

## A Comparative Analysis of Climate Change Attitudes and Actions Orientation Among Prospective Teachers in Pakistan

Maria Rehman <sup>1</sup> Dr. Qurat Ul Ain Hina <sup>2</sup>

<sup>1</sup> Ph. D Scholar, Department of Educational Sciences, National University of Modern Languages (NUML), Islamabad, Pakistan.

<sup>2</sup> Assistant Professor, Department of Educational Sciences, National University of Modern Languages (NUML), Islamabad, Pakistan.

Email: [imdadullah@awkum.edu.pk](mailto:imdadullah@awkum.edu.pk)

Corresponding Author: [1mariarehman@gmail.com](mailto:1mariarehman@gmail.com)

### ARTICLE INFO

Vol. 3, Issue 2, 2024

Pages: 121-139

Received:

30 October, 2024

Revised:

13 November, 2024

Published:

31 December, 2024

Keywords:

Climate Change,

Attitude and Action

Orientation,

Prospective Teachers,

Sustainable

Development

Education, SDG 13.3:

Climate Action.

### ABSTRACT

Climate change is a serious concern that requires a shift in the context of attitude, behaviour and action orientation. Teachers can play vital role in influencing and developing the positive attitude of future generations on this issue. The purpose of this study was to explore the attitude and action orientation of prospective teachers towards climate change focusing on gender-based compression. Through stratified random sampling technique, 350 prospective teachers (72 males and 278 female) completed a self-developed questionnaire Climate Action and Attitude Scale (CAAS) to assess the aspects related to climate change. The results indicated limited significant gender differences in general attitude about climate-related behavioural change among prospective teachers. Further, females had marginally more positive attitude regarding climate change efforts, however males showed a little higher action-oriented attitude towards climate change initiatives than females. Findings also revealed that gender might not have a generous impact on overall attitudes about climate change, it may influence to campaigns and willingness to participate in associated actions.



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## 1. Introduction

Consequences of climate change from rising temperatures to extreme weather events, has been acknowledged as one of the most persistent and challenging global concern at this time (Kapuka et al., 2017). According to sixth Assessment report by the Intergovernmental Panel on Climate Change IPCC, the consequences of climate change will continue to worsen as activities by human have caused approximately 1.1°C of global warming since 1850-1900. Notably, there is a prediction exist in the report by IPCC that in the next 20 years, the average world-wide temperature will estimate to touch or may be exceed 1.5°C take to above pre-industrial levels heating at the global level (NAS, 2014).

However, addressing climate change requires not only policy measures and technological advancements but also a significant shift in societal attitudes and behaviours (Fagan, 2019). In addition, one important aspect of this societal shift was the role of teachers in shaping the future generation's attitudes and actions orientation towards climate change (Karami, 2017). In fact, by integrating climate change education into the teacher education curriculum, teachers can be able to raise the thoughtfulness of urgency and significance of addressing on this global issue (Lombardi, 2013). Especially, by promoting critical thinking, encouragement and sense of empowerment among male and female educators can inspire to act and contribute towards mitigating climate change challenges (De Meyer, 2021). Furthermore, teachers played a crucial role in shaping students' understanding about attitudes towards climate change (Knight, 2021).

Still, there was a gap in the literature when it comes to understanding prospective teachers' attitudes and action orientation regarding climate change at the higher level of education (Molthan-Hill et al., 2019). Therefore, this research was aimed to address the gap by exploring prospective teachers' attitude and action orientation towards climate change at higher education level in Pakistan, with focus on gender (male and female) deference.

### 1.1. Objectives of the Study:

This study had focused on the following objectives.

1. To investigate the attitudes and action orientation of prospective teachers towards climate change at the higher education level.
2. To find out the association among climate change attitude and action orientation towards climate change.
3. To examine potential differences in attitudes towards climate change among prospective teachers based on gender.
4. To examine potential differences in action orientation towards climate change among prospective teachers based on gender.

### 1.2. Null Hypotheses:

Following were the null hypotheses of the study.

H01: There is no significant correlation between all variables of attitudes and action orientation of prospective teachers towards climate change.

H02: There is no significant association between attitude towards climate change and action orientation among prospective teachers.

H03(a): There is no noteworthy difference in attitude towards behavioral change related to climate change among prospective teachers based on gender.

H03(b): There is no noteworthy difference in attitude towards climate change campaigns among prospective teachers based on gender.

H04(a): There is no noteworthy difference in action orientation towards behavioral changes related to climate change among prospective teachers based on gender.

H04(b): There is no noteworthy difference in action orientation towards climate change campaigns among prospective teachers based on gender.

