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RESEARCH ARTICLE

Risk Communication based on Gender Differences of COVID-19 Related Trusted Information Sources: Insights from the Generation Z Cohort

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ABSTRACT

Background: From the initial outbreak in December 2019 in Wuhan, with the newly identified virus named “severe acute respiratory syndrome coronavirus 2” (SARS-CoV-2), different infectious variants have emerged, confirming the importance of preventive measures. Governments invest resources in information diffusion regarding the SARS-CoV-2 virus and variants and precautionary measures. In public health emergencies and pandemic situations, trust is critical in risk communication and risk management and trusted information providers and communication channels may lead to certain desired behavior.

Objectives: The focus of this research is to examine what information sources (providers and communication channels) the Greek generation Z cohort trusts, in information diffusion regarding the SARS-CoV-2 virus and the COVID-19 disease. It also examines if gender differences exist based on trust.

Methods: Eight information providers and six communication channels were tested for Gen Zers level of trust. An electronically distributed questionnaire collected data over a six-month period (N=1411) in 2020 (from June 1 to November 30, 2020), employing a nonprobability sampling method targeting the Generation Z cohort.

Results: Results reveal that the most trusted provider for COVID-19 related information are doctors and scientists, while most unofficial information providers are more trusted than official. Published academic/scientific journals with COVID-19 related research is the most trusted communication channel. Gender comparisons for information providers uncovered seven statistically significant differences and one for communication channels.

Conclusion: Gender differences exist regarding Generation Z cohort’s trust towards the COVID-19 related information distribution. Thus, communication trust between both COVID-19 information diffusion (channels and providers) and information receivers (the Generation Z cohort) must be established if the desired outcome is behavioral change. Gender differences also suggest that in some cases different channels and providers should be used for males and females when offering COVID-19-related information.

Keywords: Generation Z; COVID-19; information; trust; information providers; communication channels; risk communication; digital communication, population behavior

1. Introduction

The World Health Organization¹ on March 11, 2020, labeled COVID-19 as a pandemic. The coronavirus disease 2019 (COVID-19) has affected the global community resulting in 444.293.824 confirmed cases globally and 5.992.666 deaths as of March 5, 2022². From the initial outbreak in December 2019 in Wuhan, with the newly identified virus named “severe acute respiratory syndrome coronavirus 2” (SARS-CoV-2)³, different variants have emerged⁴.

Demographic characteristics and age seem to be essential factors in COVID-19’s spread, morbidity, and mortality. Research reveals that pre-symptomatic and asymptomatic people are infectious⁵ and that the asymptomatic people usually fall in the younger-in-age individual’s category⁶. The youngest in age adult individuals as refers to generational cohorts, fall into the Generation Z cohort category⁷.

From the initial threat of the virus, the pandemic, and the following variants, organizations and governments consider that preventive measures are the best policy for their citizens to be protected. Therefore, governments invested (and invest) resources in information diffusion regarding the SARS-CoV-2 virus, variants, protective measures to be implemented, as well as other aspects of the COVID-19 pandemic. One major information dissemination category is the preventive measures that must be implemented to decrease morbidity and mortality⁸, with main goal to lead to desired behavioral changes and specifically the application of preventive COVID-19 measures by citizens. Research similarly indicates that trusted information sources (providers and communication channels) may lead to certain desired behavior⁹ and that trust is critical in risk communication and risk management, while both are inseparable in public health emergencies and pandemic situations^{10,11}.

Though, Ali et al.¹² assert that findings on trusted information sources during

outbreaks have produced mixed results, requiring additional research. Additionally, Figueiras et al.¹³ have stated that regarding individuals’ demographic characteristics, gender and trust in online information sources, outcomes are contradictory, and thus, further research should be implemented too.

Building upon all the above-mentioned this research aims to investigate the information sources (providers and communication channels) for COVID-19-related information dissemination that are trusted by young people, and specifically by the Generation Z cohort. Additionally, it explores if there are gender differences regarding the trusted by them information sources (information providers and communication channels) of COVID-19-related information

2. Materials and Methods

For this research, information data was collected from Greece, which in the initial breakout of the crisis, implemented very quickly preventive measures (March 2020), managing to be a “COVID-free” country¹⁴. However, after the lockdown restrictions were canceled, and the country opened its borders for tourism to boost the economy, the country experienced a significant rise in COVID-19 cases, which resulted in multiple lockdowns and restrictions. Specifically, based on data provided by the National Public Health Organization¹⁵, on March 23, 2020, with 695 COVID-19 confirmed cases, the government announced the first nationwide lockdown and movement restrictions, resulting in a COVID-free country¹⁴. The first restrictions were withdrawn, on May 4, 2020, when the COVID-19 confirmed cases were 2632, while at the end of the same year the cases were 138.850 (December 31, 2020). On March 5, 2022, the number of cases is 2.499.259 with 26.143 total deaths, even though there were multiple lockdowns and restrictions and citizens vaccinations.

