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Smog, Social Media, and Public Opinion: How Facebook Conversations Reflect Pakistan's Climate Crisis

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Abstract

The problem of smog pollution has turned into a serious national crisis in Pakistan, which requires the immediate action of the population and the government. Smog, as a major effect of the climate change, is a significant threat to the health and sustainability of the population, especially the South Asian one. The current research examines the issue of Facebook to form public opinion on the smog crisis on the basis of the comments on the posts published by the most popular news outlets in Pakistan. It sought to comprehend the impacts of the public perceptions and awareness by the coverage of smog related problems in the social media. Qualitative content analysis was done on 10,000 Facebook comments, cases manually coded and the theme generated to examine the response of the people to smog coverage. The Uses and Gratification Theory was utilized to discuss the reason why individuals are highly interested in active participation in the media, in particular, the social media, to satisfy their informational requirements. The paper has uncovered the devastating effects of smog on human life and how extremely important the media including social media can be in creating awareness. It highlights the necessity of the government to undertake policies that can counter the problem in a better way whereby the citizens would be more informed and more proactive in countering the dangers of smog pollution.

Keywords: *Smog Pollution, Social Media, Public Opinion, Facebook, Awareness, Climate Change*

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1. INTRODUCTION

Climate change is a complex occurrence that is a composite of environmental factors and human endeavours, which have a far reaching impact on life on earth. It is a cross national challenge that is threatening to every nation, with or without development. Developed countries have the means to come up with innovative solutions, but the developing countries, especially Pakistan, are in a precarious situation because of their reduced resilience and the lack of ability to respond to climate change (Siddiqui et al., 2023). Smog is one of the most urgent environmental issues in Pakistan especially in Punjab that has dire health effects to the population. Environmental activities that include industrialization, deforestation and combustion of fossil fuels have played significant roles in environmental degradation leading to a rise in the level of pollution. This pollution more so as greenhouse gases, promotes global warming, and changes in climate. Its direct effects are increased temperature, changes in rainfall distribution, and severe weather conditions, which all have severe effects on the global environment and human health (Colls and Micallef, 1997; Ghorani-Azam et al., 2016; Turner et al., 2011).

Respiratory illnesses, heart disease, and lung cancer are among diseases that have been attributed to air pollution. Also, environmental pollution harms the mental and psychological state of health, adding stress, anxiety, and depression, especially in the regions where there are severe cases of pollution and climate changes (Ali et al., 2019). Therefore, the effects of climate change are complex in nature involving the physical and mental health. Urbanization, industrialization, and vehicular emissions have led to the increased use of smog a severe form of air pollution in urbanized places. Smog has become a major health concern of the population in South Asia, particularly in Pakistan (Khokhar et al., 2016). Smog in crowded cities severely decreases the quality of air, causing respiratory issues and worsening the already existing diseases such as asthma and cardiovascular diseases. Lahore, the biggest and most rapidly expanding city in Pakistan, has witnessed a frightening growth in the level of smog, and the annual growth in pollution has risen by 4 percent as compared to 2013 (Raza et al., 2020; Sanchez-Triana et al., 2014). When the pollution gets to a worse state, populations that are vulnerable are affected the most, such as children, the elderly, and those with pre-existing health conditions (Meng et al., 2023; Wu et al., 2024). To counter this, the government, public health authorities and environmental organisations are putting efforts on policies to curb the level of pollution, including tougher environmental laws, education and sensitisation of people and adoption of cleaner technology. Nonetheless, such initiatives should be intensified to the extent that they curb the increasing problem. The awareness and knowledge of the people is important in addressing the climate change. The more knowledgeable the population, the more likely the population will take action and implement policies to lessen the destruction of the environment (Leiserowitz, 2007; Schmidt et al., 2013). In Pakistan, the level of awareness regarding the problem of climate change is low, and the media reports about this topic are incomplete and haphazard. This absence of holistic media coverage has impaired the creation of an informed citizenry that completely understands the extent of the issue and mobilizing the populace on the volume scale is hard (Sharif & Medvecky, 2018). Consequently, better media coverage and awareness on climate change is highly

