



Greek Public Knowledge and Attitudes in Response to the COVID-19 Pandemic

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Authors' contributions

This work was carried out in collaboration between both authors. Author DA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author AF managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Introduction: Corona viruses are a group of viruses that often cause generally mild respiratory infections in humans and animals. Most people are infected with Corona Viruses at least once in their lives, having mild to moderate symptoms of common cold.

Aim: The purpose of this study was to examine and investigate attitudes, perceptions and public knowledge to deal with the COVID-19 pandemic. In particular, it was to investigate people's perceptions of the new COVID-19, to assess citizens' knowledge of symptoms transmission and prevention against the new COVID-19 disease and to investigate public attitudes during social containment.

Study Design: Quantitative survey design.

Place and Duration of Study: Sample: 341 Greek citizens were randomly selected and included in the study between June 2020 and August 2020.

Methodology: Due to the COVID-19 outbreak, our research was conducted through Google Drive online form sent via Facebook and Messenger to each individually by personal message and by e-mail, to which the questionnaire was sent as an attached file. Such research is aimed at the population who understand social media and with access to the internet.

Results: With regard to the participants overall assessment of their knowledge on COVID-19, 8% self-evaluated themselves as having 'poor' knowledge, 42% as having 'moderate' and 50% as having 'very good to excellent' knowledge on the subject. Majority stated that they acquired

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information on COVID-19 mainly from the Internet and/or mass media (86%) followed by Medical/Nursing staff with 71%, and family/friends 65%. Almost half of the sample, (i.e. 49%) stated that they, or a member of their family, were considered to be a vulnerable group. Also, from ANOVA variance analysis, it appears that differences between educational level groups are statistically significant regarding the need for psychological support in the period of isolation; $F(4,136) = 3,602, p < 0.05$). With regard to being afraid of contracting the virus either themselves or any member of their family, as shown by Table 4, respondents belonging either themselves or one of their family members to a vulnerable group show higher levels of fear of being affected by COVID-19 ($M = 4.18, T.A. = 1.01$) against stocks.

Discussion: The results of the study showed that public knowledge on COVID-19 shows a positive correlation with the implementation of the measures, meaning that those who know more about nature of COVID-19 are more stringent with prevention measures. Adherence to these, in turn, displays a positive correlation with the need for psychological support during the period of confinement. Therefore, the higher the levels of adherence to the measures, the greater the need for psychological support during the period of confinement.

Conclusion: The overall impression of this study suggests that simple straightforward preventive health measures provided to the public tended to be followed. Yet, the greatest problem lies in misinformation on the pandemic which seems to confuse, especially those with lower educational backgrounds.

Keywords: COVID-19; pandemic; knowledge; attitudes.

1. INTRODUCTION

The emergence and rapid spread of COVID-19 has brought about radical changes in our lifestyle in order to safeguard health and limit the spread of the virus [1].

The 2019 Corona virus pandemic officially started around December 2019. The virus was first detected in the city of Wuhan in China [2] and became known by the international term Severe Acute Respiratory Syndrome Corona virus-2 (SARS-CoV-2) [3].

Corona viruses are a group of encapsulated unfragmented, monoclonal and positive RNA genomes. There are six different corona viruses that infect humans and cause respiratory diseases [4]. Corona viruses usually cause respiratory infections with varying severity in humans and animals. It is estimated that about one third of the upper respiratory tract infections in humans can be caused by corona viruses [5,6].

Most corona viruses usually cause upper respiratory tract infections in humans, but can cause pneumonia as well and they account for 10-15% of all respiratory infections. A corona virus was responsible for an outbreak in China in 2002 of serious acute respiratory syndrome internationally known as SARS [7]. Another type of Corona virus caused Middle East Respiratory Syndrome (MERS) in 2012 [8,9].

