



ENVIRONMENT PROTECTION AWARENESS THROUGH FAMILY ADOPTION PROGRAM

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ABSTRACT **Introduction:** Environmental issues like climate change, pollution, and poor waste management are growing problems, especially in cities. The Family Adoption Program (FAP), started by the National Medical Commission under the CBME curriculum, gives MBBS students a chance to connect with communities and encourage eco-friendly habits. **Objectives:** To assess environmental awareness and practices among families adopted under the Family Adoption Program and to identify barriers to sustainable living. **Methods:** A community-based cross-sectional study was conducted over four months (April–July 2024) in the field practice area of Urban Health and Training Centre, Department of Community Medicine, Dr. PDMMC, Amravati. Using simple random sampling, 200 families were selected from 800 adopted under FAP. Data were collected through a pre-tested questionnaire and analysed using SPSS v16.0. Socioeconomic classification was done using the Modified Kuppuswamy Scale. **Results:** The study revealed that 66.5% of participants were aware of global warming, and 92% were aware of climate change. However, only 38.5% practiced proper waste segregation, while 30.5% reported disposing of garbage in open areas. Notably, none of the participants used eco-friendly vehicles, citing high costs and lack of convenience as major obstacles. The majority (68.5%) relied on private transport powered by fossil fuels. A statistically significant association was observed between socioeconomic status and knowledge of global warming ($p < 0.01$) and rainwater harvesting ($p < 0.01$). **Conclusion:** Our study found that although many families are aware of environmental issues like climate change and waste management, harmful habits still persist. The Family Adoption Program by our medical college helps address this gap by involving students in regular home visits and health education to promote eco-friendly practices. These efforts encourage actions like solar panel installation, use of electric vehicles, and better waste segregation, supporting sustainable lifestyles at the community level.

KEYWORDS : Environment Awareness, Family Adoption Program, Community Based Intervention

INTRODUCTION

India is experiencing rapid growth in both population and urbanization which has led to several environmental challenges¹. These include climate change, increasing air and water pollution, extreme weather events like floods and heatwaves, and poor solid waste management². India is already facing the severe impacts of global warming, such as more frequent heatwaves, flash floods, and unpredictable monsoon patterns that affect public health and daily life³.

Urban areas often face these problems more seriously due to overcrowding, traffic congestion, air and water pollution, and poor drainage systems. Despite the urgency of these problems, awareness and preparedness in many urban communities remain low⁴. Limited access to reliable information and low levels of public participation increase the risk of health problems caused by environmental hazards. One major issue is that health and sanitation services in urban areas are provided by separate departments without coordinating with each other. This leads to poor service delivery, such as uncollected garbage, no separation of garbage, open drains, and a higher risk of disease outbreaks^{5,6}.

National medical commission (NMC) initiated Family adoption program for MBBS students from 2021-22 batch as a part of new competency based medical education (CBME) curriculum to provides them community-based learning experience⁷. The program begins in the first professional year and continues until their final MBBS Part One, under the supervision of the Department of Community Medicine. As per this program, five families are adopted by each medical student in their first year, for whom they will monitor the general health and advice family members on health-related issues and point of seeking care, educating them to identify the problems and their solutions and to adapt healthy practices.

We have embraced the Family Adoption Program as an opportunity to engage with families in reducing pollution and promoting environmental protection. Through this initiative, families are encouraged and educated to adopt eco-friendly practices such as waste segregation, proper collection and disposal of garbage, water conservation, and the installation of solar panels in their homes. These efforts are actively supported by Information, Education, and Communication (IEC) activities conducted at Urban Health and

Training Centres (UHTCs). These initiatives not only enhance environmental awareness but also fosters a sense of teamwork and shared responsibility within the community.

Objectives

- To assess the awareness among families, adopted under the Family Adoption Program, regarding environmental issues and their possible solutions.
- To assess the lifestyle practices of these families in relation to environmental protection.
- To provide guidance on adopting environment friendly practices through healthy lifestyles, delivered by MBBS students under the supervision of the Department of Community Medicine.

MATERIALS & METHODS

Study Setting:- The study was conducted in the field practice area under the Family Adoption Program of the Urban Health and Training Centre (UHTC), Department of Community Medicine, Dr. PDMMC, Amravati.

Study Design:- Cross sectional study.

Study Duration:- 4 months (April 2024 - July 2024)

Study Population:- Families residing in the field practice area.

Sample Size:- Total 800 families were adopted by MBBS students under the Family Adoption Program across four wards of the UHTC field practice area. From these, 200 families were randomly selected-50 families from each ward. One adult member from each selected family was included in the study for answering the predesigned pretested questionnaire.

Sampling Technique:- Simple random sampling.

The inclusion criteria for the study consisted of individuals aged 18 years and above who were ready to participate.

Exclusion criteria included houses that were locked at the time of the visit and individuals who were unwilling to participate in the study.