Based on the aim and objectives of this study, data for this research is drawn from

the Greek Gen Z cohort. The Gen Z cohort encompasses people born between 1995-2009¹⁶. Precisely, this research draws a sample from the adult members of the Greek Gen Z cohort, being today (i.e., in 2020; the year in which the research was conducted) 18-25 years old (thus born 1995-2002). It is pointed out that academics consider the study of the Gen Z cohort of major interest since they consist of the youngest adult cohort who are the future of today's society⁷.

As this research explores Greek Gen Zers' trust towards information sources (providers and communication channels) of COVID-19 related information diffusion, primary data was collected with the use of a questionnaire. The questionnaire was created specifically for this purpose, based on previous studies^{13, 17-19} as well as feedback provided by the targeted group, i.e., Gen Zers.

The question that focuses on trust towards the provider (person or organization) of COVID-19-related information was stated as "Please rate how much you agree with the following statements regarding the information providers that you trust distributing COVID-19 -related information. For COVID-19-related information distribution, I trust ...". Eight information providers were tested for Gen Zers level of trust: Government representatives (e.g., Minister of Health), journalists, family members, friends, pharmaceutical companies and industries, Government structures (institutions, organizations, or services), doctors and scientists, and Influencers.

The question that refers to trust towards the communication channel (type of media used) was stated as "Please rate how much you agree with the following statements regarding the communication channels that you trust distributing COVID-19-related information. I trust" Six communication channels were tested: different internet sites, social media (Facebook, Twitter, etc.), mass media (newspapers, magazines, and radio), academic/scientific

journals with COVID-19 related published research, television (TV), and channels on YouTube. The answers to these questions were adopted from observation of the providers and channels distributing COVID-19-related information as well as previous research^{13, 17, 18, 20-22}.

The attitudinal scale (Likert scale) was used to assess trust level^(23, p.801), which was treated as a continuous variable²⁴. Precisely, trust statements were rated on a seven-point Likert scale (1=Strongly disagree, 2=Disagree, 3=Somewhat disagree, 4=Neither agree nor disagree (neutral), 5=Somewhat agree, 6=Agree, 7=Strongly agree).

The questionnaire was distributed online to collect data (through email accounts and Facebook from June 1 to November 30, 2020). A nonprobability mixed sampling method was used, and subjects had to provide with consent to use their answers for analysis (first question of the questionnaire).

The final sample consisted of 1411 valid questionnaires. The sample size was considered adequate for the statistical analysis employed²⁵ and confirmed by power analysis with G*Power 3.1 software for power analysis. G*Power 3.1 software for sample size confirmed that the sample size that was collected and used in the analyses, i.e., N=1411, overcovered the sample size requested, which is N=1302, i.e., N=651 per group with effect size $d=0.2$; α err prob=0.025 (t-tests two independent means, effect size $d=0.2$; α err prob=0.025; Power $(1-\beta$ err prob)=0.95). Therefore, the sample size was more than adequate for data analysis, especially when referring to a specific Generation cohort. In the general sense, the country's total population in 2020, (based on national census of 2011), was 10.816.286, with the Gen Z cohort (based on calculation only on number of births) is 1.132.533. As to representativeness, due to lack of data referring to generational cohorts in the country,

representativeness of sample cannot be confirmed.

Additionally, reliability of scales measured with Cronbach alpha (α) was calculated, which resulted in $\alpha=0.874$ for the trust in information providers scale, and $\alpha=0.870$ for the trust in information channel scale. As to validity measures, content, face, and construct validity were confirmed. Content validity was established using items from the peer-reviewed academic published papers used in the study and by testing the questions by two experts in communication (professors). Face validity was confirmed through a small scale (N=114) online pilot test (May 2020) with Gen Z university students²⁶. Lastly, as regards the construct validity, it was calculated with the average Discrimination Index (DI). As Stavarakas et al.²⁷, state “This index is related mainly to the construct validity of a scale consisting of several items”, and should be >0.30 ^{27,28}. Specifically, for the two questions, the average discrimination index was, for the information providers scale, $DI=0.634$, and for the information channel scale, $DI=0.674$, which both are >0.30 , establishing also construct validity.

