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## The Role of Social Media Campaigns in Raising Awareness about Smog (Climate Change) and Encouraging Sustainable Behaviors

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**Abstract:** Climate is undergoing a constant deterioration at a very alarming rate. Masud et al. (2016) observe that despite very little contribution to climate degradation, poorer countries are more affected by climate change than developed countries. Pakistan is placed at number six among the most affected countries by climate change. IPI Global Observatory reported in its recent findings that Pakistan is a contributor of 0.3% of emissions and yet disproportionality far more affected by climate adversities in the form of annual floods, heat waves, extreme weather conditions, and smog. The worst form of air pollution, called smog, has been haunting Pakistan's major cities for years. Lahore, a provisional capital of Punjab, has topped the list of most polluted cities in the world consistently in years 2021, 2022, and 2023 due to the worst situation of smog. The role of media is integral in this regard. This study explores the role of social media campaigns in creating awareness about smog and encouraging sustainable behaviors. The survey method has been used to collect data from 150 university students. The findings of the study reveal that social media can be best harnessed to cope with smog or other climate-related issues through a well-structured and target-oriented strategy of climate communication.

**Key Words:** Climate Change, Smog, Lahore, Climate Communication, Social Media Campaigns, Sustainable Behaviors

### Introduction

Climate change is a massively significant phenomenon that has been scientifically proven. It is worldwide in scope and has an impact on all living and nonliving things on Earth. It has a trans-border quality since it disregards national and political boundaries and has significant consequences for both developed and developing countries. However, compared to creative and developed nations, the suffering of countries with lower resilience and coping capacity to adapt and lessen the impacts of climate change is greater. Policymakers, academics, and governments all have different perspectives on the subject of climate change and approach. Pessimists see a doomsday scenario because the problem is apocalyptic, while optimists have great hope that human ingenuity will solve climate change-related problems. They believe that through innovation, international cooperation, and the sustainable use of resources, it will be resolved. The media has great discursive power that allows it to shape public opinion, create consensus, and compel consent. By exercising social responsibility, the media can direct public opinion toward the dire issue of climate change (Khan & Khan, 2016).

"Climate change is indeed running faster than we are, and we have the risk to see irreversible damage that will not be possible to recover if we don't act very, very quickly," said UN Secretary-General Antonio Guterres, frightening the entire world (Guterres, 2018).

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United Nations Framework on Climate Change Convention defined it as “Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC, [1992](#)).

Globally, the agriculture industry is now seriously threatened by climate change. Climate change is having a negative effect on nearly every country on earth. It presents a number of issues, such as food insecurity and a possible decline in the output of major crops (Ajani & Geest, [2021](#)). A study found that media plays a significant role in giving information to farmers regarding wheat-rice crops production (Akhtar, Ahmad, Tarar, & Akhtar, [2022](#)).

Changes in precipitation patterns, rising temperatures, and an increase in the frequency of extreme weather events are the obvious causes of this ongoing climate change (Gobena, [2018](#)). Pakistan has been ranked the 5th most-affected country around the globe due to extreme weather events between 1999 and 2018 (Eckstein D, [2020](#)).

One essential component of the response to climate change is public engagement. Effective communication and public participation are essential for achieving the necessary swift social change with the consent and participation of the public (Clarke, Webster, & Corner, [2020](#)).

Social media platforms have been utilized to plan campaigns and movements about climate change as well as to coordinate rescue and relief efforts following climate change-related tragedies (León, Bourk, & Davis, [2021](#)). Climate scientists and others are urged to explain the problem to audiences outside of the scientific community in a way that is understandable, more relatable to their experiences, and motivates them to take action (Corner & Clarke, [2017](#)).

The powerful fourth pillar of the state (media) can mobilize the public for a cause by posing pertinent questions. In the era of abundant information, the power of the media is growing exponentially. As the media informs the public, which is their audience, and poses questions, it establishes an "epistemic community." As a result, the media can spur global action to combat climate change. The ability of the media to influence governmental and institutional decisions has been demonstrated and recognized (Khan & Khan, [2016](#)).

The extensive list of subfields within communication studies research now includes climate communication. It originated from a practical interest in effective communication rather than a scholarly one in communication. Research on climate communication serves a different purpose when it approaches communication as a constitutive process that defines the problems related to climate change, societal change, public engagement, and communication. Since communication is seen as an instrument of public engagement, it is treated as a tool for awareness about climate change (Moser & Dilling, [2011](#)).

The Punjabi government has taken some positive action to combat the harmful effects of this air pollution. In an attempt to lessen traffic pollution, public transportation initiatives like the Metro bus, Orange Line train, and Speedo bus have been introduced (The New York Time, [2017](#)).

A major focus of the current government's anti-smog campaign is reforestation. Additionally, crop burning has been outlawed, and those who do so face steep fines (Dawn, [2021](#)).

These initiatives, meanwhile, have not been enough to halt or even slow down the sharp increase in air pollution and smog. To meet the targets for safer air quality, many more pertinent actions must be taken, such as reducing reliance on fossil fuels and switching to renewable energy, managing urbanization, tightening vehicle emission regulations, improving fuel quality, and relocating industry away from urban areas. All of this is impossible without the support of the general public. Public education and awareness campaigns can greatly benefit from the use of print and electronic media. The people of these three cities will keep dying a thousand cuts until these steps are taken and the desired results are realized (Ashraf, Ahmad, & Tareen, [2022](#)).

