

Assessment of Knowledge, Attitudes and Practices (KAP) Towards Climate Change Education among Teaching Staff and Medical Student of CMH Lahore Medical College, Lahore

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ABSTRACT

Background: Climate change education is a multidisciplinary approach aimed at increasing knowledge and understanding of the causes, impacts, and solutions related to climate change. This study aims to assess knowledge, attitude, and practices (KAP) of medical undergraduate, post-graduate students and teaching staff pertaining to climate change education (CCE) and to foster sustainable practices and amplify awareness and understanding of climate change among healthcare professionals within the country.

Subjects and methods: The Department of Community Medicine conducted a cross-sectional survey at CMH Medical College, Lahore, involving 267 medical undergraduate, postgraduate students and teaching staff who willingly volunteered to take part. This study took place from January 2023 to June 2023. A self-designed questionnaire, with a calculated reliability of 78% using Cronbach's Alpha in SPSS version 20 was employed. This questionnaire encompassed demographic details and inquiries related to Knowledge, Attitudes, and Practices (KAP) among medical students and teaching staff. The questionnaire included four sections. First section evaluated participants demographic information which included age, gender and discipline. Second section consisted 18 survey questions regarding knowledge of participants. Third section included 5 survey questions assessing attitude of participants and fourth section included 9 survey questions evaluating practice among participants. Scoring for each section was based on the number of questions, with a cutoff value set at 50%. Scores above 50% were categorized as "poor," while scores below this threshold were considered "good. Analysis of knowledge, attitude and practices of participants was done using SPSS version 20, in association with their age, gender and discipline by applying chi-square test considering p-value <0.05 as significant.

Results: Out of 267 participants, 110 (42.8%) were males and 157 (61%) were females. This study revealed that female students had more knowledge as compared to male students and teaching staff and this difference was statistically significant (p=0.026). In case of attitude, results showed 36.4% of males and 63.6% of females showed good attitude, with a statistically significant difference (p=0.014). In practicing habits regarding CCE, results showed 57.8% of females as compared to 42.2% of males had good practices.

Conclusion: Female medical students were more aware, showed positive attitude and practiced good habits towards CCE as compared to male students followed by teaching staff.

Keywords:

Climate change education, knowledge, practices, attitudes, teaching staff, medical students.

INTRODUCTION

Climate change education is a multidisciplinary approach aimed at increasing knowledge and understanding of the causes and impacts related to climate change. Climate change represents one of the most significant global health challenges of the 21st century.¹⁻³ According to projections by the World Bank Group, climate change could lead to the

potential addition of over 100 million individuals into extreme poverty worldwide by the year 2030. This outcome is primarily attributed to adverse effects on public health.⁴ Evidence based studies shows relation between climate change and suicide rates across the world and boost of allergic respiratory diseases in the world that call for an immediate attention and action by the health professionals.⁵⁻⁶ In 2015 WHO has demanded that all the health professionals of the world should be on the forefront to safeguard the people from the hazards of climate crisis and to achieve the United Nation's sustainable developmental goal-13 (SDG-13) i.e., "to take urgent action to combat climate change and its impacts".⁷ According to German watch's Global

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Climate Risk Index 2018 report, Pakistan is seventh in the list of countries susceptible to hazards associated with climate change.⁸ Therefore, one of the important concerns for Pakistan is its extreme vulnerability to climate change. Although it contributes less than 1% of the global emissions ranking 135th in the world in terms of its greenhouse gas emissions per capita.⁹

Keeping in view the scenario of our country the purpose of this study is to determine perceptions and behavioral practices regarding climate change education among medical students, post-graduate medical students and medical teaching staff and to foster sustainable practices and amplify awareness and understanding of climate change among healthcare professionals within the country.

SUBJECTS AND METHODS

This cross-sectional survey was conducted among teaching staff and medical students of CMH Medical College, Lahore from January, 2023 to June 2023. Sample size of 267 was calculated by using Cochran formula with 95% confidence, 6% margin of error and 50% anticipated proportion. Study was approved by the Institutional Ethical Review Committee. Informed consent was taken from all study participants. Sample was selected through non-probability convenient sampling technique. Inclusion criteria consisted of undergraduate Medical students, Postgraduate trainees and Teaching staff CMH Medical College Lahore. Health care professionals from dental, nursing and allied health sciences were excluded. Self-designed questionnaire was used with reliability of 78% calculated by Cronbach's Alpha using SPSS version-20. The questionnaire included four sections. First section evaluated participants demographic information which included age, gender and discipline. Second section consisted of 18 survey questions regarding knowledge of participants. Third section included five survey questions assessing attitude of participants and fourth section included 9

survey questions evaluating practice among participants. Data was analyzed using SPSS version 20. Scoring for each section was based on the number of questions, with a cutoff value set at 50%. Scores above 50% were categorized as "poor," while scores below this threshold were considered "good". Demographic characteristics of participants were analyzed through frequency and percentages. Analysis of knowledge, attitude and practices of participants was done in association with their age, gender and discipline by using Chi-square test of significance considering p-value <0.05 as significant.