The following statistical analysis were performed: descriptive statistics, i.e., frequencies, percentages (%), mean scores (MS) with standard deviations (StD), and medians. Also, independent sample t-tests were executed to explore gender differences. The significance level in the hypothesis testing procedures (independent sample t-tests) was preset at $\alpha=0.05$ ($p < 0.05$).

3. Results

3.1. Sample Profile

The male subjects are slightly overrepresented (51.3%), compared to the female subjects (48.7%). Moreover, the younger Gen Zers (18-21 years of age) made up 60.0% of the sample, while the older Gen Zers (22-25 years of age) were underrepresented (40.0%). The vast majority of the sample (96.0%) is single, and has secondary education (67.9%), being mainly university students (55.6%) and with a personal net income per month up to 1000.00 €/month (68.7%).

3.2. Trusted by Gen Zers information sources-providers

Stating their trust level towards eight COVID-19-related information providers, Gen Zers consider as the most trusted the doctors and scientists. Specifically, 61.3% of the Gen Zers trust these information providers, followed by their families (46.1%) and government representatives (40.2%). Additionally, friends were trusted by 38.3%, while 34.5% trust influencers, and 29.5% government structures. Among the least trusted providers of COVID-19 information diffusion are journalists (27.5%), followed by pharmaceutical companies/industries (29.7%) as Table 1 presents. In Table 1, the first row of the table, the numbers 1-7 represent the answers of the Likert scale, MS the mean score, StD the standard deviation of the mean score, while the columns 1-7 present the percentages of the answers. Answers are presented in descending order of MS.

Table 1. Gen Zers trusted providers of COVID-19 information diffusion (%)

Information providers	1	2	3	4	5	6	7	MS	StD	Median
Doctors and scientists	9.4	5.7	8.7	14.9	15.6	20.9	24.8	4.84	1.9	5.00
Family	10.6	9.3	13.8	20.1	20.2	15.2	10.7	4.18	1.8	4.00
Friends	12.3	10.8	15.0	23.6	20.9	11.7	5.7	3.88	1.7	4.00
Government representatives (e.g., Minister of Health)	23.9	11.8	9.9	14.2	15.1	13.9	11.2	3.71	2.1	4.00
Influencers	22.4	12.3	11.7	19.2	15.3	11.0	8.2	3.58	1.9	4.00
Government structures (institutions, organizations, or services)	23.3	14.1	11.9	21.2	14.0	10.4	5.1	3.40	1.9	4.00
Pharmaceutical companies/industries	26.6	15.7	14.2	22.8	12.3	5.8	2.6	3.06	1.7	3.00
Journalists	35.8	14.2	14.5	17.9	10.3	5.4	1.8	2.76	1.7	2.00

Source: The authors

3.3. Trusted by Gen Zers communication channels

Gen Zers were also asked to report their trust level towards six communication channels that disseminate COVID-19-related information. The highest trust level enjoys the academic/scientific journals with the related research (53.3%), followed by the Internet sites (33.7%), and Youtube channels (27.0%). Additionally, social media were trusted by 23.0% of the Gen Zers,

television by 22.8% and lastly the least trusted were mass media (excluding television) which were trusted by 20.2% of the sample (Table 2). In the first row of the table, the numbers 1-7 represent the answers of the Likert scale, MS the mean score, StD the standard deviation of the mean score, while the columns 1-7 present percentages of the answers. Answers are presented in descending order of MS.