## Research Objectives

- To study the role of social media in creating awareness about smog among university students in Pakistan.



- To find the effects of social media campaigns in developing sustainable behavior toward smog.

### Research questions

- Do social media campaigns create awareness about the smog issue (climate change)?
- Does exposure to social media campaigns on smog/climate promote sustainable behavior among university students?

### Literature review

Media has taken part in raising awareness of environmental issues and observing situations. Supporting long-term and environmental consciousness has increased media concentration in previous decades. As a result of increased media exposure, our society is growing increasingly aware of the impact that human activities have on the environment. In this sense, media can play a major role in helping to raise public awareness of environmental issues. Since the media has always covered public and environmental issues, it is the primary creative mechanism for disseminating awareness of environmental defense (Chhachhar, Arain, & Chandio, 2020)

A report outlined the threat posed by rising CO<sub>2</sub> emissions as early as the 1970s. The global think tank “Club of Rome” published “*The Limits of Growth*” with the hope that fossil fuel use would end before serious climate consequences arose (Meadows, Meadows, Randers, & Behrens, 1972).

The public debate has been reignited in recent years when the world witnessed a few disastrous incidents happening (Arlt, Hoppe, & Wolling, 2011). When compared to a national sample of respondents who were not impacted by the series of exceptional deluges during the winter of 2013–14, interviewees in five flood-affected areas of the UK showed increased concerns about the effects of climate change (Capstick, et al., 2015).

Pakistan is a vital nation in South Asia that has experienced huge urbanization. It is one of the top ten nations that has been negatively impacted by extreme climate change for a long time, and it is ranked as the seventh most climate-vulnerable nation in the world (Raja, et al., 2018).

The global warming crisis is a concern not just for Pakistan but for all nations. Citizens' awareness of local environmental issues and climate change is essential to addressing this growing problem. The United Nations Development Agency (UNDP, 2015) recommends that in order to address environmental issues, a nation should involve its citizens in addition to governmental and private organizations. In accordance with these recommendations, the UNDP created the SDGs for Pakistan in 2015, emphasizing the significance of addressing climate change (Rasu, Afzal, Zahid, & Bukhari, 2012).

At the UN General Assembly Headquarters in New York City, a significant resolution was passed in July 2022 that emphasized the fundamental human right to a clean environment and identified climate change and its negative effects as the biggest threat to humankind. Pakistan has been particularly hard hit by the negative effects of climate change, and the nation's environmental performance is still poor (United Nations Environment Program, 2022).

In order to engage the public, it is imperative that they are informed about the issue at hand. Pakistan has serious environmental issues, and it is crucial that its people are aware of them. The first step in addressing any problem a country faces is to inform and educate its people. Citizens' critical thinking about this issue will improve as a result of information, education, and awareness about climate change. It is essential to teach citizens about their fundamental rights and to support their critical thinking in order to solve national issues like environmental injustice (Shwom, Isenhour, Jordan, McCright, & J M Robinson, 2017).

All across the world, contemporary governments are providing their citizens with online forums where they can engage with authorities and participate in civic issues (Guenduez, Mettler, & Schedler, 2020).

The poorer countries are more affected negatively by climate change. Acquiring knowledge about climate change is essential to fostering public awareness of this issue (Masud, et al., 2016).

The modern understanding of climate change usually takes into account changes in the environment caused by human activity within the ecosystem. Currently, one of the most serious environmental problems that humans have ever faced is climate change (Moser & Dilling, [2002](#)).

The effects of climate change on human settlements, food production, water resources, and energy supplies are unparalleled. Developing nations emit fewer greenhouse gases than developed nations, but their vulnerability is primarily caused by their reliance on sectors like agriculture and water that are sensitive to climate change. Pakistan ranks sixth among the nations most susceptible to climate change and has characteristics in common with developing nations (Javed, [2016](#)).

Being informed and aware of climate change is one of the most important prerequisites for effectively addressing the problem. The degree to which the general public is aware of and literate about climate change will determine how much of them participate in mitigation and adaptation efforts. Pakistan is among the countries most susceptible to the effects of climate change, so all facets of society must take strong action. However, as a country, we are not well-informed about climate change, which makes it difficult to take effective action as a group. The vulnerability of Pakistan, as well as its level of climate literacy and awareness, were examined in this study. Following a thorough analysis of pertinent literature, it became evident that Pakistan is a country with a low level of literacy and climate awareness (Jan, Khan, & Mahsud, [2020](#)).

Since then, those who care about the environment have expressed concern over the alarming effects of human activity on the climate, which are seriously endangering social, economic, and geophysical systems. (Hanan, Saleem, Ali, & Mukhtar, [2016](#)).

Media is the term used to describe the instruments and gadgets used in communication. The media provides information, entertainment, education, and promotion through its contents. Newspapers, magazines, radio, and television are examples of traditional media. Social media is one type of modern media that is extensively used online by people all over the world (Ashraf & Islam, [2014](#)).

It serves as a conduit between the populace and the executive branch. The media shapes and assesses public opinion in support of or opposition to any movement, activity, or cause. It raises awareness of current events and matters of both national and global importance. In Pakistan, the media sets the agenda for public opinion, fosters human development, connects the public with the government, and brings up public issues for resolution (Hanan, Saleem, Ali, & Mukhtar, [2016](#)).

