

Knowledge Scale-wise Climate Change Awareness: An Analysis of Professional Characteristics of Journalists in Kerala

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Abstract

Undoubtedly, climate change as one of the most serious threats to humankind in the 21st century. This study primarily assumed climate change is largely as an anthropogenic origin and tried using an interdisciplinary lens by taken its association with journalistic narrative in the regional media landscape of Kerala. Journalistic news narratives and interpretations play a pivotal role in the public understanding of climate change. To measure journalistic knowledge scale-wise climate change awareness, study uniquely designed a conceptual model which incorporated four knowledge scales as casual & basic knowledge, effect knowledge, action-related knowledge and agreement/event knowledge (knowledge scales proposed by Tobler, Visschers & Siegrist, 2012). Each of these knowledge scales corresponded to respective four factors and 17 items. In light of this a survey instrument was developed and conducted it among 518 journalists in Kerala. Journalistic professional characteristics considered for the study were region, type of media, field of work, experience, media education, job designation, climate change news reporting and media awards. Study results showed a few professional variables had significant association with discussed knowledge scales and majority of the journalists (N= 325, 62.7%) had a moderate level of climate change awareness in corresponding to each climate change knowledge scales discussed.

Keywords

Climate Change, Climate Change Awareness, Knowledge Scale, Journalistic Professional Characteristics

Introduction

Climate change considered being one of the most serious challenges of 21st century and this is a broadest topic of interdisciplinary and multidisciplinary relevance ever studied by the academic community. Human induced climate change is a serious problem that must be addressed immediately (Houghton, 1992; Carte, 1995; Houghton, 1996; Watson, 1997; Nakicenovic and Swart, 2000; Houghton, 2001). The Intergovernmental Panel on Climate Change (IPCC) defines climate change as —a change in the state of average weather

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patterns attributed to both natural and human induced factors and which in addition to variability persists over long periods (IPCC, 2007).

Especially since the publication of Rachel Carson's famous book *Silent Spring* (1962), evidently environmentalism and environment journalism were became largely discussed and debated in the academic platforms. As climate change is an abstract, gradual, micro-level and complex phenomenon, it is not easily tangible for the common people. Many people find it hard to relate the problem to their everyday lives, where more immediate individual, social, political and economic issues compete for attention (Moser, 2010). Mass media have played a decisive role in determining public understanding of climate change and has been influential in shaping science and other strategies of policy related discourses. The mass-media is the key actors in the identification and interpretation of environmental issues (Schoenfeld et al., 1979; Spector and Kitsuse, 1977). Academic studies empirically observed that common people get a lot of information about science through the consumption of mass media (Wilson, 1995).

Media/journalists can act as intermediaries between scientific understanding and public understanding of climate change. Hence, media professionals form an interpretive community sharing the scientific consensus on human induced climate change. The journalists' attitudes towards climate change are depended with many factors like their self interest, usage of news sources, frequent interaction with scientists' community and many others. Climate change as a globally local phenomenon has the potential to cut across journalistic beats and includes journalists from different types of media outlets and countries.

Statement of the Problem

Study assumed that media plays an intermediary role between scientific understanding and public awareness of the phenomenon of climate change. Hence, journalists as media content makers, their knowledge scale-wise climate change awareness have to be thoroughly investigated. Based on the empirical data from the reviewed studies, there is a knowledge gap persist between scientific understanding and journalistic interpretation of the phenomenon climate change. In an effort to reduce this knowledge gap, this study examines knowledge scale-wise climate change awareness of journalists in Kerala, specifically with their professional characteristics.

Study Objectives

1. To understand the nature of linkage between knowledge scale-wise climate change awareness of journalists in Kerala and their professional characteristics.
2. To determine the level of knowledge scale-wise climate change awareness of journalists in Kerala.