Hence, Corona viruses are a group of viruses that often cause generally mild respiratory infections in humans and animals. Most people are infected with Corona Viruses at least once in their lives, having mild to moderate symptoms of common cold [10]. Rarely does a Corona virus mutate and spread from animals to humans, as this has only happened in the past with SARS (2003) and MERS (2012) with a limited global impact [11,12].

1.1 Aim

The purpose of this study is to explore the attitudes, perceptions and knowledge of the public in response to the COVID-19 pandemic in Greece. In particular, the objectives of this study are to:

- Investigate lay people's perceptions of the COVID-19;
- Assess citizens' knowledge of symptoms, transmission and prevention of COVID-19;
- Investigate public behaviors during social containment.

2. MATERIALS AND METHODS

2.1 Sample

The total sample for this study was 341 adults from the general population ($N=341$) in Greece,

consisting of 29% men and 71% women aged 18 to 69 years with an average age of 33.2 years. The sample is from different parts of Greece, rural and urban areas, but mostly from the Northern city of Thessaloniki (64%) while the remaining 36% from rural areas. The majority of respondents (46%) were graduates of secondary education followed by graduates of Higher Education (38%) while 12% were holders of a Master / Doctoral diploma.

2.2 Data Collection

Due to the lockdown imposed by the outbreak of SARS-CoV-2 at the time of the study, an online data collection mode was chosen. A questionnaire with 22 closed and semi-closed questions was used to conduct this quantitative survey. The 'COVID-19 Crisis Response Attitude Assessment' (C-19 CRAA) questionnaire was partially used in order to devise the research tool for this study's needs. Thus, the first 5 questions address the respondents' demographical details, the following 9 are concerned with the participants' knowledge about COVID-19 and the last 8 are chosen from C-19 CRAA which explore attitudes in response to the COVID-19 pandemic.

For the purpose of this survey an introductory information note was constructed explaining the purpose of the questionnaire, reassuring anonymity and confidentiality, the average projected time required to fill it in and finally asking for informed consent by the respondents. Thus, the online completion was anonymous and voluntary and the participants were required to answer all the questions. The maximum survey completion time was 10 minutes. The questionnaires were completed via social media, i.e. a Google Drive online form was placed on Facebook. Data was collected between June 2020 and August 2020.

3. RESULTS

With regard to the participants overall assessment of their knowledge on COVID-19, 8% were self-evaluated as having 'poor' knowledge, 42% as having 'moderate' and 50% as having 'very good to excellent' knowledge on the subject. Majority stated that they acquired information on COVID-19 mainly from the Internet and/or mass media (86%) followed by Medical/Nursing staff with 71%, and family/friends 65%. Almost half of the sample, (i.e. 49%) stated that they, or a member of their family, were considered to be a vulnerable group.

In an effort to test their overall knowledge, a question was set on the main symptoms of COVID-19. Respondents (98%) recognized fever as the main symptom, with 77% reporting dry cough, fatigue (72%), vomiting (9%) and blurred vision (6%). The majority believed that COVID-19 spreads from person to person via sneezing, coughing (98%), speech (55%), sexual intercourse (9%), blood transfusion (7%) and mosquito bites (1%).

With regard to those they consider to be a 'high risk group' for COVID-19, the majority of the respondents reported as being elderly (96%), those with diabetes (63%), being overweight (27%), medical and nursing staff (24%), pregnant women (15%) and blood donors (1%). Regarding the incubation period of COVID-19, majority (76.6%) stated that this is up to 14 days, 21.3% responded 7 days and 2.1% responded three days.

Effective measures for preventing the spread of COVID-19 were considered to be: hand-washing for 20 seconds (91%), avoiding locations where many people gather 87%, use of face masks 81%, avoiding travelling abroad 55% and socializing 43%. Yet, 6% stated consuming herbs, 1% consuming more meat, and only 9% considered vaccination an effective measure.

