

The Impact of Plastic Waste on Health and Free Health Checks for The Community of Lopo Village, Gorontalo Regency

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Abstract

Plastic is involved in every activity of human life. Plastic waste has caused health problems. One of the efforts to reduce the health impact caused by plastic on humans is to conduct health education. This service aims to provide education to the Lopo village community regarding the impact of plastic waste and conduct health checks on village communities. The service will be held in September 2021 in Lopo Village, Batudaa District, Gorontalo Regency. The service is carried out in the form of counseling using the lecture method with the help of Power Point which is then discussed with the participants. The participants of the activity are all the people of Lopo Village. The implementation of activities is self-funded by the executor. Service activities have been carried out well.

Keywords: Health, Plastic, Waste

INTRODUCTION

Plastic is one of the materials that is widely used in every human activity, but its impact on human health is still poorly understood. Plastic production is increasing, thus polluting the environment and food chain processes (Sahabuddin, 2012). Research shows that plastics have a significant and complex impact on human health (Karuniastuti, 2013). Plastic pollutes the environment from store shelves to the human body, and from waste management to sustainable impacts as water, air and soil pollution (Sunarsih, 2018).

Plastic threatens human health on a global scale. Mitigating this threat will require major steps to halt production, and reduce the use and disposal of plastics worldwide. Humans have dumped tons of plastic waste into the ocean. If this process continues for many years to come, the consequences will be to greatly worsen the food chain. Plastics that accumulate in water bodies affect living things and harm them. It also causes indirect damage to the health of seafood eaters and impacts the environment as a whole. Let's understand how plastic affects our body and health (Ayun, 2019).

The chemicals used in the production of plastics are highly toxic and detrimental to the human body. Chemicals in plastics such as lead, cadmium and mercury can directly come into contact with humans. These toxins can cause cancer, congenital defects, immune system problems and child development problems (Suriani, 2016). Other toxins such as BPA or health-bisphenol-A are found in plastic bottles and food packaging materials. When the BPA polymer chain is broken and enters the human body through contaminated water or fish, it can cause some fatal damage to our body (Waring, et. al., 2018). BPA can decrease thyroid hormone receptors which can lead to hypothyroidism (Sheavly & Register, 2007).

Apart from these severe effects, humans can also experience some health problems due to plastics. The following are some of the bad effects on health caused by plastic, namely asthma, lung cancer due to inhaling toxic gases, liver damage, nerve and brain damage, and kidney disease (Eka, 2013). Therefore, it is quite important to carry out socialization efforts related to the dangers of plastic waste for health, especially for coastal communities. Socialization is one of the efforts to overcome health problems that occur in the community (Ahmad, 2021). In addition, it is necessary to carry out health checks to determine the health status of people affected by plastic waste. The purpose of this activity is to raise public awareness about the impact of plastic waste on human health, as well as to provide health checks for at-risk groups.

METHOD

This community service activity is carried out in 2 (two) forms of activity: 1) Health education with the activity theme "The Impact of Plastic Waste on Health". Health education is an educational activity carried out by spreading messages, instilling confidence so that people are not only aware, know, and understand the dangers posed by plastic waste. 2) Health checks, such as Checking Blood Pressure, Blood Sugar, Cholesterol, and other vital signs. The health check is in collaboration with a health team led directly by a doctor.

This service activity was carried out in September 2021 in Lopo Village, Batudaa Pantai District, Gorontalo Regency. Lopo Village is located in the Tomini Bay Area. The implementation of service activities uses the Lecture and Discussion Method. The presenters provide material in the form of lectures with the help of Power Point which contains the material. After that, discussions and questions and answers were held with participants regarding the material given. The participants of the activity were all residents of Lopo village.

The socialization material that was delivered to the participants contained the following: Health impacts caused by plastic waste. The presentation materials presented in the attached counseling are attached.

RESULTS AND DISCUSSION

In general, this service activity can be carried out well on September 11, 2021 at the Lopo Village Office Hall, Batudaa Pantai District, Kab. Gorontalo. This service was attended by 30 participants, both those who attended counseling and those who took part in health examination activities. This activity was carried out well thanks to good cooperation with the Department of Physics, Faculty of Mathematics and Natural Sciences UNG, Lopo Village Government, students who became the committee, and the Lopo Village Community.

Overall, the stages of service implementation activities are as follows:

1. Preparation for Devotion

Preparation begins with carrying out a survey of service locations. Then verbally and in writing apply for a permit for the implementation of service to the village government. Prepare an activity plan including preparing things that must be provided during the implementation of activities such as banners, counseling materials, participant invitations, medical examination tools and materials, health inspectors, and other things that are considered needed at the time of implementing the activity.

2. Implementation of Activities

On the day of implementation, the activity began by preparing for the opening ceremony, arranging a place for counseling and health checks, and installing activity banners. This activity involved students and the village government. The opening is carried out according to the arrangement of events that have been prepared. The opening ceremony began with a prayer, remarks from the Head of the Department, then continued with remarks from the Head of Lopo Village, represented by the Village Secretary, Mr. Sulpical Bumulo. Submission of material is guided by a moderator. The material was delivered on a panel with other speakers from the Department of Physics who discussed Efforts to Increase Sales of Processed Waste Products, Waste Processing Procedures, then continued with the impact of plastic waste on health. Each speaker was then given half an hour each to deliver the material.

