

## **KNOWLEDGE, ATTITUDES AND BEHAVIORS OF VIETNAMESE PEOPLE ABOUT SINGLE-USE PLASTIC PRODUCTS AND HEALTH IMPACTS IN 2021**

Nguyen Huy Nga\*, Tran Tuan Anh\*\*

### ABSTRACT.

The study was conducted to assess the knowledge, attitudes and behaviors of using single-use plastic products and the impacts on health. The results showed that the proportion of people with full knowledge of the effects of single-use plastic use on cardiovascular, reproductive health, nervous system and other organs was 57,5%; 63,4%; 55,8% and 50,3%, respectively. 98,5% of respondents were willing to replace single-use plastic products with environmentally friendly products. 48% and 51,2% of respondents regularly and occasionally use plastic products. The results of the study also show that people do not have access to information about the effects of single-use plastic products on health. It is necessary to promote communication activities on the impact of single-use plastic products on health and promulgate policies to limit and replace single-use plastic products.

**Keywords:** *Single use plastic products, knowledge, attitude, behavior*

### I. INTRODUCTION

Single-use plastic products are products (except for irreplaceable attachments) including trays, food containers, bowls, chopsticks, cups, knives, spoons, forks, straws, other eating utensils whose plastic

ingredients are designed and put on the market with the intention of being used once before being disposed of into the environment [1].

Worldwide, 300 million tons of plastic are produced each year, and half of them are single-use products. In Vietnam, the average amount of plastic released into the environment is about 2,500 tons per day, of which the volume of plastic waste discharged into the sea ranges from 0.28-0.73 million tons / year, ranking 4th in the world [3].

The use of single-use plastic products in daily life can expose people directly. Some of the chemicals found in single-use plastics, such as Styrene, Phthalates and Bisphenol A, have been shown to have negative health effects. However, in reality, people's understanding and attitudes about the impact of single-use plastic products on health are not high.

### II. OBJECTS AND RESEARCH METHODS

**1. Research subjects:** People living and working in Vietnam.

**2. Research method:** Cross-sectional descriptive research using qualitative and quantitative research methods.

#### **2.1. Quantitative research**

- Tool: Self-drafted questionnaires about knowledge, attitudes, and behaviors towards the use of single-use plastic products and health impacts. Form of problem play: survey on the Google form platform.

- Sample size: 525 people in 52 provinces and cities, across 3 regions of Vietnam participated in the survey.

---

\*Faculty of Public Health, Quang Trung University

\*\*Centers for Health Environment Research and Development - CHERAD

**Responsible person:** Nguyen Huy Nga

**Email:** huynga2000@gmail.com

**Date of receipt:** 5/4/2022

**Date of scientific judgment:** 4/5/2022

**Reviewed date:** 20/5/2022

- Sample choosing: Convenience sampling, anyone can be reached on social networking platforms.

**2.2. Qualitative research**

The study used two forms of qualitative research: group discussions and in-depth interviews:

- Group discussion consists of 2 sessions with 12 participants.

- In-depth interviews with 6 subjects including consumers and sellers.

**3. Data collection and processing:** Use SPSS 20.0 software.

III. RESEARCH RESULT

**1. Demographic Characteristics of Respondents**

**Table 1.** Demographic Characteristics of Respondents (n =525)

TT	Content		Frequency (n519)	Proportion (%)
1	Age	Under 18 years old	40	7,6
		18 - 30 years old	370	70,5
		31 - 40 years old	85	16,2
		Over 40 years old	30	5,7
2	Gender	Male	166	31,7
		Female	353	67,6
		Unwilling to answer	4	0,8
3	Education	Primary, under primary	0	0
		Junior high school	8	1,5
		High school	65	12,4
		Undergraduate and postgraduate	452	86,1

**Comment:** The majority of the study subjects were young people, concentrated in the group of 18-30 (70,6%). The majority were female, accounting for 67,6%. The educational attainment of study participants was mainly undergraduate and postgraduate, accounting for 86,1%.