important to bring the issues of climate change to engage and take action. The social media, including Facebook and Instagram, has been used to enhance the visibility of the climate problems, including smog. These channels facilitate the discussion with the public, stimulate real-time information, and facilitate alterations in the policy (Kashif et al., 2025). Similarly, In Pakistan, air pollution and smog have turned into a severe environmental and people health issue, particularly in winter. Over the past years, the cities such as Lahore have witnessed very high levels of air quality that is dangerous. It was reported that Pakistan was one of the most polluted countries in the world and in extreme cases during smog, the Air Quality Index (AQI) in Lahore has gone above 1000 which is dangerous to the health of human beings. It is a combination of factors such as vehicle emissions, industrial pollution, burning of bricks kilns and crop residue, and the weather conditions that enhance the smog crisis by trapping the pollutants in the atmosphere. Its health effects on people are significant especially on old age and children and are associated with respiratory diseases, diminished lung growth and other long term health complications. Daily life has also been disrupted by the crisis wherein schools have been shut and people have been advised to stay at home and take precautions against the virus. With smog becoming an overt and pressing issue with millions of individuals, the issue has become more and more discussed and spoken of on social networking websites like Facebook where people post their experiences, worries, and views regarding the crisis of the environment and the reaction of the government (Akbar et el., 2025; Khuld, 2026)

Nevertheless, regardless of the prevalence of smog, the scarcity of research exists on the topic of social media discussing smog, especially focusing on popular opinion and the influence of news media to form opinions. The study filled the gap in the research as it sought to examine how posts and comments made on Facebook by the news channels contribute to the formation of public perception and sensitization of smog. Pakistan is increasingly becoming vulnerable to climate change and this has to be addressed. Environmental degradation poses health risks and it is imperative to reduce these risks by raising awareness on the issue and also enhancing media reporting. Since smog remains one of the issues of working concern in Lahore, the dynamics behind social media and the interpretation of the issue would help to influence the perception of the population about climate action and take essential steps to pursue it.

1.2 Significance of the Study

This study contributes to the available literature by examining the relationship between the leading news channels in Pakistan, their coverage of smog on Facebook, and the views of users. By analyzing how the comments from Facebook users of posts from news channels affect the public's awareness, the study gives good ideas on the role social media plays in determining environmental perceptions.

Moreover, the research also adds the knowledge of the quality of news coverage by news media regarding smog and their involvement in comments at Facebook to create environmental awareness in Pakistan. By discovering how news channels and social media platforms affect the people on their awareness of smog, the study,

therefore, indicates how these media can be used to assist in addressing the urgent environmental issues. Moreover, to determine the effect of the discussion around the issue of smog on Facebook and their perception and attitude, the research is supportive. This knowledge is vital to the policymakers, media companies as well as environmentalists who are willing to employ social media to create awareness and mobilize people to take action on climate-related issues, especially air pollution. Finally, the results highlight the significance of the media and user involvement that define how people perceive the issue of environmental problems like smog in Pakistan.

1.3 Objectives of the Study

This research aims to explore users' perspectives on smog coverage on Facebook by leading Pakistani news channels. The objectives are:

- To assess the impact of smog coverage on users' perspectives through Facebook comments on news channel posts.
- To examine how Facebook posts and comments by media channels contribute to public awareness of smog in Pakistan.

1.4 Research Questions

RQ1. How does the coverage of smog by leading Pakistani news channels on Facebook influence users' perspectives?

RQ2. What role do Facebook posts and comments from trending media news channels play in raising public awareness about smog in Pakistan?

RQ3. How do users engage with and respond to smog-related content shared by news channels on Facebook?

2. LITERATURE REVIEW

Smog is a term that was developed in the first half of the 20th century as a portmanteau of smoke fog, which has been developed over time to be used as a symbol of a major environmental concern. Although it was originally metaphorically applied to fog wrought by industrial smoke, it was not at once associated with air pollution. With the passage of time, with the increased pace of industrialization and urbanization (particularly in the cities), the word started to be linked solely with the negative consequences of air pollution (Sharif and Medvecky, 2018; Shi et al., 2016). This is a change in taste in regard to realizing the harmful impacts of human actions on the atmosphere.