Literature Review

There were only a few studies explored the knowledge of journalists about climate change. Wilson (2000) surveyed environmental journalists and found substantial deficits in their knowledge about the scientific consensus and the debates on par with the perspective of climatologists. If journalists underestimate the consensus in the research community, their coverage may over represent skeptical voices (Boykoff & Boykoff, 2004). In Wilson's study (2000), the climate journalists' level of knowledge depended on whether they were employed full-time and on their use of scientific sources. Peters and Heinrichs (2005) surveyed climate journalists in Germany and found that they formed a heterogeneous group that cut across beats. In another qualitative study, journalists expressed their awareness of climate change but identified ignorance about the issue as a major problem among their colleagues (Harbinson, 2006).

A recent study on climate journalists in Sweden drew a more positive picture (Sundblad et al., 2009). It found knowledge of climate change among journalists ranking second behind scientific experts but ahead of policy makers and laypersons. Research on climate journalists has been often based on studies in single countries. Berglez (2011) interviewed climate journalists in Sweden who struggled to overcome the constraints of media logic in order to adequately cover climate change. Elsasser and Dunlap (2013) showed that the conservative newspaper columnists in the US questioned anthropogenic climate change in their pertinent columns.

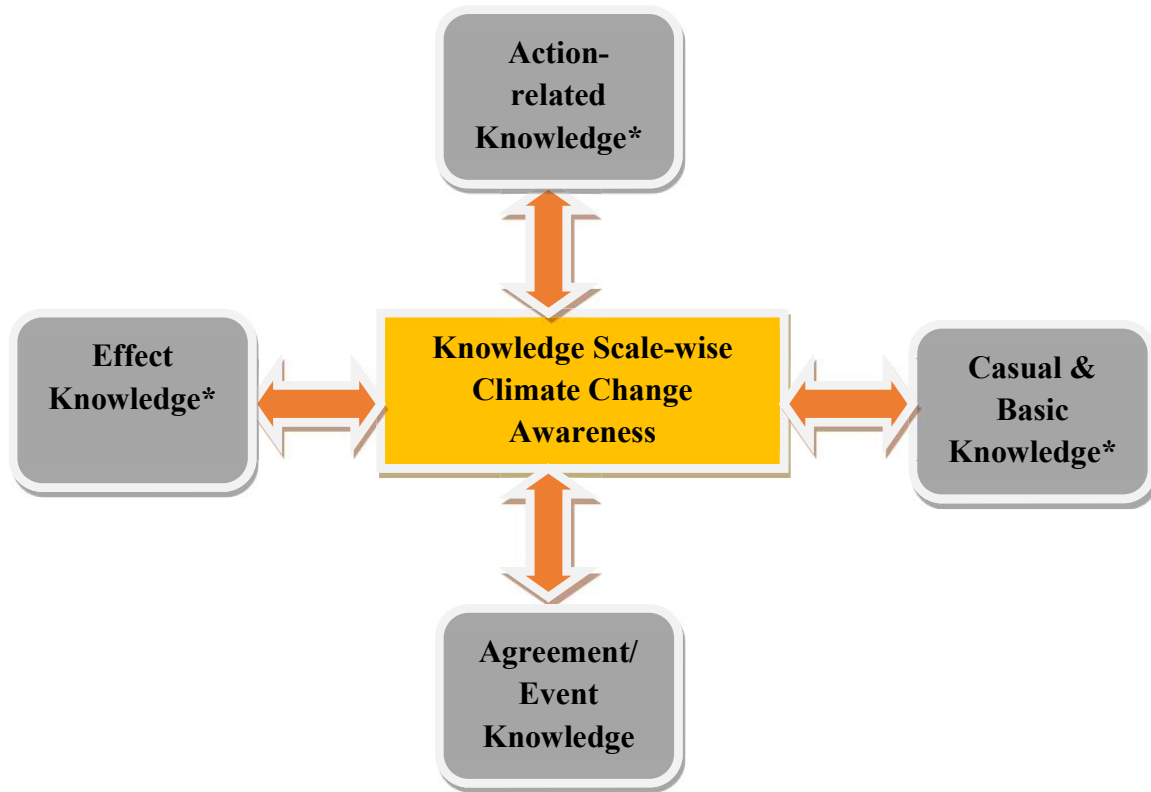
Here, quite interestingly W. Stoutenborough, Robert Nicholas Fette, Arnold Vedlitz and Carol L. Goldsmith (2014) analyzed media and climate change communication in the climate scientists' perspective. Climate scientists believe the media inaccurately report on scientific research regarding global climate change. Panos South Asia for the Climate and Development Knowledge Network (2014) prepared a project report with 49 of the best environment journalists from Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. This project report analyzed the growth and stature of climate change awareness & understanding among journalists in South Asia.

