

CLIMATE CHANGE AWARENESS AND ITS ASSOCIATE FACTORS
AMONG UNDERGRADUATE STUDENTS IN UNIVERSITY OF
MALAKAND

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Abstract

Climate change is one of the biggest challenges of our time, and understanding how aware university students it is about it has become more important than ever. This research focuses on three main goals: first, to find out the level of climate change awareness among university students; second, to determine the perception of students regarding the effect of climate change awareness on students' behavior; and third, to assess the perceptions of students about the importance of the issue of climate change to students personally. The target population for this study comprised all BS students at the University of Malakand. The sample was chosen using a cluster sampling technique. Each department was regarded as a cluster, and fifteen departments were chosen at random from the total of 32 departments to obtain the sample. 400 students were selected and given a structured questionnaire. 383 students completed and returned the questionnaire. Using descriptive analysis, the data was analyzed. We conclude that the majority of students have some level of awareness about climate change, with 36.29% of students being slightly aware, 31.33% of students being fully aware, and 20.60% students being moderately aware. 30.55% of students have changed their behavior somewhat, 28.98% of students have changed their behavior, indicating a strong response, and 9.40% of students have not made any changes, so more awareness is still needed. 59.01% of students think climate change is very important, and 26.37% of students think climate change is quite important.

INTRODUCTION

A widespread phenomenon with broad social, economic, political, geographical, ecological, and psychological consequences is the effect of climate change on human health [1]. According to some scientific literature and research, climate change seriously threatens human health [2]. The world is becoming more aware of and concerned about the possible obstacles that climate change may pose in the following decades. Changes in temperature and

precipitation patterns and rising sea levels are making disease conditions more conducive and damaging food systems [3]. According to Capstick et al. [4], common opinion holds that climate change is a crucial issue for humanity. Still, it is far less significant in their day-to-day initiatives. Currently, one of the most essential worldwide concerns, climate change, demands prompt, concerted action from all parties involved. Scientists persist despite

the wealth of scientific data supporting the concept of anthropogenic climate change [5].

According to [6] and [7], university graduates are less likely to perceive climate change as a risk than uneducated individuals. However, staying committed to the cause becomes challenging due to these disagreements regarding climate change. The reason for this is that, despite most individuals claiming to understand climate change and its causes, they are unable to describe its causes, effects, and remedies adequately. Climate change is particularly challenging to defenseless, poor rural communities who live in direct interaction with nature and whose livelihoods are tied to those natural resources. Thus, there is a pressing need for mitigation and improved adaptation. Multiple research studies have been conducted on climate change's possible and actual effects on various natural and social systems over the past 20 years [8]. Health risks associated with climate change (CC) are a complex and complicated issue. According to multiple research projects, people's attitudes and perceptions of CC risk are highly associated with their mitigation efforts and adaptive behavior [9]. According to Keles [10], educational institutions should take the lead in promoting the development of knowledge, skills, awareness, values, and sustainable action to achieve the Sustainable Earth Goal. This will help to ensure that future generations' leaders are environmentally aware and critical thinkers. Universities must begin modernizing their course offerings and implementing interventions, especially for the internal and external participants of the academic community, by gaining improved knowledge of climate change awareness. According to the UNFCCC (2012), education about climate change is therefore viewed as a useful instrument for raising social awareness of the issue and enhancing its ability for adaptation. Climate change is a constant threat that affects the whole world, and the general population finds it complicated and confusing. People have underestimated the risks posed by climate change, making it seem less serious or significant than it is [11]. Climate change is a global tragedy that affects Pakistan along with every other nation in the world. It is essential to raise public knowledge of climate change and regional

environmental issues to address this expanding issue [12].