Respondents were then asked about the optimum treatment for COVID-19. Most reported that there is currently no specific effective treatment for COVID-19 (74%) but that there is supportive treatment for symptom relief (73%). 5% responded that there was a drug or treatment and only 4% responded that there was a vaccine.

When asked what to do if in close contact with a confirmed case of COVID-19 most respondents indicated that in such a case, a person should be isolated in a different room from the rest of the family for 14 days (56%) and should then be tested for COVID-19 (26.2%). 11.4% said they should go to the referred hospital and 6.4% would simply stay at home.

In an effort to assess attitudes on the COVID-19 crisis, adherence to protective measures as proposed by the state to treat COVID-19 was checked. Thus, 80.8% of respondents largely adhered to the protection measures taken by the State to deal with COVID-19, 14.2% followed the measures proposed in a moderate manner, while 5% took little or no measures at all.

Table 1. Independent samples test on compliance with the protective measures taken by the state to deal with the corona virus by gender

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.522	.471	-2.126	139	.035	-.33756	.15874	-.65142	-.02370
Equal variances not assumed			-1.968	63.776	.053	-.33756	.17153	-.68025	.00513

Table 2. Adhering to government policies to tackle the pandemic with regard to educational background

	N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
					Primary School	5		
Lower Secondary Education	10	3.4000	.89443	.40000	2.2894	4.5106	2.00	4.00
Upper Secondary Education	157	3.9231	.95701	.11870	3.6859	4.1602	1.00	5.00
University	128	4.4528	.66697	.09162	4.2690	4.6367	3.00	5.00
MSc/PhD	41	4.2353	.75245	.18250	3.8484	4.6222	3.00	5.00
Total	341	4.1418	.86670	.07299	3.9975	4.2861	1.00	5.00

Table 3. ANOVA analysis of the adherence to government policies to tackle the pandemic with regard to educational background

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.157	4	2.789	4.035	.004
Within Groups	94.006	136	.691		
Total	105.163	140			

Table 4. Mean results of need for psychological support during isolation as per level of educational background

	N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Primary school	5	5.0000	5.00	5.00
Lower Secondary Education	10	2.4000	1.94936	.87178	-.0204	4.8204	1.00	5.00
Upper Secondary Education	157	2.2462	1.47934	.18349	1.8796	2.6127	1.00	5.00
University degree	128	1.5472	1.02968	.14144	1.2634	1.8310	1.00	5.00
MSc or PhD graduate	41	1.8235	1.23669	.29994	1.1877	2.4594	1.00	5.00
Total	341	1.9574	1.36210	.11471	1.7307	2.1842	1.00	5.00

Table 5. ANOVA analysis of need for psychological support during isolation as per level of educational background

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.880	4	6.220	3.602	.008
Within Groups	234.864	136	1.727		
Total	259.745	140			

Table 6. Independent samples test for fear of contracting COVID-19 as per vulnerable groups

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	6.740	.010	4.335	139	.000	.85507	.19725	.46507	1.24507
Equal variances not assumed			4.357	133.778	.000	.85507	.19624	.46694	1.24321

Table 7. Average scores of the need for psychological support during isolation by educational level

	1	2	3	4	5	6	7	Age
1. Knowledge on COVID-19	1	.216*	.070	.083	.025	-.020	.124	-.024
2. Adhering to the measures		1	-.107	.464**	.066	-.162	.172*	.112
3. Rigor of protective measures			1	-.143	.091	.474**	-.174*	.055
4. Need for psychological support				1	.061	-.252**	.143	-.051
5. Fear about COVID-19					1	.317**	-.015	.212*
6. Feeling frustrated and angry						1	-.308**	-.043
7. Crisis response effectiveness							1	.061
Age								1

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

The severity of the protective measures against the new COVID-19 were assessed by respondents as being moderate 28%, 35% thought the protective measures strict while 36% considered the measures to be too strict.

When asked if they were afraid of contracting COVID-19 either themselves or a family member, 60% are greatly afraid of being affected by COVID-19, 18% had no fear at all, while 22% stated to have moderate fear.