Do you think mass media has an important role to play among common people's understanding of communication discourses of climate change issues? B.N.Neelima and R.Uttama Reddy (2014) focused on the issue of climate change as an emerging area of concern among citizens, governments and policy makers globally. At the same time, Martin Rice, Ann Henderson-Sellers and Greg Walkerden (2015) used a lens to focus on journalists and researchers at the forefront of communicating climate science. They conducted a survey to compare journalists' & researchers' attitudes on the performance of the media as a channel of information of climate change.

Conceptual Model of Knowledge Scale-wise Climate Change Awareness of Journalists

As an important construct knowledge scale-wise climate change awareness is conceived to have four unique knowledge scales: casual & basic knowledge, effect knowledge, action-related knowledge and agreement/event knowledge. Each knowledge scale is associated with their respective contributing factors like cause, consequence, adaptation & mitigation and climate change agreement.

Figure 1: Knowledge Scale-wise Climate Change Awareness (Conceptual Model)



**Knowledge Scales Proposed by Tobler, Visschers & Siegrist (2012)*

Methodology

The objectives of the study warrant a quantitative survey method. The study conducted a survey among journalists who were enlisted in the Public Relations Department (PRD) directory of Government of Kerala that constituted the population of the study. By adopting a multistage stratified random sampling method, study sample constituted of 518 journalists. Besides to this study designed a standardized survey instrument to measure knowledge scale wise climate change awareness. A 25 statement survey instrument consisted of two sections. First section of the questionnaire enquired the journalists about their professional characteristics (region, type of media, field of work, experience, media education, job designation, climate change news reporting and media awards). The second section consisted of 25 statements spread across four knowledge scales: casual & basic knowledge, effect knowledge, action-related knowledge and agreement/event knowledge with their respective four contributing factors. 17 items across four contributing factors under each knowledge scale were measured on a 3-point Likert scale (true/false/don't know) with item-wise scores as the 1 score for each correct response and 0 score for the wrong response. Both positive and negative statements were presented. The responses to the positive statements, 'true' indicates as 'informed', 'false' indicates as 'misinformed' and 'don't know' indicates as 'not informed' (for the negative statements 'true' & 'false' will denote vice versa).

For the study, the ranges of knowledge scale-wise climate change awareness score based on each knowledge scale were equally divided into three levels as 'High', 'Moderate' and 'Low'. For the study, the knowledge scale-wise climate change awareness score is greater than mean + standard deviation ($\mu + \sigma$), the awareness level will consider as High, whereas the score less than mean - standard deviation ($\mu - \sigma$), the awareness level will consider as Low. Since, the score value in-between mean + standard deviation ($\mu + \sigma$) & mean - standard deviation ($\mu - \sigma$) is considered as Moderate.

Population Profile

To describe the population, study used the enlisted journalists in the directory of Public Relations Department (PRD), Government of Kerala published in 2019. The total number of journalists in Kerala is 3,941.

Results

To find out the difference in mean scores of knowledge scale-wise CC (Climate Change) awareness with various professional characteristics such as

region, type of media, field of work, experience, media education, job designation, climate change news reporting and media awards. Study used the statistical tests such as One-Way ANOVA and Independent sample t-Test, based on the case may be treated in the respective data frames. The results are reported in below tables.