## **Literature Review**

### **The views of students and teachers about climate change at higher education level:**

It's crucial to assess how students and teachers at higher education level perceive the importance of addressing the climate change and action to mitigate the worse impact of climate change (Greenwald et al., 2023). A study by the International Federation of Medical Students Associations found that only 15% of medical school's students were concerned about the worst effect of climate change on human health. While addressing climate change is vital, some argued that higher education should prioritize climate change education (Molthan-Hill et al., 2019). Kay (2020) provides a plausible explanation for these concerns as the potential benefits for future generations and community well-being. Greenwald et al. (2023) raised a crucial question: How do higher education students and teachers perceive the implications of climate change today? Lemery et al. (2020) suggested that their perceptions were very important in determining awareness and action. However, Diallo et al. (2023) found that climate change education remains underrepresented in higher education curricula. Although climate change in higher education system was widely recognized particularly in teacher education (Hess & Collins, 2018; Padhra & Tolouei, 2023).

### **Relationship of climate change attitude and action orientation towards climate change:**

Understanding the relationship between climate change attitudes and action orientation is crucial for addressing the challenges posed by climate change, as emphasized by Vehmas et al. (2024). This understanding can help identify barriers towards action, inform effective communication strategies, and guide policy interventions to promote sustainable behaviour change (Drews & Bergh, 2016). Examining this relationship can also reveal the factors influencing individuals' willingness to act and support climate change mitigation efforts (Capstick et al., 2015).

Climate change attitude refers to individuals' beliefs, emotions, and concerns about climate change, while action orientation encompasses their willingness and motivation to take action (Funk, 2021; Vehmas et al., 2024; Smith & Hempel, 2022). These two components are interconnected, as attitudes toward climate change can significantly influence an individual's readiness to engage in actions that mitigate its effects. In conclusion, the relationship between climate change attitudes and action orientation is complex and multifaceted (Roser-Renouf et al., 2014; Jacquet et al., 2014). By comprehending this relationship, we can develop targeted interventions to encourage sustainable behaviour change and sustain public support for effective climate policy (Cipriani et al., 2022).

### **SDG 13: Climate Action and sub goal 13.3**

Multiple reports had emphasized that climate change education plays a central role in achieving Sustainable Development Goal (SDG) 13, which focused on taking urgent action to combat climate change and its impacts (Fahey, 2019). By incorporating climate change education into higher education curricula, we can equip the next generation of professionals with the knowledge and skills necessary to address climate change challenges.

Numerous studies underscore the importance of education in fostering climate action which was recognised as sub goal of SDG 13.3 (Padhra & Tolouei, 2023; Andre et al., 2024). It is widely

accepted that the education system bears a significant responsibility for imparting climate change education. This education not only raises awareness but also cultivates a sense of responsibility for taking action among students and educators in addressing climate-related challenges (Prentice et al., 2024; Andre et al., 2024). Moreover, integrating climate change education into higher education curricula contributes to developing a workforce capable of implementing sustainable practices and promoting climate action across various sectors (Vehmas et al., 2024; Molthan-Hill et al., 2019).

Understanding the crucial link between climate change education and SDG 13.3 highlights the urgency of incorporating relevant literature and resources into the higher education system (Padhra & Tolouei, 2023). By doing so, educators can effectively communicate the importance of climate action and empower students to become catalysts for change in mitigating and adapting to climate change (Doni et al., 2020)

### **Climate change Education and Prospective teachers.**

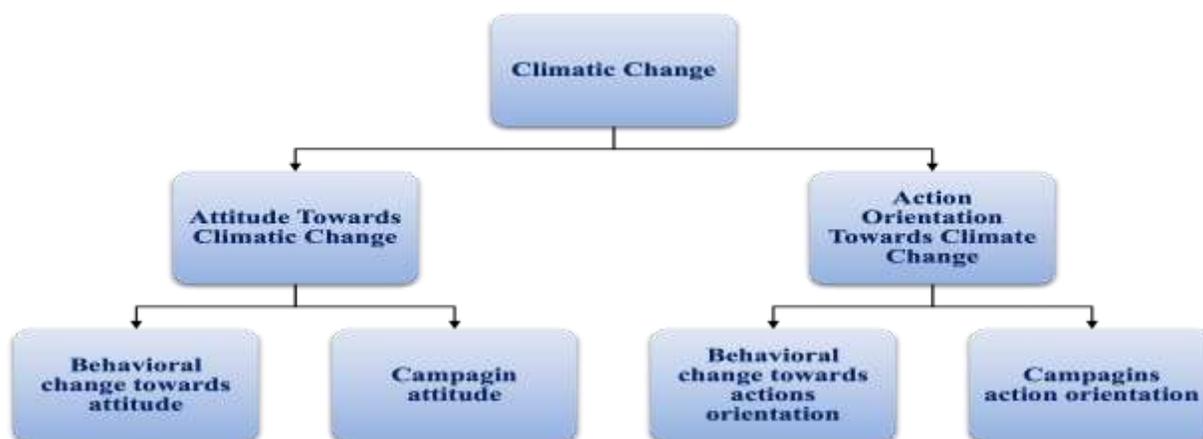
The perspective of future teachers on climate change at higher education level is pivotal in shaping the understanding of future professionals (Vehmas et al., 2024). A study by Çokçalışkan and Çelik (2017), had focused on pre-service teachers' perceptions and revealed that teachers express concern regarding climate change issue but they often lack in comprehensive understanding of its broader socio-environmental complexities. With the growing urgency of addressing climate change, it is imperative for educators to recognize the importance of integrating climate change education into their curricula (Padhra & Tolouei, 2023; Rojas et al., 2017).