Data Collection and Analysis

Data was collected using a predesigned and pre-tested questionnaire covering participants' sociodemographic details, awareness about the environment and climate change, and lifestyle practices related to environmental protection, including the use of renewable energy. Socioeconomic status was assessed using the Modified Kuppuswamy Scale⁸. The data was entered in Microsoft Excel and analysed using SPSS version 16.0.

Ethical Consideration and Confidentiality

Necessary permission was obtained from the ethical committee, and data was collected through door-to-door visits by the authors, who interviewed a responsible family member in each household.

RESULTS

Table 1: Distribution Of Demographic Variables in Study Participants (n=200)

Study variable	Category	Frequency (n=200)
Type of family	Nuclear	128 (64.00)
	Joint	35 (17.50)
	Three generations	37 (18.50)
Type of House	Kachha	17 (08.50)
	Semi-pakka	63 (31.50)
	Pakka	120 (60.00)
Socioeconomic Class	Upper class	0 (0)
	Upper middle	36 (18.00)
	Lower middle	39 (19.50)
	Upper lower	120 (60.00)
	Lower	5 (02.50)

(Figures in Parenthesis Indicate Percentage)

Table 1 shows the distribution of sociodemographic variables of the study participants. The table shows that 64% live in nuclear families, 17.5% in joint families, and 18.5% in three-generation families. Regarding housing, 60% reside in Pakka houses, 31.5% in Semi-pakka houses, and 8.5% in Kachha houses. In terms of socioeconomic class, 60% are categorized as Upper Lower, 19.5% as Lower Middle, 18% as Upper Middle, and 2.5% as Lower, with no participants in the Upper class.

Table2: Awareness About Factors Influencing Environment and its Solutions (n=200)

Study variable	Category	Response		
		Yes	No	
Awareness	Problems	Global warming	133(66.50)	67(33.50)
		Climate change	184(92)	16(8)
		Increase in Vector borne diseases	169(84.50)	31(15.50)
	Solutions	Rain water harvesting	117(58.50)	83(41.50)
		Renewable sources of energy	143(71.50)	57(28.50)
		Prime minister Surya Ghar Muft Bijali Yojna	121(60.50)	79(39.50)
Environment friendly power operated vehicles	163(81.50)	37(18.50)		

(Figures in Parenthesis Indicate Percentage)

Table 2 shows awareness about factors influencing environment and their solutions among the study participants. It shows that 66.50% are aware of global warming, 92% about climate change, and 84.50% were aware about increase in vector-borne diseases like Dengue and Malaria. Considering the knowledge about environment protection measures, 58.50% are aware about rainwater harvesting, 71.50% have knowledge about renewable sources of energy, 60.50% were having knowledge about the Prime Minister's Surya Ghar Muft Bijali Yojna and 81.50% were aware of environment-friendly power-operated vehicles.

Table 3. Environment Related Practices Adopted by Families (n=200)

Sr.no.	Practice	Good Practice	Bad Practice
1.	Garbage disposal	Collected in Garbage Vans=103 (51.50)	Throw in open drainage=36(18) Throw in open spaces=61(30.50)
2.	Wet and Dry Segregation of Garbage	Doing Segregation=77 (38.50)	Not doing segregation=123 (61.50)
3.	Sewage disposal	Through proper drainage pipes/system in household or public toilets =117(58.50)	Open drain in front of House=83(41.50)

4.	Environment Friendly power operated Vehicles	Using=0 (0)	Not using=200(100)
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(Figures in parenthesis indicate percentage)

Table 3 highlights a mix of good and bad environmental practices adopted by 200 families. While some families follow good habits—like 51.5% using municipal vans for garbage and 58.5% having proper drainage—many still follow harmful practices. About 30.5% throw garbage in open areas, 61.5% don't separate wet and dry waste, and 41.5% have open drains. Alarmingly, none of the families (0%) reported using environment-friendly, power-operated vehicles, pointing to a complete lack of green transport practices. This reflects a mix of progress and ongoing challenges in adopting eco-friendly behaviours at the community level.

Table 4: Mode of Transport Used by Study Participants for day-to-day Activities (n=200)

Mode of Transport	Frequency (%)
Bicycles	21 (10.50)
Public transport	42 (21.00)
Private vehicles	137 (68.50)

Assessing the mode of transport is important as it directly influences environmental pollution through fuel emissions. Understanding whether families use private vehicles, public transport, or bicycles helps evaluate their environmental impact and awareness. Table 4 shows that most participants (68.5%) use fossil fuel-based private vehicles for daily activities, while 21% use public transport and only 10.5% use bicycles. This reflects a strong preference for private vehicles, indicating a need to promote more sustainable and eco-friendly transport options in the community.

