P-ISSN: 2709-6254	Journal of Development and Social Sciences	Apr-June 2024, Vol. 5, No.2
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2024(5-II)04	[33-44]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

Unveiling Climate Consciousness: Assessing Perceptions based on Social Media and Mass Communication Strategies among Balochistan University Students

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ABSTRACT

Climate change transformed Pakistan into 5th most vulnerable nation across globe facing threats of food and water scarcity, increased flooding, extreme heat, more disease, and economic loss. Balochistan is its largest province and challenges are multifold. In order to face these, role of mass communication and social media is vital and needs exploration to evaluate and improve. Climate change forced major threat across Pakistan. Quetta as capital of Baloshistan acts as hub of educational institutions. Hence sensitization amongst students needed exploration to identify gaps and future strategies. Online questionnaires using purposive sampling method was used to collect data from three universities during COVID19 pandemic. Major of the respondents were aware of climate change, its causes, its impacts and role of media was acknowledged to be critical for future mass scale sensitization. Future strategies must incorporate social media and digital means in social and public sensitization.

KEYWORDS Climate Change, Mass Communication, Public Sensitization, Social Media, Youth Awareness

Introduction

Climate change is considered as one of the greatest threat to the humanity at global scale. These changes are permanent pattern changes in the longer span of weather and climate patterns of an area. Climate change includes both global warming caused by humans and its impacts on Earth's weather patterns (Füssel, 2007). The main cause is the emission of greenhouse gases, mostly carbon dioxide (CO_2) and methane from burning of fossil fuels (Malik, Awan, & Khan, 2012). People are at risk from high heat, more diseases, more floods, shortages of food and water, and economic losses due to climate change. It may also be the cause of human migration (Khan et al., 2016). The World Health Organization calls climate change the greatest threat to global health in the 21st century. Even if efforts to minimize future warming are successful, some effects will continue for centuries. These include sea level rise, and warmer, more acidic oceans (IFRC, 2021). Pakistan is amongst the leading climate change vulnerable country across the globe. Being the 5th most vulnerable country, Pakistan major threats include loss of habitat, public health, food shortages, floods, droughts, abrupt weather patterns and monsoon, changes in duration of weather and many more critical and severe impacts (Sharif & Medvecky, 2018). Heat waves are likely to become more frequent and intense all over Pakistan, and the number of 'hot' days and nights are expected to increase significantly (Lee, Markowitz, Howe, Ko, & Leiserowitz, 2015).

Balochistan is the largest province of Pakistan with diverse geographic elements all across its area. With desert, dry regions and shortage of water for people and poor rainfall pattern, it is considered as one of the most climate change effected area of Pakistan. Quetta city being the provincial capital is one of the major city of the province and offers major provincial educational facilities through multiple universities in the city in private and public

domains. These students not only get education from these institutions but also were prepared for the professional excellence ahead in their lives (Mumtaz, 2021). Role of people in such circumstances of climate change challenge becomes critical to manage and mitigate these events and their impacts (Qazlbash, Zubair, Manzoor, Haq, & Baloch, 2021). Youth being the key role player must be aware about these impacts and scenarios happening around them and effecting their lives and future. Though climate change is actively discussed and highlighted through multimedia across nation, its awareness and sensitization still remains a critical question towards ensuring youth being able to help the nation cope with its negative impacts (Lee et al., 2015). Hence there was a need to explore how far the youth is aware about these climate change events, their impacts, future consequences of these events and how better modern day communication tools of social media and mass communication should be used to increase the level of awareness and sensitization amongst the people of Balochistan.

Increasing and improving the current knowledge and awareness about the climate change would not only benefit the people to be able to understand the climate change phenomena, its impacts, its future consequences and how it can be reduced or mitigated but also should help evaluate the current knowledge level. Identification of most appropriate social medium for public awareness should help enhance the process of awareness and improving the current situation towards better preparation and lifestyle changes to cope with climate change.

