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Coronavirus Pandemic

Albanian university students' knowledge, attitudes, and practices regarding COVID-19 infection and vaccine: A cross-sectional study

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Abstract

Introduction: COVID-19 pandemic remains a public health concern worldwide. Given that, students represent a subgroup of the population with an impact on the pandemic.

Aim: The aim of this study is to evaluate the knowledge, attitudes, and practices of Albanian students about COVID-19, and to provide a database to plan and implement preventive evidence-based interventions.

Methodology: An online survey was conducted among Albanian university students during April-May 2022, to collect information on their knowledge, attitudes, and practices related to COVID-19, through a structured questionnaire.

Results: A total of 906 students, 72.8% females, were included in it. 93.4% of participants knew the ways of transmission of COVID-19; 92.5% had information about preventive measures, but only 30% knew about quarantine and 37.0% knew vaccination as a preventive measure. Regarding attitudes, 54.8% of participants believed that COVID-19 infection is very dangerous. 46.5% have a negative attitude toward covid vaccines. Almost all respondents (93.7%) apply regular hand washing as a preventive measure; 82.8% cover their mouth when coughing or sneezing; but only 28.2% always use a mask indoors.

Conclusions: Albanian university students had good knowledge, positive attitudes, and appropriate preventive practices against COVID-19, but the study found that some limitations in terms of information and misconceptions still exist. Raising awareness and providing adequate information, education, and more effective communication programs will have a positive impact on increasing knowledge, improving attitudes, and supporting the required student behavior change.

Key words: Knowledge; COVID-19; attitude, vaccine, students.

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Introduction

More than two years since the first SARS-CoV-2 infections were reported, the pandemic remains a global public health emergency, with considerable health, social, and economic impact worldwide. With an up and down trend, the COVID-19 pandemic continues to be a serious public health concern with over 536 million confirmed cases and over 6.3 million deaths reported globally, as of 19 June 2022 [1]. In response to this emergency, World Health Organisation (WHO) published the first Global Strategic Preparedness, Readiness and Response Plan (SPRP) in February 2020, which is updated regularly [2]. In Albania, the first COVID-19 case was reported on March 9, 2020. From the moment WHO declared COVID-19 a health emergency, the Albanian Ministry of Health and Social Welfare drafted an action plan which is regularly updated, based on newly available information in accordance with WHO and European Centre for Disease Prevention and Control (ECDC) recommendations [3]. Accurate and credible information plays a major role in preventing the spread of infection, breaking transmission chains, and curbing the COVID-19 pandemic. There is now a strong body of evidence to suggest that knowledge, risk perception, and beliefs motivate people to adopt preventive behaviours when dealing with infectious epidemics [4–17]. Results from various studies show that a higher level of knowledge regarding COVID-19 including correct attitudes correlates in a positive way with preventive behaviour, and a lower likelihood of attitudes and practices that may have negative effects on the pandemic management. At the peak of this pandemic, the WHO announced that COVID-19 has

been accompanied by an "infodemic" -a situation in which a lot of false information is being spread in a way that could be harmful. According to the WHO, the COVID-19 infodemic was just as dangerous as the virus itself [18–20]. Due to the public exposure to false information, the COVID-19 outbreak response has become less effective, has been associated with increased health risks, and has a tendency to intensify or could prolong Covid outbreaks [6,9,20–27].

In this context, the evaluation of university student's knowledge, attitude, and practices toward COVID-19 also, are considered vital to prevent the spread of the virus and support a more effective COVID-19 response. Furthermore, global vaccination coverage levels in this specific target group are currently suboptimal – that's also the case for Albania. Additionally, university students' lack of knowledge and concern about anti-Covid vaccine side effects have been mentioned as the primary causes of hesitancy among low-middle income countries. Our study purpose was to assess the level of knowledge, beliefs, and practices regarding COVID-19 among university students to provide a necessary database of information that would help to plan and implement more effective public health interventions, while redesigning health education/ promotion activities, and communication materials leading to better control measures against COVID-19.