The China Meteorological Administration (CMA) gives a technical definition of smog in its book of practices on surface weather observation, which states that smog is the suspension of tiny particles in the air that greatly decreases visibility, generally to less than 10 km. More so, the 2010 redefinition of the term by the CMA makes it clear that smog can be formed when visibility is less than 10 km, and there

are no other meteorological phenomena such as rain or dust storm, as well as the humidity is lower than 80 percent (Parry, 2007). These circumstances reveal the impairment of the visibility of pollution and its ecological hazards, especially the concentration of particulate matter. The fact that smog does not fade away in the air by being dispersed through rain and other natural processes makes it part of the chronic air quality problems, especially in large urban cities where human activity is a significant contributor to air pollution. Such a situation has increased smog in densely populated cities around the world and especially in South Asia with rapid urbanization and industrialization contributing towards air pollution. The smoking has serious health effects, which cause respiratory illnesses, cardiovascular diseases, and even preterm birth (Colls & Micallef, 1997; Ghorani-Azam et al., 2016). Other than health hazards, smog diminishes visibility, which has an impact on transportation, tourism and general living conditions in cities. With smog becoming a more common occurrence in cities, there is need to have extensive monitoring, educating the population, and proper policy interventions. The increasing urban population, particularly in the developing countries, exacerbates the air quality management by making it more difficult to reduce the emissions of industries, car pollution, and encourage the development of cleaner sources of energy than ever before.

Khuld (2026) and Nawaz (2026) have pointed out that not only was smog in Pakistan an environmental problem but also a significant social health concern that impacted the life of the urban population. Research revealed that traffic, industries, brick kilns, and burning of crops were some of the causes of pollution in cities such as Lahore. Scholars discovered that air pollution led to respiratory diseases and asthma particular in children and the elderly as well as raised societal awareness and social media debate.

Smog is also closely associated with air pollution and a major pollutant is fine particulate matter (PM). The World Health Organization (WHO) lists PM as one of the leading causes of the unhealthy air quality, which consists of sulfates, nitrates, black carbon, and mineral dust. PM is further divided into fine (PM 2.5) and coarse particles, the latter have sizes less than 2.5 micrometers, and PM 2.5 is the most dangerous particle. These tiny particles invade deep into the lungs leading to severe respiratory and heart diseases (NASA GMAO, 2016).

Smog, therefore, is among the lethal agents of air pollution, particularly in the South Asian region. Pakistan is a country which is severely impacted by smog and has had repeated pollution cases especially by the transboundary pollution by India between 2012 and 2015. This is the case that highlights how vulnerable Pakistan is to climate change, which is aggravated by environmental and socio-economic factors. Smog management should include better community education that results in active measures of fighting against environmental degradation (Rauf et al., 2017). The perception of the sources of pollution amongst the people is dependent on the place and context. Research has shown that smog warnings usually make individuals attribute the problem to cars, industries, or even an external factor such as a neighbouring nation. The perception of the extent of the smog in the society changes over time depending on the trends in the region, the media, and the

governmental intervention.

It has been demonstrated that these attitudes influence the behavior significantly, including outdoor activities change (Saksena, 2011; Peng et al., 2020). It is important to note that mass media is influential in creating the perception of the environmental problem such as smog in the population. Media outlets establish scripts on the risk to the environment and provide possible ways out, which makes them a potent method of educating the population (Mudombi et al., 2017). The growing scope and impact of digital media contributes to the increased potential of digital media in terms of environmental education as it bridges the communication gap existing among governments, environmental organizations, and the masses.
The influence of media on the opinion is especially instrumental in solving the climate change issue as it contributes to the awareness of the population about the dangers of climate change and inspires people to take measures to reduce climate effects (Shapiro and Bolsen, 2018). To sum up, the part of the media in informing the masses and influencing behavior as far as the environmental problems such as smog are concerned is paramount. The insight into the impact that media coverage has on the opinion of people and their behavior concerning climate change and pollution can be used to shape effective communication methods. This information is essential in creating communication strategies that can help in resolving smog and other environmental risks in order to promote healthier and more sustainable lives of people.