According to [13], involving students and the younger generation in environmental accountability has significant long-term effects. For example, youth accountability behaviors and attitudes may help reduce environmental damage; young people can use technological devices to learn how and where carbon pollution is eliminated and to help share the vulnerable rural society to a successful country; and students can expand green technologies by accumulating technological knowledge from school. Numerous academics have investigated the attitudes, views, and adaptation plans of farmers and agricultural professionals around the world about climate change. Additionally, research on how the public and native communities perceive climate change is being conducted. Climate refers to long-term weather patterns in a region, while climate change involves disruptions to these patterns due to human activities like industrialization and deforestation. These actions have increased greenhouse gas emissions, causing global warming and significant environmental impacts such as rising sea levels and extreme weather. Public awareness is essential to addressing these challenges, and university students play a key role due to their potential to influence sustainable actions. This research aims to assess university students' awareness of climate change by examining their knowledge, attitudes, and information sources, and analyzing how factors like academic background, gender, and year of study affect their understanding. The goal is to enhance climate education and youth engagement in climate action.

Erwinsyah [14] conducted a study at Indraprastha University PGRI in Jakarta, Indonesia, investigating the relationship between students' environmental knowledge, attitudes, practices, and their influence on behavior change. The research involved 137 students: 49 undergraduate biology education majors and 88 postgraduate students in mathematics and natural sciences. The study utilized the Knowledge, Attitudes, and Practices (KAP) survey method and analyzed the data using a nonparametric Bivariate Pearson Correlation. Findings revealed that 63% of students acquired environmental knowledge through formal

education, 15% through informal means such as community or media, and 22% through both. The study concluded that while environmental knowledge did not significantly influence students' attitudes, it had a positive effect on their environmental practices. Additionally, students' attitudes alone did not translate into behavioral change. However, those who actively engaged in environmental practices were more likely to exhibit environmentally responsible behaviors.

Eladham and Osman [15] conducted A quasi-experimental study at Mansoura and Fayoum Universities in Egypt aimed to assess the impact of a Climate Change Educational Program on university students' knowledge, attitudes, and practices (KAP) regarding climate change. The study involved 200 students, the majority of whom were female (65.5%) and resided in rural areas (67.0%). Data was collected using a structured, self-administered questionnaire with three scales measuring environmental knowledge, attitudes, and reported practices. Falave and Okwilagwe [16] investigate that Climate change, driven by human activities, has become one of the most pressing challenges of our time, significantly affecting both human societies and the natural environment. As weather patterns shift, the resulting natural disasters—such as floods, droughts, and storms—are increasingly devastating. Addressing this issue, environmental education is crucial in raising awareness and influencing behaviors that can mitigate the impact of climate change. These findings underscore the importance of improving climate change education at the school level, both to raise awareness and to encourage behaviors that contribute to environmental sustainability.

Ekpoh and Jackson [17] conducted a study in Calabar Municipality that investigated the level of climate change awareness among secondary school teachers, aiming to understand its implications for informed societal response. Using a self-designed instrument, the *Climate Change Awareness Questionnaire (CCAQ)*, data were collected from 200 teachers and analyzed using population and independent t-tests. The findings revealed generally low awareness of climate change among teachers, with variations observed based on sex. Additionally, limited access to climate change information sources

was reported. The study highlighted the need for improved dissemination of information and its potential impact on management effectiveness in addressing climate change. Ochieng and Koske [18] examined climate change awareness and perception among primary school teachers in Kisumu Municipality, Kenya. Using a structured questionnaire, data were gathered from 100 teachers across 20 primary schools. While the findings indicated that general awareness was not significantly low, notable knowledge gaps were identified. Furthermore, teachers widely perceived climate change as a serious threat. The study emphasized the need for capacity building to enhance teachers' understanding of climate change, recognizing their potential role as key facilitators in climate education and public awareness campaigns in Kenya. Tranter and Skribs [19] examined that a longitudinal study involving 16 to 17-yearold students across Queensland revealed strong support among young Australians for actions addressing human-induced global warming. Compared to the OECD average, these students were more inclined toward sustainable development practices. Social background significantly influenced environmental attitudes, with young women showing more concern about climate change and global warming than their male counterparts.