Considering its influence, the media can actively contribute to raising public awareness of climate change and encouraging decision-makers to do their share of the work. This communication system can also be used to get pertinent data and materials out to the public from policy and scientific circles (Kakade, [2013](#)).

Media responsibility extends beyond simply disseminating information. However, it must bring the public's attention to climate-related issues like food, water, energy, and health through its trustworthy and credible content. In turn, the public can exert pressure on the government to take action (Riaz, [2018](#)).

Air pollution is responsible for 7 million global deaths annually, including from non-communicable diseases such as cancer. Despite the fact that air pollution-related diseases and deaths are preventable, global action for clean air has been slow. Given the media's vital role in social and policy change, this paper reviews the existing literature on how the media portrays air pollution and the implications this has on perceived links between air pollution and cancer. Our review finds that the media has created public attention toward air pollution and has been effective in raising risk perceptions, but our review also indicates gaps in media reports, including an under-emphasis on health effects (Murukutla, Kumar, & Mullin, [2019](#)).

Smog is the most lethal type of air pollution worldwide. The South Asian region's new source of acute health risks is this dangerous smog. Pakistan has spent the last few years covered in smog in the South Asian region (Wang, Kim, Moon, & Song, [2020](#)).

These arguments are especially relevant in the digital age, where audiences are customizing their media consumption more and more. For instance, when it comes to climate change, it's critical to take into



account the variety of opposing viewpoints that the public may choose to identify with, thanks to digital media (Happer & Philo, [2013](#)).

Empirical evidence indicates that communicative strategies that highlight relatable and scientifically grounded risks are efficacious. Our results would lend credibility to the growing use of the language of risk in communications about climate change (Painter, [2013](#)).

Both behavioral and attitude changes were sparked by media accounts. Regarding the creation of constructive changes, the media's portrayal of climate change as an unknowable topic was closely linked to mistrust and misunderstandings. One of the main obstacles to taking action that keeps coming up is the feeling that there is too much information available online and in the media about what or who to believe when it comes to the best course of action (Happer & Philo, [2016](#)).

When it comes to warning audiences about health risks, especially those that are invisible or intangible, the media is crucial. As "watchdogs," the media can assist viewers in assessing the possibility and seriousness of the risk, their own susceptibility to it, and ways to safeguard themselves.

The most populated and dirty cities in Punjab, Lahore, Faisalabad, and Gujranwala, are dealing with an increasingly severe case of smog, which recurs every winter with more ferocity. Industrialization, burning of crops, and extreme traffic pollution are major contributing factors. These have resulted in serious health problems with the skin, heart, lungs, and eyes. Even though the government has taken some action to lessen the harmful effects of smog, it hasn't seemed like much has changed. To combat this issue, significant efforts are still required, and public cooperation will be crucial. In order to accelerate anti-smog efforts and make the relevant authorities aware of the seriousness of the situation, our goal is to draw their attention to it (Ashraf, Ahmad, & Tareen, [2022](#)).

Recent data indicates that in November 2021, the Air Quality Index (AQI) in some parts of Lahore frequently exceeded  $400 \mu\text{g}/\text{m}^3$ , while the safe AQI value is thought to be below  $50 \mu\text{g}/\text{m}^3$ . Smog is the main cause of the wintertime decline in air quality (Dawn, [2021](#)).

Numerous major health problems, such as respiratory disorders like asthma flare-ups, coughing, burning in the chest and throat, and chronic bronchitis, are brought on by smog. In addition to these respiratory issues, smog also manifests as skin, heart, and eye symptoms (Ali, Razi, Felice, Sabir, & Petrillo, [2019](#)).

Smog is thought to be the main threat to health. It can enter the respiratory system and become lodged in the lung tissue, leading to a variety of pulmonary diseases. It is the same element that makes smog appear "hazy" and decreases visibility (Sánchez-Triana, Enriquez, Afzal, Nakagawa, & Khan, [2014](#)).

It is essential that sensible steps be taken to improve air quality, given the harm that smog can cause. The majority of environmental regulatory agencies lag behind because they lack funds, standardized protocols, specialized equipment, and trained staff (Ali & Athar, [2010](#)).

To begin, the government should set aside the necessary funds for afforestation projects across the country, monitoring and lowering harmful emissions and transitioning to renewable energy sources. Given the dire predictions that the current state of affairs presents, it is imperative that a strict action plan be put in place to protect public health and lessen the financial strain on the nation's health system. Finally, but just as importantly, people should be informed about the potential health risks associated with this environmental hazard and taught self-defense techniques to avoid aggravating pre-existing medical conditions. Some of the most efficient ways to make sure of this are the distribution of educational pamphlets and brochures, as well as public service announcements on radio, television, and the Internet (Riaz & Hamid, [2018](#)).