A significant portion of the literature on climate change education acknowledged the critical role of teachers in shaping the minds of future generation (Molthan-Hill et al., 2019). Their understanding and acceptance of climate change's relevance to their field can influence their positive attitude about climate change (Eze & Nwagu, 2021; Padhra & Tolouei, 2023). Greenwald et al. (2023) found that teachers' attitudes and beliefs about climate change directly impact their willingness to incorporate it into their teaching practices.

Furthermore, teacher student's attitude was equally vital. As future professionals their engagement and interest in climate change education can drive the demand for comprehensive and integrated curricula (Vehmas et al., 2024). It is essential for prospective teachers to be aware of and responsive to fostering an environment that encourages discussion, learning, and action-oriented approaches to climate change (Molthan-Hill et al., 2019; Hess & Collins, 2018; Tshiningayamwe, 2018).

### **Theoretical model for climate change awareness:**

Behavioural Change to Climate Change Lead and the climate change campaign as well behaviour for action orientation towards climate change leads and the action orientation campaign. To validate the attitude toward climate change, the above two factors significantly lead to behavioural change, such as what type of willingness and responsibility can be adopted to address the climate change impact and effect as mitigation and using social media and educational platforms to promote awareness and campaigns to increase awareness about climate change mitigation.



**Figure 1:** *Theoretical Framework of Attitude and Action Orientation towards Climate Change*

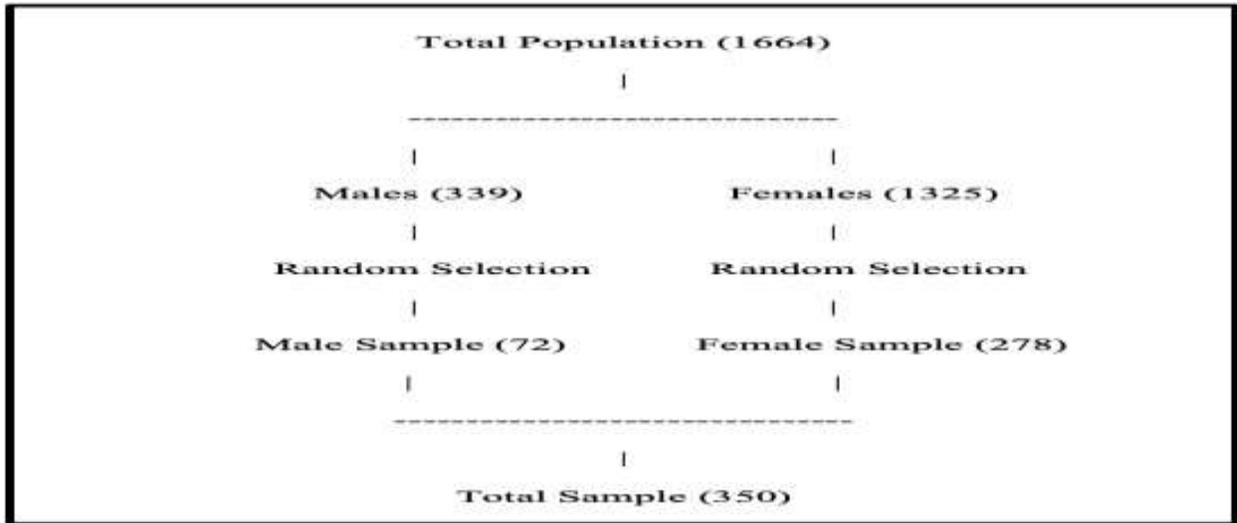
The theoretical framework for this study draws upon the pro-environmental behaviour model proposed by Del et al. (2015). However, given the specific focus of this research on climate change attitude and climate change action orientation, the original model has been adapted and streamlined. Attitude towards climate change was elaborated as for the behaviour of individuals towards climate change and how they can contribute to leading the climate change campaign. As action orientation was that how their behavioural attitude can led them to do action against climate change mitigation and how much they were thinking seriously for climate change action needed.

### **Research Methodology**

Quantitative research approach was used to analyse the arranged set of numerical data using statistical methods of mean, standard deviation, correlation matrix, independent t score and regression analysis. This research paradigm was descriptive study, a common type of social research that aims to accurately represent the current state of conditions. For collecting data, survey method was applied, which involved the distribution of a questionnaire by the researcher to achieve their research objectives.