**2. Knowledge of single-use plastic products**

**2.1. General knowledge of single-use plastic products**

**Table 2.** General knowledge of single-use plastic products (n=525)

Content		Frequency (n)	Percentage (%)
The most common type of single-use plastic product	Plastic straws	53	10,1
	Plastic coffee/milk tea cup	22	4,2
	Food containers	22	4,2
	Nylon bag	350	66,7
	Plastic plates and cups	9	1,7
	Mineral water bottles, plastic soft drinks	33	6,3
	Packaging of household items	6	1,1
	Others	30	5,7

Content		Frequency (n)	Percentage (%)
Decomposition time of plastic waste	Non-decomposition/ long time to decompose	460	87,6
	Less than 50 years	54	10,3
	Less than a year	11	2,1
Species affected by single-use plastics	Terrestrial animals	474	90,3
	Bird	365	69,5
	Fish/marine animals	484	92,2
	Human being	499	95
	No species were affected.	11	2,1

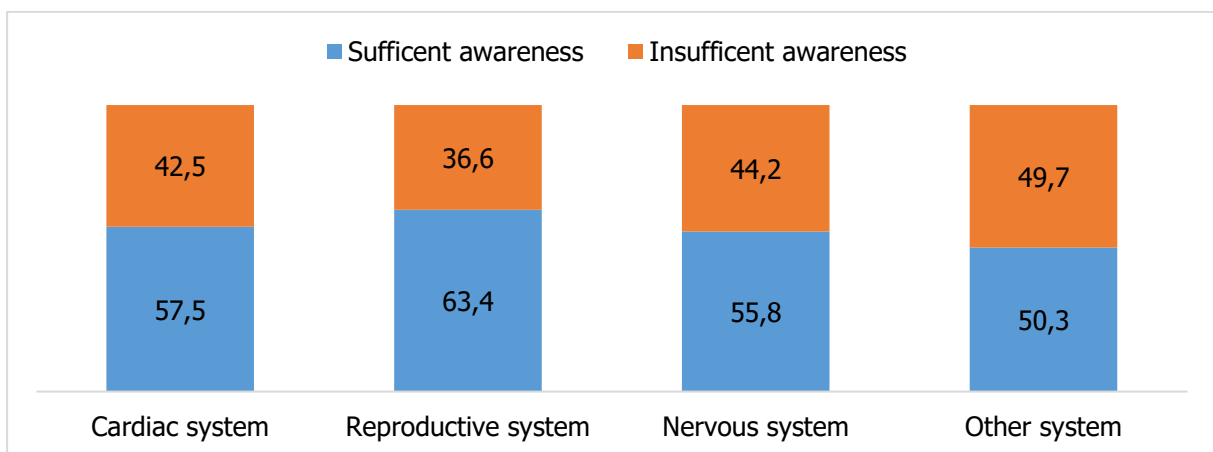
**Comment:** 66,7% of respondents rated plastic bags as the most common disposable plastic product in Vietnam. 87,6% of respondents answered correctly that it takes a lot of time/over 50 years to decompose plastic products. The proportion of all species: humans, fish/marine animals, terrestrial animals, birds affected by disposable plastic accounted for a very high proportion of 95%, 92,2%; 90,3%; 69,5%; respectively.

## 2.2. Knowledge of the impact on health

**Table 3.** Knowledge of the way of exposure and the duration of impact on health (n=525)

Content		Frequency (n)	Percentage (%)
Pathways exposed to toxic substances from single-use plastic products	Directly through food	481	91,6
	Directly through the skin	294	56,0
	Directly through the air	322	61,3
	Indirectly through water and food pollution	516	98,3
	Indirectly by promoting the development of pathogens for people	485	92,4
The timing of the health effects,	Immediately	13	2,5
	After a year	0	0,0
	After a long time	308	58,7
	All right	202	38,5
	No impact	2	0,4

**Comment:** The ways of exposure are further exposed through water and food pollution, directly through food and indirectly through promoting the development of pathogens are the most identified with 98,3%, 92,4% and 91,6%, respectively. The percentage of people with the right knowledge of the timing of the occurrence of health impacts is 38,5%.



**Figure 1.** Knowledge of the impact on each organ system in the body

**Comment:** The proportion of people with sufficient knowledge of the effects on cardiovascular, reproductive system, nervous system and other system is 57,5%, 63,4%, 55,8%, 50,3 %, respectively.

*"I've known about this issue for a long time, but I don't really know how it affects it, because it's less common on television or in the press"*

Consumers participating in in-depth interviews, female, 20 years old, Thanh Xuan District, Hanoi

The results of the in-depth interview showed that people did not have full access to the mass media about the impact of the use of single-use plastic products on health.