RESULTS

In this study, there were 267 participants in which 110 (42.8%) were males and 157 (61%) were females.

Knowledge of Medical students, Trainees and Medical students regarding climate change education: Among medical students, trainees and teaching staff, teaching staff have comparatively poor knowledge regarding Climate Change Education. Out of 128 teaching staff, 91 (48.1%) teaching staff fall in poor category of knowledge whereas among medical students out of 139 (52%) fall in poor category. Total 69.3% participants believed that Climate Change is natural process whereas 30.7% believed that it is not. Similarly total 93.3% participants have consensus that Climate Change is caused by human activities and 96.3% respondents agreed that there is a difference between natural and enhanced greenhouse effect. Total 98.5% considered that deforestation had major impact on climate change, whereas 98.1% participants believed that now a days rise in temperature has strong association with climate change 91.4% participants believe respiratory diseases are the major risk factor faced by humans due to climate change and 92.5% agreed that business and industrial activities have contributed massively in Climate Change (Table 1).

Table 1: Association of climate knowledge with demographic factors (N=267)

| Characteristics | Good Knowledge | Poor Knowledge | p-value |
|-------------------|----------------|----------------|---------|
| Age | | | |
| 20 – 30 | 53 (30.8%) | 120 (69.2%) | 0.329 |
| 31 – 40 | 19 (31.1%) | 42 (68.9%) | |
| 41 and above | 6 (18.2%) | 27 (81.8%) | |
| Gender | | | |
| Male | 24 (21.8%) | 86 (78.2%) | 0.026 |
| Female | 54 (34.6%) | 103 (65.4%) | 0.026 |
| Discipline | | | |
| Medical students | 41 (29.7%) | 98 (70.3%) | 0.448 |
| Trainees | 20 (34.5%) | 38 (65.5%) | |
| Teaching staff | 17 (24.3%) | 53 (75.7%) | |

Table 2: Association of attitude of medical students, trainees and teaching towards climate change education (N=267)

| Characteristics | Good Attitude | Poor Attitude | p-value |
|-------------------|---------------|---------------|---------|
| Age | | | |
| 20 – 30 | 117 (68.9%) | 56 (31.1%) | 0.385 |
| 31 – 40 | 47 (76.3%) | 14 (23.7%) | |
| 41 and above | 23 (71.0%) | 10 (29.0%) | |
| Gender | | | |
| Male | 68 (62.5%) | 42 (37.5%) | 0.014 |
| Female | 119 (76.5%) | 38 (23.5%) | |
| Discipline | | | |
| Medical students | 92 (66.7%) | 47 (33.3%) | 0.359 |
| Trainees | 43 (75%) | 15 (25%) | |
| Teaching staff | 52 (75.8%) | 18 (24.2%) | |

Table 3: Status of medical students, trainees and teaching staff regarding practicing habits towards climate change (N=267)

| Characteristics | Good Practice | Poor Practice | p-value |
|-------------------|---------------|---------------|---------|
| Age | | | |
| 20 – 30 | 30 (16.9%) | 143 (83.1%) | 0.408 |
| 31 – 40 | 12 (18.3%) | 49 (81.71%) | |
| 41 and above | 3 (6.2%) | 30 (93.8%) | |
| Gender | | | |
| Male | 19 (16.5%) | 91 (83.5%) | 0.878 |
| Female | 26 (15.5%) | 131 (84.5%) | |
| Discipline | | | |
| Medical students | 29 (20.3%) | 110 (79.7%) | 0.188 |
| Trainees | 9 (10.5%) | 51 (89.5%) | |
| Teaching staff | 7 (11.6%) | 61 (88.4%) | |

Attitude of Medical students, Trainees and Teaching staff regarding climate change education:

Among teaching staff and medical students 75% teaching staff have good attitude towards Climate Change Education where as 66.6% students have shown positive attitude towards Climate Change Education. Total 89.9% participants have considered that it is important to arrange seminars for students about Climate Change and 85% participants express their view that it is important to teach the skills of interoperating graphs with tables in IPPC (Inter-governmental Panel on Climate Change) reports, whereas 93.6% believe that by broad casting public service messages about climate change will make general public better global citizens. However, 82.8% respondents thought that Climate Change Education can be infused more effectively in curriculum of undergraduate students and 95.9% responded strongly that government should focus its efforts on environmental conservation. There was significant association between attitude and gender ($p=0.014$). Females showed more positive attitude as compared to males (Table 2).

