

Original Research Article

## Assess 1st Year B.Sc. Nursing Students' Knowledge Of Plastic's Adverse Effects On The Environment And Human Health To Create An Information Booklet

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### ABSTRACT

**Background:** In the current study, we surveyed nursing students who were in their first year of the Basic Bachelor of Science programme to determine how much they knew about the use of plastic and the negative effects it has on both the environment and human health. Our goal was to compile this information into a booklet.

**Materials and Methods:** A descriptive survey research design was used to assess the knowledge of one hundred students in the first year of a basic Bachelor of Science in nursing programme regarding the use of plastic and the adverse effects it has on both the environment and human health. In this particular study, the selection of the sample was accomplished by the use of the convenient sampling technique. In addition to receiving ethical clearance from the Ethical committee at the Krishna Institute of Medical Sciences, Deemed to Be University in Karad, we also received informed consent from all of the subjects. A well-structured questionnaire was given to respondents in order to evaluate their level of awareness concerning the use of plastic and the negative effects it has on both the environment and human health. The findings indicated that the majority of students, 61%, have average knowledge, 23% possessed good knowledge and 16% possessed bad awareness on the use of plastic and the adverse effects it has on both the environment and human health. There was no significant association found between demographic variables such as age, sex, religion, parent education, family income, Diet and parent occupation and knowledge score, with the exception of the opinion of the participant regarding awareness regarding plastic can cause severe health problem. Chi-square = 95.902,  $p < 0.001$ .

**Conclusion:** The outcomes of the study indicate that the majority of the students possessed knowledge that was on par with the national average about the use of plastic and the negative

effects it has on the environment. As a result, there is an urgent requirement to create an information booklet.

**Keywords:** Knowledge, harmful effect, human health, information booklet

## INTRODUCTION

Because we use so many products made of plastic in our day-to-day lives, the material plays an essential role in the lives of humans. The introduction of these products has made human life simpler and in many ways, superior.

The synthetic or semi-synthetic organic solids that are employed as raw material in the creation of the industrial products are referred to as plastic materials. Plastics are high-molecular-weight polymers and they can be blended with a variety of other substances to boost their performance and cut down on the overall cost of the product <sup>[1]</sup>.

The usage of plastics in everyday life is widespread across the globe. The word "plastic" comes from the Greek word "plastikos" which literally translates to "suited for moulding". Plastic is named after this word. Products made of plastic are both lightweight and sturdy, in addition to being pricey and long-lasting. It is resistant to corrosion and has good thermal and electrical insulating properties. Other characteristics include high thermal resistance. Plastic plays an extremely vital role in today's contemporary civilization, despite the fact that it poses a threat to both human and environmental health <sup>[2]</sup>.

More than one hundred million individuals are harmed on a global scale as a direct result of pollution in the environment. The next generation of Indians will face a grave danger that is far more dangerous than nuclear weapons. The lifespan of human-made garbage made of plastic ranged from ten to five hundred years, with an average of twenty years. Bags make up 44.6% of the total, followed by bottles/caps/lids (29%) and other products round out the remaining 26%. The processing of waste has an impact on the environment when land filling is done with garbage mixed with plastic bags <sup>[3]</sup>. As a result of improper methods of land filling, many harmful metals from land soil, such as cadmium and lead pigments, pass into underground water. These metals include colours <sup>[4]</sup>.

Despite the fact that there are a lot of benefits of plastic in human existence and that plastic is becoming an essential component of the day-to-day lives of the population, the drawbacks should not be overlooked and should be minimised to some extent using methods that are acceptable for waste management. And beneficial activities, such as carrying one's belongings in cloth bags, avoiding food that has been packaged in plastic, raising awareness and making use of vermin composting and making use of plastic as fuel by burning it, which is a practise that is typically carried out by women <sup>[5]</sup>. All garbage, with the exception of plastic, biodegrades, which is another word for decomposes, when subjected to the biological action of bacteria. It takes around a thousand years for plastic to degrade completely. Animals such as cows, dogs, lambs, and birds may frequently mistake plastic for food, which can quickly lead to death as a result of choking or the effects of chemicals. As a consequence of this, over one million animals and sea birds perish every year around the globe <sup>[6]</sup>.

Plastics that were dumped into water sources such as the ocean, rivers, streams and ponds pollute the water, which in turn has an adverse effect on marine life. The improper disposal of plastic trash has a negative impact on human health because it pollutes both the air and the water, which in turn leads to a variety of health issues, including water-borne diseases and

diseases that are brought on by a contaminated environment [7].

The pollution caused by open disposal of single-use plastics and the effect that it has on health requires immediate remedies such as the reuse of plastic and recycling of it. Recycling used plastic in an appropriate manner is the most important thing that can be done to extend the life of plastic [8]. As a result of poor management on the part of local authorities and a lack of resources that can be used for recycling, single-use plastic is being dumped in drainage systems and open spaces such as along roadsides [9].