Methodology

The KAP (Knowledge/Attitudes/Practices) survey methods are used to understand what people know, what they believe, and what they do, and are essential for the control and effective management of any disease, including COVID-19. The KAP model is a structured, standardized questionnaire completed by a target population that can quantify and analyzed what is known (knowledge), believed (attitudes), and done (practices) with regard to a topic of interest [28,29]. Based on this, an online survey was conducted among Albanian university students for the period from 30 April to 30 May 2022. The data collection instrument was a structured questionnaire, which was prepared based on the WHO's guidelines for conducting a behavioural study related to COVID-19 and has considered other similar questionnaires of COVID-19 used in KAP surveys. The survey questionnaire included a set of 36 questions divided into four main sections: (a) sociodemographic characteristics; (b) knowledges; (c) attitudes, and (d) behaviour/practices related to the COVID-19 pandemic. The draft questionnaire was pretested with a similar group of students to gather additional feedback. The questionnaire was modified based on their feedback and after expert opinions; we prepared the final version of the questionnaire. Online link of the questionnaire was sent to all students via email. The study received the approval of the Ethics Committee and students were informed about the privacy and confidentiality of participations in the study. All the data were collected using a Google form and afterwards were transferred and analysed using SPSS 28.0 software. All variables were subjects of descriptive analyses (frequency, percent, mean, and standard deviation). Fisher's exact test was used to test the statistical significance in the analysis of cross-tabulation of data. Chi-square test was utilized to compare categorical variables and ratios and 2-tailed *p* to test significance between variables. A *p*-value of 0.05 or lower was considered statistically significant.

Table 1. Sociodemographic characteristics of study participants, n = 906.

Characteristics	Frequency n (%)	95% [LCL-UCL]
Gender		
Males	246 (27.15)	[24.36-30.14]
Females	660 (72.85)	
Faculty		
Faculty of Medical Sciences / Pharmacy	32 (3.53)	[2.5-4.94]
Faculty of Medical Sciences / Dentistry	74 (8.17)	[6.56-10.13]
Faculty of Medical Sciences / Physiotherapy	39 (4.30)	[3.16-5.83]
Faculty of Medical Sciences / Nursing	437 (18.23)	[44.99-51.49]
Faculty of Social Sciences	133 (14.68)	[12.52-17.13]
Faculty of Applied and Economic Sciences	191 (21.08)	[18.55-23.86]
Year of study		
1st	284 (31.35)	[28.41-34.44]
2nd	292 (32.23)	[29.27-35.34]
3d	196 (21.63)	[19.08-24.43]
4th	14 (1.55)	[0.92-2.58]
5th	14 (1.55)	[0.92-2.58]
Master	106 (98.45)	[9.77-13.96]

Results

Socio-demographic characteristics of study participants

A total of 906 Albanian university students were included in the final analyses, after excluding individuals with missing data (Table 1). 64.2% were studying at the Faculty of Medicine, 14.7% at the Faculty of Social Sciences, and 21.1% at the Faculty of Applied and Economic Sciences. Female responders were 72.8% of all participants. The gender difference was related to the larger number of female students attending the Albanian university, as well as the numerical differences between the selected faculties.

Knowledge of the study participants towards COVID 19

95.3% (870) of the students reported they had general non-specific knowledge about COVID-19 (Table 2). 46.9% (410 of them), had received this information from all sources of information (family-friends-colleagues, internet, printed media, television, health personnel, and social networks), while the rest, respectively from a family-friends-colleagues 2.8%; internet 8.1%; printed media 5.9%; health staff 7.9%; social networks 16.5%; and television 7.3%. For them the most reliable sources of information were health staff 31.7%, followed by the internet 14%, while only 2% did not trust any of the sources of information. 92.5% were aware that COVID-19 was transmitted by close contact with an infected person, 69.8% mentioned that COVID-19 was transmitted by contact with objects contaminated with the virus, and 63.7% through the contaminated air. 87.7% (744) of participants were

Table 2. Knowledge domains about COVID-19 infection among study participant.