Table 1: Knowledge Scale-wise Climate Change Awareness by Region

Knowledge Scales	Region	N	Mean Score	Std. Dev.	F	Sig.
Casual & Basic Knowledge	Southern	181	5.27	1.50	1.753	.155
	Central	138	5.46	1.41		
	Northern	170	5.38	1.41		
	Outside Kerala	29	5.89	1.11		
	Total	518	5.39	1.43		
Effect Knowledge	Southern	181	4.09	1.17	1.902	.128
	Central	138	4.21	1.01		
	Northern	170	3.94	1.14		
	Outside Kerala	29	4.31	1.07		
	Total	518	4.08	1.12		
Action-related Knowledge	Southern	181	4.25	1.23	.999	.393
	Central	138	4.29	1.18		
	Northern	170	4.15	1.23		
	Outside Kerala	29	4.55	.98		
	Total	518	4.25	1.20		
Agreement/Event Knowledge	Southern	181	4.79	1.88	2.100	.099
	Central	138	4.71	1.99		
	Northern	170	4.78	1.83		
	Outside Kerala	29	5.65	1.39		
	Total	518	4.81	1.88		

Journalists from outside Kerala had a greater CC Awareness mean scores in respect of Casual & Basic knowledge (M= 5.89, SD= 1.11), Effect knowledge (M= 4.31, SD= 1.07), Action-related knowledge (M= 4.55, SD= .98) and Agreement/Event Knowledge (M= 5.65, SD= 1.39). But the differences on knowledge scales were not statistically significant, since $p > .05$.

Table 2: Knowledge Scale-wise Climate Change Awareness by Type of Media

Knowledge Scales	Media	N	Mean Score	Std. Dev.	F	Sig.
Casual & Basic Knowledge	Newspaper	343	5.44	1.45	.686	.561
	Radio	17	5.23	1.52		
	Television	92	5.21	1.42		
	Online Media	66	5.40	1.31		
	Total	518	5.39	1.43		
Effect Knowledge	Newspaper	343	4.09	1.13	.444	.721
	Radio	17	4.17	1.18		
	Television	92	3.97	1.14		
	Online Media	66	4.16	1.03		
	Total	518	4.08	1.12		
Action-related Knowledge	Newspaper	343	4.25	1.26	.281	.839
	Radio	17	4.35	.93		
	Television	92	4.29	1.16		
	Online Media	66	4.13	1.05		
	Total	518	4.25	1.20		
Agreement/Event Knowledge	Newspaper	343	4.90	1.87	1.045	.372
	Radio	17	4.41	2.03		
	Television	92	4.56	1.88		
	Online Media	66	4.84	1.85		
	Total	518	4.81	1.88		

ANOVA results showed that Newspaper journalists had higher CC awareness mean scores in respect of Casual & Basic knowledge (M= 5.44, SD= 1.45) and Agreement/Event knowledge (M= 4.90, SD= 1.87), whereas Radio journalists had higher CC awareness mean scores in respect of Effect knowledge (M= 4.17, SD= 1.18) and Action-related knowledge (M= 4.35, SD= .93). Yet, differences on mean scores were not statistically significant, since $p > 0.05$.

Table 3: Knowledge Scale-wise Climate Change Awareness by Field of Work

Knowledge Scales	Field of Work	N	Mean	Std. Dev.	F	Sig.
Casual & Basic Knowledge	Reporting	243	5.37	1.40	7.057	.001*
	Editing	231	5.55	1.37		
	Others	44	4.68	1.65		
	Total	518	5.39	1.43		
Effect Knowledge	Reporting	243	4.09	1.16	7.912	.000*
	Editing	231	4.20	.99		
	Others	44	3.47	1.33		
	Total	518	4.08	1.12		
Action-related Knowledge	Reporting	243	4.33	1.21	1.950	.143
	Editing	231	4.22	1.18		
	Others	44	3.95	1.25		
	Total	518	4.25	1.20		
Agreement/Event Knowledge	Reporting	243	4.93	1.94	5.220	.006*
	Editing	231	4.86	1.78		
	Others	44	3.95	1.81		
	Total	518	4.81	1.88		

*p < 0.05

Journalists in the field of editing had higher CC awareness mean scores in respect of Casual & Basic knowledge (M= 5.55, SD= 1.37) and Effect knowledge (M= 4.20, SD= .99), whereas journalists in the field of Reporting had higher CC awareness mean scores in respect of Action-related knowledge (M= 4.33, SD= 1.21) and Agreement/Event knowledge (M= 4.93, SD= 1.94). ANOVA results showed that the differences on mean scores of Casual & Basic knowledge, Effect knowledge and Agreement/Event knowledge were statistically significant, since $p < 0.05$.

