USE ON HEALTH AMONG PEOPLE IN SELECTED AREAS OF PUNE CITY"

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Abstract

Introduction - The study titled " A Descriptive study to assess the knowledge regarding effect of plastic use on health among people in selected areas of Pune city " aimed to assess the knowledge regarding effect of plastic use among people. The knowledge levels among the participants varied 67% (201) of samples had excellent knowledge regarding effect of plastic use on health .32% (96) of samples had moderate knowledge regarding effect of plastic use on health. 1% (3) of samples had poor knowledge regarding effect of plastic use on health

The widespread use of plastics has led to growing concerns about their environmental and health impacts. Initially celebrated for their versatility and cost-effectiveness, plastics now pose significant risks due to their chemical composition, breakdown into microplastics, and improper disposal. This study focuses on assessing the knowledge of individuals regarding the health impacts of plastic use in selected areas of Pune city. Plastics contain additives like phthalates and bisphenol A (BPA), which can leach into the environment and disrupt hormonal functions, leading to reproductive issues, developmental challenges, and chronic diseases. The breakdown of plastics into microplastics, widely found in air, water, and food, exposes humans to potential health risks, including inflammation and cellular damage. Additionally, plastic manufacturing and improper disposal release harmful pollutants, exacerbating respiratory illnesses and climate change effects. Given the severity of these issues, this study aims to evaluate the awareness of individuals regarding the health effects of plastics.

Method - A quantitative, descriptive research design was employed, involving a sample of 300 participants from selected areas of Pune city. Participants were selected using a non-probability sampling method, with inclusion criteria focused on individuals working in the plastic industry and those willing to participate. A structured knowledge questionnaire, validated by experts and achieving a reliability score of 0.8985, was administered to gather data. It assessed respondents' knowledge across demographic variables, categorizing awareness into poor, moderate, and excellent levels.

Result - Findings from previous literature indicated a moderate level of awareness among most populations regarding plastic-related health risks, with significant gaps in understanding specific issues like microplastic exposure and chemical leaching.The study highlights the urgent need for enhanced public education, stricter regulatory measures, and sustainable practices to mitigate the health impacts of plastics. Educational initiatives should focus on promoting alternatives to plastics, safe handling practices, and improved waste management.

The results are expected to guide policymakers and healthcare professionals in developing targeted interventions and fostering a healthier, sustainable future.

Conclusion - By addressing these knowledge gaps, the study seeks to contribute to the global discourse on plastic pollution and health, emphasizing the importance of interdisciplinary collaboration to combat this pervasive issue effectively.

(Keywords - knowledge, effect, plastic, health)

INTRODUCTION

Humans are highly dependent on plastic materials since they are lightweight, cost-effective, durable, and efficient to produce. Therefore, plastics have replaced glass, wood, and metal in many products and nowadays have become a part of daily household supplies, technology, medical use, and packaging (1) . This introduction examines the many ways plastic use affects human health, focusing on how plastics create dangers through various direct and indirect routes.

The hazard of plastics is due to Nano-plastics' interaction with human cells and via exposure to harmful additives in plastic products.6,7 Both Nano plastics and harmful additives occur in food packaging, household items, and even medical equipment, entering the body by ingestion, inhalation, and skin contact (2). The increased production of cost-effective plastics with a variety of attractive characteristics (e.g., resistance, durability, corrosion-resistant, high thermal and electrical insulation properties), resulted in their widespread use in a vast range of industrial as well as domestic applications. These materials allowed a considerable improvement of human life quality (e.g., cheaper and lighter materials, products that promoted the reduction of wastage and food borne bacterial infections) (3). These substances can interfere with hormones, potentially causing reproductive issues, developmental challenges in children, and increased risks of chronic illnesses like diabetes and obesity. Similarly, BPA, present in polycarbonate plastics and epoxy resins, mimics estrogen and has been associated with various health concerns, including breast and prostate cancer, as well as behavioral problems in children.

Plastic bag packing for hot edible items causes migration of harmful chemicals to food items. These include styrene which is carcinogenic, phthalates, and bisphenol which causes diabetes and diseases of the heart and liver. Therefore, it is high time we switch over to alternative materials for packing and transportation.(4). These bits have been found in different places like oceans, soil, and air, exposing many people. Microplastics can enter the body through contaminated food and water or by breathing them in from the air. Once inside, they can move through tissues and organs, possibly causing inflammation, oxidative stress, and even harm to cells [3].