As a result, increasing levels of environmental pollution result in birth abnormalities, disturbance of endocrine systems, difficulties in reproduction, and conditions that can lead to cancer.

Therefore, the United Nations Environment Programme suggested raising awareness among the many stakeholders [10]. It was important to create stringent laws and regulations for both the production of plastics and their use in order to reduce the negative effects of plastics on human health as much as possible [11].

## Materials and Methods

At the Krishna Institute of Nursing Sciences in Karad, one hundred students in their first year of the Basic Bachelor of Science programme were given a descriptive survey as their research design. The purpose of the study was to evaluate the students' knowledge regarding the use of plastic and the negative effects it has on both the environment and human health. In this particular study, the selection of the sample was accomplished by the use of the convenient sampling technique. Clearance in terms of ethics was received from the ethical committee at the Krishna Institute of Medical Sciences, which is affiliated with Karad's Deemed to Be University. In order to collect the data, the researcher first sought and received official authorization from the Principal and Dean of the Krishna Institute of Nursing Sciences in Karad. The researcher went over the importance of the study as well as its goals with the participants, and they gave their agreement after being fully informed. A structured knowledge questionnaire was given to one hundred students in their first year of the Basic BSc Nursing programme in order to measure their level of awareness regarding the use of plastic and the negative effects it has on both the environment and human health.

The structured questionnaire contains:

**Section I:** Demographic variables such as age, gender, religion, family income, diet, and occupation of parents. This section also includes dietary considerations.

In the second part of the report, a structured knowledge questionnaire consisting of a total of 35 questions was produced to assess respondents' levels of familiarity with the ways in which plastic is used and the negative effects that this has on both the environment and human health. 0-13 for a Poor Score, 14-20 for an Average Score, and 21-35 for an Excellent Score (Good score).

The SPSS programme was utilised in order to carry out the data analysis. The data were evaluated, and their meaning was determined, through the use of both descriptive and inferential statistics.

After conducting an examination of the data on the usage of plastic and its adverse effects on both the environment and human health, an information pamphlet was compiled and made accessible to all of the participants.

## Results

**Table 1:** Socio-Demographic data of the Samples N = 100

	<b>Demographic Data</b>	<b>Frequency (F)</b>	<b>Percentage (%)</b>
<b>1.</b>	<b>Age (Year)</b>		
a.	18-19 year	88	88%
b.	20 to 21 year	11	11%
c.	Above 22 year	1	1%
<b>2.</b>	<b>Sex</b>		
a.	Male	28	28%
b.	Female	72	72%
<b>3.</b>	<b>Religion</b>		
a.	Hindu	48	48%
b.	Muslim	4	4%
c.	Christian	45	45%
d.	Other	3	3%
<b>4.</b>	<b>Parents Education</b>		
a.	10 <sup>th</sup> Science	18	18%
b.	12 <sup>th</sup> Science	43	43%
c.	Graduation	23	23%
d.	Any other degree	16	16%
<b>5.</b>	<b>Family Income/Month</b>		
a.	1000-3000	33	33%
b.	3001-6000	22	22%
c.	6001-9000	16	16%
d.	Above 9001	29	29%
<b>6.</b>	<b>Diet</b>		
a.	Vegetarian	6	6%
b.	Non Vegetarian	8	8%
c.	Mixed diet	86	86%
<b>7.</b>	<b>Parent Occupation</b>		
a.	Government job	7	7%
b.	Private job	40	40%
c.	Daily wage	18	18%
d.	Others	35	35%
<b>8.</b>	<b>Method of Waste Disposal</b>		
a.	Open land	2	2%
b.	Dustbin	75	75%
c.	Burning	8	8%

d.	Other method	15	15%
9.	<b>Do you think that the over use of plastic can cause severe Health problems?</b>		
a.	Yes	40	40%
b.	No	60	60%
10.	<b>Do you think that the over use of plastic can cause severe Environmental hazards?</b>		
a.	Yes	98	98%
b.	No	2	2%

The data presented in the table demonstrates that the bulk of the samples, or 88%, fell within the age range of 18 to 19 years old. Most of the samples 72% are female. The Hindu faith is practised by the vast majority (48%) of the samples. The majority of the samples, 43%, had parents who had at least a minimum education in 12th grade Science. Majority of the sample 33% had household income per month ranging from 1000-2000. The Mixes diet is consumed by the majority of the sample, which is 86%. The majority of the sample, which was forty percent, had parents whose jobs involved the private sector. The majority of the samples, which made about 75% of the total, disposed of their waste in dustbins. Most of the sample 60% were answered as Yes were they are aware of the over usage of plastic can create significant health concern. The majority of people in the sample, which accounts for 98%, responded with a 'Yes' when asked if they were aware that an excessive amount of plastic consumption can result in significant environmental hazards.