Table 4: Knowledge Scale-wise Climate Change Awareness by Experience

Knowledge Scales	Experience	N	Mean Score	Std. Dev.	F	Sig.
Casual & Basic Knowledge	Upto 1 Year	40	5.15	1.49	1.560	.184
	1 - 5 Years	137	5.24	1.47		
	6 - 10 Years	103	5.31	1.42		
	11 - 15 Years	87	5.55	1.45		
	Above 15 Years	151	5.56	1.36		
	Total	518	5.39	1.43		
Effect Knowledge	Upto 1 Year	40	3.92	1.28	3.199	.013*
	1 - 5 Years	137	3.91	1.07		
	6 - 10 Years	103	3.95	1.17		
	11 - 15 Years	87	4.24	1.03		
	Above 15 Years	151	4.29	1.10		
	Total	518	4.08	1.12		
Action-related Knowledge	Upto 1 Year	40	4.35	1.05	7.175	.000*
	1 - 5 Years	137	3.90	1.18		
	6 - 10 Years	103	4.03	1.17		
	11 - 15 Years	87	4.50	1.16		
	Above 15 Years	151	4.54	1.22		
	Total	518	4.25	1.20		
Agreement/Event Knowledge	Upto 1 Year	40	4.20	1.95	5.021	.001*
	1 - 5 Years	137	4.59	1.83		
	6 - 10 Years	103	4.50	1.73		
	11 - 15 Years	87	5.02	2.01		
	Above 15 Years	151	5.28	1.82		
	Total	518	4.81	1.88		

*p < 0.05

Journalists with more than 15 years of experience had higher mean scores of CC awareness in respect of Casual & Basic knowledge (M= 5.36, SD= 1.36), Effect knowledge (M= 4.29, SD= 1.10), Action-related knowledge (M= 4.54, SD= 1.22) and Agreement/Event knowledge (M= 5.28, SD= 1.82). Difference of mean scores of Effect knowledge, Action-related knowledge and Agreement/Event knowledge were statistically significant, since p < 0.05.

Table 5: Knowledge Scale-wise Climate Change Awareness by Media Education

Knowledge Scales	Media Education	Number	Mean Score	Std. Dev.	T	Sig. (2-tailed)
Casual & Basic Knowledge	Yes	436	5.41	1.37	.612	.541
	No	82	5.30	1.70		
Effect Knowledge	Yes	436	4.11	1.10	1.101	.272
	No	82	3.96	1.22		
Action-related Knowledge	Yes	436	4.30	1.20	2.175	.030*
	No	82	3.98	1.19		
Agreement/Event Knowledge	Yes	436	4.91	1.82	2.776	.006
	No	82	4.29	2.08		

*p < 0.05

Remarkably, journalists who possessed professional media education had better CC awareness mean scores in respect of Casual & Basic knowledge (M= 5.41, SD= 1.37), Effect knowledge (M= 4.11, SD= 1.10), Action- related knowledge (M= 4.30, SD= 1.20) & Agreement/Event knowledge (M=4.91, SD= 1.82) than journalists without professional education. T-test results showed that a difference in mean scores of Action-related knowledge was statistically significant, since p < 0.05.

Table 6: Knowledge Scale-wise Climate Change Awareness by Job Designation

Knowledge Scales	Job Designation	N	Mean Score	SD	F	Sig.
Casual & Basic Knowledge	Field	213	5.42	1.38	1.168	.312
	Desk	208	5.28	1.49		
	Supervisory	97	5.54	1.39		
	Total	518	5.39	1.43		
Effect Knowledge	Field	213	4.07	1.11	.987	.373
	Desk	208	4.03	1.14		
	Supervisory	97	4.22	1.11		
	Total	518	4.08	1.12		
Action-related Knowledge	Field	213	4.38	1.137	3.563	.029*
	Desk	208	4.08	1.19		
	Supervisory	97	4.34	1.34		
	Total	518	4.25	1.20		
Agreement/Event Knowledge	Field	213	4.80	1.93	.296	.744
	Desk	208	4.77	1.86		
	Supervisory	97	4.94	1.83		
	Total	518	4.81	1.88		