Plastic is one of the major toxic pollutants now a days. Plastic is a non- biodegradable substance, composed of toxic chemicals, plastic pollutes earth, air and water. We know more than a 100 million tons of plastic is produced world-wide each year. Disposal of plastic through recycling, burning or land filling is a myth because it does not undergo bacterial decomposition. And per day by per day this problem become increased(5). The pervasive presence of plastics and microplastics in the ecosystem has sparked grave worries among the general public and the scientific community regarding the potential threats posed by these tiny plastic particles to human health and the environment. The global production of plastics reached unprecedented level of 400.3 million metric tons in 2022, driven by rising demand from urbanization and

economic growth(6).This accumulation can lead to higher levels of harmful substances in seafood, posing risks to people's diets [4].

The quality of soil reduces as the plastic present in the manure remains in the soil for years. This result in increase in landfill and resources needed to transport and recycle them. The problem further aggravates by the developed countries shipping off their plastic waste to countries like India.(7) Starting in 2018 and 2019, the Plastics Strategy and Single-Use Plastics Directive paved the way for a significant reduction of plastic pollution and investments in waste management infrastructures. For example, the Plastics Strategy has promoted the development of eco-friendly products aimed at increasing their recyclability and/or degradation, reducing plastic waste, and supporting research and innovation, while the Single-Use Plastics Directive promotes policies that include banning plastic bags, straws, or cotton swabs(8).

NEED OF STUDY

The urgent need to examine how plastic use affects health is driven by its pervasive presence in our environment and daily lives. This investigation is important for several reasons, Plastic products' extensive utilization and prevalence have raised concerns regarding the exhaustion of non-renewable resources, leading to the inefficient utilization of energy and raw materials. (9)Plastic materials can experience long-lasting environmental degradation spanning thousands of years . The improper disposal of single-use plastic bags can also cause infrastructure damage by obstructing drainage systems Studying these effects helps to establish a clear connection between plastic exposure and health outcomes, which is essential for creating preventive and mitigative strategies [6].

The widespread problem of plastic pollution highlights the need for thorough research. Plastics are found almost everywhere on the planet, from the deepest parts of the oceans to the highest peaks. Microplastics, tiny pieces that come from the breakdown of larger plastic items, have been found in the air, water, and soil. These particles can be swallowed or breathed in, leading to possible health issues like inflammation, oxidative stress, and cell damage. It is important to understand how people are exposed to microplastics and how these particles affect health. Studying the health impacts of plastics is crucial for guiding policy and regulation. Governments and regulatory agencies need strong scientific evidence to create effective policies that reduce harmful exposures. For example, proof of the toxic effects of some plastic additives has led to bans on BPA in baby bottles in many countries. Ongoing research can help develop safer alternatives, enforce stricter rules on plastic production and use, and improve waste management practices [7].

Raising public awareness and changing behaviors are crucial in tackling the health effects of plastic use. Research on plastic's health impacts forms the foundation for educational campaigns that inform people about the dangers and promote safer habits. For instance, consumers can be encouraged to avoid heating food in plastic containers or to select products made from safer materials. Teaching the public about the need to reduce plastic use and enhance recycling practices can foster more sustainable consumption habits and lower plastic pollution. Additionally, interdisciplinary studies on the health effects of plastics can inspire innovation in material science. Knowing the health risks linked to conventional plastics can drive the creation of safer, biodegradable alternatives. This not only reduces health risks but also addresses environmental issues, paving the way for a more sustainable future [8].

Researching the health effects of plastic use is important for several reasons. It offers key information to understand and reduce health risks, shapes policy and regulatory choices, increases public awareness, and encourages the development of safer materials. As plastic pollution keeps growing, thorough research is essential for safeguarding public health and promoting a more sustainable relationship with our environment. Tackling this problem demands a combined effort from scientists, policymakers, industry, and the public to ensure a healthier future for everyone [9].

AIM OF THE STUDY

An aim of the study A Descriptive study to assess the knowledge regarding effect of plastic use on health among people in selected areas of Pune city.

METHODOLOGY

The research employed a non-experimental, descriptive design and used a quantitative research approach to assess participants' understanding. The study included 300 people, with participants selected through a non-probability purposive sampling method from selected areas in Pune city. A structured knowledge questionnaire was developed to assess the knowledge regarding effect of plastic use on health among people. The tool's reliability and validity were confirmed through expert review and a pilot study. Data were collected through face-to-face interviews, focusing on demographic variables and knowledge-related questions. The sample population included women aged 18 to 60, with varying educational and occupational backgrounds

RESULTS

1) Analysis of data related to demographic variables

The demographic distribution of the 300 samples is summarized as follows:

In terms of age, the largest proportion of participants 30.33% (91) of the people is 28 – 37 of age group, followed by 30% (90) of the people is 18 – 37 years' age group. A smaller percentage 25.66% (77) of the people is 38 – 47years age group, and only 14% (42) of the people is 48 – 60

Regarding educational qualifications, the majority 35.66% (107) of the people were educated secondary, while 28.66% (86) of the people were educated primary, a smaller portion 20.66% (62) of the people were educated higher secondary, and only 15% (45) of the people were educated graduated and above

With respect to occupation, the majority 43.33% (130) of the people were employed. The 32.66% (98) of the people were businessmen The 24% (72) of the people were unemployed.