Table 2. Gen Zers trusted communication channels of COVID-19 information diffusion (%)

Communication channels	1	2	3	4	5	6	7	MS	StD	Median
Academic/scientific journals and published academic/scientific research	13.7	9.1	9.9	14.1	17.3	16.4	19.6	4.40	2.0	5.00
Internet sites	17.8	12.2	14.0	22.4	20.8	8.4	4.5	3.59	1.7	4.00
YouTube channels	20.8	13.0	15.4	23.7	15.5	7.9	3.6	3.38	1.7	4.00
Social media (Facebook, Twitter, etc.)	27.4	14.7	14.1	20.8	13.3	6.2	3.5	3.10	1.8	3.00
Television (TV)	27.0	14.2	15.5	20.5	13.7	6.3	2.8	3.10	1.8	3.00
Mass media (Newspapers, magazines, and radio)	27.4	15.0	15.6	21.8	11.8	6.6	1.8	3.03	1.7	3.00

Source: The authors

3.4. Gender Differences in trusted information providers

Gender differences (Table 3) were examined regarding trust towards eight providers of COVID-19 related information employing the t-tests for independent samples (SPSS ver. 26). Specifically, Table 3

presents the independent sample t-test for Gen Zers gender and trusted providers of COVID-19-related information distribution (assuming equal variances). The t-tests disclosed that for seven out of eight cases, gender differences exist.

Table 3. Gen Zers gender comparisons of trusted providers of COVID-19 information diffusion

Providers of COVID-19 information	t-test for Equality of Means							95% Confidence Interval of the Difference	
	F	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
Government representatives (e.g., Minister of Health)	2.897	2.218	1409	.027	.246	.111	.028	.464	
Journalists	.462	3.289	1409	.001	.296	.090	.120	.473	
Family	2.195	3.405	1409	.001	.324	.095	.137	.510	
Friends	.432	2.293	1409	.022	.206	.090	.030	.383	
Pharmaceutical company/industry	2.521	3.976	1409	.000	.357	.090	.181	.533	
Government structures (institutions, organizations, or services)	1.695	3.346	1409	.001	.329	.098	.136	.522	
Influencers	4.196	1.582	1409	.114	.164	.103	-.039	.367	
Doctors and scientists	4.895	2.919	1409	.004	.273	.093	.089	.456	

Source: The authors

Specifically, no gender differences were detected for trust level of COVID-19 information provider regarding the “Influencers”. On the other hand, the independent sample t-test showed that there are statistical differences for Gen Zers’ male and female subjects (the following MSm refers to the male MS and the MSf refers to the female MS) for government representatives (F=2.897, p=.027; MSm=3.83; MSf=3.59), journalists (F=.462, p=.001; MSm=2.90; MSf=2.61), family (F=2.195, p=.001; MSm=4.34; MSf=4.02) and friends (F=.432, p=.022; MSm=3.98; MSf=3.77). Also, t-tests showed that there are statistical differences between Gen

Zers’ male and female subjects and trusted providers referring specifically to the pharmaceutical companies/industries (F=2.521, p=.000; MSm=3.24; MSf=2.88), government structures i.e., institutions, organizations, or services (F=1.695, p=.001; MSm=3.56; MSf=3.23), and doctors and scientists (F=4.895, p=.004; MSm=4.78; MSf=4.90).

3.5. Gender Differences in trusted communication channels

Gender differences regarding trust towards six communication channels of COVID-19 information diffusion (Table 4) were examined using t-tests for

independent samples (SPSS ver. 26). Table 4 presents the comparisons for Gen Zers' gender and communication channels of COVID-19 information diffusion, i.e., six

cases in total (assuming equal variances). The comparison disclosed that for only one out of six cases, gender differences exist.

Table 4. Gen Zers' gender comparisons of trusted communication channels of COVID-19 related information diffusion

Communication channels of COVID-19 information	t-test for Equality of Means							
	F	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Internet sites	1.698	.568	1409	.570	.053	.092	-.129	.234
Youtube channels	1.839	.586	1409	.558	.054	.092	-.126	.234
Mass media (Newspapers, magazines, and radio)	1.514	.887	1409	.375	.079	.090	-.096	.255
Academic/scientific journals and published academic/scientific research	.257	.240	1409	.810	.026	.108	-.186	.238
Television (TV)	4.895	2.919	1409	.004	.273	.093	.089	.456
Social media	5.167	1.809	1409	.071	.166	.092	-.014	.347

Source: The authors

Specifically, no gender differences were detected for trust towards COVID-19 communication channels regarding internet sites, Youtube channels, newspapers and magazines, academic/scientific journals, published academic/scientific research, and social media. On the other hand, the t-test revealed statistically significant differences between male and female Gen Zers for the television (TV) as a communication channel of COVID-19 information diffusion ($F=4.895$, $p=.004$; $MSm=3.24$; $MSf=2.97$), whereas MSm refers to the male MS and the MSf refers to the female MS .