### **Participants:**

The population of the study comprised of both male and female prospective teachers enrolled and registered in the 4-years BS Education programme, pursuing higher education in public universities of twin cities of Islamabad and Rawalpindi. Total 1664 prospective teachers (see Fig no 1) were enrolled in 4-year BS programme, identified as male (339) and female (1325) from all public universities from Islamabad and Rawalpindi city: 1. National University of Modern Language Islamabad; 2. International Islamic University Islamabad; 3. Fatima Jinnah Women University Rawalpindi; 4. Pir Mehar Ali Shah Arid Agriculture University Rawalpindi. Further Stratified sampling technique was utilised to select the sample from the target population, with males and females being the primary strata for this study.



**Fig 2: Block Diagram of Stratified Random Sampling**

As for the selection of the sample, researcher had utilized the stratified random sampling technique to select 350 participants (72 males, 278 females) as 21% from the total population of 1664 prospective teachers, ensuring proportional representation of gender distribution mentioned in the Table No. 1, remaining after respondent rate of return sample was comprised of 318 (65 male & 253 females) with 90.8 %.

**Table 1: Population and Sample of the Study**

Group	Population Size	Proportion in Population	Sample Size	Proportion in Sample	Respondent Rate of Return	Proportion in sample
Males	339	20.4%	72	20.6%	65	20.4%
Females	1325	79.6%	278	79.4%	253	79.6%
Total	1664	100%	350	21%	318	90.8%

### Research Tool

Self-developed questionnaire, Climate Action and Attitude Scale (CAAS) had used for collection data from respondents to get their attitude and action orientation towards collection change (see table 2). The participant response was evaluated using a five-point Likert scale represented 1 to 5 as strongly disagree, disagree, neutral, Agree, and strongly agree respectively. The primary two construct of scale was the climate change attitude and action orientation towards climate change then further these each part was subdivided into two more sub constructs for in depth analysis as first was climate-related campaigns and second was climate-related behaviour change. All the prospective teachers who joined in the survey were informed about the study's objectives, what is more a bit enough response rate was achieved due to their cooperation and availability. Finally, with a response rate of 90.8%, data were collected from 318 out of 350 prospective teachers.

**Table 2: Details of research tool with Cronbach alpha reliability test (n-36)**

<b>Sr. No</b>	<b>Variables</b>	<b>Sub Variables</b>	<b>Code</b>	<b>Statements</b>	<b>Reliability (Cronbach alpha)</b>
1	Attitude towards climate change	1 Behavioural change attitude	BCA1	Is climate change being reversible.	.780
			BCA2	Is climate change being natural phenomenon.	.760
			BCA3	Climate change is associate with human behaviours.	.776
			BCA4	Eggplant-based diet reduce carbon footprint	.758
			BCA5	Human actions drive global warming.	.755
			BCA6	Human beings cannot stop the worst effects of global warming.	.761
			BCA7	Responsibility can slow down GB by taking serious obligation.	.761
		2 Campaigns attitude	CA1	Education for sustainable development is extremely important.	.762
			CA2	Teacher education program should cover climate change education.	.763
			CA3	Recognised aptitude for mitigation and adaptation can encourage by awareness.	.773
2	Action Orientation towards climate change	3 Behavioural changes towards action	BCAO1	Discover more concerning globally friendly ecological system.	.756
			BCAO2	I can impart knowledge on climate change.	.754

	orientations	BCAO3	Attempting to adopt any habits that contribute to a cleaner environment.	.772
4	Campaigns action orientations	CAO1	Ten Billion Tree Tsunami Campaign is essential to reaching SDG 13.	.776
		CAO2	Initial steps in taking climate action are CC education.	.760
		CAO3	Membership of clean and green Pakistan campaign.	.758
		CAO4	Particular attention to promoting bio dermal material for climate action strategy.	.764
		CAO5	Government clean and green Pakistan campaign engages the locals to achieve the pollution-free environment.	.788
		CAO6	feeling a moral obligation to react to climate change	.783
		CAO7	Collective efforts can control global warming.	.793
Total		20	20	20

Before collecting the final data for this study, a pilot test was managed to validate and define the reliability Cronbach alpha value for the research tool CAAS. The initial questionnaire underwent for the content validation by three experts in climate change and environmental science, all holding doctorate degrees in their respective fields. After getting their feedback, refinements were made to enhance the tool's clarity and relevancy. Subsequently, the pilot data collection was conducted with a sample of 36 filled questionnaires. Cronbach's alpha reliability analysis was performed on this sample to assess the internal consistency and reliability (.777 of 20 statements) of the tool as it would be used in the main data collection phase detail mentioned in the above table No 2.