Knowledge Domains	Alternatives	Male, N (%)	Female, N (%)	*p*-value
Do you think you have information on COVID-19?	No	15 (6.1)	21 (3.18)	0.001
	Yes	231 (93.9)	639 (96.82)	
If so, where did you get this information?	Family, friends, colleagues	5 (2.03)	23 (3.48)	> 0.05
	Internet	18 (7.32)	59 (8.94)	
	The written media	14 (5.69)	40 (6.06)	
	From all sources	124 (50.41)	286 (43.3)	
	I have no information	15 (6.1)	21 (3.18)	
	Health staff	20 (8.13)	50 (7.58)	
	Social media	33 (13.41)	130 (19.7)	
	Television	17 (6.91)	51 (7.73)	
What sources of information do you trust?	None	16 (6.5)	14 (2.12)	0.002
	Family, friends, colleagues	19 (7.72)	41 (6.21)	
	Internet	27 (10.98)	98 (14.85)	
	The written media	4 (1.63)	13 (1.97)	
	Health staff	73 (29.67)	223 (33.79)	
	Health staff & internet	26 (10.57)	95 (14.39)	
	Social networks	24 (9.76)	69 (10.45)	
	All sources	41 (16.67)	64 (9.70)	
	Television	16 (6.5)	43 (6.52)	
How dangerous do you think COVID-19 is?	I do not know	4 (1.62)	5 (0.76)	0.001
	It is not dangerous	22 (8.94)	33 (5)	
	A little dangerous	110 (44.72)	194 (29.39)	
	Very dangerous	110 (44.72)	428 (64.85)	
Is COVID-19 transmitted by close contact with infected persons?	No	20 (8.13)	39 (5.91)	> 0.05
	I don't know	2 (0.81)	1 (0.15)	
	Yes	224 (91.06)	620 (93.94)	
Is COVID-19 transmitted through saliva sprays?	No	20 (8.13)	39 (5.91)	> 0.05
	I don't know	2 (0.81)	1 (0.15)	
	Yes	224 (91.06)	620 (93.94)	
Is COVID-19 transmitted by contact with objects contaminated with the virus?	No	20 (8.13)	48 (7.27)	> 0.05
	I don't know	55 (22.36)	149 (22.58)	
	Yes	171 (69.51)	463 (70.15)	
Is COVID-19 transmitted through the air?	No	38 (15.45)	132 (20)	> 0.05
	I do not know	52 (21.14)	105 (15.91)	
	Yes	156 (63.41)	423 (64.09)	
A person without symptoms, can be infectious to others?	No	17 (6.91)	31 (4.70)	0.37
	I do not know	29 (11.79)	74 (11.21)	
	Yes	200 (91.30)	555 (84.09)	
To prevent COVID-19, should we avoid overpopulated places?	No	16 (6.5)	27 (4.09)	> 0.05
	I do not know	3 (1.22)	5 (0.76)	
	Yes	227 (92.28)	628 (95.15)	
Are children and young people at risk of being infected by COVID-19?	False	182 (73.98)	563 (85.30)	> 0.05
	True	38 (15.45)	46 (6.97)	
	I do not know	26 (10.57)	51 (7.73)	
Who are most at risk of being infected with COVID-19?	I do not know	5 (2.03)	6 (0.91)	> 0.05
	All	41 (16.67)	117 (17.73)	
	Elderly, chronically ill people	162 (65.86)	361 (54.7)	
	Health staff	38 (15.48)	176 (26.67)	

aware that asymptomatic persons are able to spread COVID-19, but 11.5% didn't know and 5.3% have misconceptions in relation to the role of asymptomatic individuals in spreading the infection. 93.7% were aware that avoiding crowded places was one of the effective measures to prevent the spread of COVID-19. 60.3%, identified elderly people and those with pre-existing chronic diseases as a risk group for being infected by COVID-19, and 21.1% identified health personnel.

Attitude and practice of respondents towards COVID 19

Regarding their attitudes: 54.8% of participants (538) believed that COVID-19 disease caused by the SARS-CoV-2 virus (or one of its variants) is very dangerous, with a noticeable gender difference among

Table 3. Attitudes and practices domains about COVID-19 infection and vaccination among study participants.

Attitudes and practices Domains	Alternatives	Male, N (%)	Female, N (%)	*p*-value
Do you think quarantine is the best way to prevent COVID-19?	No	188 (76.42)	434 (65.76)	> 0.05
	I do not know	4 (1.63)	8 (1.21)	
	Yes	54 (21.95)	218 (33.03)	
Do you believe vaccination prevents COVID-19?	No	112 (45.53)	313 (47.42)	0.15
	I do not know	49 (19.92)	97 (14.7)	
	Yes	85 (34.55)	250 (37.88)	
What do you think about covid vaccines?	They are produced quickly and are not safe	88 (35.77)	238 (36.06)	0.04
	They have unknown risks	115 (46.75)	289 (43.79)	
	They are not stored in proper conditions	15 (6.1)	64 (9.7)	
	I have no opinion	20 (8.13)	30 (4.55)	
	They cause infertility	8 (3.25)	39 (5.91)	
Do you cover your mouth when you cough or sneeze?	No	13 (5.28)	18 (2.73)	0.10
	Not always	35 (14.23)	80 (12.12)	
	Yes	198 (80.49)	562 (85.15)	
Do you wash your hands regularly with soap and water?	No	5 (2.03)	4 (0.61)	0.05
	Not always	15 (6.1)	26 (63.41)	
	Yes	226 (91.87)	630 (95.45)	
Do you use a mask in closed and crowded environments?	No	64 (26.02)	81 (12.27)	0.001
	Not always	125 (50.81)	360 (54.55)	
	Yes	57 (23.17)	219 (33.18)	
Are you worried about getting infected or reinfected with COVID-19?	No	88 (35.77)	188 (28.48)	0.03
	Yes	158 (64.23)	472 (71.52)	
Have you ever been infected with COVID-19?	No	76 (30.89)	170 (25.76)	0.09
	Perhaps	4 (50.0)	4 (0.61)	
	Yes	166 (67.48)	486 (73.64)	
Have you been vaccinated against COVID-19?	No	38 (15.45)	121 (18.33)	0.04
	Yes, with 1 shot	21 (8.54)	42 (6.36)	
	Yes, with 2 shots	172 (26.42)	479 (72.58)	
	Yes, with 3 shots	15 (6.10)	18 (2.73)	
Why did you choose to be vaccinated?	Forced to attend school	25 (10.16)	96 (14.55)	0.21
	I have not been vaccinated	38 (15.45)	121 (18.33)	
	To attend premises	55 (22.36)	122 (18.42)	
	To protect my health	83 (33.74)	220 (33.33)	
	To travel free	45 (18.29)	101 (15.30)	
What is the reason you have not been vaccinated?	I am against any kind of vaccine	3 (1.22)	23 (3.48)	0.001
	I have been vaccinated	208 (84.55)	539 (81.67)	
	I have got COVID-19 and am protected	11 (4.47)	30 (4.55)	
	I do not believe that vaccines protect	13 (5.28)	9 (1.36)	
	For health reasons	1 (0.41)	10 (1.52)	
	Vaccines were produced in a short time and are not efficient and safe	10 (4.07)	49 (7.42)	
Would you self-quarantine if you were infected or had contact with COVID-positive people?	No	64 (26.02)	147 (22.27)	0.14
	I do not know	43 (17.48)	93 (14.09)	
	Yes	139 (56.50)	420 (63.64)	
What is the reason you would not be quarantined?	I would be quarantined	139 (56.50)	420 (63.64)	0.008
	Isolation would have a negative effect	22 (8.94)	53 (8.03)	
	I don't want to miss classes	30 (12.2)	94 (14.24)	
	I don't think it infects others	55 (22.36)	93 (14.09)	