4. Discussion

According to the WHO²⁹, risk communication is “the real-time exchange of information, advice, and opinions between experts or officials and people who face a threat (hazard) to their survival, health or economic or social well-being. Its ultimate purpose is that everyone at risk is able to

make informed decisions to mitigate the effects of the threat (hazard) such as a disease outbreak and take protective and preventive action”. As a public health outbreak, the COVID-19 pandemic is considered a situation where risk communication is needed³⁰. Also, WHO²⁹, on its site points out that risk communication produces results “when there is communication based on trust between those who know (experts), those in charge (authorities) and those affected.” Lohiniva et al.³¹ indicate that risk communication should be based on a good insight of (amongst others) trust towards communicating authorities. Moreover, Cerdá-Mansilla et al.³² draw attention to that knowledge of official and unofficial information distribution providers and channels will offer with means to improve information management and credibility in pandemic conditions. Lastly, Gehrau et al.³³ indicate that carefully chosen, widely used, and highly trusted health communication

channels may lead to more effective COVID-19-related information dissemination.

The COVID-19 pandemic brought to light the need for effective information distribution and communications, in order to decrease the spread of the disease. Previous researchers stress that in crisis conditions, in order for citizens to comply with a suggested behavior in risk communication, the individual receiving the message must trust the information provider^{21,33}. Generally, this research found a quite large distrust in information providers of COVID-19-related information dissemination, excluding doctors and scientists (61.3%), the only providers that Gen Zers seem to trust. This result is in line with almost all the research findings of previous studies, whereas doctors and scientists are rated if not as the highest trusted, they are rated very high^{21,33}.

Additionally, family is ranked as the second trusted provider with 46.1% and rated higher than the official government sources of COVID-19 information distribution. These findings are in line with previous research findings, whereas previous analysis on the generation Z cohort's characteristics pointed out that Gen Zers are family- and friend-centered³⁴. Dobó³⁴, in investigating Gen Zers and millennials' credibility and popularity of different communication providers and channels regarding COVID-19 information (N=732; Hungary), found that family and friends were rated the highest.

Another interesting finding is that Gen Zers rate trust in Influencers (34.5%) higher than trust in the government structures, i.e., institutions, organizations, or services (29.5%) for COVID-19 information. Hence, unofficial information providers are considered as more trustworthy than official ones. This outcome is opposite to the majority of studies dealing with Influencers and government structures; though, it is in line with Pramiyanti et al.³⁵ (Indonesia), and Hartley and Jarvis³⁶ (Hong Kong), who found low

trust in the government regarding COVID-19 information.

The least trusted providers of COVID-19 information diffusion are journalists, followed by pharmaceutical companies/industries. The possible rationale behind this is that Gen Zers consider that journalists are not always objective and therefore are not going to provide citizens with factual information. Previous research regarding journalists in Greece confirm these beliefs³⁷.

Lastly, the second least trusted information provider is considered to be the pharmaceutical companies and industries, which is in line with the findings of Hernandez et al.³⁸.

As to exploring the trusted by Gen Zers communication channels, it is revealed that Gen Zers don't seem to fully trust any communication channel regarding COVID-19-related information dissemination. Specifically, the most trusted communication channel for COVID-19 related information diffusion are academic/scientific journals and its published academic/scientific research (trusted by 53.3% of the sample). This result cannot be directly compared to other studies since we did not identify studies that measure this communication channel to distribute COVID-19 related information. Yet, studies that measured trust towards scientists are considered in this study as information providers, and thus analyzed in the corresponding section (see previous section).

The remaining five communication channels are trusted by less than 35% of Gen Zers, with the internet sites being trusted by 33.7% and the rest by even less. This reveals that Gen Zers somewhat distrust these communication channels. Furthermore, YouTube channels are trusted more than social media, TV, and Mass media. These findings are partially in line with other research findings. For example, Dobó³⁴ found that the least credible communication channel for Gen Zers and millennials was social media. The fact that television was rated higher than mass media and

social media, though lower than the internet are also partially in line with Dobó's³⁴ findings. He found that, online sources and social media were ranked as the second and third most credible communication channel. They are also partially in line with the findings of Gehrau et al.³³ who found that the least trusted communication channels for COVID-19-related information (N=629; Germany) were social networks, alternative sources, and the internet. Our results are not in line with their findings referring to the radio which was rated higher as a trusted channel than the newspapers and the television which contradict our findings.