Literature Review

The climate is an area's long-term average of weather. A change in those average scenarios is known as climate change. Due to the usage of coal, gas, and oil in business entities, houses, and transportation, people are the primary cause of the current, rapid climate change. The majority of the greenhouse gases released by the burning of fossil fuels is carbon dioxide (CO2). The planet's temperature rises as a result of these gases' ability to retain solar heat (Barreda, 2018). The quantity of CO2 in the atmosphere has increased by 50%, and the world is currently 1.2C warmer than it was in the 19th century (Farooqi, Khan, & Mir, 2005). Extreme weather events are already more intense, threatening lives and livelihoods (Ekpoh & Ekpoh, 2011). The global temperature rose by 0.76°C over the 20th century, while a 0.6°C increase has been seen in the first ten years of the current century. The top nine hottest years ever recorded worldwide, in decreasing order of rank, came from the first ten years of the twenty-first century: 2010, 1998, 2005, 2003, 2002, 2009, 2004, 2006, 2007, 2001, 1997, 2008, 1995, 1999, 1990, 2000 (Rasul, Afzal, Zahid, & Ali Bukhari, 2012). The sun's energy radiates from the warming Earth as thermal radiation and infrared rays, which travel straight into space and cool the planet. But part of the radiation leaves the atmosphere and returns to the Earth's surface when carbon dioxide, water vapor, ozone, methane, and other gases absorb it again (Abouelfadl, 2012). These gases are commonly known as greenhouse gases due to their heat-trapping capacity (Royal Science Society, 2021). Over the past 100 years, the planet's surface temperature has increased at an unprecedented rate. The average surface temperature of the Earth increased by 0.6 to 0.9 degrees Celsius between 1906 and 2006. Methane gas is produced in millions of pounds by agricultural decomposition of biomass and animal dung, as well as landfills (Qazlbash et al., 2021). Many nitrogen-based fertilizers, such as urea and diammonium phosphate, as well as other soil management practices, emit nitrous oxide into the atmosphere (Anam Tariq, Nazia Tabish, Khuda Bakhsh, M. Ashfaq, 2014). These greenhouse gases can remain in the atmosphere for decades or more after they are produced. The Intergovernmental Panel on Climate Change (IPCC) estimates that since the industrial revolution in 1750, the levels of carbon dioxide and methane have risen by 35% and 148%, respectively (Clark et al., 2003). If global warming continues to advance unregulated and inadequate steps are taken to stop this impending catastrophe, severe weather events, increasing sea levels, and other devastating effects on the environment, society, and natural world will result (Abbasi & Nawaz, 2020). Overall impacts in temperature are shown below in figure 01.

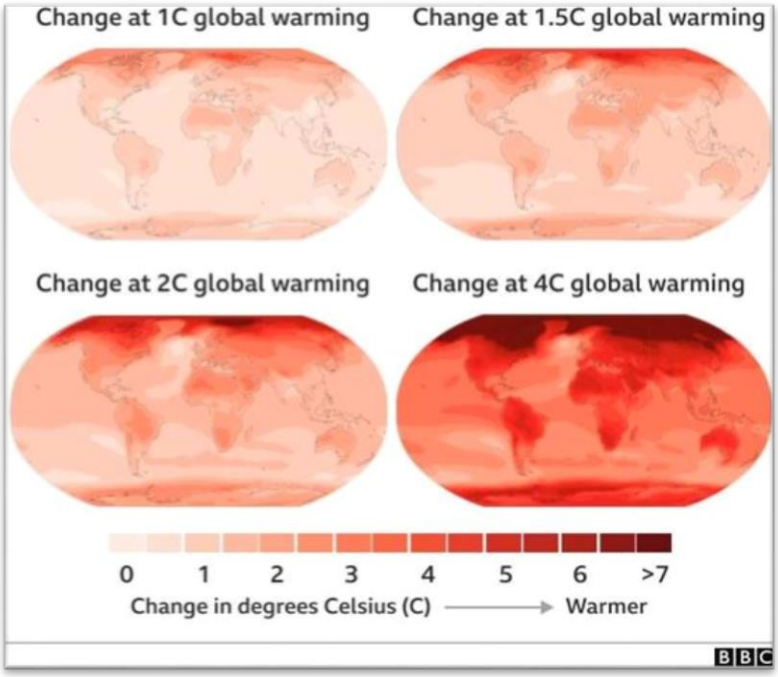

Figure 01 Impact of temperature change globally for 1-4 degree Celsius (BBC,2021)