## Methodology

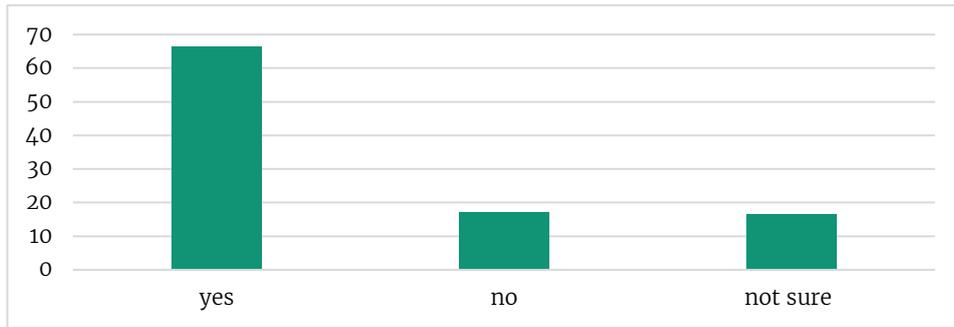
This research uses a survey method to get the responses of 150 university students selected by using systematic random sampling. A carefully developed questionnaire was used as a tool of the study.

## Results & Findings

Results and findings are expressed in the form of charts and tables.

**Figure 1**

Do you know about climate change?



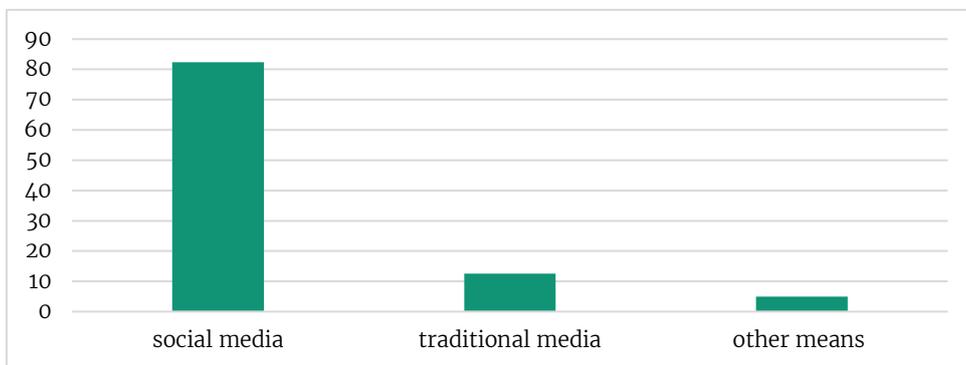
**Table 1**

Statement	Yes	No	Not sure
Do you know about climate change?	66.3%	17.2 %	16.5 %

Figure 1, Table 1 shows the values of responses against the given statement. 66.3 % of the respondents reported that they knew about climate change, 17.2 did not know it, and 16.5 % remained unsure.

**Figure 2**

From where do you get information that climate change is happening?



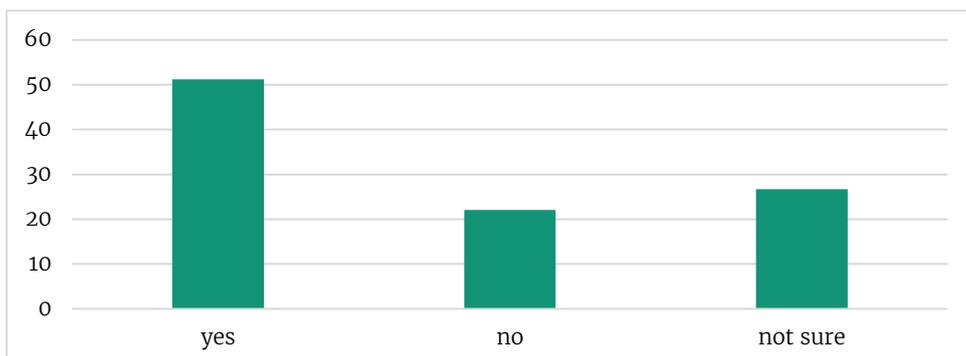
**Table 2**

Statement	Social media	TV/Radio/Newspapers	Other means
From where do you get information about climate change?	82.4 %	12.6 %	5 %

Figure 2, Table 2 shows that 82.4 % of respondents get information about climate change on social media, 12.6 % get it from traditional media, and 5 % get such information from other means.

**Figure 3**

Do you know that smog is the outcome of climate change?





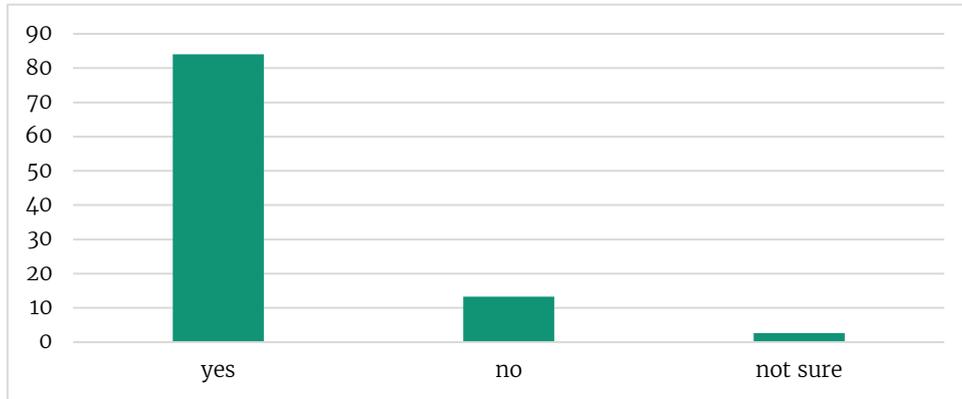
**Table 3**

Statement	Yes	No	Not sure
Do you know that smog is the outcome of climate change?	51.2 %	22.1 %	34.1 %

Figure 3 and Table 3 show the percentages of responses recorded against the given statement. 51.2 % responded yes, 22.1% no, while 34.1 % remained unsure about the given statement.