### Results and Findings

The demographic results of the respondents were mentioned in the Table No 3, revealed significant gender distribution with 253 female's prospective teachers (79.6%) compared to 65 male's prospective teachers (20.4%). The majority of respondents were aged between 20-25, with 84.6%

falling within this age range. Further a smaller proportion of respondents were aged between 31-35 years (11.6%), and an even smaller group was aged between 36-40 years (3.8%). The educational discipline breakdown revealed that 35 respondents (11.4%) were pursuing BS in Primary Education, 113 respondents (36.7%) were enrolled in BS Elementary Education, and the majority, 160 respondents (51.9%), were engaged in BS Secondary Education programs. This suggested the strong preference for secondary education disciplines among the respondents.

**Table 3: Demographic Analysis (n= 318)**

<b>1. Gender</b>	<b>Frequency</b>	<b>Percent</b>
Male	65	20.4%
Female	253	79.6 %
Total	318	100%
<b>2. Age</b>		
20-25	269	84.6%
31-35	37	11.6%
36-40	12	3.8%
Total	318	100%
<b>3. Education Discipline</b>		
Primary Education	36	11.3%
Elementary Education	118	36.1%
Secondary Education	164	51.6%
Total	318	100%

**Result for Research Objective 1 and Null Hypothesis No 1:**

As shown in Table 4, prospective teachers demonstrated a moderately positive attitude towards behavioural change related to climate change, with a mean score of 21.36. Their attitudes towards participating in campaigns related to climate change were less positive, with a mean score of 8.95. Further according to results mentioned in the table no 3 the prospective teachers indicated a moderate level of intention to take individual actions to address climate change (mean score = 9.21). Their action orientation towards participating in campaigns for climate change was more positive, with a mean score of 21.16.

**Table 4: Descriptive statistics (mean and standard deviation of variables) (n=318)**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std, Deviation</b>
Behavioural change attitude	318	21.36	5.24
Campaign attitude	318	8.95	2.71
Behavioural change action orientation	318	9.21	1.91
Campaign action orientation	318	21.16	6.15

H01: “There is no significant correlation between all variables of attitudes and action orientation of prospective teachers towards climate change”.

**Table 5:** *Correlations Matrix between all variables.*

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1. Behavioral Change Attitude	–			
2. Campaign Attitude	.604**	–		
3. Behavioral Change Action Orientation	.678**	.510**	–	
4. Campaign Action Orientation	.852**	.135	.484**	–

**Note:** \*\*  $p < .01$

The correlation matrix in Table 5 revealed significant positive correlations among all variables measuring attitudes and action orientations towards climate change initiatives among prospective teachers.

The results indicate that there was a strong correlation between the constructs of behavioural change attitude and campaign action orientation ( $r = .852^{**}$ ,  $p < .01$ ), behavioural change attitude and behavioural change action orientation ( $r = .678^{**}$ ,  $p < .01$ ), and behavioural change attitude and campaign attitude ( $r = .604^{**}$ ,  $p < .01$ ). According to these results, people who have positive attitudes about one facet of climate action were probably going to have positive attitudes about other elements as well, and they're also probably going to take action.

A number of additional variable pairings showed moderate correlations ( $r = .510^{**}$ ,  $p < .01$ ) between the campaign attitude and behavioral change action orientations, such as the Behavioural Change Action Orientation and Campaign Action Orientation ( $r = .484^{**}$ ,  $p < .01$ ). The association between campaign attitude and campaign action orientation ( $r = .135$ ,  $p < .05$ ) was not as strong as the other correlations, despite the fact that all of them were statistically significant. This implies that variables other than attitudes might also affect people's propensity to act in response to initiatives addressing climate change.

***Result for Research Objective 2 and Null Hypothesis No 2:***

“Association among climate change attitude and action orientation towards climate change.”

H02: “There is no significant association between attitude towards climate change and action orientation among prospective teachers”.

