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Perception of public health students of Kathmandu, Nepal towards effect of climate change

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Abstract

The objective of the study was to determine in what specific ways the public health students believe climate change will harm human health. The study was descriptive cross-sectional in design followed by both qualitative as well as quantitative methods of information collection and analysis. The study sample was 386 public health students chosen from four different colleges of Kathmandu Valley of Nepal. Quantitative data was collected via self administered semi-structured questionnaire and qualitative data was gathered via Focus Group Discussions (FGD). Data analysis was done by using both descriptive and inferential statistics using SPSS version 20 and MS Excel 2007. More than halves of the public health students said that they were most concerned about the risk to themselves and their families. Most of the public health students believed that climate change has most effect on vulnerable and deprived population. Similarly, almost cent percent believed that climate change harm human health in terms of causing skin cancer followed by heat stroke (92%), malaria (87.3%), infections causing diarrhea (66.6%), and cardiovascular diseases (50.5%). While 95.6% of the respondents believed sunburn is an effect of climate change which shows the misleading concept of climate change. The study suggests further research to be carried out to explore the perception of health professional on viewing climate change in terms of health risks and involving health professionals in solving the climate change issues to prevent the future disease epidemics.

1. Introduction

The climate is being changed because of the global warming and there is now overwhelming scientific consensus that it is happening and human-induced.

Intergovernmental Panel on Climate Change's third assessment traced little evidence towards the human health impacts of climate change in 2001¹ but by the year 2007, the international panel of research scientists made clear indication of the contribution of climate change to the global burden of disease and premature deaths². A WHO study estimated that by the year 2000, climate change caused 150,000 deaths across the globe annually with additional 5 million 'disability-adjusted life years' lost per year. Based on the original estimates by the World Health Organization, for the years 2000 and 2030 (McMichael et al., 2004), it is likely that in low-income countries, climate change currently causes an additional 200,000 premature deaths annually of which children being the most vulnerable group accounting for 85% of those deaths. The leading trait for those climate-sensitive health outcomes was crop failure and under-nutrition,

diarrheal disease, malaria and flooding³. Many of the major killers such as diarrheal diseases, malnutrition, malaria and dengue are highly climate-sensitive and are expected to worsen as the climate changes.

The Lancet Journal stated that climate change is the biggest global health threat of the 21st century and thereby protecting health from its effect is an emerging priority for the public health community⁴. Similarly, WHO has urged to emphasize research on climate change and health. At the national level, Nepal Health Research Council (NHRC) has prioritized climate change as the key environmental health research priority area for Nepal in 2006⁵.

The increasing impact of climate change demonstrates the need of research on perception of climate change as a human health threat.

Failure to integrate the impact of climate change into the public health sector may be boding ill for the country's future. Rebranding climate change as public health issue needs the involvement of public health professionals in this sector for addressing the policy for mitigating the impact of climate change.

Public health students are the future health professionals responsible for addressing these issues, that's why their perception matters a lot.

The aim of the study was to determine in what specific ways the public health students believe that the climate change will harm human health.

2. Methodology

2.1. Study Approach

Main approach used for data collection for this study was descriptive cross-sectional study including both and quantitative methods.

2.2. Site Selection

The study was carried out in Kathmandu Valley which is supposed to be the most vulnerable place for the effect of climate change and the place with more colleges offering public health courses in Nepal.

2.3. Unit of Analysis

Unit of analysis for this research purpose was basically the under-graduate public health students.

2.4. Data Collection

Data was collected via self administered semi-structured questionnaire and focus group discussion.

2.4.1. Quantitative Method of Data Collection

The quantitative part of the study dealt with the collection of data using self administered semi-structured questionnaire.

2.4.1.1. Technique for Selecting Respondents

The colleges for the research purpose were chosen through

simple random sampling. Out of 15 colleges 7 colleges were selected randomly.

