

ONLINE SUPPLEMENTAL MATERIAL

Climate Change: A Survey of Global Gastroenterology Leadership

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Methods

The initial design was based on the survey by Kotcher et al[1]. Multiple revisions and repeated testing of successive versions were carried out by the WGO Climate Change Working Group. The final web-based survey consisted of 12 questions and was designed to be used by countries where English may not be the first language, and to be completed within 10 minutes.

Inclusion: The survey was sent to the presidents of national GI associations which are members of WGO. If the president was unavailable, the survey was directed to the president-elect. Two non-national GI organisations, the Association of West Indian Gastroenterology and the Internal Medicine Organisation of the Pacific, whose President is a Gastroenterologist, were also invited. There are four major adult GI organisations in the United States. The two who are members of the WGO were included (all other countries provided one response).

Exclusion: Replies from more than one member of a society were deleted with the reply of the most senior member of executive being included. Replies where fewer than four questions were answered (N=6) were not included.

Distribution: An individualised pre-survey letter was sent from the President of the WGO to individual member society Presidents outlining the rationale for the survey and asking for their participation. The survey was then distributed by email with a follow up email one week later to non-responders. The survey was conducted using a web-based platform, Qualtrics XM.

Comparison with World Bank (WB) geographic and economic regions: The WB groups countries by seven geographic zones and four economic bands and lists 217 economic zones for the purposes of assembling data on development indicators[2]. A comparison of survey responses was conducted with WB groupings to determine if the results were globally representative. Respondents were classified into geographic and economic zones based on WB classification.

Confidentiality: Personal information such as name, age, and gender were not collected. The names of societies were obtained unless the respondents chose to keep their replies anonymous. Replies were kept confidential, and results shown only as aggregated data by region. The survey was not designed with a specific research question in mind but was carried out by the WGO as an ultimate potential resource for its member societies and to provide information regarding actionable efforts. The survey was deemed by the Dalhousie University, Canada ethics committee to not require formal review as per Tri-Council Policy Statement 2.

Results

Numbers have been rounded to nearest whole number. Percentages may sum to more than 100%.

Response rate and global distribution: The response rate was 49% (57/117). Input was received from all global geographic regions and economic levels as shown in Tables 1 and 2.

Income Level	Survey: Number (%)	World Bank: Number (%)
High	23 (40%)	80 (37%)
Upper middle	18 (32%)	55 (25%)
Lower middle	12 (21%)	55 (25%)
Low	4 (7%)	27 (12%)
Total	57 (100%)	217 (100%)

Table 1. World Bank categories of income level, number and percent of survey respondents and corresponding numbers of countries and percent by World Bank classification.

There was no statistical difference, as measured by one sample Chi square goodness of fit, in the proportion responding to the survey relative to the World Bank global proportions of economies ($p=0.42$).

Geographic Zone	Survey Number (%)	World Bank Number (%)
East Asia and Pacific	11 (20%)	37 (17%)
Europe and Central Asia	19 (33%)	58 (27%)
Middle East North Africa	3 (5%)	21 (10%)
Latin America Caribbean	9 (16%)	42 (20%)
North America	3 (5%)	3 (1%)
South Asia	2 (4%)	8 (4%)
Sub Saharan Africa	10 (18%)	48 (22%)
Total	57 (100%)	217 (100%)

Table 2. WB geographic zones, number and percent of survey respondents, and corresponding number of WB number and percent of countries.

There was no statistical difference as determined by One Sample Chi-Square Goodness-Of-Fit Test, in the proportion responding relative to the World Bank global proportions of economies ($p=0.15$).

Survey Questions and Replies

Below is a listing of the survey questions and the replies. For some of the questions, an analysis of the replies is included:

Q1 Some people have described climate change as a crisis. Can you tell us how you **personally** feel? Please move the slider so that it shows your opinion from 0 (I do not think that climate change is happening at all) to 100 (I think this is a major crisis).

The median crisis score from 48 respondents was 86. There was no statistical difference, as determined by independent sample median test, in crisis level ranking either between regions ($p=0.71$) nor between higher and lower income countries ($p=0.25$).

Q2 Assuming climate change is happening do you think it is caused entirely (100%), mostly (>75%), equally (50:50) by human activities or mostly (>75%), entirely (100%) by natural changes or is it simply not happening?

Of 56 respondents, 86% (48) believe that climate change is caused entirely or mostly by human activity while 14% believes that it is caused equally by natural changes and human

forces. None believe that it is caused mostly, or entirely, by natural changes or that it is not happening.

Q3 Now we would like to know how engaged you personally are on this issue.

Have you made any changes in your personal life, such as decreasing driving or flying, to reduce your carbon footprint?

No 14 (25%) Maybe 10 (18%) Yes 28 (49%) Not feasible 5 (9%) Total 57 (100%)

Have you made any changes in your professional life, such as decreasing energy use in your clinic, to reduce your carbon footprint?

No 13 (23%) Maybe 9 (16%) Yes 30 (53%) Not feasible 5 (9%) Total 57 (100%)

Do you have a plan to cut your personal or professional carbon emissions in the next 12 months?

No 15 (26%) Maybe 20 (35%) Yes 21 (37%) Not feasible 1 (2%) Total 57 (100%)

Q4 Health professionals have not been very engaged on the issue of climate change - why do you think that is so? What do you see as the reasons for not engaging?

Analysis of 52 comments in an open text question on the lack of healthcare engagement to date produced several extractable themes; a lack of awareness and knowledge (N=14), the competing demands of clinical work (N=11), lack of imminent threat (N=6), a belief that the health sector either could not change its practices or was not responsible (N=6), inability to have an impact (N=4), lack of organisation and resources (N=4), lack of advocacy (N=2), and climate denial (N=2).