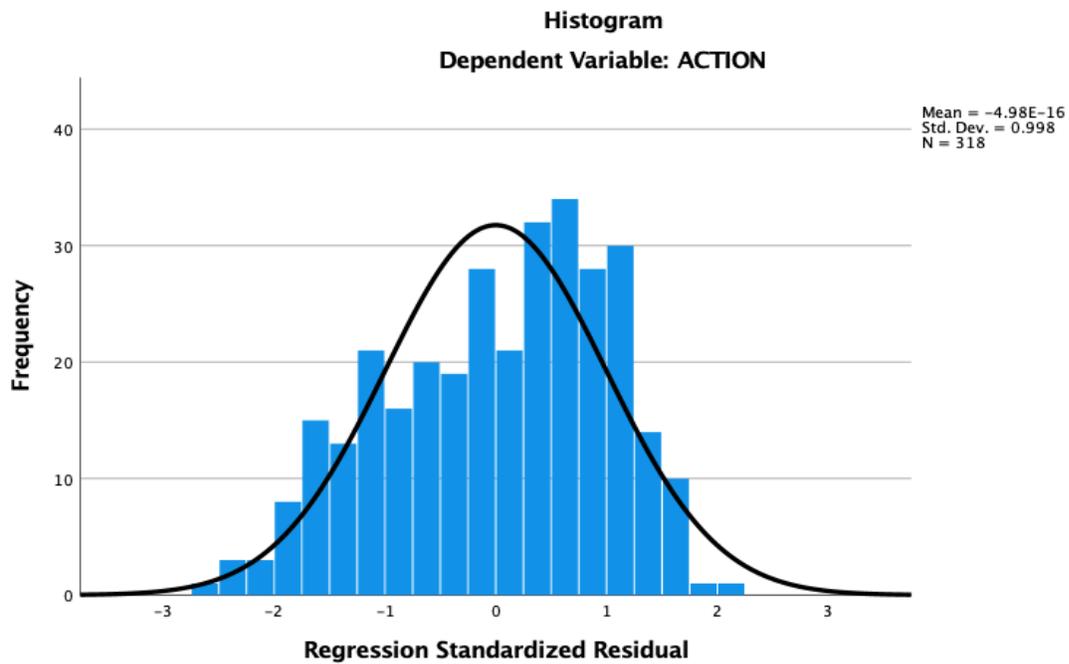
As shown in the table 6 the simple linear regression was conducted to predict action orientation based on attitude towards climate change to find out the relationship between attitude and action orientation towards climate change. The results were statistically significant,  $F(1, 316) = 400.577$ ,  $p < .001$ , indicating that attitude significantly predicted action orientation. The model explained 55.9% of the variance in action orientation ( $R^2 = .559$ ). Therefore, the null hypothesis of no significant relationship between attitude towards action orientation was rejected.

**Table 6: Linear Regression Analysis Predicting Action Orientation from Attitude (n =318)***Model Summary*

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>			
<b>0.748</b>	<b>0.559</b>	<b>0.558</b>	<b>4.836</b>			
<b>ANOVA</b>						
	<b>Sum of Squares</b>	<b>df</b>	<b>F</b>		<b>sig</b>	
<b>Regression</b>	<b>400.577</b>	<b>1</b>	<b>5.188</b>		<b>&lt;.001</b>	
<b>Residual</b>		<b>316</b>				
<b>Coefficients</b>						
	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>			
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>	<b>95% CI Upper</b>
<b>(Constant)</b>	<b>7.499</b>	<b>1.174</b>		<b>6.385</b>	<b>&lt;.001</b>	<b>9.809</b>
<b>Attitude</b>	<b>0.755</b>	<b>0.038</b>	<b>0.748</b>	<b>20.014</b>	<b>&lt;.001</b>	<b>0.829</b>