As to gender differences, seven gender differences were detected regarding the trust towards providers of COVID-19 related information distribution. Specifically, gender differences were found in trust in the following providers: government representatives, journalists, family, friends, pharmaceutical companies/ industries, government structures (institutions, organizations, or services), and doctors and scientists. Excluding the doctors and scientists, males had significantly higher trust levels than females in all the other cases. The only case that females compared to male subjects reported higher trust was doctors and scientists.

In general, these findings cannot be directly compared to other studies since no study has been found that investigated simultaneously the issues tackled in this one. Indirectly, though, the results are in line with the outcomes of the study of Maykrantz et al.²⁰, who found that males compared to females base their trust in the government for COVID-19 related information. However, they did not deal with the Generation Z cohort.

Lastly, only one gender difference was detected regarding trust in communication channels distributing COVID-19 related information. Specifically, the only gender-related statistically significant difference was found for trust towards television (TV), wherein males had significantly higher

levels of trust than females. These findings are partially in line with the outcomes of prior research. For example, Figueiras et al.¹³ found statistically significant differences with regard to gender and trust towards TV and social media as distributors of COVID-19 related information, whereas excluding newspapers and radio, females indicated higher levels of trust in television and social media than males. Moreover, Maykrantz et al.²⁰ observed that males trust formal information channels (provided by media) as regards COVID-19 related information compared to females. Also, Figueiras et al.²¹ found that females trust social media and TV more than males.

5. Limitations and Directions for Future Research

The main limitation of this study derives from the research design which focuses on one country and one generation, i.e., Greece and the Generation Z cohort. Due to lack of data referring to generational cohorts in the country representativeness of sample cannot be confirmed. Though, the large sample size, reveals an insight of the Gen Z cohorts' trust. Additionally, the research method employed a mixed non-probability sampling method, therefore, generalizability of findings is not possible. The third limitation is that information providers and communication channels could be divided into more categories and thus studied separately, such as Facebook, Twitter, or Instagram. Finally, the last limitation derives from the point of focus of information trust studied. This means that the two questions and its items referring to specific providers and channels of COVID-19 related information was not validated, since it does not measure antecedents of trust (reliability, integrity, and credibility), but actual trust towards specific providers and channels without assuming strong psychometric properties for this scale. These limitations offer ground for future research, such as expanding the research to other generational cohorts (Generation X, Y, Baby Boomers, and

GI generation), applying a probability sampling frame, or even studying other countries Gen Zers for trust comparison.

6. Conclusions

This study provided insight into Gen Zers' trusted providers and communication channels regarding COVID-19 related information distribution. This research adds important findings to academia and government officials since it is an understudied issue, especially by focusing on the Generation Z cohort.

Three very important findings stood out. Firstly, Gen Zers do not fully trust information providers or communication channels distributing COVID-19 related information. Secondly, the highest trusted ones are associated with "scientific evidence" in the sense that Gen Zers trust doctors and scientists (for example researchers that deal with the virus and disease) as information providers, and scientific communication channels, i.e., articles in academic journals. Third, the non-official COVID-19 related information providers and communication channels were rated higher than official sources and traditional media. These three points should lead to effective risk communication.

These findings can assist the government officials in developing a risk communication strategy that will be effective and deliver desirable behavioral outcomes in crisis conditions. Risk communication will be based on the providers and communication channels regarding information dissemination that the Gen Z cohort trusts, and even more detailed that female and male Gen Zers trust mostly.

References

1. WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Accessed on September 11, 2021.
<https://www.who.int/dg/speeches/detail/who-directorgeneral-s-opening-remarks->

Based on the findings, the study can aid public health officials to develop and realize targeted risk communication strategies that will include all relevant information sources in order to effectively address the Gen Z cohort segment. For example, television as a communication channel can target Gen Zers' families (older members) and the Gen Z male subjects since they trust the information provided by it. On the other hand, doctors and scientists should be used more to target female subjects since they rate them highly as a trustworthy provider of information.

Statement of Ethics: "The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board/ Coordinating Committee of International Hellenic's University (No. 2/20.1.2020)."