*p < 0.05

Data shows that journalists in supervisory position had higher CC awareness mean scores in respect of Casual & Basic knowledge (M= 5.54, SD= 1.39), Effect knowledge (M= 4.22, SD= 1.11), Action-related knowledge (M= 4.34, SD= 1.34) and Agreement/Event knowledge (M= 4.94, SD= 1.83). Yet, a difference on mean scores of action-related knowledge was only statistically significant, since p < 0.05.

Table 7: Knowledge Scale-wise CC Awareness by CC News Reporting

Knowledge Scales	CC News Reporting	N	Mean Score	SD	T	Sig. (2-tailed)
Casual & Basic Knowledge	Yes	423	5.55	1.32	5.657	.000*
	No	95	4.66	1.67		
Effect Knowledge	Yes	423	4.16	1.08	3.098	.002*
	No	95	3.76	1.24		
Action-related Knowledge	Yes	423	4.30	1.18	1.887	.060
	No	95	4.04	1.27		
Agreement/Event Knowledge	Yes	423	4.95	1.83	3.648	.000*
	No	95	4.18	1.94		

*p < 0.05

Similarly, journalists who reported climate change news had higher CC awareness mean scores in respect of Casual & Basic knowledge (M= 5.55, SD= 1.32), Effect knowledge (M= 4.16, SD= 1.08), Action-related knowledge (M= 4.30, SD= 1.18) & Agreement/Event knowledge (M= 4.95, SD= 1.83). Hence, differences in mean scores of three knowledge scales (Casual & Basic knowledge, Effect knowledge & Agreement/Event knowledge) were statistically significant, since p < 0.05.

Table 8: Knowledge Scale-wise CC Awareness by Media Award

Knowledge Scales	Media Award	N	Mean Score	Std. Dev.	T	Sig. (2-tailed)
Casual & Basic Knowledge	Yes	105	5.61	1.26	1.806	.072
	No	413	5.33	1.46		
Effect Knowledge	Yes	105	4.37	.91	2.905	.004*
	No	413	4.01	1.16		
Action-related Knowledge	Yes	105	4.65	1.14	3.894	.000*
	No	413	4.15	1.20		
Agreement/Event Knowledge	Yes	105	5.26	.80	2.750	.006*
	No	413	4.70	1.88		

*p < 0.05

Data shows that journalists with media awards had higher CC awareness mean scores in respect of Casual & Basic Knowledge (M= 5.61, SD= 1.26), Effect knowledge (M= 4.37, SD= .91), Action-related knowledge (M= 4.65, SD= 1.14) and Agreement/Event Knowledge (M= 5.26, SD= .80). Differences in mean scores of Effect knowledge, Action-related knowledge and Agreement/event knowledge were statistically significant, since p < 0.05.

Knowledge Scale-wise Climate Change Awareness Level of the Journalists

To determine the level of knowledge scale-wise climate change awareness of journalists in Kerala is one of the objectives of the study. The results are reported below (table: 9).

Table 9: Knowledge Scale-wise CC Awareness Level of the Journalists

Knowledge Scales	CC Awareness Level	N	Mean	Std. Dev.	F	Sig.
Casual & Basic Knowledge	High ^	108	6.64	.56	217.24	.000*
	Moderate^^	325	5.48	1.07		
	Low^^^	85	3.47	1.41		
	Total	518	5.39	1.43		
Effect Knowledge	High	108	4.77	.41	134.588	.000*
	Moderate	325	3.86	.87		
	Low	85	2.75	1.12		
	Total	518	3.87	1.04		
Action-related Knowledge	High	108	4.57	.51	213.737	.000*
	Moderate	325	3.24	1.00		
	Low	85	1.85	.92		
	Total	518	3.29	1.22		
Agreement/Event Knowledge	High	108	4.87	.37	172.330	.000*
	Moderate	325	3.50	1.10		
	Low	85	2.12	1.24		
	Total	518	3.56	1.32		