### 3. Attitude towards single-use plastic products

**Table 4.** Attitude towards the use of single-use plastic products (n=525)

Content		Frequency (n)	Percentage (%)
Views on readiness to reduce and replace single-use plastic products	Willing	517	98,5
	Unwillingness	5	1,0
	Unknown	3	0,6
Reasons to replace single-use plastic products, (n=517)	Limit adverse impacts on environment element (water, air, soil),	214	40,8
	Limiting adverse health effects	286	54,4
	Avoid adverse impacts on landscape and hygiene	15	2,9
	Other	10	1,9

**Comment:** 98.5% of respondents are willing to replace single-use plastic products with environmentally friendly products. The main reasons when choosing to replace single-use plastic products are limiting the impacts on the environment (40,8%) and health (54,4 %).

*"Bamboo straws or other products such as cloth bags, glass or stainless-steel water pipes are not really handy because they are too heavy or inconvenient to carry with us."*

Participants in the group discussion, male, 31 years old. Quy Nhon City, Binh Dinh

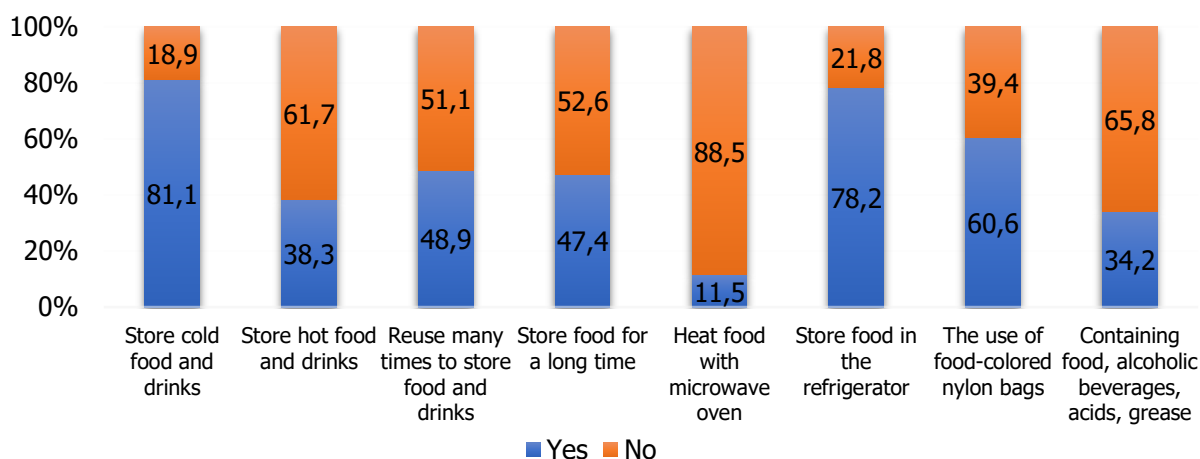
The results of the group discussion showed that the participants in the study supported the replacement of single-use plastic products but still feared for the quality and convenience of the substitutes.

**4. Behaviors of using single-use plastic products**

*Table 5.* Behaviors of using single-use plastic products

Content		Frequency (n)	Percentage (%)
These types of disposable plastic products are often used by the DTNC	Plastic straws	316	60,2
	Plastic coffee cup / milk tea	224	42,7
	Food containers	270	51,4
	Nylon bag	466	88,8
	Plastic plates and cups	135	25,7
	Mineral water bottles, plastic soft drinks	303	57,7
	Bottles containing physiological saline, packaging of household items	159	30,3
Frequency of use of single-use plastic products	Regular	252	48,0
	Occasionally	272	51,8
	Never	1	0,2
Purpose of use	Food/food packaging	418	79,6
	Packing other items	261	49,7
	Garbage storage	339	64,6

**Comment:** 48% and 51,2% of survey participants regularly and occasionally use plastic products; 88,8% of people use plastic bags. The most common use is food storage with 79,6% of respondents surveyed.



**Figure 2.** The behaviors of using single-use plastic generating negative effects on human health

**Comment:** Some unsafe single-use plastic behaviors are very common, namely: storing cold food, drinks; storing food in the refrigerator and using colored nylon bags to store food with 81,1%, 78,2% and 60,6%, respectively.