The family monthly income -wise distribution revealed that The majority 35% (105) of the people family income is 20001 – 30000.The 24.33% (73) of the people family income is 15001 – 20000.The 24.33% (73) of the people family income is other. The 16.33% (49) of the people family income is 10000 – 15000.

Finally, in terms of gender, majority 59.66% (179) of the people is female. The 40.3% (121) of the people is male The 0% (0) of the people is transgender

This distribution highlights the diversity of the sample in terms of age, education, occupation, family monthly income, and gender, which can provide a comprehensive basis for further analysis.

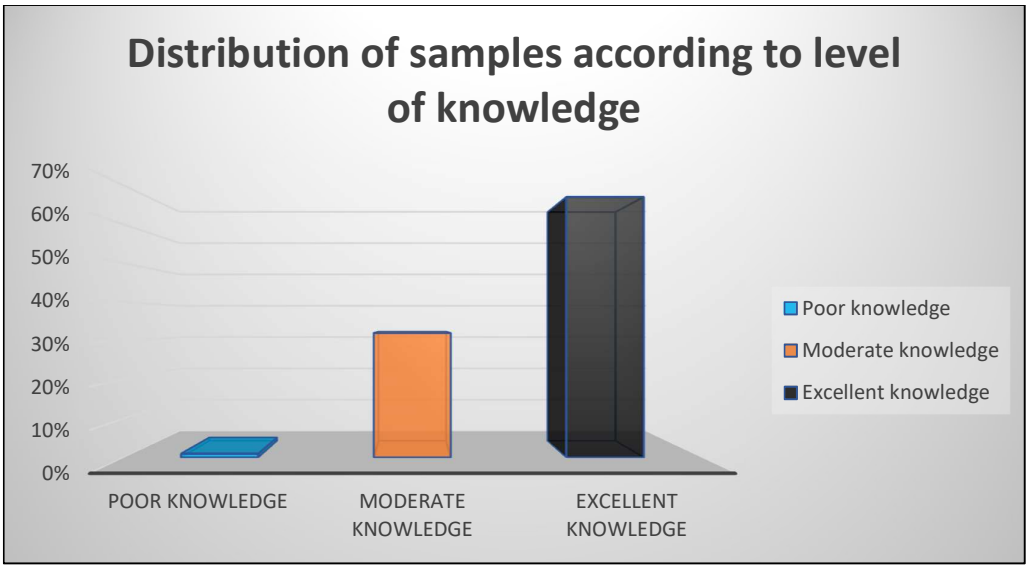
2) Analysis of knowledge regarding effect of plastic use on health among people.

n=300

Level of knowledge	Frequency	Percentage	Mean	SD
Poor knowledge	3	1%	15.14	2.52
Moderate knowledge	96	32%		
Excellent knowledge	201	67%		

Table no – 1 shows that, The majority 67% (201) of samples had excellent knowledge regarding effect of plastic use on health. The 32% (96) of samples had moderate knowledge regarding effect of plastic use on health. The 1% (3) of samples had poor knowledge regarding effect of plastic use on health

n = 300



The bar diagram showing percentage wise distribution of knowledge regarding effect of plastic use on health.

DISCUSSION

The main purpose of this study was to assess the knowledge regarding effect of plastic use on health among people. The researchers decided to use a quantitative research approach for this study. They chose a non-experimental, descriptive design to assess people's knowledge about effect of plastic use on health in specific hospitals of Pune city. The study population included individuals living in Pune. The researchers selected a sample size of 300 people using non-probability purposive sampling.. After taking collecting data from 300 people result shows that , 67% (201) of samples had excellent knowledge regarding effect of plastic use on health. The 32% (96) of samples had moderate knowledge regarding effect of plastic use on health. The 1% (3) of samples had poor knowledge regarding effect of plastic use on health.