**Figure 4**

*Do you think that smog has bad health consequences?*



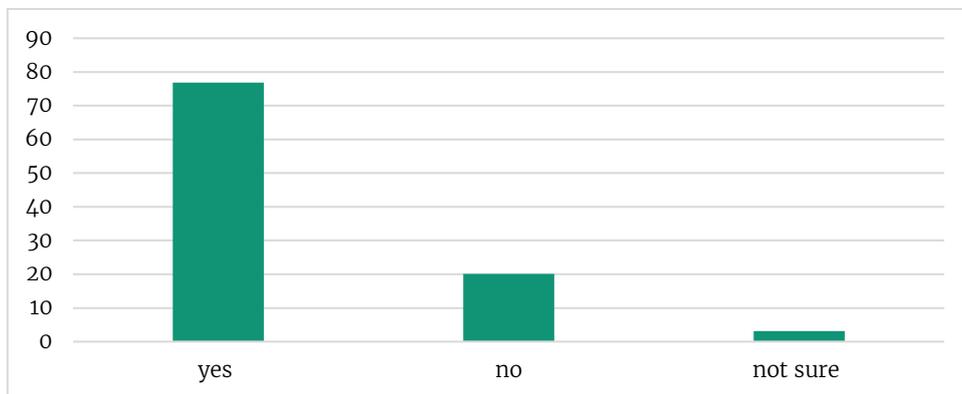
**Table 4**

Statement	Yes	No	Not sure
Do you think that smog has bad health consequences?	84 %	13.3 %	2.7 %

Figure 4, Table 4, shows the percentage of responses recorded from the respondents. 84 % of the respondents think that “yes” smog has bad health consequences, 13.3 % do not think that way, and 2.7 % remain unsure about the given statement.

**Figure 5**

*Did you ever have health issues due to smog?*



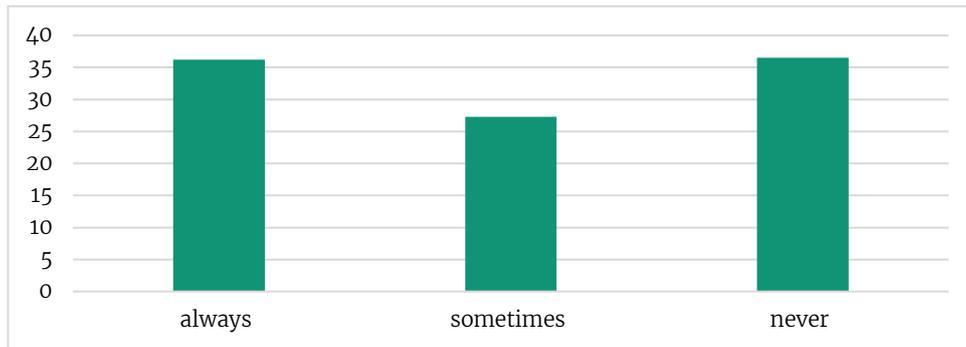
**Table 5**

Statement	Yes	No	Not sure
Did you ever have health issues due to smog?	76.8 %	20.1 %	3.1 %

Values given in Figure 1 and Table 1 show the responses observed against the given statement. 76.8 % of the respondents marked “yes” that they have health issues from smog, 20.1 % do not have smog-related health issues, and 3.1 % remained unsure.

**Figure 6**

Do you think that smog affects your daily life?



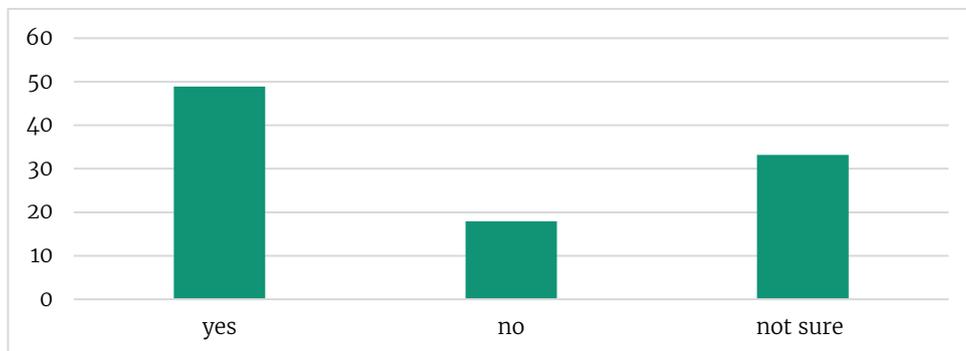
**Table 6**

Statement	Always	Sometime	Never
Do you think that smog affects your daily life?	36.2 %	27.3 %	36.5 %

Figure 6, Table 6 shows that 36.2 % of participants responded that their daily life is “always” affected by smog, 27.3% remarked “sometimes,” while 36.5% responded that their life is never affected by smog.

**Figure 7**

Do you follow pages related to smog (climate) information?