Additionally, students with university-educated parents and those intending to pursue higher education exhibited stronger pro-environmental attitudes, highlighting the role of early socialization. However, trust in environmental groups has declined over time, particularly among male students. Rahman, Overgaard, and Haque [20] conducted A cross-sectional study in Laos and Thailand assessing knowledge, attitudes, and practices (KAP) related to climate change and dengue among 719 households (urban and rural) and 20 government officials. The study revealed generally low KAP levels on both climate change and dengue, except relatively positive attitudes toward dengue. Significant associations were found between KAP levels and factors such as education, socioeconomic status (SES), internet use, and prior dengue experience. In both countries, higher education and SES were strongly linked with better knowledge and practices. In Laos, dengue-related

practices were also influenced by internet access and prior exposure to dengue. In Thailand, urban/rural residence and internet use significantly influenced attitudes toward climate change. Additionally, awareness of the climate-dengue link was low among government officials in both countries. These findings underscore the need for targeted educational and communication strategies to enhance public and institutional preparedness for climate-sensitive diseases like dengue.

Research Objectives

1. To determine the level of climate change awareness among undergraduate students at the University of Malakand.
2. To determine the perceptions of students regarding the effect of climate change awareness on students' behavior.
3. To assess the perceptions of students about the importance of the issue of climate change to students personally.

Methodology

This section includes an overview of sampling, data collection, and the questionnaire used for this study.

Introduction to Sampling

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The whole set of cases from which the researcher draws a sample is called the population. Meanwhile the researcher has neither the time nor the resources to analyze the entire population so they apply sampling techniques to reduce the number of cases.

When conducting sampling, there are several key steps typically involved. First, it is important to clearly identify the target population. Once the population is defined, the next step is to select a suitable sampling frame. After that, an appropriate sampling method should be chosen. The fourth step

involves determining the required sample size. Once the sample size has been estimated, data collection can begin. Finally, it is essential to estimate the response rate to understand the effectiveness of the sampling process (Turner, 2020). The following are some stages that are likely to be gone through when conducting the sampling.

Cluster Sampling

The units of the population are already divided into subgroups by nature, and the lists of units of the subgroups already exist or can be easily created. In such situations, a sampling technique called cluster sampling is used. These evident natural subgroups usually occur according to geographic area, and that's why cluster sampling is sometimes called area sampling. In such cases, the subgroups (clusters) are identified, and some clusters are selected at random either by simple random sampling or by systematic sampling. This method of sample selection is called cluster random sampling or simply cluster sampling. The units between clusters are homogeneous, and the units within clusters are heterogeneous in cluster sampling. A cluster may be a district, village, block, or an academic department of a university, etc.

Example: Suppose a researcher wants to study the academic performance of university-level students in Pakistan. First, the researcher would divide the entire population of Pakistan into clusters, say districts. Then, the researcher would select a simple random sample of a few districts. Suppose the researcher chose a sample of 30 districts, and he or she wanted a final sample of 5,000 students. The researcher would then select 5,000 university-level students from those 30 selected districts by using simple random sampling.

This is a two-stage cluster sampling because the selection of units was made at two stages. The researcher can also make the selection of units at more than two stages, called multistage sampling.

Notations for Clusters Sampling:

N	Number of clusters in the population
n	Number of clusters in the sample
M	Number of units in each cluster
NM	Population size

Nm	Sample size
$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i^2$	sample mean
$\bar{y}_i = \frac{1}{n} \sum_{j=1}^M y_i^2$	mean of ith clustre
$S_i^2 = \frac{1}{M-1} \sum_{j=1}^M y_{ij} - \bar{y}_i$	varince of ith cluster
$\bar{Y}_i = \frac{1}{N} \sum_{j=1}^M y_i^2$	Avrage of cluster mean
$\bar{Y} = \frac{1}{NM} \sum_{i=1}^M \sum_{i=1}^n y_{ij}$	population mean
$S_b^2 = \frac{1}{N-1} \sum_{j=1}^M (y_{ij} - \bar{y}_N)^2$	Variance between clusters
$S_i^2 = \frac{1}{M-1} \sum_{j=1}^M (y_{ij} - \bar{y}_i)^2$	Variance within clusters
$S_i^2 = \frac{1}{NM-1} \sum_{i=1}^N \sum_{j=1}^M (y_{ij} - \bar{Y})^2$	Population variance

Types of Cluster Sampling:

There are two ways to classify this sampling technique. The first way is based on the number of stages followed to obtain the cluster sample, and the second way is the representation of the groups in the entire cluster analysis. In most cases, sampling by clusters happens over multiple stages. A stage is the step taken to get to the desired sample. We can divide this technique into single-stage, two-stage, and multiple-stage. As the name suggests, sampling is done just once. An example of single-stage cluster sampling - An NGO wants to create a sample of girls across five neighboring towns to provide education. Using single-stage sampling, the NGO randomly selects towns (clusters) to form a sample and extend help to the girls deprived of education in those towns. Here, instead of selecting all the elements of a cluster, only a handful of members are chosen from each group by implementing a systematic. An example of two-stage cluster sampling - A business owner wants to explore the performance of his/her plants that are spread across various parts of the U.S. The owner creates clusters of plants. So, he/she then selects random samples from these clusters to conduct research. Multiple-

stage cluster sampling takes a step or a few steps further than two-stage sampling. For conducting effective research across multiple geographies, one needs to form complicated clusters that can be achieved only using a multiple-stage sampling technique. An example of multiple-stage sampling by clusters - An organization intends to survey to analyze the performance of smartphones across Germany. They can divide the entire country's population into cities (clusters), select cities with the highest population, and also filter those using mobile devices.

Steps to Conduct Cluster Sampling:

Here are the steps to perform cluster sampling:

- i. **Sample:** Decide the target audience and the sample size.
- ii. **Create and evaluate sampling frames:** Create a sampling frame by using either an existing framework or creating a new one for the target audience. Evaluate frameworks based on coverage and clustering and adjust accordingly. These groups will be varied, considering the population, which can be exclusive and comprehensive. Members of a sample are selected individually.

- iii. **Determine groups:** Determine the number of groups by including the same average members in each group. So, make sure each of these groups is distinct from one another.
- iv. **Select clusters:** Choose clusters by applying a random selection.
- v. **Create sub-types:** It is bifurcated into two-stage and multi-stage subtypes based on the number of steps followed by researchers to form clusters.

Data Description

This section deals with the population, as well as the sampling techniques and the sample size of our study.

Study Area Description

The study of this population is at the University of Malakand, Chakdara Main Campus, Dir Lower Khyber Pakhtunkhwa, Pakistan. This University has 32 departments.

Data Collection Tool:

The data was collected from the University of Malakand by using cluster sampling, which is one of the most well-known sampling techniques. Academic departments were considered clusters, and students were selected by randomly choosing the entire department. For the collection of data, a questionnaire was developed. The researcher made

personal visits to each department and obtained the necessary permission from the relevant authorities before approaching the students. Simple and easy words are used in a questionnaire so that respondents would easily understand as well as answer every question. Possible answers were provided to enable respondents to tick whichever answer they found suitable in terms of their response to the question. The workplace level of climate change awareness questionnaire was used in this method.

The population for this study consists of all students enrolled in the University of Malakand, Khyber Pakhtunkhwa, Pakistan, which has 32 departments. A sample of students will be selected from 15 departments out of the total of 32 departments.

The tool that was established, together with the data for this study, is a questionnaire. This is an easy method to collect data. The questionnaire comprises subgroups planned to identify the subject's gender, age, and awareness. An answer to the questionnaire was coded in Excel, organized, and investigated using Minitab.

Descriptive Analysis:

The data analysis in Table 4.1 summarizes the collected data of all variables and their categories, frequencies, and percentages.

Table 1: Data analysis of the summarized collected data

<i>Variable</i>	<i>Categories</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Age</i>	<i>15 to 18</i>	<i>27</i>	<i>1.84</i>
	<i>19 to 22</i>	<i>318</i>	<i>21.68</i>
	<i>23 to 27</i>	<i>38</i>	<i>2.59</i>
<i>Gender</i>	<i>Male</i>	<i>205</i>	<i>53.52</i>
	<i>Female</i>	<i>178</i>	<i>46.48</i>