The need for psychological support during a period of isolation was considered to be moderate for 9.2% of the respondents, high for 17.2% and none or very little for 73%. When asked if they felt irritated and angry about the limitation of their personal freedom during lockdowns, 39% felt irritation and anger, 20.6% stated moderate levels of irritation and anger while 40.4% experienced none to very little. Furthermore, when the respondents were asked if the Greek State has so far effectively responded to the COVID-19 crisis, only 28.7% considered this to be effective, 34.8% moderate and 36.9% thought the state's response to COVID-19 crisis was insufficient.

Respondents were also asked if they considered the COVID-19 virus to be a 'laboratory construct'. Majority (69.5%) affirmed this scenario and 30.5% denied the possibility. In an effort to explore these answers, a further open question was asked, regarding the possible reasons behind this artificial 'virus construction'. Thus, 27% implied this was done in an effort to secure global control of humanity and deprivation of fundamental individual freedoms, 26% proposed that this was due to market opportunities by pharmaceutical companies to further their financial gains via vaccines, 23% suggested that this was to reduce world population, 11% claimed that the virus was developed to be used as a biological weapon, and 20% stated that the pandemic was imposed in order to spread generalized fear over the human race.

Differences in sample responses according to demographic characteristics are as follows: The 141 Men of the sample had a mean of 3.9 and an SD of .97(SE.15) while the 200 women had a mean of 4.2 and an SD of .80(SE.08). As shown from these findings, women tend to adhere more to protective measures proposed by the State to prevent the spread of COVID-19. An Independent Student's t-test, as shown in table 1 below, confirmed that gender differences in

respect of the protective measures taken by the state to treat COVID-19 are statistically significant ($t(139) = -2.126, p < 0.05$).

As for adherence in conjunction with educational level, the higher the education level of respondents, the more they adhere to the protective measures (Table 2).

Also, from the ANOVA variance analysis, it appears that differences between educational level groups are statistically significant in terms of adherence to the protection measures taken by the state to treat the new COVID-19; they are statistically significant ($F(4,136) = 4,035, p < 0.05$).

Also, from ANOVA variance analysis, it appears that differences between educational level groups are statistically significant regarding the need for psychological support in the period of isolation; $F(4,136) = 3,602, p < 0.05$.

With regard to being afraid of contracting the virus either themselves or any member of their family, respondents to belonging either themselves or one of their family members to a vulnerable group show higher levels of fear of being affected by COVID-19 ($M = 4.18, T.A. = 1.01$) against stocks.

Subsequently, as shown by the Independent sample t-test, the differences between inclusion or not in a susceptible group related to fear of COVID-19 infection per inclusion in vulnerable groups are statistically significant ($t(139) = 4,335, p < 0.05$).

3.1 Correlations between Variables

Associating variables with the use of Pearson statistical control has found that:

- Knowledge of COVID-19 shows a positive statistically significant correlation with the respect of the measures ($r = .216, p < 0.05$). Therefore, the higher the levels of knowledge about COVID-19, the greater the respect of the measures by citizens
- Compliance with the COVID-19 measures shows a positive statistically significant correlation with the need for psychological support during the period of confinement ($r = .464, p < 0.01$). Therefore, the higher the levels of adherence to the measures, the greater the need for psychological support during the period of confinement.