Agriculture remains an important source of employment for 42 per cent of the population of Pakistan (Füssel, 2007). Nearly 90% of agriculture relies on irrigation from the River Indus and its tributaries, which are supplied by glaciers (Sharif & Medvecky, 2018). The capacity of individuals to work and make ends meet will be impeded by health effects (most notably heat fatigue, hunger, the rise of vector-borne illnesses like dengue fever, and the increased burden of waterborne infections). Internally displaced people, religious and ethnic minorities, and migrants will be particularly susceptible since they are frequently excluded from areas prone to hazards and encounter obstacles in getting access to healthcare, including financial ones brought on by informal work (Pandve et al., 2011). In addition, frequent heat waves and droughts are two further effects of the nation's changing climate (Oruonye, 2011). Pakistan has created laws and policies pertaining to climate change, but putting these policies and efforts into practice—which is directly tied to raising public awareness and promoting climate literacy—is a difficulty (Mavrodieva, Rachman, Harahap, & Shaw, 2019). Relatively recently developed concepts include climate change adaptation and fostering ecosystem and human resilience to risks from hazards and climatic instability. Because of this, networks for exchanging knowledge and insights will be crucial in addressing adaptation within particular ecosystems or places, particularly those that connect delta regions (Rasul et al., 2012).

The media is essential in spreading knowledge to the public and policymakers about the need of safeguarding natural resources for the benefit of future generations and to prevent climate catastrophe (Mumtaz, 2021). By wisely using natural resources while preserving the environment, sustainable development may be achieved (Jan, Khan, & Mahsud, 2020). Rich and poor nations alike have an equal interest in this environmental management. It's essential to our planet's existence (Kuhn & Zhang, 2014). In this sense, the media is essential in raising public awareness of the issue and encouraging individuals to adopt healthier lifestyle choices that will help reduce the effects of anthropogenic climate change. Therefore, mass media and communication have a crucial role in both climate change and sustainable development (Dr. Onkargouda Kakade, 2013). There are several obstacles in the way of widespread climate change communication today. Although journalists often have some theoretical training, most have not received the backing to put this knowledge into practice. Media houses experience some amount of government control and intimidation (Ricart, Olcina, & Rico, 2019). Numerous issues plaguing radio stations are

widespread in East Africa, including a precarious financial foundation and inadequate journalistic capabilities. The ability of the media to communicate effectively on important subjects such as climate change is influenced by all these elements (Anderson, 2017). Thus social media can be used as an enabler to create awareness of environmental issues (Kaur & Chahal, 2018). Recent COVID19 pandemic raised the importance of mass communication and social media towards engagement of the public for sensitization as well as exploration of alternate means to communicate and educate (Bhatti, Huma, 2023). These transformations raised the need of alternate means of communication and developing better strategies to cope with unforeseen and unprecedented transformation challenges ahead (Bhatti et al., 2023).

The main city and provincial capital of the Pakistani province of Balochistan is Quetta. It ranks as Pakistan's tenth-biggest city as well. Quetta is the only major city in Pakistan that is located at a high height, with an average elevation of 1,680 meters (5,510 feet) above sea level (Farooqi et al., 2005). Quetta is facing severe environmental and climatic change issues. It is evident that environmental circumstances have significantly declined within the last 25 years. The city surrounded by mountains has been ranked among the world's most polluting cities. The fundamental causes of this include the population's explosive increase, industry, polluting cars, and refrigerators' release of Chloro Floro Carbon (CFC). Rapid urbanization and rising population growth suggest that the city's population will double by 2030. The district's elevation ranges from 5577 to 10500 feet, therefore the winters are quite cold and the weather is arid. Unfortunately, the city lies outside the range of the monsoon range and rainfall is scanty and irregular (Clark et al., 2003). With many universities in the context of the city, university students have been selected as the major respondent category for evaluation of the research objectives setforth.

Material and Methods

The research exploration moved ahead with focus on research phases i.e. research definition development, review of literature, exploration of data collection tools, piloting, data collection and data analysis leading to research conclusions. With help of purposive sampling, three major universities were selected as a true representation of the population i.e. University of Balochistan, BUITEMS & SBKWU and sample size of 100 was targeted. The initial phase focused on development of a data collection tool in the form of a questionnaire to enable online data collection as well as gathering data where physical visit was allowed. Purposive sampling helped identified the key aspects and highlighted categories to select human resources from and then opt for data collection.