After the material has been delivered, the moderator then invites the participants to provide feedback or questions. There were two participants who asked questions related to the material presented.

3. Implementation of Health Checks

After the delivery of the material and discussion, the participants were then directed to take part in a health examination carried out by the Health Team from the Midwifery Department, FIKES UMGo.

4. Evaluation and Closing

The evaluation was carried out by asking several questions about the material presented, such as: How can plastic pollute the environment and food? What are the effects of consuming microplastics? and How to prevent plastic waste from polluting the environment?

Of the several questions given, 80% of all participants who attended were able to answer the questions correctly. The closing of the event was carried out by taking a group photo with the participants of the service activity. The results obtained are in line with the results of research conducted by Natsir (2018) in Barana Village which found that there was a difference in knowledge before and after being given counseling with a p value of 0.000. Another study in Medan Tutungan District by Lumongga and Syahrial (2013) also showed that counseling using the lecture and discussion method increased children's knowledge and attitudes about clean and healthy living behavior with a p value of 0.012. In addition to face-to-face counseling, counseling through e-learning can also help increase knowledge (Ahmad, 2021). Research conducted by Putri et.al (2021) shows that counseling using booklets and one minute videos can increase the knowledge of citizens in the good category by 100% (15 people) and attitudes in the positive category by 66.7% (10 people) regarding hypertension control.

The output of this activity is Public Health Service Activity Reports, Publications, and Documentation Videos uploaded on Youtube which can be accessed via the link: https://youtu.be/eNp_c0QSoZs. Another output that is obtained directly is that the community can find out their health status when activities are carried out through their health checks.

The outcome of this activity is that the participants of this service activity become more aware and know more about the health impacts caused by plastic waste and the impacts if they dispose of waste carelessly. The assessment is based on the response and enthusiasm of the participants in receiving the material provided.

CONCLUSIONS AND RECOMMENDATIONS

Community service carried out in the form of counseling with the theme "The Impact of Plastic Waste on Health" for the people of Lopo Village, Batudaa Pantai District, Gorontalo Regency can be carried out well. The expected outcome can be achieved well where there is an increase in the knowledge of the participants of service activities. Community and stakeholders in Lopo Village is to make a place for waste disposal and processing, further to make a Waste Bank which is funded by village funds. In addition, it must increase cooperation with universities for assistance from universities and other parties in the context of reducing plastic waste and the impact it has on health.

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REFERENCES

- Ahmad, Z. F. (2021). The E-Learning Utilization On Attitudes And Behavior Of Diarrhea Prevention During Pandemic. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(6), 231-236.
- Ayun, N. Q. (2019). Analisis mikroplastik menggunakan FT-IR pada air, sedimen, dan ikan belanak (*Mugil cephalus*) di segmen Sungai Bengawan Solo yang melintasi Kabupaten Gresik (Doctoral dissertation, UIN Sunan Ampel Surabaya).
- Eka, R. (2013). *Rahasia Mengetahui Makanan Berbahaya*. Guepedia.

- Karuniastuti, N. (2013). Bahaya plastik terhadap kesehatan dan lingkungan. *Swara Patra: Majalah Ilmiah PPSDM Migas*, 3(1).
- Lumongga, N., & Syahril, E. (2013). Pengaruh penyuluhan dengan metode ceramah dan diskusi terhadap peningkatan pengetahuan dan sikap anak tentang PHBS di Sekolah Dasar Negeri 065014 Kelurahan Namogajah Kecamatan Medan Tuntungan tahun 2013. *Kebijakan, Promosi Kesehatan dan Biostatistika*, 2(1), 14398.
- Natsir, M. F. (2018). Pengaruh penyuluhan ctps terhadap peningkatan pengetahuan siswa sdn 169 bonto parang desa barana. *Jurnal Nasional Ilmu Kesehatan*, 1(2).
- Sahabuddin, E. S. (2012). Cemaran air dan tercapainya lingkungan sumber daya alam yang berkelanjutan. *Jurnal Publikasi Pendidikan*, 2(02), 102-111.
- Sheavly, S. B., & Register, K. M. (2007). Marine debris & plastics: environmental concerns, sources, impacts and solutions. *Journal of Polymers and the Environment*, 15(4), 301-305.
- Sunarsih, L. E. (2018). *Penanggulangan Limbah*. Deepublish.
- Suriani, S. (2016). Analisis Kandungan Logam Berat Timbal (P Kadmium (Cd) dan Seng (Zn)) pada Tanah Sawah Kelurahan Paccinongan Kecamatan Sombaopu Gowa (Doctoral dissertation, Universitas Islam Negeri Alauddin Makassar).
- Waring, R. H., Harris, R. M., & Mitchell, S. C. (2018). Plastic contamination of the food chain: A threat to human health?. *Maturitas*, 115, 64-68.

APPENDIX



Figure 1. Implementation of Counseling



Figure 2. Discussion Session



Figure 3. Medical examination



Figure 4. Photo with the Service Implementation Team