- The feeling of irritation and anger during the period of confinement shows a positive correlation with the severity of the protective measures ($r = .474$, $p < 0.01$) and fear of the common ($r = .317$, $p < 0.01$) and a negative correlation with the need for psychological support ($r = -.252$, $p < 0.01$)¹). Therefore, the tighter the protective measures and the levels of fear for the public, the higher the levels of irritation and anger among citizens. In contrast, high levels of irritation and anger are associated with low levels of need for psychological support.
- The view on the effectiveness of the protective measures was found to be positively correlated with the adherence to the measures ($r = .172$, $p < 0.05$) and negatively with the severity of the protective measures ($r = -.174$, $p < 0.05$) and the feeling of irritation and anger ($r = -.308$, $p < 0.05$). Therefore, the higher the effectiveness of protective measures is considered, the greater the compliance with the measures, while the lower the levels of severity of the measures and the feeling of irritation and anger, the lower the effectiveness of tackling the crisis.
- The age of citizens shows a positive statistically significant correlation with the fear of being questioned about the welfare ($r = .212$, $p < 0.05$). So the younger the respondents, the higher the levels of fear.

4. DISCUSSION

This novel questionnaire was devised and used to assess knowledge and attitudes of the pandemic in a Greek sample and showed that although majority relied on the internet and mass media, their knowledge on the symptoms was fairly good. However, there were some individuals who were seriously misinformed on prevention and treatment for the virus. Yet, their knowledge and their proposed action if in close contact with a confirmed case of COVID-19 was largely correct, as most respondents would isolate in a different room from the rest of the family for 14 days, would be tested for COVID-19 and would attend the reference hospital. Knowledge on virus contraction was also correct as almost all correctly identified sneezing, coughing and talking as the main routes of contagion.

Based on the responses of the participants, statistically significant differences in their

demographic characteristics were shown. Thus, women are more in line with the measures than men with regard to the adherence levels to the protection measures imposed by the Greek State to deal with the COVID-19 pandemic. Also, the higher the level of educational background of the participants, the more they seem to comply with the protective suggestions provided by the State to tackle the pandemic. Thus, ANOVA variance analysis showed that the higher the educational level of respondents, the more they comply with the protective measures.

A feeling of need for psychological support during the period of isolation per educational level indicates statistically significant that the higher the educational level of the respondents; the less they claimed the need for psychological support during the period of isolation. Also, respondents from vulnerable groups showed a higher fear of being infected by COVID-19 than the others.

The results of the study showed that public knowledge on COVID-19 shows a positive correlation with the implementation of the measures, meaning that those who know more about the nature of COVID-19 are more stringent with prevention measures. Adherence to these, in turn, displays a positive correlation with the need for psychological support during the period of confinement. Therefore, the higher the levels of adherence to the measures, the greater the need for psychological support during the period of confinement.

Similarly, studies from India, Malaysia and S. Arabia, reconfirm that the general public has low to moderate level of knowledge regarding COVID-19 which implies that there is a large margin for improvement especially as the pandemic is far from over yet. Therefore, further steps should be taken by WHO, governments and health authorities, in line with the local culture, in order to increase vaccination acceptance and foster positive attitudes towards the vaccine. Under this light, increased levels of knowledge about the virus, including prevention practices, are essential. Overall, COVID-19 facts and knowledge tools should be focused on the general public in order to enhance compliance with the new restrictions that the pandemic may force upon local communities and societies per se. Furthermore, health experts should focus more on the false information being disseminated across the internet, and try to educate the

general public against unsubstantiated claims [13,14,15].

The feeling of irritation and anger during the period of confinement shows a positive correlation with the severity of protective measures and fear for COVID-19 and a negative correlation with the need for psychological support. Therefore, the tighter the protective measures and the levels of fear for the COVID-19, the higher the levels of irritation and anger among citizens. In contrast, high levels of irritation and anger are associated with low levels of need for psychological support. We noted that the view on the effectiveness of the protective measures was positively related to the observance of the measures and negatively to the severity of the protection measures and the feeling of irritation and anger; therefore, the higher the effectiveness of the protection measures, the greater the compliance with the measures, while the lower the levels of severity of the measures and the feeling of irritation and anger, the lower the effectiveness of the response to the crisis.

Finally, the age of the sample indicated a positive statistically significant correlation with fear of COVID-19 respondents, in that the younger the respondents, the higher the levels of fear.