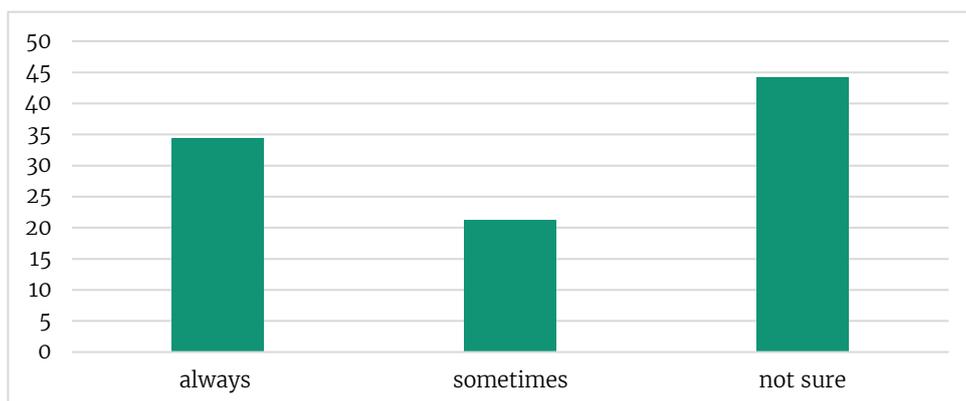
**Table 7**

Statement	Yes	No	Not sure
Do you follow pages related to smog (climate) information?	48.9 %	17.9 %	33.2 %

Figure 7 and Table 7 show the percentages of the responses. 48.9 respondents do follow pages related to smog or climate information, 17.9 % do not follow, and 33.2 remain unsure about the given statement.

**Figure 8**

Do you think social media gives accurate information on smog?





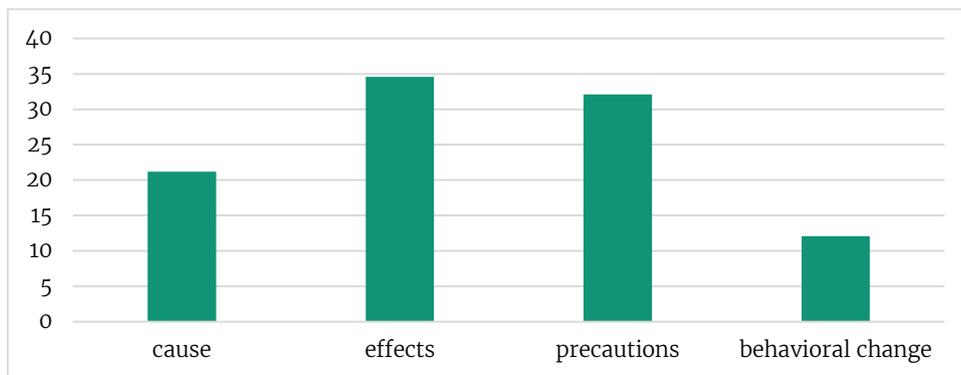
**Table 8**

Statement	Always	Sometimes	Not sure
Do you think social media gives accurate information on smog?	34.5 %	21.3 %	44.2 %

Figure 8, table 8 shows that 34.5 % of participants responded that social media “always” gives accurate information on smog, 21.3 % responded “sometimes,” while 44.2 were “not sure” about the given statement.

**Figure 9**

Information on smog is mostly based on?



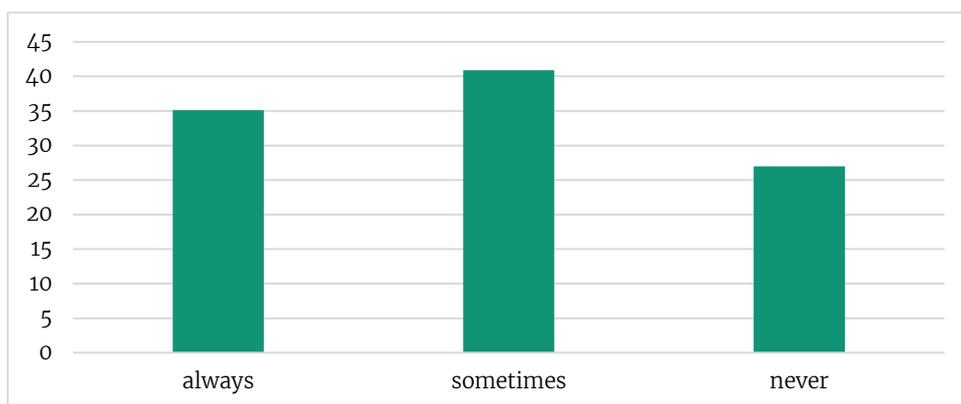
**Table 9**

Statement	Cause	Effects	Precautions
Information on smog is mostly based on?	21.2 %	34.6 %	32.1 %

Figure 9, Table 9 shows that 21.2 % of social media coverage of smog is based on cause, 34.6 % on effects of smog, 32.1 % covers precautions, and 12.1 % focuses on behavioral change.

**Figure 10**

Does social media give you information on individual roles in reducing smog?