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[at-the-mediabriefing-on-covid-19---11-march-2020](#)

2. JHU. COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at John Hopkins University. 2020.

- Accessed November 26, 2021. <http://coronavirus.jhu.edu/map.html>
3. Fauci AS, Lane CL, Redfield RR. Covid-19—Navigating the Uncharted. *N. Engl. J. Med.* 2020; 382: 1268–1269. <https://doi.org/10.1056/NEJMe200238>
 4. WHO, Tracking SARS-CoV-2 variants. Updated February 2022. Accessed February 16, 2022. <https://www.who.int/en/activities/tracking-SARS-CoV-2-variants/>
 5. Aguirre-Duarte N. Can people with asymptomatic or pre-symptomatic COVID-19 infect others: a systematic review of primary data. medRxiv, 2020. <https://doi.org/10.1101/2020.04.08.20054023>
 6. Ma Y, Xu QN, Wang FL, et al. Characteristics of asymptomatic patients with SARS-CoV-2 infection in Jinan, China. *Microbes Infect.* 2020; 22: 212-217. <https://doi.org/10.1016/j.micinf.2020.04.011>.
 7. Kamenidou IE, Stavrianea A, Mamalis S, et al. Knowledge assessment of covid-19 symptoms: Gender differences and communication routes for the generation z cohort. *Int. J. Environ. Res. Public Health.* 2020; 17: 6964. <https://doi.org/10.3390/ijerph17196964>
 8. Hansen MA, Johansson I, Sadowski K, et al. The partisan impact on local government dissemination of COVID-19 information: Assessing US County government websites. *CJPS/RCSP.* 2021; 54: 150-162. <https://doi.org/10.1017/S0008423920000918>
 9. Jennings FJ. Where to turn? The influence of information source on belief and behavior. *Journal of Risk Research.* 2019; 22: 909-918. <https://doi.org/10.1080/13669877.2017.1422788>
 10. Renn O, Levine D. Credibility and Trust in Risk Communication. In Kasperson R.E., Stallen P.J.M. (Eds). *Communicating Risks to the Public. Technology, Risk, and Society.* Springer, Dordrecht; 1991: 175-217.
 11. Vaughan E, Tinker T, Effective health risk communication about pandemic influenza for vulnerable populations. *Am. J. Public Health.* 2009; 99: 324-332. <https://doi.org/10.2105/AJPH.2009.162537>
 12. Ali SH, Foreman J, Tozan Y, et al. Trends and predictors of COVID-19 information sources and their relationship with knowledge and beliefs related to the pandemic: Nationwide cross-sectional study. *JMIR Public Health Surveill.* 2020; 6: e21071. <https://doi.org/10.2196/21071>
 13. Figueiras MJ, Ghorayeb J, Coutinho MV, et al. Levels of trust in information sources as a predictor of protective health behaviors during COVID-19 pandemic: A UAE cross-sectional study. *Front. Psychol.* 2021; 2780. <https://doi.org/10.3389/fpsyg.2021.633550>
 14. Kamenidou IE, Stavrianea A, Liava C. Achieving a Covid-19 free country: Citizens preventive measures and communication pathways. *Int. J. Environ. Res. Public Health.* 2020; 17: 4633. <https://doi.org/10.3390/ijerph17134633>