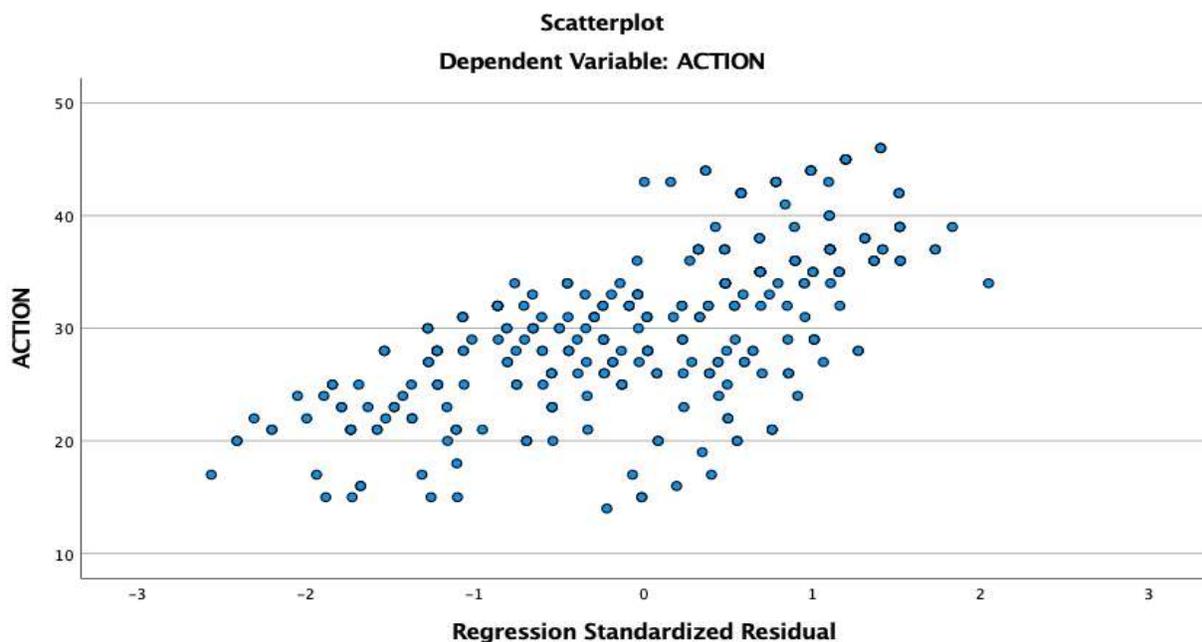
**Note:** Dependent Variable: Action

The unstandardized regression coefficient (B) for attitude was 0.755 ( $p < .001$ ). This indicates that for every unit increase in positive attitude for climate change, there was a corresponding increase of 0.755 in action orientation. The standardized coefficient (Beta = .748) further emphasizes the substantial impact of attitude in predicting action orientation. These findings provide strong support for the rejection of the null hypothesis H02. There was indeed a significant difference in the overall attitudes and action orientation of prospective teachers towards climate change. The positive relationship observed suggests that fostering a more positive attitude towards climate change could be a crucial step in promoting active engagement and behavioural change to address this pressing global issue.



**Figure 3:** Histogram of linear regression model for attitude and action orientation towards climate change

Overall, this histogram provides further evidence supporting the validity of the regression model. The normal distribution and mean of zero for the residuals suggest that the model's assumptions were met and that the relationship between attitude and action orientation towards climate change was well represented by a linear function.



**Figure 4:** Scatterplot for linear regression model of attitude and action orientation towards climate change

Above scatterplot further confirms the suitability of the linear regression model for predicting action orientation based on attitude towards climate change. The random scatter of points, adherence to homoscedasticity, and lack of outliers indicate that the model's assumptions are valid, and the results were reliable.

**Result for Research Objective 3 and Null Hypothesis 3 with Sub hypotheses:**

“To examine potential differences in attitudes towards climate change among prospective teachers based on gender”.

H03(a): “There is no noteworthy difference in attitudes towards Behavioural change related to climate change among prospective teachers based on gender”.

**Table 7: Gender Differences on Behavioral Change Attitudes (n =318)**

Variable	Gender	n	Mean	SD	T value	df	p-value	Mean difference	Cohen;s d	Decision
Behavioural Change Attitudes	Male	65	22.17	6.988	1.117	316	.267	1.023	0.195	Fail to Rejected
	Female	253	21.15	4.687						

As shown in table 7 that an independent samples t-test was applied to examine the difference in behavioural change attitudes related to climate change between male and female prospective teachers. The results indicated a statistically significant difference in attitudes between genders, as p (.267) value is greater than the usually used significance level of 0.05, fail to rejecting the null hypothesis H03a. The mean behavioural change attitude for males (M = 22.17) was significantly higher than the mean for females (M = 21.15), with a mean difference of 1.023. This difference represents a small-to-medium effect, as indicated by Cohen's d of 0.195 suggesting that the true effect size in the population could range from negligible to medium. On the bias of the data we have doesn't provide strong evidence to conclude a statistically significant difference in attitudes between male prospective teachers based on gender.

H03(b): “There is no noteworthy difference in the attitudes towards climate change campaigns among prospective teachers based on gender”.

**Table 8: Gender Differences on Attitudes Towards Climate Change Campaigns (n =318)**

Variable	Gender	n	Mean	SD	T value	df	p	Mean difference	Cohen;s d	Decision
Attitudes Towards Climate Change Campaigns	Male	65	8.31	2.855	-2.15	316	.032	-0.803	-0.132	Rejected
	Female	253	9.11	2.640						

In table no 8, results indicated a statistically significant difference in attitudes between genders, t (-2.15), p = .032, rejecting the null hypothesis H03b. The mean attitude towards climate change campaigns for females (M = 8.31) was significantly higher than the mean for males (M = 9.11), with a mean difference of -0.803. Males exhibited slightly less positive attitudes compared to females (small effect size, Cohen's d = -0.132) suggesting that the true effect size in the population could range from small to negligible.

### **Result for Research Objective 4 and Null Hypothesis 4 with Sub hypotheses**

"To examine potential differences in action orientation towards climate change among prospective teachers based on gender".

H04 (a): There is no noteworthy difference in action orientation towards behavioural changes related to climate change among prospective teachers based on gender.

**Table 9: Gender Differences on Action Orientation Towards Behavioural Change (n =318)**

Variable	Gender	n	Mean	SD	T value	df	p	Mean difference	Cohen's d	Decision
Action Orientation Towards Behavioural Change	Male	65	9.06	2.120	-.638	31	.525	0.496	0.120	Fail to reject
	Female	253	9.25	1.853						

The results in table no 9 indicated not noteworthy significant difference in action orientation between genders,  $t(-.638)$ ,  $p = .525$ , which is much greater than the significance level of 0.05. and fail to rejecting the null hypothesis H04(a). The mean action orientation towards behavioural change for males ( $M = 9.06$ ) was significantly higher than the mean for females ( $M = 9.25$ ), with a mean difference of 0.496. This difference represents a small effect, as indicated by Cohen's  $d$  of 0.120 suggesting practically negligible difference in action orientation between the genders

H04(b): There is no noteworthy difference in the action orientation towards climate change campaigns among prospective teachers based on gender.