2.1 Theoretical Framework

It is the theoretical framework that creates the structure and interpretation of a research study that determines the technique and instrument selection. It assists in establishing epistemological, and methodological components of the study so that the findings are significant and effective (Grant and Osanloo, 2014; Akintoye, 2015). The Uses and Gratification Theory (UGT) is the most important theory used in this study to examine that relationship between the consumption of media and the responses of users especially on social network sites such as Facebook. UGT concentrates on how individuals actively pursue media content in an attempt to meet needs in information, entertainment, social interaction and validation. When applied to the Facebook posts on smog coverage by the news sources, UGT shows how users are interested in the environmental information that meets either informational or emotional needs.

It recommends that users do not just passively consume media, but they are active participants trying to fulfill more profound needs, such as opinion formation or social discussion of social problems, such as environmental degradation. This theory can be used to understand why the users respond to the posts and comments about the smog and form their attitudes towards the problem. Through UGT, the study determines how effective media coverage is in addressing the informational needs of the users to create awareness of the health and environmental hazards of smog. UGT has been especially important in communication studies since it brings out the significance of user satisfaction. It highlights the utilitarian purpose of media in fulfilling inspiration and wishes of people (Windahl et al., 2008).

The framework helps to comprehend the effects of media consumption to user behavior, engagement and perceptions which are particularly important in forming attitudes towards environmental problems such as smog. Therefore, UGT presents a useful frame through which the impact of media on community consciousness and intervention on issues like environmental problems in Pakistan can be examined.

3. METHODOLOGY

In a bid to know the association between Facebook statements on smog and perceptions of its health effects in Pakistan, this study utilizes qualitative content analysis. The research adopts an inductive content analysis method, which is a qualitative method and it entails the creation of codes, categories, and themes directly out of the information in order to discover the meaning behind the material. The thematic analysis, outlined by Clarke and Braun (2013), is applied to systematize and interpret the patterns that are repeated in the data. The methodology is especially effective to establish shared experiences and meanings of comments posted by users on Facebook, in this case, about the problem of smog.

The study concerned with the content posted by four Pakistani news outlets, including Geo News, Express News, Bol News, and Dunya News, on Facebook about smog problems in November and December 2021, 2022, and 2023. The months have been selected because they are the months when the smog levels are highest in Pakistan when the environmental and health issues are at the fore. Through examination of the user comments during such time, the research is able to get the real-time and genuine reaction to the smog coverage.

The data collection was done through manual extraction of the Facebook post comments and Urdu comments were translated to English to ensure consistency. The content was coded into a coding frame to be able to categorize the content and the systematic coding was used to pinpoint reiterating ideas and themes and patterns. The surface-level analysis of the meanings expressed in the comments was emphasized on so that the themes could depict user experiences and perceptions excluding the consideration of deeper meanings (Braun and Clarke, 2006). Thematic analysis will enable the researcher to record the discourse on smog in the social environment and the role played by the media in raising awareness to the people. This method can provide a clue on how social media can be used to understand how the social media can influence perceptions about environmental problems such as smog and influence the behavior of the populace (Leedy et al., 2014).

4. THEMATIC ANALYSIS

4.1 Governance and Management

This theme is concerned with the critical part that the government activities and leadership can play in resolving the smog crisis in Pakistan. The Facebook discussion regarding the news posted by the large news outlets is an indication of how the masses view the fight against smog by the government. One of the general feelings that users expressed was the inability to bring effective policies to minimize

the level of smog. The gap between the policy development and its implementation became the subject of several complaints made by different users, especially the inability to implement environmental regulations and control industrial emissions and truck pollution.

Users attributed the problem of smog to issues of governance, which included corruption, absence of accountability, and inefficiency in the bureaucracy. This indicates the general outrage in the society that the government is not doing anything about environmental health issues. There was a heavy demand of higher accountability and transparency and many of the users indicated that they were not convinced that the government officials were ready to solve the smog crisis. Moreover, political authorities and environmentalists regularly became the focus of criticisms concerning their inadequate activities and disregard to the well-being and health of people. This brings out the call by the people on the need to have leaders who are responsive and responsible in addressing the issue of smog.