15. National Public Health Organization. Daily reports on COVID-19, 2020. Accessed June 21, 2020.
<https://eody.gov.gr/epidimiologika-statistika-dedomena/ektheseis-covid-19/imerisies-ektheseis-covid-19-2020/>
16. McCrindle M, Wolfinger E. The ABC of XYZ: Understanding the Global Generation. UNSW Press; 2011.
17. Price D, Bonsaksen T, Ruffolo M, et al. Perceived Trust in Public Authorities Nine Months after the COVID-19 Outbreak: A Cross-National Study. *Soc. Sci.* 2021; 10: 349.
<https://doi.org/10.3390/socsci10090349>
18. Falcone R, Sapienza A. How COVID-19 Changed the Information Needs of Italian Citizens. *Int. J. Environ. Res. Public Health.* 2020; 17: 6988.
<https://doi.org/10.3390/ijerph17196988>
19. Rana IA, Bhatti SS, Aslam AB, et al. COVID-19 risk perception and coping mechanisms: Does gender make a difference? *Int. J. Disaster Risk Reduct.* 2021; 55: 102096.
<https://doi.org/10.1016/j.ijdrr.2021.102096>
20. Maykrantz SA, Gong T, Petrolino AV, et al. How Trust in Information Sources Influences Preventative Measures Compliance during the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health.* 2021; 18: 5867.
<https://doi.org/10.3390/ijerph18115867>
21. Figueiras MJ, Ghorayeb J, Coutinho M, et al. Sources of information, trust, and protective health behaviors during COVID-19 pan-demic: A UAE cross-sectional study, 2020. Accessed September 14, 2021.
<https://doi.org/10.31234/osf.io/fsyxn>
22. Brown R, Coventry L, Pepper G. Information seeking, personal experiences, and their association with COVID-19 risk perceptions: demographic and occupational inequalities. *J. Risk Res.* 2021; 24: 506-520.
<https://doi.org/10.1080/13669877.2021.1908403>
23. Castelfranchi C, Falcone R. Trust and control: A dialectic link. *Appl. Artif. Intell.* 2000; 14: 799-823.
<https://doi.org/10.1080/08839510050127560>
24. Dittrich R, Francis B, Hatzinger R, et al. A paired comparison approach for the analysis of sets of Likert-scale responses. *Statistical Modelling.* 2007; 7: 3-28.
<https://doi.org/10.1177/1471082X060700102>
25. Lehmann DR, Gupta S, Steckel JH. *Marketing Research.* Addison Wesley Longman; 1998.
26. Spector P. *Summated Rating Scale Construction;* SAGE Publications; 1992.
27. Stavrakas M, Menexes G, Triaridis S, Bamidis P, Constantinidis J, Karkos PD. Objective structured assessment of technical skill in temporal bone dissection: validation of a novel tool. *The Journal of Laryngology & Otology.* 2021 Jun;135(6):518-28.
<https://doi.org/10.1017/S0022215121001201>
28. Sabri S. Item analysis of student comprehensive test for research in teaching beginner string ensemble using model based teaching among music students in

- public universities. *International Journal of Education and Research*. 2013;1(12):1-4.
29. WHO. Emergencies: Risk communication. Accessed March 29, 2021.
<https://www.who.int/news-room/q-a-detail/emergencies-risk-communication>
30. Zhang L, Li H, Chen K. Effective risk communication for public health emergency: Reflection on the COVID-19 (2019-nCoV) outbreak in Wuhan, China. *Healthcare*. 2020; 8: 64.
<https://doi.org/10.3390/healthcare8010064>
31. Lohiniva AL, Sane J, Sibenberg K, et al. Understanding coronavirus disease (COVID-19) risk perceptions among the public to enhance risk communication efforts: a practical approach for outbreaks, Finland, February 2020. *Eurosurveillance*. 2020; 25: 200031.
32. Cerdá-Mansilla E, Rubio N, Campo S. Critical success factors for sharing information and knowledge of COVID-19 through Twitter. *Knowl. Manag. Res. Pract*. 2021; 1–9.
<https://doi.org/10.1080/14778238.2021.189568>
33. Gehrau V, Fujarski S, Lorenz H, et al. The Impact of Health Information Exposure and Source Credibility on COVID-19 Vaccination Intention in Germany. *Int. J. Environ. Res. Public Health*, 2021; 18: 4678.
<https://doi.org/10.3390/ijerph18094678>
34. Dobó R. Source Prestige in Covid-19 Communication. In *International Scientific Conference Strategic Management and Decision Support Systems in Strategic Management*; 2021; 111-119.
https://doi.org/10.46541/978-86-7233-397-8_127
35. Pramiyanti A, Mayangsari ID, Nuraeni R, et al. Public Perception on Transparency and Trust in Government Information Released During the COVID-19 Pandemic. *Asian J. Public Opin. Res*. 2020; 8: 351–376.
<https://doi.org/10.15206/AJPOR.2020.8.3.351>
36. Hartley K, Jarvis DS. Policymaking in a low-trust state: legitimacy, state capacity, and responses to COVID-19 in Hong Kong. *Policy Soc*. 2020; 39: 403-423.
<https://doi.org/10.1080/14494035.2020.1783791>
37. Hallin DC, Papathanassopoulos S. Political clientelism and the media: southern Europe and Latin America in comparative perspective. *Media Cult. Soc*. 2002; 24: 175–195.
<https://doi.org/10.1177/016344370202400202>
38. Hernandez FJ. *Trust in the Pharmaceutical Sector, Analysis of drug safety controversies by means of drug life cycles*, Publisher: J.F. Hernandez; 2015.