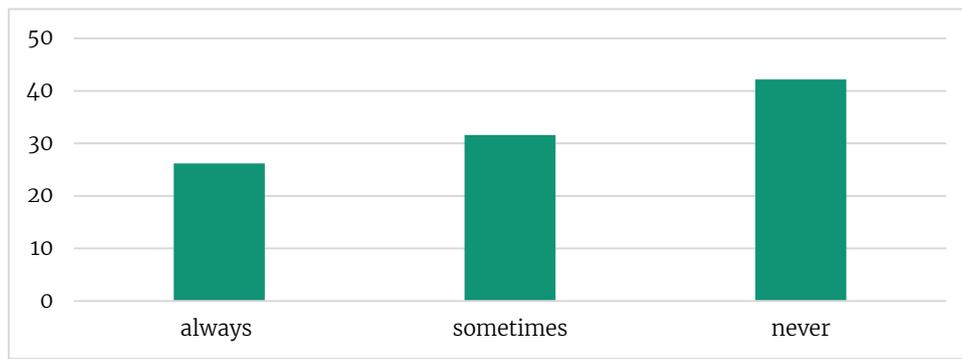
**Table 10**

Statement	Always	Sometimes	Never
Do social media give you information on individual roles in reducing smog?	35.1 %	40.9 %	27 %

Figure 10 and Table 10 show the responses recorded against the given question. 35.1 % of respondents believe that social media coverage of smog “always” gives information on individual role in reducing smog, 40.9 % responded “sometimes,” while 27 % responded that social media coverage of smog never covers individual role in reducing smog.

**Figure 11**

Do you follow social media instructions on precautions regarding smog?



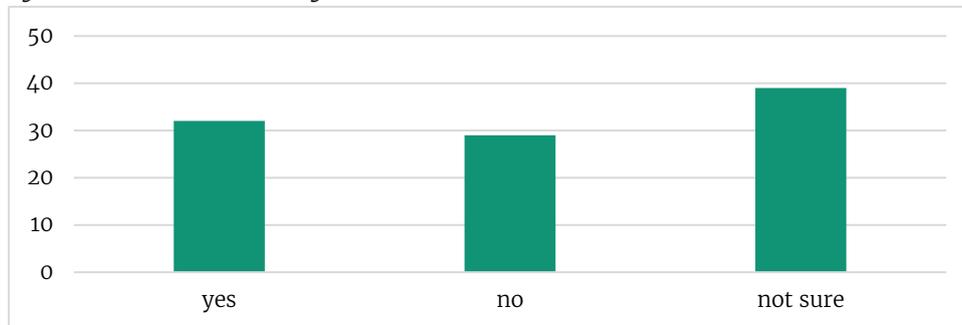
**Table 11**

Statement	Always	Sometimes	Never
Do you follow social media instructions on precautions regarding smog?	26.2 %	31.6 %	42.2 %

Figure 11 and Table 11 show the values of responses. 26.2 % of the participants responded that they “always” follow the precautionary measures covered on social media regarding smog, 31.6 % do so but only “sometimes,” while 42.2 % “never” follow such instructions.

**Figure 12**

Do you share smog/climate-related messages on social media?



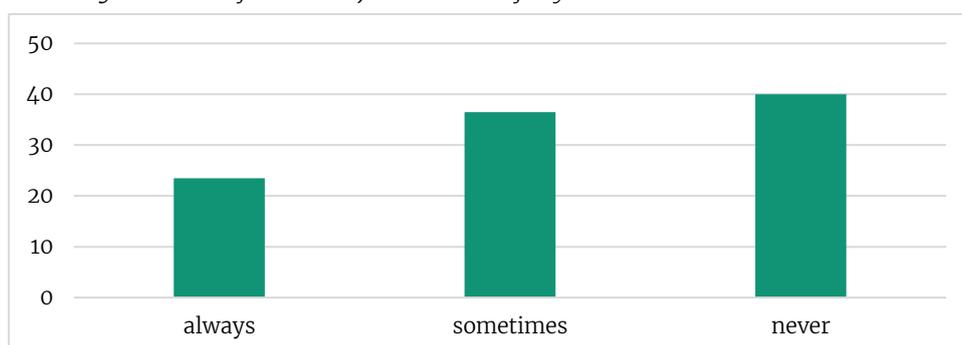
**Table 12**

Statement	Yes	No	Not sure
Do you share smog/climate-related messages on social media?	32 %	29 %	39 %

Values shown in Figure 12 and Table 12 illustrate the responses of the participants recorded against the given question. 32 % of respondents share information regarding smog or climate issues, 29 % never do so, while 39 % remained unsure in this regard.

**Figure 13**

When I come across smog-related information, I read it carefully





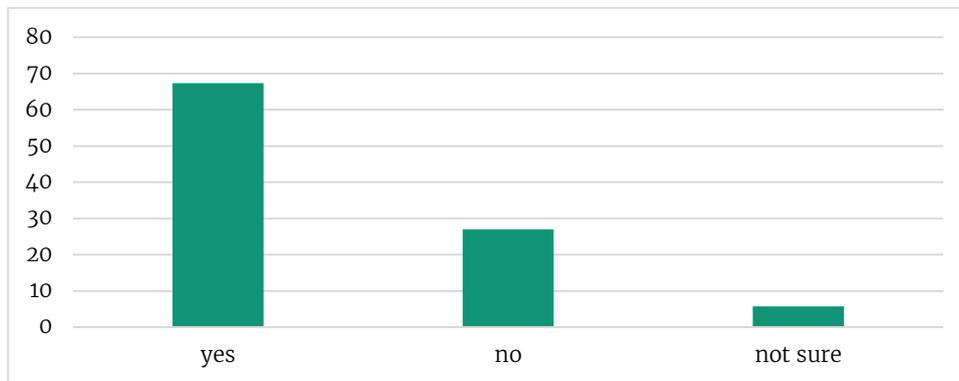
**Table 13**

Statement	Always	Sometimes	Never
When I come across smog-related information, I read it carefully.	23.5 %	36.5 %	40 %

Figure 13 and Table 13 illustrate the values of recoded responses against the given statement. 23.5 % of respondents always carefully read the information regarding smog, 36.5 % do it only sometimes, and 40 % never do that.