4.2 Health, Well being and Safety

This is a theme related to the health and safety risks that smog comes with, as it is articulated by users in their comments. The rising alarm regarding the health effects of smog including respiratory complications, irritation of the eyes and reduced health was obvious. Smog was regarded as an environmental problem, as well as a social health crisis. The visibility issues due to smog were highlighted in most of the comments as they created accidents and limited outdoor activities. This heightened insecurity and made places of work into hazardous places. Another aspect that users realized is the interdependence between human and environmental health whereby smog is a subset of the much bigger environmental health crisis.

The increasing interest in the necessity of environmental sustainability was noticeable as well, and environmentalists talked about such a personal measure as decreasing the number of trips to vehicles and encouraging green activities. There was an increased pressure on the need to raise awareness through campaigns by the population and the need to engage in community participation in addressing health challenges brought about by smog. Numerous users demanded the government to take more action and act as a collective force to deal with health hazards caused by smog.

4.3 Smog, Environmental Problems, and Planting Trees

This theme emphasizes the growing concern of the society with the environmental matter concerning smog, with the users referring to the origins of smog and the possible remedies to smog. The most common point raised was industrial pollutants, vehicle emissions and urban sprawl. The concept of planting trees and green cover became a viral solution, and the users indicated that afforestation would help in curbing smog. This is an indicator of the proactive approach to environmental preservation and the idea of positive impacts of trees on the quality of air. There were also numerous demands of environmental policies and enforcement of laws by users. It was emphasized that there should be long term, long-term solutions

to solve smog and not short-term ones. The users also called on the government officials and specialists to be more explicit on environmental guidelines and carry out more community outreach programs. This underlines the role played by the people in the fight against smog and environmental degradation.

4.4 Awareness and Educational Problems

Education was one of the most popular topics of the discussion of smog and its reports among the users. Education was emphasized by many users who viewed the need to create awareness on the causes and effects of smog. They demanded educational initiatives that would make individuals make well-informed decisions about their environmental effect and promote sustainable ones. The government was also criticized to have neglected the educational activities and some users were disappointed that instead of providing long-term plans on how to deal with smog, they were closing down institutions. Such frustration was an indication that it believed that the government was not taking the environmental crisis seriously since it was channelling its attention to other short-term problems such as school closures. Ignorance of smog and environmental health among the population was also perceived as one of the biggest obstacles in taking effective measures, and more active and sustainable education is necessary.

4.5 Social and Financial Issues

The theme discusses the social and economic factors that determine how users perceive smog and media discussion of smog. A lot of users talked about the effects of urban development on the environment, especially deforestation by housing development that promotes the effects of an urban heat island and promotes smog. The possible conflict between developing and environmental conservation was also central in the comments. The financial factor was also cited as a hindrance to the solution of the smog, as most individuals cannot afford air purifiers, masks, and healthcare as they lack the money. Individual behaviors like high usage of cars by the user were also pointed to as having contributed to the smog problem.

The necessity of increasing the public awareness about the health hazards of smog and preventive measure was made to be heard with many users demanding more coverage in the media so as to make the population aware of the consequences. Another issue that was discussed was industrial pollution, the users insisted on the use of stricter environmental regulations and high responsibility of industries that are known to contribute to smog. This is an expression of the frustration among the population with the industries that are focusing on financial benefits more than on environmental preservation and the significance of the more balanced approach to economic development and environmental sustainability.

4.6 Discussion

This paper examines the impact of media reports on how the people of Pakistan viewed the smog crisis. Smog is one of the most hazardous types of air pollution in the world, and its consequences on health have been devastating, especially

in South Asia, and Pakistan is one of the most affected (Peng et al., 2020). The study looks at how Facebook posts of the most popular news channels in Pakistan including Geo News and Express News affect the awareness and attitudes of the masses towards smog. These media experienced great activity among the users, particularly when the smog was high and thus signified that people were concerned with the problem. It was shown that the analysis of the comments placed by the users was rather dissatisfied with the actions of the government. The inability of the government to take proper measures to reduce smog was a frustrating factor to many users. In 2021, negative remarks were all over Geo News Facebook posts and the government was accused of not taking any action on industrial pollution and vehicle emissions. Political leaders were even accused by some of their users of using school closures as a political gimmick instead of dealing with the source of smog.