<i>Department</i>	<i>Artificial intelligence</i>	36	9.40	8.09	
	<i>Biochemistry</i>	31	3.39		
	<i>Biotechnology</i>	13	12.01		
	<i>Botany</i>	46	7.31	3.66	
	<i>Chemistry</i>	28	2.61	6.79	3.92
	<i>Multimedia and gaming</i>	14	7.05	7.83	5.74
	<i>Geology</i>	10	8.36	7.57	
	<i>Information technology</i>	26	6.27		
	<i>Journalism</i>	15			
	<i>Political science</i>	27			
	<i>Pashto</i>	30			
	<i>Sociology</i>	22			
	<i>Urdu</i>	32			
	<i>Zoology</i>	29			
	<i>statistics</i>	24			
<i>Semester</i>	1	143	37.34		
	4	135	35.25	17.23	
	6	66	10.18		
	8	39			
<i>Are you aware from climate change?</i>	<i>Not aware</i>	45	11.75		
	<i>Slightly aware</i>	139	36.29	20.60	
	<i>Moderately aware</i>	79	31.33		
	<i>Fully aware</i>	120			
<i>How knowledgeable do you consider yourself about the causes and effects of climate change?</i>	<i>Not very knowledgeable</i>	29	7.57		
	<i>Neutral</i>	94	29.54		
	<i>Somewhat knowledgeable</i>	172	44.91		
	<i>Very knowledgeable</i>	88	22.98		
<i>How did you know about climate change?</i>	<i>Formal education</i>	211	55.09		
	<i>Non-formal education</i>	41	10.70		
	<i>Both</i>	131	34.20		
<i>How important is the issue of climate change to you personally?</i>	<i>Very important</i>	226	59.01		
	<i>Quite important</i>	101	26.37		
	<i>Neutral</i>	38	9.92		
	<i>Not very important</i>	18	4.70		
<i>Do you practice waste management in your daily life?</i>	<i>Never</i>	51	13.32		
	<i>Rarely</i>	113	29.50	26.89	59.40
	<i>Sometimes</i>	103	14.88		
	<i>Often</i>	59			
	<i>Always</i>	57			

<i>Do you feel a personal responsibility to take action against climate change?</i>	<i>Strongly disagree</i>	20	5.22
	<i>Disagree</i>	37	9.66
	<i>Neutral</i>	40	10.97
	<i>Agree</i>	179	46.74
	<i>Strongly agree</i>	105	27.42
<i>How often do you use public transport or other eco-friendly alternatives to reduce your carbon footprint?</i>	<i>Never</i>	36	9.40
	<i>Rarely</i>	130	33.94
	<i>Sometimes</i>	131	34.20
	<i>Often</i>	86	22.45
<i>I feel that I contribute to the fight against climate change.</i>	<i>Strongly disagree</i>	30	7.83
	<i>Disagree</i>	31	8.09
	<i>Neutral</i>	72	18.80
	<i>Agree</i>	168	43.86
	<i>Strongly agree</i>	82	21.41
<i>How much have you changed your behavior because of climate change?</i>	<i>Not at all</i>	36	9.40
	<i>Little</i>	119	31.07
	<i>Some</i>	117	30.55
	<i>Very much</i>	111	28.98

Table 1 shows that 27(1.84%) students were aged 15 to 18. There were 318 students (21.68%) aged 19 to 22. In addition, 38 students (2.59%) were aged 23 to 27. There were 205 (53.52%) male students and 178(46.48%) female students. We observed that 36(9.40%) students from department of Artificial Intelligence, 31(8.09%) students from department of Biochemistry, 13(3.39%) students from department of Biotechnology, 46(12.01%) students from department of Botany , 28(7.31%) students from department of Chemistry, 14(3.66%) students from department of Multimedia and Gaming, 10(2.61%) students from department of Geology, 26(6.79%) students from department of Information technology, 15 (3.92%) students from department of Journalism, 27(7.05%) students from department of Political Science, 30 (7.83%) students from department of Pashto, 22 (5.74%) students from department of Sociology, 32(8.36%) students from department of Urdu, 29(7.57%) students from department of Zoology, and 24(6.276%) students from department of Statistics. We observed that 143 students (37.34%) were from the 1st semester, 135