In order to establish reliability, based on the explored review of literature and recent research publications, multiple explored data collection based questionnaires were considered and using adaptability based approach questionnaire suitable to the current context of Quetta with focus on students from universities, questionnaire was evolved. In order to establish validity, a small scale pilot testing using online questionnaire was established with on call/phone assistance aviable to help students better cope with questions as well as clarity of understanding was provided. This initial piloting help rephrase a few questions to make them easy to understand. The pilot testing data was not included in the overall data for analysis.

Results and Discussion

In order to carry out the data collection for the research exploration, devised research methodology was brought into action through data collection phase. Data was collected online through shared Questionnaire based on the review of literature was used. Following are the major dates and details of the phases as shown in Table 01:

Table 01
Data collection phase timeline

S.No	Phase	Start Date	End Date	Duration
1	Testing	18th October, 2021	29th October, 2021	2 weeks were used. Data collection tool was explored and tested if respondents could understand it or not. It went well and respondents were able to respond to it. Researcher enabled cell number accessibility and contact for any ease that can be provided to the respondent.
2	Online data collection	1st November, 2021	26th November, 2021	4 weeks were used for online data collection. Questionnaire was shared online to all the selected universities and their targeted departments. In order to carry out the task, multiple emails were sent to ensure people were able to access and respond to the questionnaire.

Table 02
Respondents demographics & details

S.No	Basic Demographics	Student Count	Male	Female	Percentages
1	University of Balochistan	35	26	9	**35%**
2	BUITEMS	40	28	12	**40%**
3	SBKWU	26	0	26	**26%**
4	**Total**	**101**	**54**	**47**	
5	**Percentages**		**53%**	**47%**	

As shown above in the table 02, a total of 101 respondents took part in the research activity through providing the online data through questionnaire. Three university students took part which mainly included University of Balochistan (35%), BUITEMS (40%) and SBKWU (26%) respectively. Overall 53% representation was of male respondents while 47% were female. Since SBKWU is a women's university, hence complete representation was mainly from the female respondents. Since data time for data collection was limited and winters in Quetta are severe, hence the feedback was limited to 101 respondents. More than 80% of the students were in the 21-25 age group while rest were mainly in 26-30 age group. Overall 65% of the students were in under-graduate degrees, 28% were in graduate level degrees while remaining 7% were in post-graduate degrees. As per shown in table 03 below, overall there were 8 questions along with sub-parts to gather data about the perception and awareness of the climate change amongst the respondents. Collected data is shown below:

Table 03
Data from respondents about awareness on Climate Change

S.No	QUESTIONS	YES	%	NO	%	NOT SURE	%
1	Have you heard the term Climate Change?	88	87%	9	9%	4	4%
2	Are you aware of the term climate change and its meaning?	75	74%	12	12%	14	14%
3	Was climate change part of your study or any course in your degree at university level?	90	89%	5	5%	6	6%
4	Do you think climate change is a threat to our environment?	75	74%	2	2%	24	24%
5	Do you think climate change is responsible for the following:						
6	Changes in rain pattern	73	72%	8	8%	20	20%
7	Changes in weather & seasons patterns	72	71%	6	6%	23	23%
8	Droughts	65	64%	7	7%	29	29%
9	Floods	72	71%	6	6%	23	23%
10	Temperature variations	75	74%	5	5%	21	21%
11	Longer Summers	68	67%	4	4%	29	29%

12	Small Winters	65	64%	2	2%	34	34%
13	Increase in number of severe weather days	50	50%	6	6%	45	45%
14	Do you think human beings are responsible for causing climate change?	78	77%	8	8%	15	15%
15	Do you think society has a responsibility to respond to this humanitarian crisis?	94	93%	7	7%	0	0%

Based on the data collected from the respondents, Climate change awareness data is shown above in table 03. The major share about the awareness is highlighted in grey color. As shown above, it became evident from the provided data in table 03 that there is higher level of awareness about climate change amongst the university students in three selected universities. Almost 88% of respondents have heard the term climate Change, 74% were aware about its meaning and concept, 89% of the respondents were having Climate change as part of their syllabus in one or more subjects and 74% believe that climate change is a threat to our environment. Respondents believe that climate change has been associated with changes in the rain pattern (72%), changes in weather and seasons pattern (71%), increased droughts (64%), increased floods (71%), temperature variations (74%), longer summers (67%), smaller winters (64%) and 50% believed that increase in severe weather days has been associated or caused by climate change. Based on the respondents data, 77% believe that climate change has been anthropogenic i.e. caused by human activities and hence it's the responsibility of the human beings and society to mitigate the effects of climate change was believed by 93% of the respondents.