Q5 How much of a priority, compared to all the other challenges and needs, do you think your professional society sees the issue of climate change? Please move the slider from 0 (Extremely low priority) to 100 (Extremely high priority).

The median priority ranking from 47 replies was 36 on a 0-100 scale. There was no statistical correlation between their personal level of concern and their societies priority ranking by Spearman rank order testing ($p=0.29$, $r=0.11$). There was no statistical difference between income groups ($p=0.72$) or geographical region ($p=0.16$).

Q6 Does your professional society have the following? N= 57 responses.

A climate change committee or working group.

Yes 5 (9%) No 51 (89%) Not sure 1 (2%)

An advocacy or government liaison lead on climate

Yes 9 (16%) No 43 (75%) Not sure 5 (9%)

A plan to build resilience to the effects of climate change on digestive diseases in your country.

Yes 10 (18%) No 45 (79%) Not sure 2 (4%)

Education programs on climate change

Yes 9 (16%) No 44 (77%) Not sure 4 (7%)

A plan to reduce its own carbon footprint

Yes 15 (26%) No 38 (67%) Not sure 4 (7%)

A plan to move to hybrid annual meetings with in- person and on line attendance.

Yes 34 (60%) No 19 (33%) Not sure 4 (7%)

A plan for a symposium on climate change at your upcoming national annual meeting

Yes 16 (28%) No 35 (61%) Not sure 6 (11%)

Q7 How willing do you think your professional society would be to do the following in the next 1-2 years?

Establish a climate change committee or working group. N=57 responses.

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
6 (11%) 6 (11%) 16 (28%) 17 (30%) 9 (16%) 3 (5%)

Engage in advocacy on this issue. N= 56 responses.

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
2 (4%) 6 (11%) 13 (23%) 21 (38%) 13 (23%) 1 (2%)

Develop a climate resilience plan for digestive disease in your country. N= 56

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
3 (5%) 8 (14%) 14 (25%) 21 (38%) 10 (18%) 0 (0%)

Hold education sessions on this topic. N= 56

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
3 (5%) 3 (5%) 7 (13%) 23 (41%) 16 (29%) 4 (7%)

Reduce your organization's carbon footprint including moving to hybrid meetings (i.e. a mix of online and in person events). N= 57

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
0 (0%) 5 (9%) 5 (9%) 23 (40%) 17 (30%) 7 (12%)

Hold a symposium on climate change at an upcoming national annual meeting. N=57

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place
4 (7%) 7 (12%) 12 (21%) 19 (33%) 11 (19%) 4 (7%)

Offset travel related emissions to your national meeting by increasing the registration fee. N=57

Extremely unlikely Somewhat unlikely Not sure Somewhat likely Extremely likely In place.
12 (21%) 15 (26%) 15 (26%) 12 (21%) 3 (5%) 0 (0%)

Q8 What do you think the barriers are to your professional society engaging on this issue?

We have more pressing priorities, and this topic is somewhat outside our focus. N= 57 responses.

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
22 (39%) 24 (42%) 7 (12%) 1 (2%) 3 (5%)

We do not have the knowledge base to engage.

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
15 (26%) 27 (47%) 4 (7%) 8 (14%) 3 (5%)

This is an issue which government needs to handle.

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
17 (30%) 22 (39%) 6 (11%) 11 (19%) 1 (2%)

Unlikely we can make a difference. (N=55 responses)

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
6 (11%) 16 (29%) 9 (16%) 15 (27%) 9 (16%)

Unlikely to get sponsorship.

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
16 (28%) 16 (28%) 10 (18%) 12 (21%) 3 (5%)

No barriers, we are moving ahead.

Strongly agree Partly agree Neither agree nor disagree Somewhat disagree Strongly disagree
5 (9%) 15 (26%) 16 (28%) 14 (25%) 7 (12%)

Q9 How useful might these actions be to your society if your group was thinking of getting more engaged in this issue of climate and health? N=57 responses.

Training for a member of your society to take the lead on climate issues.

Useless	Neither useful nor useless	Useful
11 (19%)	6 (11%)	40 (70%)

Information on how to advocate for change.

Useless	Neither useful nor useless	Useful
10 (18%)	5 (9%)	42 (73%)

Slide decks and speakers to help with continuing education.

Useless	Neither useful nor useless	Useful
10 (17%)	7 (12%)	40 (71%)

Guidance on how to reduce your organizations carbon footprint and how to move to hybrid meetings.

Useless	Neither useful nor useless	Useful
11 (19%)	3 (5%)	43 (75%)

Q10 Can you tell us the name of your professional society?

Q11 What position do you hold in your professional society?

Q12 Finally, do you have any thoughts, comments, suggestions you would like to share with us? Is there anything else we can do to help? Are there other barriers we have not touched on?

Thirty-two comments were recorded in an open text question which allowed free input on other suggestions for what WGO might be able to do. Several themes emerged; Need for education materials, sessions and training (N=13), need to collaborate between groups (N=3), need to strategize and prioritise (N=2), and a need for increased advocacy (N=2).

References

1. Kotcher J, Maibach E, Miller J, Campbell E. Views of health professionals on climate change and health: a multinational survey study. *Lancet Planet Health*. 2021 May;5(5):e316-e323. doi: 10.1016/S2542-5196(21)00053-X. Epub 2021 Apr 8. PMID: 33838130; PMCID: PMC8099728.
2. World Bank. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>