students (35.25%) were from the 4th semester, 66 students (17.23%) were from the 6th semester, and 39 students (10.18%) were from the 8th semester. The Table further shows that 45 students (11.75%) are not aware, 139 students (36.29%) are slightly aware, 79 students (20.60%) are moderately aware, and 120 students (31.33%) are fully aware of climate change. The Table also shows that 29 students (7.57%) are not knowledgeable, 94 students (29.54%) are neutral, 172 students (44.91%) are somewhat knowledgeable, and 88 students (22.98%) are very knowledgeable about the causes and effects of climate Change. The Table revealed that 211 students (55.09%) from formal education, 41 students (10.70%) from non-formal education, and 131 students (34.20%) from both formal and non-formal are known about climate change. The Table indicates that on the issue of climate change, personally, 221 students (59.01%) are very important, 101 students (26.37%) are quite important, 38 students (9.92%) are neutral, and 18 students (4.70%) are not very important. According to the table, 51 students (13.32%) are never, 113

students (29.50%) are rare, 103 students (26.89%) are sometimes, 59 students (15.40%) are often, and 57 students (14.88%) are always practicing waste management in daily life. The Table illustrates that 20 students (5.22%) strongly disagree, 37 students (9.66%) disagree, 40 students (10.97%) are neutral, 179 students (46.74%) agree, and 105 students (27.42%) strongly agree, are feel a personal responsibility to act against climate change. The Table presents that 36 students (9.40%) never, 130 students (33.94%) rarely, 131 students (34.20%) sometimes, and 86 students (22.45%) often use

public transport as other eco-friendly alternatives to reduce their carbon footprint. The Table demonstrates that 30 students (7.83%) strongly disagree, 31 students (8.09%) disagree, 72 students (18.80%) are neutral, 168 students (43.86%) agree, and 82 students (21.41%) strongly agree, to feel that they contribute to fighting against climate change. The Table also shows that 36 students (9.40%) said not at all, 119 students (31.07%) were a little, 117 students (30.55%) were some, and 111 students (28.98%) were very much, changed their behavior because of climate change.

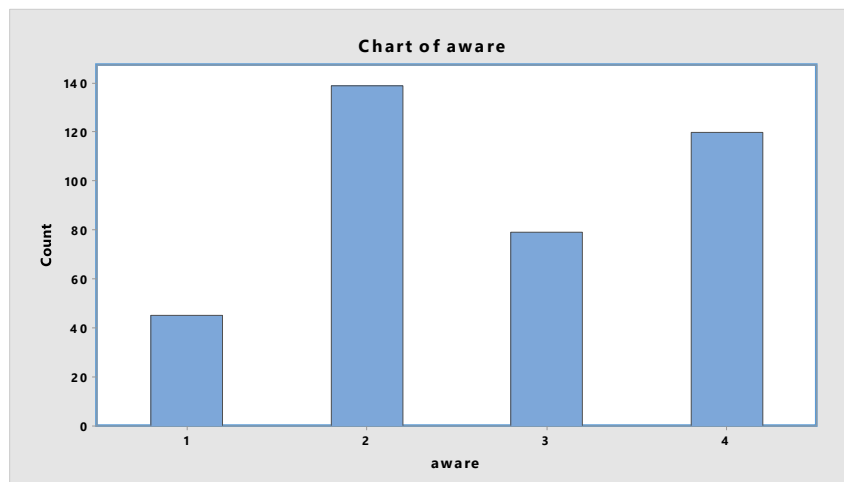


Figure 1: Climate Change Awareness

The above figure indicates that 11.75% of students (45 students) have no awareness of climate change, 36.29% (139 students) have slight awareness, 20.60% (79 students) have moderate awareness, and 31.33% (120 students) are fully aware of the issue of climate change.

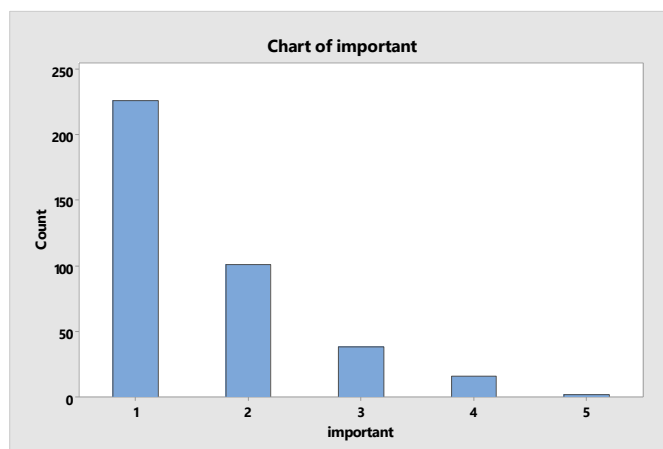


Figure 2: Important Issue Of Climate Change

The above figure shows that on the issue of climate change, personally, 221 students (59.01%) are very important, 101 students (26.37%) are quite important, 38 students (9.92%) are neutral, and 18 students (4.70%) are not very important.