Table 5: Barriers for Use of Environment Friendly Power Operated Vehicles Among Fossil Fuel Consuming Private Vehicle Users (n=137)

Barriers	Frequency (%)
High initial cost	79 (57.67)
Not convenient due to refuelling difficulty	27 (19.70)
Already purchased petrol/diesel vehicle in the past	31 (22.63)

Table 5 highlights key barriers to using environmentally friendly power-operated vehicles among private fossil fuel consuming private vehicle users (n=137). The main issue is high initial cost (57.67%), followed by refuelling inconvenience (19.70%) and prior investment in petrol/diesel vehicles (22.63%). These barriers highlight financial and practical concerns that limit the adoption of environment friendly power operated transport solutions.

Table 6: Association Between Socioeconomic Class and Knowledge About Both Global Warming and Rain Water Harvesting (n=200)

Study Variable	Socio-economic class	Knowledge Present		Total	Chi square value	P value
		Yes	No			
Global warming	Upper middle	31 (86.11)	5 (13.89)	36 (100)	35.75	< 0.001
	Lower middle	37 (94.87)	2 (5.13)	39 (100)		
	Lower	65 (52)	60 (48)	125 (100)		
Rain water Harvesting	Upper middle	28 (77.78)	8 (22.22)	36 (100)	20.12	< 0.001
	Lower middle	31 (79.49)	8 (20.51)	39 (100)		
	Lower	58 (46.77)	67 (53.23)	125 (100)		

(Figures in parenthesis indicate percentage)

Table 6 shows that the association between socioeconomic class and knowledge about both rainwater harvesting and global warming is statistically significant, as determined by the Chi-square test. This indicates that socioeconomic status significantly influences the level of environmental knowledge.

DISCUSSION

In our study, 92% of participants were aware of climate change, a figure that closely aligns with the findings of Vishwakarma et al. (2023)⁹ in Delhi and Pandve in Pune¹⁰, both of whom reported over 91% awareness. The awareness of global warming in our study stood at 66.5%, which is slightly lower than the 72.1% reported by Rathore et al. (2024)¹¹ in Mumbai. Similarly, 84.5% of participants were aware of the rise in vector-borne diseases, a figure consistent with the 84% reported in Northern Gujarat by Mahalakshmi et al. (2012)¹² and the 88.4% reported by Poyyamozhi¹³ in Tamil Nadu.

In terms of sanitation, 58.5% of households in our study had access to proper drainage systems, which is slightly higher than the 50% reported by Desai et al. (2022)¹⁴ in Mumbai. However, 41.5% still reported the presence of open drains, reflecting persistent sanitation challenges. This finding aligns with national data (India Water Portal, 2024)¹⁵, which shows that around 37.5% of households in semi-urban and urban areas rely on open drains, often discharging toilet or septic effluent directly into the streets. A 2020 trend analysis further corroborates this, revealing that about 52% of urban households use septic tanks that discharge into surface drains.¹⁶

Awareness of rainwater harvesting was reported by 58.5% of participants, which is considerably lower than the 78.75% reported by Sube Singh in Haryana¹⁷, highlighting regional variation in awareness levels. Regarding solid waste disposal, 51.5% of house garbage is collected by municipal vans, a figure that is comparable to the 64% reported in Coimbatore by Deepikavani and Thilakam¹⁸. A qualitative study from Ujjain similarly found that unreliable waste collection and the absence of proper segregation facilities led to widespread unsafe disposal practices, even in areas served by formal systems¹⁹.

Importantly, we observed a statistically significant association between socioeconomic status and knowledge of global warming, confirmed through chi-square analysis. This finding supports the results of Vishwakarma et al.⁹ in Delhi, who also reported a similar association between higher socioeconomic class and better environmental awareness.

Overall, our findings indicate that urban populations in India exhibit good general awareness regarding key environmental issues such as climate change, global warming, vector-borne diseases, and rainwater harvesting. However, there remain significant gaps in knowledge and implementation, especially in areas such as waste segregation and sewage management. This suggests that while people may recognize broader environmental concerns, there is a need for targeted education, improved infrastructure, and community-based interventions to bridge the gap between awareness and sustainable environmental action.

CONCLUSION

Our study found that while many families are aware of environmental issues like climate change and waste management, harmful habits such as open dumping, poor waste segregation, and heavy use of fossil fuel vehicles are still common. The Family Adoption Program by our medical college helps address this by involving students in regular home visits and health education. Through these efforts, families are encouraged to adopt eco-friendly practices—like installing solar panels under the Prime Minister's Har Ghar Bijli Yojana, using electric vehicles over fossil fuel-powered ones and supporting Swachh Bharat Abhiyan through proper waste segregation and disposal—helping turn awareness into action at the community level.

Strengths of the Study

A community-based study with a good sample size under the Family Adoption Program, involving medical students in promoting key environmental practices through regular home visits and health education.

Limitations of the Study

As a cross-sectional study, it captures only initial patterns; final outcomes of the Family Adoption Program will emerge after sustained efforts over three years.

Future Recommendations

Strengthen the Family Adoption Program with regular follow-ups and IEC activities to improve environmental practices and promote schemes like Surya Ghar Yojana and rainwater harvesting.

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Conflict of the Interest: There is No conflicts of interest.

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