5. CONCLUSION

The overall impression of this study suggests that simple straightforward measures given to the public tend to be followed. The greatest problem lies in misinformation on the pandemic which confuses especially those with lower educational backgrounds.

Furthermore, on a positive note, this study shows that government information initiatives via mass media had a positive role in accurately informing this Greek sample, especially on symptoms of COVID-19 and how to prevent contracting it. Yet, there were also a number of conspiracy theories proposed by the sample, which explained what they believed to be the root cause of the pandemic, thus, creating some resistance to adherence.

CONSENT

As per international standard or university standard, respondents' consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

This study was undertaken with the general public under their free will and therefore, ethical approval was sought.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Khan N. New Virus Discovered by Chinese Scientists Investigating Pneumonia Outbreak Wall Street Journal. 2020;12(142):0099-9660.
2. Zheng YY, Ma YT, Zhang JY. COVID-19 and the cardiovascular system. *Nat Rev Cardiol.* 2020;17:259–260.
3. Wu Z, McGoogan J. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) Outbreak in China. *Jama.* 2020;323(13):1239-1242.
4. Fung S, Liu DX. Human Coronavirus: Host-Pathogen Interaction. *Annu Rev Microbiol.* 2019;73:529-557.
5. Nickbakhsh S, Ho A, Marques DF. Epidemiology of Seasonal Coronaviruses: Establishing the Context for the Emergence of Coronavirus Disease. *J Infect Dis.* 2020; 222:17.
6. Zhu Y, Xu B, Li C. A Multicenter Study of Viral Aetiology of Community-Acquired Pneumonia in Hospitalized Children in Chinese Mainland. *Virology.* 2021; 36:1543.
7. Hui D, Memish, Z, Zumla, A. Severe acute respiratory syndrome vs. the Middle East respiratory syndrome. *Curr Opin Pulm Med.* 2020;20(3):233-41.
8. Yan Y, Chang L, Wang.. Laboratory testing of SARS-CoV, MERS-CoV, and SARS-CoV-2 (2019-nCoV): Current status, challenges, and countermeasures, *Reviews in Medical Virology.* 2020;30(3):e2106.
9. Jin Y, Yang H, Ji W. Virology, Epidemiology, Pathogenesis, and Control of COVID-19. *Viruses.* 2020;12(4):372.
10. Han Y, Yang H. The transmission and diagnosis of 2019 novel coronavirus infection disease (COVID-19): A Chinese perspective. *Journal of Medical Virology.* 2020;92(6):639-644.
11. Weiss J, Navas-Martin S. Coronavirus pathogenesis and the emerging pathogen

- severe acute respiratory syndrome coronavirus. *MicrobiolMolBiol Rev.* 2005;69(4):635-64.
12. Tang YW, Schmitz J, Persing D, et al., Diagnosis of COVID-19: Current Issues and Challenges. *Journal of Clinical Microbiology.* 2020;146(1):23-34.
 13. Gunchan P, Shruti S, Guneet S, Gurparvesh S, Sarit S, Birinder P, Gautam S, Lal P. Assessment of knowledge gaps and perceptions about COVID-19 among health care workers and general public-national cross-sectional study, *Journal of Anaesthesiology Clinical Pharmacology.* 2020;36(3):337-344.
 14. Jairoun AA, Al-Hemyari SS, El-Dahiyat F. et al. Assessing public knowledge, attitudes and determinants of third COVID-19 vaccine booster dose acceptance: current scenario and future perspectives. *J of Pharm Policy and Pract.* 2022;15(1):26-32.
 15. Alqahtani A, Aldahish A, Krishnaraju V, Alqarni M, Al-Sheikh Hassan M. General Public Knowledge of Coronavirus Disease 2019 (COVID-19) at Early Stages of the Pandemic: A Random Online Survey in Saudi Arabia. *Patient Prefer Adherence.* 2021;15:601-609.

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