

Pollution does it affect overall health:A systematic analysis

S Pragya¹, Gayatri Devi.R², A.Jothi Priya³

Running title: Awareness about visual pollution on adolescents

Type of study: Original survey study

¹Saveetha Dental college,

Saveetha Institute of Medical and Technical Science (SIMATS)

Saveetha University, Chennai, India

²Associate Professor,

Department of Physiology,

Saveetha Dental college,

Saveetha Institute of Medical and Technical Science (SIMATS)

Saveetha University, Chennai, India

³Assistant Professor,

Department of Physiology,

Saveetha Dental college,

Saveetha Institute of Medical and Technical Science (SIMATS)

Saveetha University, Chennai, India

Corresponding Author:

Dr.R.Gayatri Devi,

Associate Professor,

Department of Physiology,

Saveetha Dental college,

Saveetha Institute of Medical and Technical Science (SIMATS)

Saveetha University, Chennai, India

Mail id: gayatridevi@saveetha.com

ABSTRACT:

Background & Aim: Environmental issues are a growing concern in today's world. Pollution is the introduction of harmful materials into the environment which contaminates the natural environment and causes adverse effects. Visual pollution is a compound effect of clutter, disorder, and excess of graphics and various objects. The interesting thing is that the visual pollution may not cause any physical damage but causes mental pollution. Visual pollution causes overcrowding and irregular formations. Visual pollution disturbs the visual areas of people by creating harmful changes in the natural environment. The main aim of this study is to assess the knowledge, attitude and awareness about visual pollution among adolescents

Materials and methods: A cross-sectional survey was conducted among the adolescent population with a sample size of 102. A self administered structured questionnaire was prepared based on visual pollution and it consisted of 15 questions. It was circulated to participants through an online platform (google forms). The statistics were done using SPSS software, a chi-square test was used to check the association and P value of 0.05 was said to be statistically significant. Simple random sampling method was the sampling method used to minimise the sampling bias. Children and adults were excluded from the survey.

Results: A majority 75% participants were aware about visual pollution. This study reveals that females were more aware about visual pollution than males. Majority of females think visual pollution causes eye fatigue over males. 80% of participants agreed that longer usage of gadgets can cause visual pollution.

Conclusion: Effects of exposure to visual pollution include distraction, decrease in opinion diversity, and loss of identity. Therefore to make human life healthy, positive and peaceful it is very important to control visual pollution

KEYWORDS: Visual pollution, aesthetic issue, billboards, antennas, Innovative technology.

INTRODUCTION

Pollution is the introduction of harmful materials into the environment. These harmful materials are called pollutants. Pollutants can be natural such as volcanoes, they can also be created by human activity, such as trash or run-off produced by factories (1)(2–4). Pollutants damaged the quality of air, water and land. Pollution has adverse effects on humans and other organisms, thereby contaminating the entire environment. Visual pollution impairs Pleasant view. Visual pollution comes under aesthetic pollution. It is a compound effect of clutter, disorder and excess of various objects and graphics in the landscape such as outdoor advertisements, street furniture, vegetation characteristics (5)(6–11) and other objects. Widely accepted as a real concern among marketing experts, landscape designers, city planners and public health specialists from both the advertiser and consumer perspective, open bracket design, tolerance, information, absorption etc...(12)(13) Industrial development added ten fold more to visual pollution. The interesting thing is that the visual pollution caused may not cause any physical damage but causes mental pollution. Visual pollution causes overcrowding and irregular formations.

Sources of visual pollution are excess and overcrowded advertisements, smoke spewing chimneys from factories, graffiti, telecommunication and electrical wire poles, mobile towers, deforestation, signboards, billboards, posters and hoardings, open storage trashes, dump yards, slums. Local authorities, overcrowded advertising, and individual negligence are responsible for visual pollution. Visual pollution affects human health by causing distraction, fatigue, accidents, loss of identity, mental health deterioration, rheumatic disease, decrease in opinion diversity, interferes with nature lovers view, reduces decision-making capacity, affects mood and behaviour. Previous research done on this topic are global concerns on the effect of visual pollution on mental health and conception factors. Effect of electronic billboards on driver distraction, traffic injury also one of the causes of visual pollution (14)(15). Measuring visual pollution by outdoor advertisements in an urban street using internal visibility and public service. People can be evaluated about the importance of the natural environment and self motivate them to change the habit towards visual pollution (16)(17)(18).