**Table10: Gender Differences on Action Orientation Towards Climate Change Campaigns (n =318)**

Variable	Gender	n	Mean	SD	T value	df	p	Mean Difference	Cohen's d	Decision
Action Orientation Towards Climate Change Campaigns	Male	65	23.46	7.585	2.880	316	<.001	1.004	0.178	Rejected
	Female	253	20.57	5.593						

As the results mentioned in table no 10 indicated a statistically significant difference in action orientation between genders,  $t(2.892)$ ,  $p < .001$ , rejecting the null hypothesis H04(b). The mean action orientation towards climate change campaigns for males ( $M = 23.46$ ) was significantly higher than the mean for females ( $M = 20.57$ ), with a mean difference of 1.004. This difference represents a small-to-medium effect, as indicated by Cohen's  $d$  of 0.178 suggesting that the true effect size in the population is likely small to medium.

## **2. Discussion**

This study was set out to discuss the prospective teacher attitude and action orientation related considerations towards climate change. Even with the previous research by Karpudewan, (2019), the current study shows gender differences in how prospective teachers relate to climate change and the action towards climate change. Another finding for gender defences that females hold more positive attitudes towards campaigns, whereas males were stand more likely towards action for climate mitigation (Mat Said et al., 2003).The gender gap was also aligns with a study by Chesnut & Cullen in 2014 and similarly they had found women tend to have stronger environmental interests and support for pro-environmental policies, but men were more likely to engage in

particular climate friendly activities that leads to action orientation towards climate change. The core intentions for the gender variances probable involve a complex relationship of sociological, psychological, and cultural influences that shape environmental attitudes, behaviours and then action orientation (Karpudewan, 2019; Chesnut & Cullen, 2014). This may be due to differences in self-efficacy, beside males potentially feeling far more inspired to instigate climate actions (Merdassa, 2012). Research suggests a complementary relationship: women frequently demonstrate greater environmental concern, while men tend to translate that concern into concrete behaviours like adopting sustainable practices or supporting environmental policies (Karpudewan, 2019; Merdassa, 2012). These findings have somewhat surprising implications given the fact that other research shows the important implications for the policy of educational initiatives and communication approaches intended to engaging both male and female prospective teachers in climate action. Moreover, tailored approaches that had reported about gender based differences in attitudes and behaviours could be more applicable in stimulating climate-friendly practices among future teachers (Berkebile-Weinberg et al., 2024). For example, it was not surprising to see that determinations to increase females' engagement in climate campaigns might highlight the social and community-oriented aspects of participation (Dutta & Chandrasekharan, 2018). Conversely, involvements and pursuing by males could focus on enhancing their substantial paths for distinctive climate action. The outcomes related to participating in the campaigns aligns with previous research's which had observed though individuals may be concerned about climate change but they often required the motivation or plan to do actual actions to address it (Gatersleben et al., 2014). As per results there was strong correlations between the various attitude and action related constructs, however, indicated that those with positive attitudes in one area are likely to have positive intentions in other areas as well. This is consistent with the notion that attitudes and action are interconnected, and that interventions targeting one aspect may have spill over effects on other related behaviors (Naidoo & Gasparatos, 2023). Past research has found that while attitudes can be relatively easy to change, they may not always translate into actual behaviour change (Gatersleben et al., 2014). However, relatively weaker correlation found between campaign attitude and campaign action orientation in the current study but other factors beyond just attitudes, such as perceived behavioral control and social norms, likely play an important role in determining whether individuals will actually engage in climate-related actions. Ultimately, the results suggest that efforts to promote climate change action should focus not just on shaping attitudes, but also on addressing the other psychological and contextual factors that influence behavioural intentions and actual behaviors. This multifaceted approach may be more effective in catalysing the changes in individual and collective action that are needed to address the pressing challenge of climate change (Bush & Clayton, 2023; Gatersleben et al., 2014; Naidoo & Gasparatos, 2023).

#### **4.1. Conclusion**

The purpose for the present study was to determine that how much was the difference have been existed prospective teachers' attitude and action orientations towards climate change. Thus, Current research found significant positive correlations between attitudes towards behavioural change, campaign engagement, and climate change, with higher action orientation towards individual changes and campaigns. The second aim of this study was to investigate the gender differences in how prospective teachers relate to climate change and action orientation. The study concluded that females hold more positive attitudes towards campaigns, while males were more likely to act. This can be valuable for modifying educational and communication approaches to engage and motivate both genders.

## **4.2. Recommendation**

According to the results and conclusions, action orientation towards climate change were found to be limited as compared to the attitude and moreover this study was limited to only survey method. Therefore, it is recommended for future research required to have done by mix methodology cross national study. Further for practical implications, there would seem to be definite need for universities should have encouraged training to encourage prospective teachers' understanding and action for mitigate for worst situation of climate change.

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