Out of 7 colleges 3 colleges didn't meet the criteria of the study as those college's education system was not based on semester system as well as only 2 year students were available in the college at the time of data collection. That's why those 3 colleges were excluded and remaining 4 colleges; National Open College (NOC), Central Institute of Science & Technology (CIST), Nobel College and Institute of Medicine (IOM) were chosen for the study. Similarly, 97 students from each 3 colleges (NOC, CIST and Nobel College) were chosen for the study purpose. As the sample size met, in IOM 95 students were only taken.

2.4.1.2 Sample size

The sample size was 386. The sample was calculated as:

$$n = \frac{Z^2 \times pq}{d^2}$$

Where;

n = required sample size

Z = confidence level at 95% (standard value of 1.96)

p = estimated prevalence of public health students in Kathmandu Valley (standard value of 0.5)

d = margin of error at 5% (standard value of 0.05)

2.4.2. Qualitative Method of Data Collection

The qualitative part of the study dealt with the collection of data through focus group discussion (FGD) among the public health students of the same four colleges.

2.5. Data Processing and Analysis

Data was analyzed in SPSS-20 and MS-Excel 2007. Both descriptive and inferential statistics were used to analyze the data.

2.6. Validity and Reliability

The study was conducted using valid and reliable standard questionnaire. Assurance of strict confidentiality while completing the questionnaire was another effort at ensuring maximum reliability and validity of the data. The mixed method study design also accounted for ensuring the validity and reliability of data. To ensure external validity the results were compared with those reported in the literature from within the country as well as those from similar socio-cultural backgrounds.

2.7. Ethical Consideration

Informed consent was taken from the respondents prior to data collection and their participation was absolutely voluntary. Privacy and anonymity was taken well into consideration.

The ethical approval was obtained from the Ethical Review Board of Faculty of Medical Sciences, Nobel College. Ethical approval from NHRC was also obtained.

Permission was obtained from the concerned institutions from where data was collected.

The findings depicted that more than 3/4th of the public health students (89%) believed that climate change leads to major health risk but it was surprising to know that 1% of them thought that there is no risk of climate change on their health.

3. Results and Discussion

3.1.1. Perception towards Risk of Climate Change

Table 1. Perception of public health students towards worldwide effects of global warming over the next 20 year

Effects of Global warming	Response in %					
	Many more	Few more	No difference	A few less	Many less	Don't know
Drought & water shortages	79.7	17.9	0	2.3	0	0
Extinctions of plants & animal species	51.4	44.2	0	0	4.4	0
People living in poverty	55.1	36.6	4.2	0	2.3	1.8
Refugees	42.6	37.4	0	10.6	0	9.4
Disease epidemics	59.2	28.6	1.8	8.1	2.3	0
Intense hurricanes	51.2	37.1	7.3	4.4	0	0
Intense rainstorms	51.2	41	5.5	2.3	0	0
Floods	75.3	20.8	0	0	3.9	0
Forest fires	67	28.1	1	1.6	2.3	0
Expanding deserts	62.3	27.5	4.9	2.9	2.3	0
Severe heat waves	67	23.6	0	5.5	3.9	0
Melting ice caps & glaciers	74.8	18.7	1.6	9.6	2.3	0
Famines & food shortages	57.4	35.1	3.6	1.6	2.3	0
Abandoning large coastal cities due to rising sea level	61.6	33	5.5	0	0	0

This finding clearly shows that most of the respondents perceived that climate change affects environmental issues like drought, water shortages, abandoning large coastal cities

due to rising sea level, etc whereas only half of the respondents perceived disease epidemics to be many more as an effect of climate change if nothing is done to address it.