Developing methods on quantifying visual pollution has left it out of the conversation in cities that requires measurable evidence for decision-making (19). Loose government control over the quality of public spaces, lack of awareness and reliable measurement tools are the possible reasons (20)(21)(22). Previous study revealed that research on visual pollution is only from urban landscapes. Our team has extensive knowledge and research experience that has translate into high quality publications(23–27)(27–31)(28–32)

This research is needed to bring awareness among adolescents in the local region about visual pollution, and to bring about a significant reduction in visual pollution. It fulfils the understanding regarding visual pollution and its effect on human health. Hence this research analyses visual pollution awareness among adolescents.

MATERIALS AND METHODS :

A cross-sectional survey was conducted among the adolescent population with a sample size of 102. A self administered structured questionnaire was prepared based on visual pollution and consisted of 15 questions. It was circulated to participants through an online platform (google form). The statistics were done using SPSS software, chi-square test was used to check the association and P value of 0.05 was said to be statistically significant. The pros of the survey is that the adolescents of different lifestyles and cultures were surveyed . Children and adults were excluded from the survey. Simple random sampling method was the sampling method used to minimise the sampling bias.

DATA COLLECTION :

Questionnaire involved the following questions

Name, Age, Gender, Are you aware about visual pollution, Do you think radiation from TV, computer causes visual pollution, Do you think visual pollution comes under aesthetic pollution, Do you think using gadgets for long time causes visual pollution, Do you think we shall pollution causes are you fatigue, Do you think we should pollution is a threat to human lives, How often do you come across billboards, open storage of trash, antennas, electrical wires in your day to day life, Would you like to keep your surroundings and nearby buildings clean and tidy to reduce visual pollution, How often are you present in overcrowded environment, Do you come across many ads on roads and highways which disturbs natural view ,Reflection of sunlight from glass buildings causes visual pollution, What

steps would you take to reduce visual pollution .

RESULTS AND DISCUSSION :

The survey was conducted among the small scale population. The research was statistically analysed and studied. When participants were asked if they were aware about visual pollution 75% majority responded yes. Females were more aware of visual pollution than males. Pearson chi square test showed p value was(0.001) (<0.05), which is statistically significant (Figure 1). 45% participants think visual pollution comes under aesthetic pollution (Figure 1). 68% participants responded yes for reflection of sunlight causing visual pollution (Figure 2). 90% majority participants think visual pollution causes eye fatigue (Figure 3). 80% participants responded 'yes' for using gadgets for long hours causing visual pollution (Figure 4). 87% majority responded 'yes' for keeping the surroundings and nearby buildings clean to reduce visual pollution (Figure 5). 63% participants responded yes for visual pollution is a threat to human life. 80% participants think visual pollution is caused by TV radiations. 76% participants responded they come across an unpleasant view 'sometimes'. 77% participants responded sometimes for coming across billboards, open storage of trash, antennas, electrical wires in day to day life. 75% participants responded 'sometimes' for presents in overcrowded environments . Out of 62 females and 41 males, 44 females were aware about visual pollution, and 30 males were aware about visual pollution. 50% females and 36% men agree to keep the surroundings clean. 52% females and 37% men think that pollution causes eye fatigue. 45% females and 32% males responded they come across unpleasant views 'sometimes'. More females think we shall cause eye fatigue than males. Both male and female come across a pleasant view which disturbs their eyes.