In 2022 the criticism continued, as users indicated that they could not believe that the government had not addressed the issue of the smog crisis in years since it had been long-lasting. In 2023, the frustration had risen and several users expressed their frustrations at the poor response by the government. Dunya News and Bol News, in their turn, featured less smog-related content and fewer comments posted by users. Conversations in the Dunya News pages cast doubts on industry pollution and the members decried the fact that economic concerns were taken as priority as opposed to human health. The coverage of Bol News noted lack of attention by the media to environmental issues, where users were sceptical of the attitude taken by the government.

The paper highlights the importance of the media in informing the masses of the dangers of smog to their health and users often talk about the breathing issues as well as the overall health disaster. This media reporting has brought about calls towards improved governance as well as implementation of policies and accountability. The outcomes reveal the necessity of the comprehensive response of governments and long-term plans, which proves the great power of media in forming the social impressions and provoking the people to discuss the environmental problem.

The findings are aligned with the previous studies including the work by (Akbar et al., 2025; Khuld, 2026; Nawaz, 2026) discovered that smog and increasing emissions of CO 2 in South Asia had a profound relationship with economic growth, urbanization, energy use, and industrialization. All these led to the rising reliance on fossil fuels, and this factor contributed to environmental degradation and bad air quality in such countries as Pakistan, India, Bangladesh, and Iran. The findings indicated that increasing development without sustainable energy policy increased pollution and health hazards and therefore, tougher environmental policies, cleaner energy sources, and better control of emissions in the region were required.

5. CONCLUSION

This research examined users' views on smog coverage using Facebook comments to posts made by major Pakistani news channels - Geo News, Express News, Bol News and Dunya News. Using thematic analysis, the research investigated the effect of smog coverage in these channels on public opinion and awareness regarding health challenges in Pakistan with smog. The analysis of user comments showed that there is a lot of opinions on the smog problem. Many users raised concerns about educational policies and said why schools were being closed but industries, old vehicles, and crop burning which are the major reasons for smog, are not being addressed. Other comments were critical of the government's poor decision-making and implementation of policies, and suggested a lack of accountability.

Additionally, some users said they would plant trees to reduce smog and clean up air. The research showed that Geo News and Express News have given the most comprehensive coverage on smog in the peak months of November and December, whereas Dunya News and Bol News showed relatively little coverage. This disparity in coverage points to differing degrees of media interaction with environmental issues, and the role of the media to inform the public about smog and safety precautions. Despite the huge amount of attention given to smog by some news channels, the study also pointed out a crucial issue that smog and air pollution policies in Pakistan are often poorly implemented, lack a concrete strategy and do not have a significant impact. This gap in the effective enforcement of policies has fuelled the general lack of public awareness about the long-term effects of smog, with many persons remaining uninformed to the issue. While media coverage, especially through social media like Facebook, has a vital role to play in creating awareness regarding smog, the study highlights the urgent need for stronger policy implementation, more comprehensive environmental strategies and societal education to successfully tackle the crisis of smog in Pakistan.

5.1 Limitations

The study is limited because it focuses on comments from four news channels only and focuses on the urban areas, so there is a potential of missing general perspectives. Language translation may have resulted in the loss of distinctions, and the study does not follow up on changes in behaviour over time or measure real-world effects. Additionally, media biases might have had an impact on the content and the reactions of the public.

5.2 Recommendations

To deal with the problem of smog, it is suggested that news channels should do more to inform the people, and they should use various forms of communication such as videos and infographics. The government should implement more stringent environmental policies and long-term solutions, while organizing public education in order to promote certain behaviors that could reduce smog, such as minimizing vehicle usage and promoting tree planting. Additionally, initiatives at the grassroots of communities should be promoted in order to empower the local population, and

further research should be undertaken to investigate the long-term effects of the media on behaviour change in relation to environmental issues such as smog.

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