Based on these observations, it was evident to evaluate the root cause perceptions of climate change amongst the respondents. Hence further exploration was carried out as shown below in table 04.

Table 04
Data from respondents about causes of Climate Change

S.No	Which major factors do you think are responsible for climate change? Tick all the relevant options:	Count	%
1	Global Warming	88	87%
2	Pollution	71	70%
3	Fossil fuels burning	75	74%
3	Non-renewable energy	71	70%
4	Food / Agriculture production	33	33%
5	Deforestation	65	64%
6	Urbanization	75	74%
7	Over consumption	65	64%
8	Transportation	80	79%
9	Mining & allied ore extraction processes	67	66%

As shown above in table 04, some of the major causes of climate change were asked from respondents. The response was based on the current awareness level about multiple sources. Global warming was considered the most critical factor for climate change with 87% followed by transportation with 79%, fossil fuel burning and urbanization as 74% and 70% for pollution and non-renewable energy resources usage for energy generation. It was further believed that other major allied factors asked have values higher than 64% i.e. except for food and agricultural production.

As per shown in table 05 below, data related to social media for awareness about climate change in university students is shared:

Table 05
Respondents data about social media for climate change awareness

S.No	Questions about the role of social media in climate change awareness	Yes	%	No	%	Not sure	%
1	Do you think social media can be used as a modern day tool to increase the awareness amongst the university students about climate change ?	95	94%	1	1%	5	5%
2	Can social media be a better alternate to print media?	75	74%	25	25%	1	1%
3	Can social media be a better alternate to TV?	42	42%	55	54%	4	4%
4	Among the mediums, which one is the most appropriate for the purpose? Rank them	**Medium**	**Value**	**%**	**Medium**	**Value**	**%**
		Instagram	75	74%	WhatsApp	96	95%
		Facebook	97	96%	TikTok	88	87%
		Snapchat	84	83%	Pinterest	44	44%
		Youtube	97	96%	Reddit	32	32%
		Twitter	85	84%			

As shown above in the table 05, social media has a strong role to play in the university students awareness related to climate change. Since with usage of modern day cell phone as major common communication tool used by students, social media is widely used on it through multiple applications and softwares. Hence university level students explored in three universities not only had knowledge about the major mediums used for social media communication across globe but most are also either using them or have been in touch in some alternate ways. 94% of the respondents believed that social media has a strong role to play in increasing the awareness of climate change amongst the university level students. With fast, cost effective and easy to use, social media can be a better alternate to print media was perceived by 74% of the respondents while 54% believed that Television still has a strong role to play and will be a major medium to help increase awareness while 42% believed that social media will be a better medium for the same purpose. Hence it was evident that social media has been accepted as a social norm for communication by the youth in the form of university students.

It is also evident from the statistics shown above that amongst the social mediums explored the most highly accepted mediums included Youtube (96%), Facebook (96%), WhatsApp (95%), TikTok (87%), Twitter (84%), Snapchat (83%), Instagram (74%), Pinterest (44%) and Reddit (32%) respectively. Based on the provided data, it is evident that university students believed in animations, videos and graphic based communication tools and mediums to be major source of social media strength towards better forms of communication and awareness. With 4-5 major higher accepted value based tools used videos and animated mediums as their mode of communication. Hence, it is evident that students of universities prefer video content over simple graphic content with ease of access and choices of view-ability options.

Findings

Some of the major findings of the research exploration are shared below:

- Majority of the students have heard the term climate change since it was part of their study or subjects with above 70% knowing the meaning of the term itself.