*p < 0.05

High[^] = Awareness score value is greater than $\mu + \sigma$, *Moderate*^{^^} = Awareness score value in-between $\mu + \sigma$ & $\mu - \sigma$ *Low*^{^^^} = Awareness score is less than $\mu - \sigma$

In respect of casual & basic knowledge scale, data (table: 9) revealed that 108 journalists had higher level climate change awareness (M= 6.64, SD= .56) whereas majority of journalists (N=325) had moderate awareness (M= 5.48, SD= 1.07) & minority of them (N= 85) had low level of climate awareness (M= 3.47, SD= 1.41) level as well. But the difference on mean scores of three different levels of climate change awareness in respect of causal & basic knowledge scale was statistically significant, since $p < 0.05$.

On the other hand, 108 journalists with high level of climate change awareness in respect of effect knowledge scale (M= 4.77, SD= .41) whereas majority of journalists (N=325) had moderate awareness level (M= 3.86, SD= .87) & minority of them (N= 85) had low level of climate change awareness (M= 2.75, SD= 1.12) in the same knowledge scale. ANOVA results showed that the difference on mean scores of three different levels of climate change awareness in respect of effect knowledge scale was statistically significant, since $p < 0.05$.

Similarly, ANOVA results showed that the difference on mean scores of three different levels of climate change awareness in respect of action-related knowledge scale was statistically significant, since $p < 0.05$. Data showed that

108 journalists with high level of climate change awareness in respect of action-related knowledge scale (M= 4.57, SD= .51) whereas majority of journalists (N=325) had moderate awareness level (M= 3.24, SD= 1.00) & minority of them (N= 85) had low level of climate change awareness (M= 1.85, SD= .92) in the action-related knowledge scale.

Remarkably, data shows that that 108 journalists with high level of climate change awareness in respect of agreement/event knowledge scale (M= 4.87, SD= .37) whereas majority of journalists (N=325) had moderate awareness level (M= 3.50, SD= 1.10) & minority of them (N= 85) had low level of climate change awareness (M= 2.12, SD= 1.24) in the agreement/event knowledge scale.

Discussion & Conclusion

Undoubtedly, empirical evidences from the academic reviews that media plays a significant role in the public understanding and their perception of climate change issues. Reflecting this, the last decade has witnessed a proliferation of research examining the coverage and framing of climate change in the media, with a strong focus on the science of climate change, impacts, and mitigation (Moser, 2010, 2014; Nerlich et al., 2010; Schmidt et al., 2013). One of the primary objectives of the study was to determine knowledge scale-wise climate change awareness level of journalists in Kerala. Study result emphasized that out of the total sample of the study (N= 518), majority of the journalists in Kerala (N= 325) had a moderate level of climate change awareness in respect of all four knowledge scales and significantly minority of them (N= 85) had low level of awareness as well.

Study also investigated nature of linkage between journalistic knowledge scale-wise climate change awareness and their professional characteristics. Journalists with more than 15 years of experience had higher mean scores of CC awareness in respect of casual & basic knowledge, effect knowledge, action-related knowledge and agreement/event knowledge. Weber (2013) asserts that personal experience only shapes the beliefs about climate change for individuals with no strong beliefs about the same but is less likely to influence the level of awareness for people with a firm belief on climate change. Similarly, journalists belonged to outside Kerala and those who work in supervisory position had higher CC awareness mean scores in respect of casual & basic knowledge, effect knowledge, action-related knowledge and agreement/event knowledge. When it comes to type of medium, Newspaper journalists had higher CC awareness mean scores in respect of casual & basic knowledge and agreement/event knowledge whereas Radio journalists had

higher CC awareness mean scores in respect of effect knowledge and action-related knowledge.

As this particular study is limited in the regional media landscape of Kerala, further extended studies can be done to have a deeper investigation on the various factors of journalistic awareness & their perspective and practice towards climate change as well. Especially in the context of climate change as a pressing threat of human existence, the research domain of media communication about climate change (MCCC) desperately needs continuous academic research interventions.

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