Practice of Medical students, Trainees and Teaching staff regarding climate change education:

Among teaching staff and medical students, only 64.4% students are habitual of good practices towards climate

change whereas only 35.6% teaching staff are in good practice. Total 77.5% participants showed interest in attending professional development courses regarding climate change education whereas, 58.4% responded negatively that there is no need to assess understanding of undergraduate students regarding climate change issues in their examinations. However, 89.9% strongly practice energy conserving habits in their daily routine like turning off tap while brushing teeth, 94% practice habit of saving electricity, 58.8% used to buy food in biodegradable containers, 59.2% used to practice carpooling in their daily routine and 49.8% used to bring their own food containers while eating out. 48.7% shared that they have participated in clean up drives or seminars on climate change and 64% used to read news and articles on climate change. However, there was no significant difference ($p>0.05$) (Table 3).

DISCUSSION

Climate change stands as a prominent peril to global well-being in the 21st century.¹⁰ It is a significant and emerging threat to public health.¹¹ This issue demands a response from healthcare professionals. Increasing worry exists among health authorities and policymakers regarding climate change and its potential ramifications on both the environment and human well-being.¹² The results of this study provide valuable insights into the knowledge, attitudes, and practices (KAP) of teaching staff and medical

students at CMH Lahore Medical College, Lahore, regarding climate change education. Understanding these KAP factors is crucial in addressing the growing concern of climate change, especially within the healthcare sector.

As for the knowledge about climate change is concerned the findings of this study indicate that both teaching staff and medical students displayed a considerable gap in their knowledge about climate change. While a majority of participants believed that climate change is caused by human activities, a significant percentage still perceived it as a natural process. Additionally, a substantial number of participants were unaware of the difference between natural and enhanced greenhouse effects. These findings highlight the need for improved education and awareness regarding the science and causes of climate change among healthcare professionals. Another survey was done to know the perception of climate change and risks associated with it by the students of public and private universities in Lahore. The results of the findings showed a moderate level of awareness about climate change among the students. Awareness of climate change is an important ingredient for the successful implementation of climate change policy in the country. By improving the climate services and raising awareness about climate change and once it starts to grow it can be integrated into local, national, and sectoral development plans.¹³ The gender-based disparities in knowledge are noteworthy. Female participants, especially medical students, exhibited better knowledge about climate change compared to their male counterparts. This difference could be attributed to various factors, including educational experiences, personal interests, and access to information. Addressing this gender gap in knowledge is essential for promoting a more comprehensive understanding of climate change among all healthcare professionals. Furthermore, it is worth noting that a survey conducted in China highlighted that in both settings, intermediate or delayed health impacts of climate change, such as allergies and malnutrition, were not frequently recognized as potential health consequences of climate change.¹⁴ This contrasted with findings of this study's focus, which delved into knowledge, attitudes, and practices related to climate change education among healthcare professionals in Lahore. While both studies emphasize the need for increased awareness about climate change's health impacts, they offer insights from different geographic and demographic contexts.¹⁴

As for the attitudes towards Climate Change Education are concerned, this study revealed positive attitudes towards climate change education among both teaching staff and medical students. A majority of participants recognized the importance of organizing seminars, teaching data interpretation skills, and broadcasting public service messages related to climate change. Furthermore, participants showed a strong belief in integrating climate change education into the curriculum and emphasized the role of government in environmental conservation efforts.

The finding reported in the study conducted at Yale University, USA, where nearly 90% of health professionals agreed that they have a responsibility to conserve resources and prevent pollution in their workplace.¹⁵

The motive behind conducting the present study was Hung's (2014) study addressing teachers' readiness for climate change education in Singapore, which showed that teachers are the key figures in holding climate change courses.

CONCLUSION

Overall, the abovementioned studies focus more on students' awareness of climate change and its health impacts, these studies indicate a positive attitude toward climate change awareness and education and are in alignment as they highlight the importance of about climate change, its causes, and health-related consequences.

When assessing practices related to Climate Change, the practices demonstrated a mixed picture. While a significant proportion of participants expressed interest in attending professional development courses and reported energy-conserving habits in their daily routines, there was room for improvement. A considerable number of participants did not believe it was necessary to assess undergraduate students' understanding of climate change in exams. Additionally, fewer participants engaged in practices like using biodegradable containers, carpooling, or bringing their own food containers.

The study had been conducted exclusively within a specific medical college, which might constrain the generalizability to other healthcare institutions across Pakistan. Additionally, the reliance on self-reported data introduces the potential for response bias. The utilization of a cross-sectional design also imposes limitations on the capacity to establish causal relationships between variables.

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