- More than 70% believed that climate change has a strong negative impact on the environment and has caused multiple issues like changes in rain patterns, increased floods and droughts, changes in weather patterns, temperature variations, etc.
- Almost 80% of them believed that climate change has been an anthropogenic caused or triggered activity based on the human actions and its impacts.
- Above 905 believed that society has a string role to play towards enabling better understanding and mitigation of the causes of climate change.
- Some of the major factors with above 70% acceptance to be major climate change causing agents were global warming, pollution, fossil fuels burning, transportation and extensive utilization of non-renewable resources of energy.
- 94% of the students accepted that social media platforms could be one of the best source for sharing information and increasing the climate change awareness.
- 75 % agreed that it would be better than print media while 54 % agree that it would not be able to compete with Television as major string source of information and climate change awareness.

Discussion

Collected data has shown some very interesting and knowledgeable insights into the current understanding of the climate change perception and awareness amongst the three explored university students in Quetta city. Being a remote city, initially it was believed that level of climate change perception amongst the university students would be poor but it was astonishing to see that most of the students not only are aware about the climate change terminology but are also aware of the phenomena and its impacts. It was also worth exploring that some of the major caused explored with respect to the climate change were also known by the students and they were aware of these causes and were able to relate them with the climate change phenomena. Another interesting fact that brought forward the current update going on through academic circles for improvements in the education and level of awareness is that most of the students came across the concept of climate change through their educational courses and subjects. Though they were not asked to share about their current department or degree to eliminate biasness towards students of selective subjects / domains having better understanding, it was evident that most of them have some subject correlating or sharing knowledge about the climate change as part of the academic learning. They also believed that society has a string role to play towards mitigating and reducing the negative impacts of the climate change and since mankind is mainly responsible for it, it is utmost necessary to take actions to reduce climate change impacts.

The second part of the questionnaire focused on the collection of data related to the social media tools and mediums used amongst the university level students and how far these can be useful in increasing the awareness of the students on the climate change issues and impacts. It was again well highlighted that some of the most commonly and accepted international norms and application of social media are extensively used by the students. They were well aware about the Youtube, Facebook, WhatsApp, Instagram, Twitter, Tiktok and other modern day social media tools. Their preference towards improving the awareness rested on the preference for the video and animated mediums of expressions like videos, short animations, documentary, etc which may be more helpful towards not only engaging the audience but in little time may help share better information in an efficient manner. They believed that Television is still an accepted medium across the university students being use in almost every home while print media is now losing its share of the audience and hence better awareness tools of future for climate change awareness and perception development could be TV and social media.

Conclusions

Following are the major conclusions from the research exploration:

- It was concluded that the knowledge and the level of awareness amongst the students in the three universities of Quetta city was strong enough to relate the climate change and the environmental issues.
- They were able to relate the impacts of climate change with the ongoing environmental threats.
- Climate change is part of their academic exploration through allied subjects or courses.
- They have access and extensive usage of the social media platforms.
- Some of the most appropriate and most extensively used platforms to increase awareness of people and students through social media would include Youtube, Facebook, Twitter, Instagram, WhatsApp, TikTok and other allied applications.
- Television would still be a strong support system apart from the social media tools and have a large scale impact with better coverage and hence can be used for the same purpose.

Recommendations

Following were the major recommendations from the research exploration:

- Climate change must be part of the diverse academic courses and degree programs to help youth better understand the concerns and help them develop better concept about its impacts.
- Youth has a string role to play in society. They must be kept in mind while developing the content for the social mediums to enable better educational and knowledge based data sharing.
- Multiple platforms can have similar information just like a marketing mix which uses multiple mediums for the advertising purposes but here the information will have better usage through enabling knowledge and information sharing amongst the masses.
- Content developers and subject domain specialists should work together to help develop social media content to increase the awareness of the public at large through enabling integration of TV and allied social mediums.
- Academia and industry may help together building this awareness to the masses.
- One of the key aspect of the increased targets of awareness are associated with integration of local culture and languages into the content to ensure their acceptability amongst the masses.
- Youth with such campaigns with social and environmental awareness must be encouraged and financed by the academic and allied institutions to help society cope with the awareness and how they can play a significant role to mitigate and develop critique on the actions of the governing bodies and society at large.
- Using local language based programs on Radio and Television would also be encouraging for local broad scale public to be engaged and aware about the climate change.

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