**Table 2:** Distribution of sample according to the Knowledge score

N=100

Area of analysis	Knowledge regarding the use and harmful effect of plastic on environment and human health	Score	Percentage	Mean	SD
Knowledge score	Poor	16	16%	17.29	4.176
	Average	61	61%		
	Good	23	23%		

0-13 (Poor Score), 14-20 (Average score), 21-35 (Good score)

According to the data presented in the table above, a total of 61% of students had average knowledge, 23% had good knowledge scores, and a relatively small number of students (16%), had poor knowledge scores regarding the use of plastic and the negative effects it has on human health and the environment. The standard deviation of the score for one's level of knowledge was 4.176. According to the findings, it would be beneficial to design an information pamphlet about the usage of plastic and the negative effects it has on both the environment and human health.

**Table 2:** Association of Knowledge score with demographic variables N = 100

Characteristics	Category	Respondents		Categorization of score			Chi-square test	P-value
		F	%	Poor 0-13	Average 14-20	Good 21-35		
Age in year	18-19	87	88%	14	52	22	2.051	0.7263
	20-21	11	11%	2	8	1		
	Above 22	1	1%	0	1	0		
Sex	Male	28	28%	4	19	5	0.8184	0.6642
	Female	72	72%	12	42	18		
Religion	Hindu	48	48%	6	32	10	8.043	0.2350
	Muslim	4	4%	0	4	0		
	Christian	45	45%	10	22	13		
	Others	3	3%	0	3	0		
Parent education	10 <sup>th</sup> Science	18	18%	2	11	5	1.906	0.9281
	12 <sup>th</sup> Science	43	43%	9	24	10		
	Graduation	23	23%	3	15	5		
	Any other degree	16	16%	2	11	3		
Family Income	1000-3000	33	33%	9	16	8	10.456	0.1067
	3001-6000	22	22%	4	15	3		
	6001-9000	16	16%	2	8	6		
	Above 9001	29	29%	1	22	6		
Diet	Vegetarian	6	6%	1	4	1	1.051	0.9020
	Non vegetarian	8	8%	2	5	1		
	Mixed diet	86	86%	13	52	21		
Parent occupation	Government job	7	7%	2	5	0	7.89	0.2486
	Private job	40	40%	9	22	9		
	Daily wage	18	18%	3	9	6		
	Others	35	35%	2	25	8		
Method of waste disposal	Open land	2	2%	0	1	1	2.827	0.8302
	Dustbin	75	75%	12	48	15		
	Burning	8	8%	1	5	2		
	Other methods	15	15%	3	7	5		
Do you think that the over use of plastic can cause severe Health	Yes	40	40%	16	1	23	95.902	<0.001*
	No	60	60%	0	60	0		

problem								
Do you think that the over use of plastic can cause severe Environmental hazards	Yes	98	98%	16	59	23	1.305	0.5208
	No	2	2%	0	2	0		

The information presented in the table above indicates that there was no significant association between demographic factors such as age, sex, religion, parent education, family income, Diet, and parent occupation and knowledge score, with the exception of participant opinion regarding awareness that plastic can cause severe health problems. Chi-square = 95.902,  $p < 0.001$ . The majority of students, 61%, have knowledge that is about average on the usage of plastic and the adverse effects that its use can have on both the environment and human health. Students only account for 16% of those with inadequate knowledge, whereas the remaining 23% of students have good knowledge. The outcomes of the study indicated that a pamphlet concerning the usage of plastic and the adverse effects of plastic on both the environment and human health should be developed.

## Discussion

The findings of the present study indicated that a total of 61% of students had an average level of knowledge, 23% had a good level of knowledge score, and 16% had a poor level of knowledge score regarding the use and harmful effect of plastic on the environment and human health. The findings of the present study were supported by a study that was carried out by Henna Malik<sup>1</sup> to assess the knowledge and attitude of adolescents regarding the mismanagement of plastic waste and the hazards it poses to the environment among 60 adolescents. The results similar findings were reported by Joseph Jeganathan<sup>[12]</sup>, who found that 52% of respondents had low awareness, 48% had moderate knowledge, and not a single one of them had strong understanding regarding the health risks associated with the usage of plastic. This was similar to the findings of the study that was done by B. Geetha Praveena<sup>[13]</sup> among 100 women. She found that 30% of the subjects had inadequate knowledge, 70% of the subjects had moderately adequate knowledge and none of the subjects had adequate knowledge. None of the subjects had adequate knowledge.

In the current study, there was not found to be a significant association between demographic factors such as age, gender, religion, family income, diet and parental occupation and knowledge score. Similar conclusions were reached by Ambily<sup>[14]</sup>, who found that there was no correlation between the demographic characteristics and the knowledge score.

## Conclusion

The vast majority of pupils have insufficient understanding regarding the use of plastic and the potentially detrimental effects it has on both the environment and human health. Therefore, it is necessary to construct an information booklet in order to raise students' levels of awareness and improve their knowledge.

## Recommendation

A study with the same design can be carried out on a large sample size in a variety of locations. Students in the first year of the Basic Bachelor of Science in Nursing programme could benefit from receiving knowledge through the use of a self-instructional module concerning the usage of plastic and the adverse effects of plastic on the environment and human health.

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