The present study provides valuable insights into the understanding of effect of plastic use on health among people in Pune. While the overall knowledge scores were relatively high, The lack of significant associations between demographic factors and the level of knowledge suggests that awareness campaigns and educational initiatives should be designed to be

inclusive, catering to people across diverse age groups, educational backgrounds, and occupations. This comprehensive approach is essential to ensure that the necessary information and support reach all people, addressing the existing gaps in knowledge and empowering them about effect of plastic use on health.

CONCLUSION

In conclusion, while the majority of people possess an excellent understanding of effect of plastic use on health, there remains a need to bridge the knowledge gap. The absence of a significant relationship between demographic factors and knowledge indicates that education programs should target all people, regardless of their demographic background, to ensure equitable and comprehensive awareness of effect of plastic use on health.

Conflict of Interest: The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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REFERENCES

1. Barbir, J., Leal Filho, W., Salvia, A. L., Fendt, M. T. C., Babaganov, R., Albertini, M. C.,& Müller de Quevedo, D. (2021). https://www.mdpi.com/1038816. **https://doi.org/10.3390/ijerph18063116**
2. Hamza, W., Mahmoud, A community-based cross-sectional study exploring knowledge, attitude, and practice of adults towards the use and hazards of plastic products.https://ejcm.journals.ekb.eg/article_278388_6a7183f4d3bce8f1210fcb57bb45d599.pdf **10.21608/EJCM.2022.157402.1232**
3. Soares J, Miguel I, Venâncio C, Lopes I, Oliveira M. Public views on plastic pollution: Knowledge, perceived impacts, and pro-environmental behaviours. Journal of hazardous materials. 2021 Jun 15;412:125227. Public views on plastic pollution: Knowledge, perceived impacts, and pro-environmental behaviours - ScienceDirect.https://www.sciencedirect.com/science/article/abs/pii/S0304389421001904 doi: **10.1016/j.jhazmat.2021.125227**
4. Praveena, B. G. (2024). A Study to Assess the Knowledge Regarding Health Hazards of Plastic in Domestic Use and Attitude toward the use of Alternatives in Women Residing at Mohan Kumar Nagar, Bengaluru. *International Journal of Nursing and Medical Investigation*, *4*(3), 50–53.View of A Study to Assess the Knowledge Regarding Health Hazards of Plastic in Domestic Use and Attitude toward the use of Alternatives in Women Residing at Mohan Kumar Nagar, Bengaluru. https://www.innovationaljournals.com/index.php/ijnmi/article/view/538/450 **https://doi.org/10.31690/ijnmi/50**
5. Sandipan DS. The concept of control and manage plastic pollution of India/world. Int J Eng Sci. 2016;5:1-7. www.theijes.com **https://www.theijes.com/papers/v5-16/version-2/A0506020107.pdf**
6. Hossain MS. People's attitudes regarding plastics and microplastics pollution: Perceptions, behaviors, and policy implications. Marine Policy. 2024 Jul 1;165:106219. People's attitudes regarding plastics and microplastics pollution: Perceptions, behaviors, and policy implications - ScienceDirect. https://www.sciencedirect.com/science/article/abs/pii/S0308597X24002173

https://doi.org/10.1016/j.marpol.2024.106219

7. Khairnar C, Shaji SR, Khemnar D, Vyas S, Gadkari A, Devi S. Assess the awareness regarding hazards of plastic bag use among adults. The Pharma Innovation Journal. 2019;8(6):139-43. 8-5-172-475-libre.pdf https://www.semanticscholar.org/paper/Assess-the-awareness-regarding-hazards-of-plastic-Khairnar-Shaji/8574f8a733d43bddffd3d192c61433086ef02003 **https://www.thepharmajournal.com/archives/2019/vol8issue6/PartC/8 -5-172-475.pdf**
8. Miguel I, Santos A, Venâncio C, Oliveira M. Knowledge, concerns and attitudes towards plastic pollution: An empirical study of public perceptions in Portugal. Science of The Total Environment. 2024 Jan 1;906:167784. Knowledge, concerns and attitudes towards plastic pollution: An empirical study of public perceptions in Portugal - ScienceDirect https://www.sciencedirect.com/science/article/pii/S0048969723064112 **https://doi.org/10.1016/j.scitotenv.2023.167784**
9. Alteneiji SM, Mathew BT, Mohammed HA, Abu-Elsaoud AM, El-Tarabily KA, Al Raish SM. Knowledge, Attitudes, and Practices towards Single-Use Plastic Bags in the United Arab Emirates. Sustainability. 2024 Aug 28;16(17):7396. Knowledge, Attitudes, and Practices towards Single-Use Plastic Bags in the United Arab Emirateshttps://www.mdpi.com/2071-1050/16/17/7396 **https://doi.org/10.3390/su16177396**