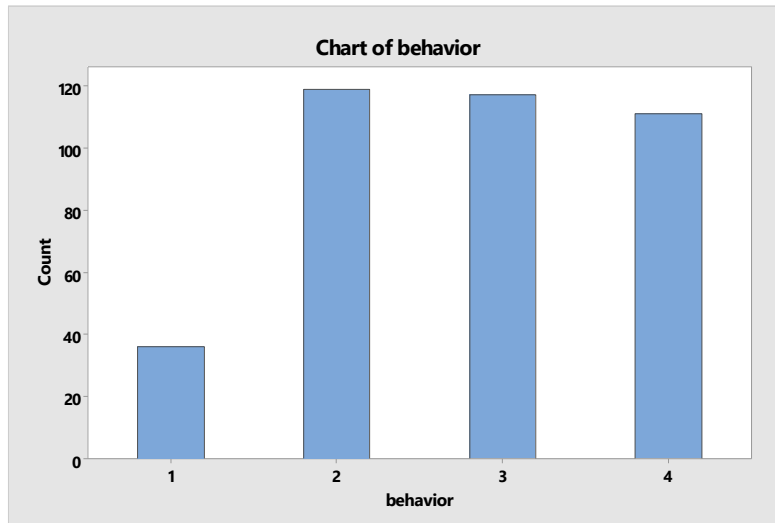


Figure 3: Behavior of Students

Figure 3 also reveals that 36 students (9.40%) reported they did not change their behavior at all due to climate change, 119 students (31.07%) changed their behavior a little, 117 students (30.55%) to some extent, and 111 students (28.98%) changed their behavior very much.

Conclusion

This study aims to analyze the level of climate change awareness and its effect on students' behavior, as well as the importance of climate change. For our research, the data were obtained from a random sample of 383 students. Through our descriptive study, we learned that (36.29%) students are slightly aware, (31.33%) students are fully aware, and (20.60%) are moderately aware. The survey data presents a detailed breakdown of student demographics and their awareness, knowledge, and behaviors related to climate change. Regarding age, most respondents are between 19 and 22 years old students (21.68%), followed by those aged 23 to 27 years old students (2.59%) and 15 to 18 years old students (1.84%). The gender distribution shows a slight male dominance, with 53.52% male and 46.48% female participants.

Regarding knowledge about the causes and effects of climate change, a large number 44.91% consider themselves somewhat knowledgeable, with 22.98% considering themselves very knowledgeable. The main sources of climate change information are formal education (55.09%) and both formal and non-formal education (34.20%). The survey findings indicate a strong concern about climate change, with 59.01% of students considering it very important, 26.37% quite important, 9.92% neutral, and only 4.70% considering it not very important to them personally. In terms of behavior change, a significant portion has taken action, with 30.55% changing their behavior somewhat and 28.98% very much, while only 9.40% reported making no change at all.

Future Recommendations

The following suggestions are recommended based on the results of the current study on the level of climate change awareness among university students. It is recommended that students actively seek information from reliable sources such as environmental organizations, scientific articles, and educational websites to strengthen their knowledge of climate change.

Students are encouraged to participate in campus activities such as environmental clubs, awareness campaigns, and seminars that promote sustainable practices and climate action. Using social media responsibly by following credible environmental pages and avoiding misinformation can help students stay informed and engaged.

Teachers play an important role in shaping the attitudes and awareness of their children. The following suggestions are made for teachers:

Teachers are encouraged to discuss environmental issues in class and support eco-friendly habits like saving energy, reducing waste, and recycling.

It is recommended that teachers expose their students to documentaries, books, or news related to climate change to increase their awareness.

DECLARATIONS:

Data Availability Statement

All relevant data are available within the manuscript.

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Conflict of Interest

The authors have no conflict of interest to declare.

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