Visual pollution is considered to be any type of man-made construction that is unattractive which affects a person's ability to enjoy view or other aesthetically pleasing objects (33). Unlike air or water pollution for which the research is already certain on levels of harm, visual pollution remains a loose concept tied to general irritation, emotional and psychological harming of viewers. 80% responded that radiation from TV or computers causes visual pollution. Sources of visual pollution are excessive and overcrowded telecommunication, electrical wires and poles, mobile towers, deforestation etc...According to previous literature (34), TV radiation does not contribute much to visual pollution. 90% responded visual pollution causes eye fatigue (Figure 4). Visual pollution affects human health by causing distraction ,eye fatigue ,decreased in opinion diversity,loss of identity ,accidents (16). Visual pollution also affects mental health and eye related problems, Therefore the response is in concordance with other articles (35). 76% of people come across unpleasant views like billboards,open storage of trash,antennas in day to day life. Similar findings were found in a busy street of Poland , they tackled the problem by focusing on measuring visual pollution by Outdoor advertisements and changing the way of perceiving,designing and making outdoor advertisements (33,36). 75% of respondents were present in overcrowded environments sometimes. Overcrowded areas cause visual pollution such as bus stops, railway stations, and markets. 69% of the respondents think reflection of sunlight from glass buildings causes visual pollution. Similar findings were found in (19) work that the majority think visual pollution is caused by reflection of sunlight from glass buildings.

Some limitations of the study where it considered only close ended questions. The study was not suitable for less educated respondents. Technology like smartphones and gadgets are required. Time-consuming to analyse the data only in a limited population. Future scope of the survey is to decrease the ill effects which are caused by visual pollution like eye fatigue, irritability etc.. This study will help the country to focus on visual pollution, visual quality which will improve economic development by flourish