**Figure 14**

*Social media promotes using public transport.*



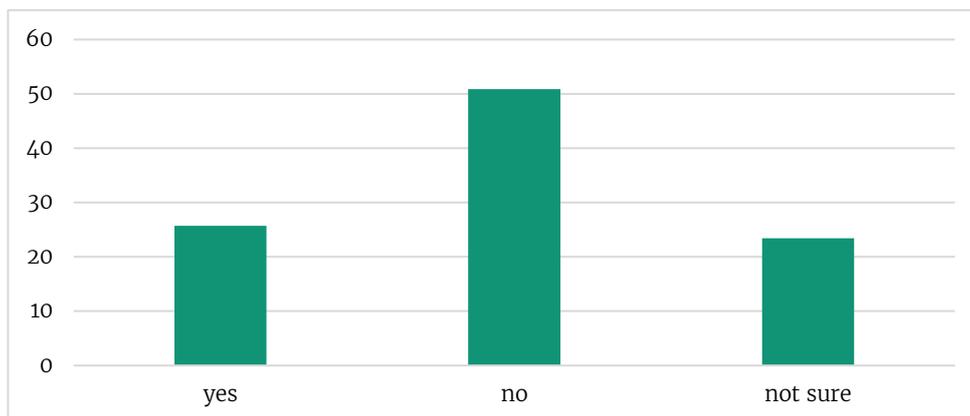
**Table 14**

Statement	Yes	No	Not sure
Social media promotes using public transport.	67.3 %	27 %	5.7 %

Figure 14, Table 14 shows that 67.3% responded that social media promotes the use of public transport, 27 % responded “no,” and 5.7 % were not sure about the given statement.

**Figure 15**

*Are you part of any climate change awareness campaign on social media?*



**Table 15**

Statement	Yes	No	Not sure
Are you part of any climate change awareness campaign on social media?	25.7 %	50.9 %	23.4 %

Figure 15, Table 15 shows that 25.7 % of participants responded “yes” they are part of a climate change awareness campaign on social media, 50.9 % majority is not a part of any such campaign while 23.4 % were not sure about it.

## Discussion

Climate change is a real phenomenon and is happening at an alarming rate. Social media can play an impressive part in this regard. The modern man lives a hybrid life both in online and offline worlds (Van Dijk, 2020). Mass consumption of social media can be harnessed for smog and other climate-related concerns. Environment-related online engagement is the most exemplary of newer forms of media engagement (De Moor, 2017). Findings reveal that 82.4% of the sampled population gets smog or climate-related information from social media. Thus, social media has surpassed traditional media. Similarly, 48.9% follow climate-related pages on social media, while 34.5% believe that social media always gives accurate information on climate-related issues. Considering the trust level of social media consumers, there is a need to address disinformation and fake news to get the most out of social media engagement on smog/climate-related issues. In order to effectively address climate change, or more accurately, climate disruption, we must broaden our perspective to encompass phenomena beyond our direct experience (Rock & Gilchrist, 2021). 76% of the responded that social media gives awareness about individual responsibility in reducing climate change and its adversities, while 67.3% agreed that social media coverage of smog urges the use of public transport. 57.8% tend to follow precautionary measures promoted on social media. Media responsibility extends beyond simply disseminating information. However, it must bring the public's attention to climate-related issues like food, water, energy, and health through its trustworthy and credible content. In turn, the public can exert pressure on the government to take action (Riaz, 2018). The majority responded that social media coverage of smog is mostly based on effects (34.6%) and precautions (32.1%). Additionally, 57.8% follow the instructions given on social media regarding smog, and 32% share climate-related information on social media. However, it is important to observe that only 25.7% are part of social media climate-related campaigns. This indicates that social media coverage of smog or climate-related issues needs to be revisited so that social media consumers can play their individual part in using social media as a vital tool of climate communication.

## Conclusion

Pakistan is among the most affected countries by climate change. The most apparent consequences include heavy floods, smog, heat waves, and extreme weather. Pakistan contributes very little to global climate change. However, major cities in Pakistan are hit by the worst form of air pollution, i.e., smog. Lahore, the provisional capital of Punjab, is reported as the most polluted city in the world for the third consecutive year. Reasons can be numerous, but being a real-time fact, there is a need for sustainable adaptations. Media can do a lot in this regard. A huge number of digital citizens in Pakistan can be better informed and guided regarding these consistent climate adversities that the country is facing. Results and findings of the study reveal that social media campaigns on smog awareness are helpful in public engagement. However, such media campaigns, in particular, and other climate-related media messages in general, need to be reconstructed so that sustainable adaptations can be achieved. It will also help to mobilize the whole community against climate-related threats, and a solution-centered approach will become more feasible than ever before.

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