Table 2. Perception of public health students regarding perceived health hazards of climate change

	Yes	No	Don't Know
Heat stroke	92%	2.6%	5.4%
Skin Cancer	99%	1%	0%
Infections which can cause diarrhea	66.6%	31.1%	2.3%
Cardiovascular conditions	50.5%	35%	14.5%
Allergies	97.1%	2.9%	0%
Infectious disease such as malaria	87.3%	10.4%	2.3%
Asthma & respiratory conditions	84.4%	9.6%	6.0%
Sunburn	95.6%	4.4%	0%

The above table shows that almost cent percent (99%) believed that climate change causes skin cancer followed by heat stroke (92%), malaria (87.3%), infections causing diarrhea (66.6%) and cardiovascular diseases (50.5%). While 95.6% of the respondents believed that sunburn is an effect of climate change which showed the misleading concept of climate change. While Surveys of the United States, Canada and Malta in 2010 showed that huge number of Canadian and Maltese saying that climate change can cause respiratory problems (78–91%), heat-related problems (75–84%), cancer (61–90%) and infectious diseases (49–62%). Canadian also named sunburn (79%), injuries from extreme weather events (73%) and Maltese cited allergies (84%) as an effect of climate change.

More than half of the public health students (62%) believed that slum population is the most affected by the climate change followed by elder population (18%) and children (8%). This finding revealed that most of the public

health students believed that climate change has the most effect on vulnerable and deprived population like women, children, elderly and slum population.

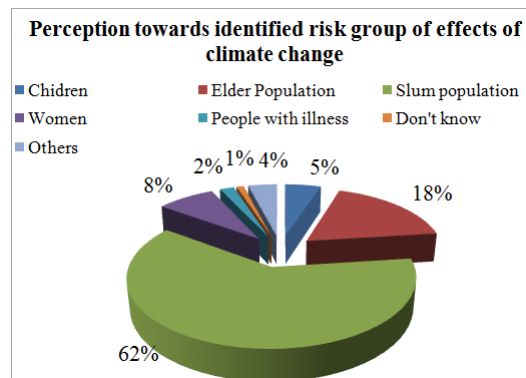


Fig 1. Perception towards identified risk group of effects of climate change

3.1.2. Identified Risk Groups of Hazards of Climate Change

Table 3. Perception of public health students towards the self identified groups in risk of hazards of climate change

Risk group of hazards of climate change	Perception in percentage				
	A great deal	A moderate amount	Only a little	Not at all	Don't know
You personally	62.3	36.4	1.3	0	0
Your family	57.4	40.3	2.3	0	0
Your community	69.4	27.5	2.1	1	0
People in Nepal	72.5	25.5	2.1	0	0
People in modern industrialized countries	64.2	26.2	8.6	1	0
People in developing countries	74	23.9	0	2.1	0
Future generation of people	90.9	6.8	0	0	2.3

The above table shows that more than 90% of the respondents believed that the future generation of the people will be at the most risk of climate change followed by people in developing countries as compared to developed countries. Similarly more than halves of the respondent said that they were most concerned about the risk to themselves and their families.

3.2. Qualitative Findings

Viewing the actual scenario of perception of climate change through the eyes of the respondents the results of the focus group discussion showed that female perceived themselves as more vulnerable than male participants and the reasons associated behind it were that they perceived themselves less active to save themselves during the natural disasters as a result of climate change. Female believed themselves less protective and less involved in coping activities in response to disasters in spite of having equal opportunity to the access to infrastructure.

The misleading concept on climate change have been shown by the respondents as they view sunburn as an effect of climate change and this result also supported the percentage of respondents believing sunburn as an effect of climate change in the quantitative analysis of data.

4. Conclusions

The study concluded that majority of the total respondents believed Nepalese are being harmed by climate change. Similarly, more than halves of the respondent said that they were most concerned about the risk to themselves and their families. Most of the public health students believed that climate change has the most effect on vulnerable and deprived population. Almost cent percent believed that climate change harm human health causing skin cancer, heat stroke, malaria, infections causing diarrhea and cardiovascular diseases.

The study suggests further research to be carried out to explore the perception of health professional on viewing climate change in terms of health risks and involving health professionals in solving the climate change issues to prevent

the future disease epidemics. The contents on basic information on cause, effects and mitigation measures of climate change should be added in the course of public health. Climate change regulation and acts need to be planned from government level including gender and climate change issue. The findings of the study also suggest that various awareness programs need to be launched in all population along with especial focus among public health professionals.

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