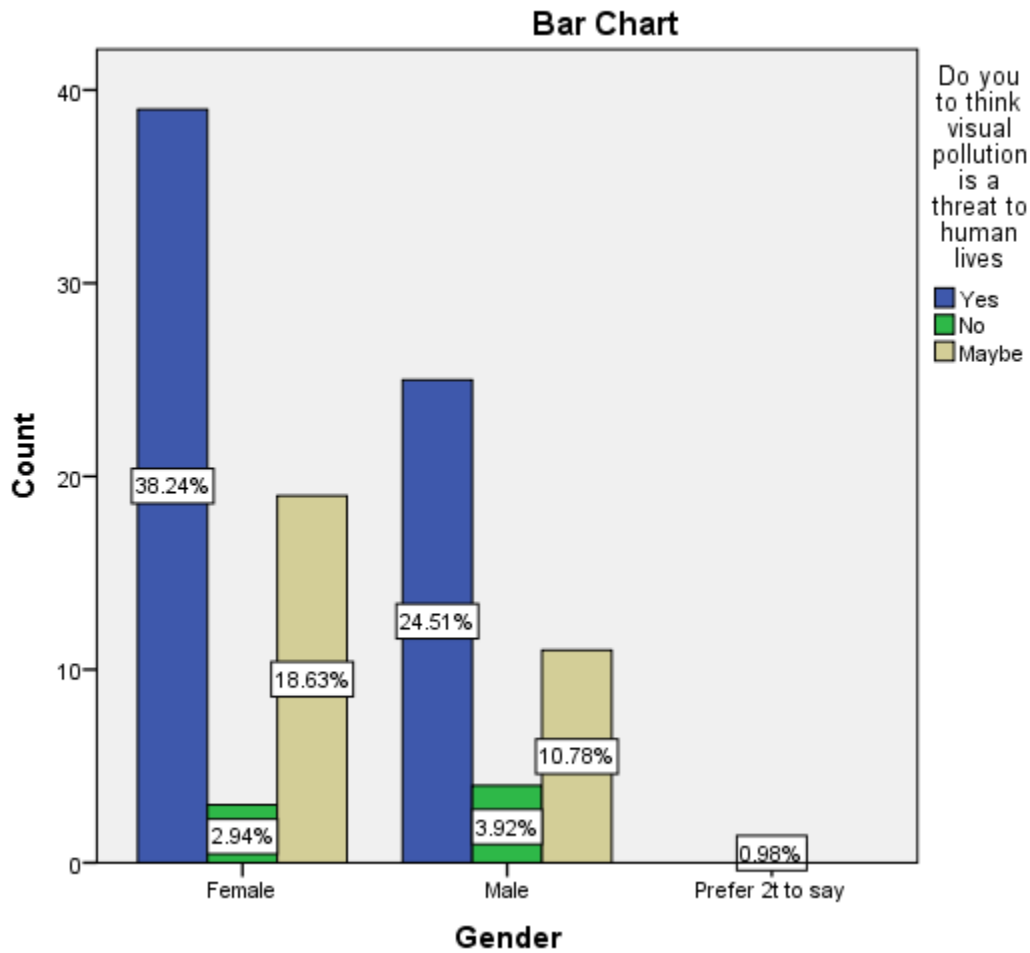


Figure 1: The bar showing association between gender and visual pollution is a threat to human lives. X axis represents the gender and Y axis represents the number of responses. The blue color denotes Yes, green color denotes no, sandal color denotes may be. Females were more aware of visual pollution than males. Pearson chi square test showed p value was(0.001) (<0.05), which is statistically significant.

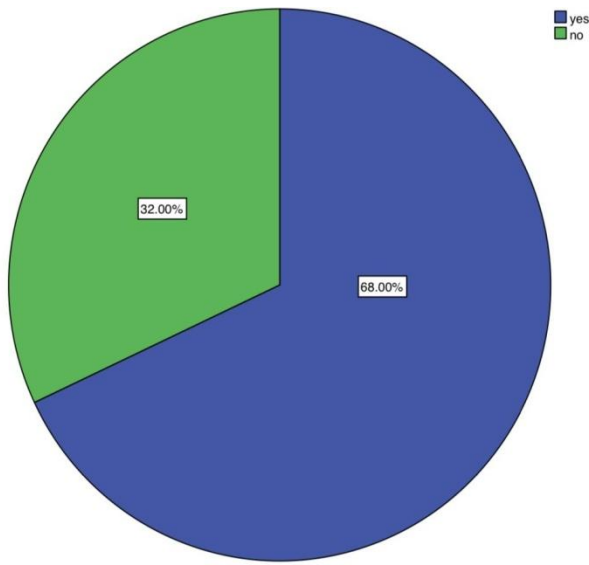


Figure 2: Pie chart showing the percentage of students who thought that reflection of sunlight from glass buildings causes visual pollution. Majority participants 68% responded yes (blue), 32% responded no (green).

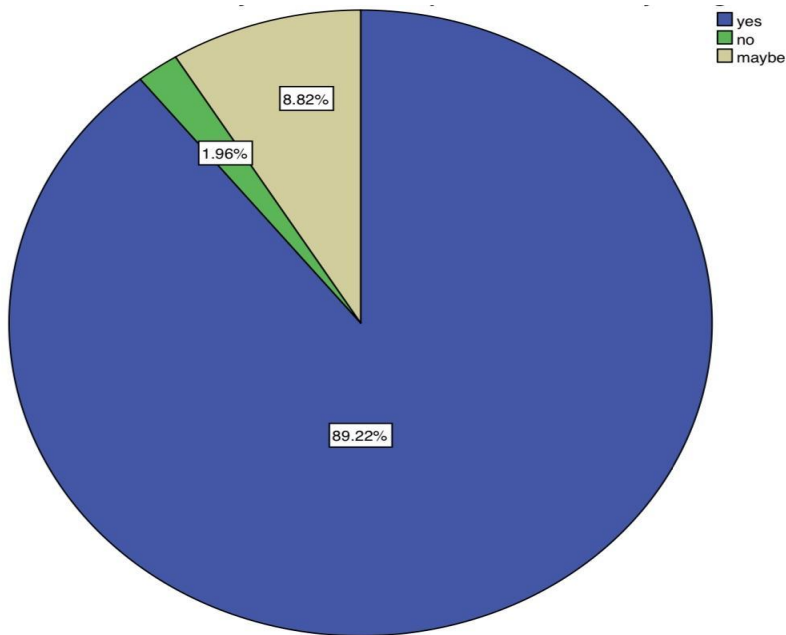


Figure 3: Pie chart showing the percentage of participants' knowledge on visual pollution causes eye fatigue. Majority of 89% answered yes (blue), 2% answered no (green) and 9% answered may be (Sandal)