#### IV. DISCUSSION

The majority of the study participants were young people, under the age of 30 accounting for 78,1%. The education of respondents in this study was quite high, with 86,1% are undergraduate and postgraduate degrees.

The majority of the study subjects had knowledge of plastic products and their impacts on the environment but were insufficient. 66,7% answered correctly the most common type of single-use plastic product as plastic bags, this result was four times higher than the study by Nicholas Ogus et al. in 2021 with 87,6% of the study subjects correctly answered that single-use plastic waste takes a very long time to decompose [5], this result is also higher than the study Habeena Shaira and colleagues conducted in 2020 [2].

In this study, 90,3%; 92,2% and 95% of respondents answered that single-use plastic products affects terrestrial animals, marine animals and humans, these results are coincident with the study of Najnin Khanam and colleagues in India in 2019 [4].

With regard to knowledge of the impacts on human health, the proportion of people with sufficient awareness is not high. Only 60% of respondents answer that the health effects will appear after a long time of absorbing harmful substances from single-use plastic products. Specific effects on cardiovascular, reproductive health, neurological and other organs are lowly identified, only 57,5%; 63,4%; 55,8% and 50,3%; respectively. The results of the study showed that people do not have full access to information about the effects of single-use plastic products on human health.

98,5% of respondents were willing to replace the reduction of single-use plastic products, which was higher than the study by Najnin Khanam et al. with 65,26% of participants agreeing to limit their use [4]. The reason that motivates people to replace these products is mainly to limit the impact on the environment and human health, of which health problems account for not much, just over 54%. People have expressed support for products to replace single-use plastic products, but are still afraid of the convenience and quality of such products.

The habit of using single-use plastic products is very popular, of which plastic bags are the most common. The purpose of daily use to store food and the habit of using disposable plastic products is very common, these behaviors increase the risk of contamination of harmful substances such as Bisphenol, Phtalate ... It affects food and affects human health.

**Limitations of the study:** Due to the convenient way to choose samples on the online platform, the survey results are only described on young people, regularly use social networks and there will be certain error factors if the results are extended to the general population.

#### V. CONCLUSION

The majority of people already have knowledge of single-use plastic products and their impact on the environment. However, people do not have sufficient and detailed knowledge of the impacts on human health. The proportion of study participants with sufficient knowledge of the effects on cardiovascular, reproductive health and nervous system was 57,5%; 63,4% and 55,8%, respectively.

The majority of people are willing to replace single-use plastic products (98,5%). People regularly use single-use plastic products, especially in the food sector, the habit of increasing the ability to review harmful substances into food is very common.

#### VI. RECOMMENDATION

- Strengthen communication programs on the impact of single-use plastic products on human health. Build content and forms of communication suitable for each audience group and media aggregator.

- Develop policies to research, develop and produce alternative products of quality and convenience in accordance with people's tastes.

- Strengthen the management of the use of single-use plastic products in the food sector.

#### REFERENCES

1. **Government of the Socialist Republic of Vietnam (2022)**. Decree No. 08/2022/ND-CP

Detailing a number of articles of the Law on Environmental Protection.

2. **Habeena Shaira, Imaad Mohammed Ismail, Nihal Ahmed, et al.**, Assessment of Knowledge, Attitude and Practice regarding single use plastics among the residents of a rural area in a coastal district of Karnataka - A descriptive study. *National Journal of Community Medicine*. 2020. 11(2): p. 87-92.
3. **Jenna R Jambeck , Roland Geyer , Chris Wilcox, et al.**, Marine pollution. Plastic waste inputs from land into the ocean. *Science*, 2015. 347: p. 768-771."
4. **Najnin Khanam, Vasant Wagh, Abhay M Gaidhane, et al.**, Knowledge, attitude and practice on uses of plastic products, their disposal and environmental pollution: A study among school-going adolescents. *Journal of Datta Meghe Institute of Medical Sciences University*, 2019. 14(2): p. 57-60.
5. **Oguge, Nicholas, Francis Oremo, and Salome Adhiambo**, "Investigating the Knowledge and Attitudes towards Plastic Pollution among the Youth in Nairobi, Kenya. *Social Sciences*, 2021. 10(11): p. 408.