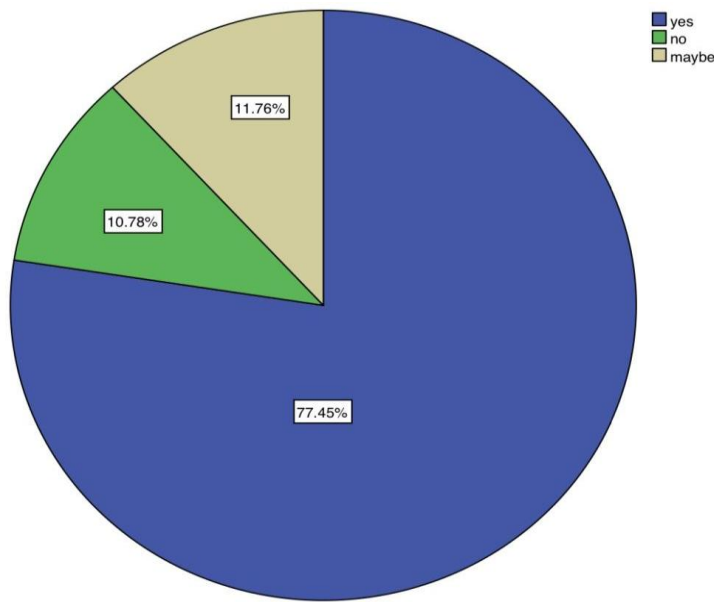


Figure 4: Pie chart showing the percentage distribution of participants coming across advertisements on roads and highways which disturb natural view. 77% answered yes (blue) while 11% answered no (green) and 12% answered maybe (Sandal).

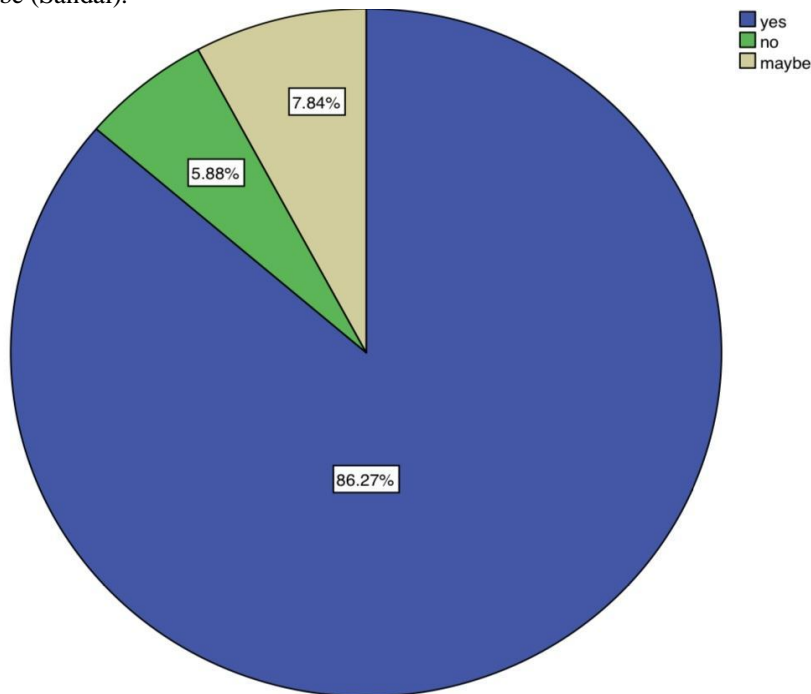


Figure 5: Pie chart showing the percentage distribution of participants' knowledge on keeping surroundings and nearby buildings clean and tidy to reduce visual pollution. Majority of 86% answered yes (blue) while 6% answered no (green) and 8% answered maybe (sandal).

CONCLUSION :

Within the limitations of the study, it enforces on the solutions to reduce visual pollution, to have a green and clean

environment. Thereby decreasing effects on flora and fauna and human related health issues. To make human life healthy, positive and peaceful it is very important that we control visual pollution.

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CONFLICT OF INTEREST:

All the authors declare that there was no conflict of interest in the present study.

AUTHORS CONTRIBUTIONS :

S. PRAGYA: Literature search, data collection, analysis, manuscript drafting .

GAYATRI DEVI.R: Data verification, manuscript drafting

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