respondents: 44.7% of males vs 64.85% of female (Table 3). Overall, 71.1% believed that quarantine is the best way to prevent COVID-19. A total of 46.5% (425) of the participants believed that covid vaccines in general do not protect from COVID-19. Among all respondents 45.3% claimed that the vaccines 'pose unknown risks'; 35.9% said that they were produced in a short time and are not safe (7.9% believed that they are not stored in proper conditions); and 4.6% believed that they can cause infertility. Of all respondents, 67.9% believe that they are at risk of being infected/reinfected by any of the variants causing COVID-19, again with a gender difference, and 32.1% think that they are not at risk.

Related to preventive practices, 93.7% of participants said they washed their hands regularly with soap and clean water, 82.8% covered their mouth when coughing or sneezing, but only 28.2% of them always used a mask in closed and crowded environments, and 52.7% used it occasionally. Of all respondents, 70.6% of them have been infected by the COVID-19 virus (or one of its VOCs) at least once (since the start of the pandemic). 83.1% were vaccinated and 49.5% of them with 2 doses of available vaccines. Only 33.5% were vaccinated to protect their health, while others to: use public spaces more freely and to travel more freely (37.2%); or as a legal obligation to attend university (12.4%). The reasons given by students for not getting vaccinated were: they were against any type of vaccine (2.4%); have been infected and passed covid and think are protected (4.5%); don't believe that vaccines protect (3.3%), and because vaccines were produced in a short time and are not efficient and safe (5.7%). Nearly two-thirds of the students, 60.1% would self-quarantine if they were infected or had contact with a positive or infected person with COVID. Among the most frequent reasons (for isolating) were: I don't want to miss the lesson (13.2%); I don't think I'll infect others (18.2%); isolation would negatively impact my mental health (8.5%).

Discussion

Since university students represent an important subgroup of the entire population, their knowledge, beliefs, and behaviours will have an impact on the spread as well as the prevention of the COVID-19 pandemic. That's the rationale why this KAP survey will help us to better understand their knowledge, beliefs, and attitudes and better plan and implement more effective interventions targeted towards university students that will hopefully lead to better control of COVID-19.

Our KAP survey findings demonstrated that in general, students had a good level of knowledge about the COVID-19 infection; however, they also expressed a level of misconceptions and lack of information. These findings are similar to another study carried out across Albanian universities, as well as to previous studies conducted among university students in different regions, of European and non-European countries [6,21,30–38]. We found that a majority of the students had correctly answered the questions about the way of virus transmission and prevention of COVID-19. Students were aware that COVID-19 is transmitted by close contact with an infected person, or with objects contaminated by the virus, through saliva droplets and the air. Only a very small number of respondents didn't know or had misconceptions about the above ways of transmission of the COVID-19 virus and were unaware that asymptomatic persons are also able to spread the infection. More than half of the participants (54.7%) have correctly identified elderly people and those with chronic diseases as the most at-risk group to get infected by COVID-19. However, about 20% did not know that children and young people are also a group at risk of being infected by COVID-19.

Our findings also showed that students had good knowledge of some of the ways of preventing COVID-19. The majority (93.7%) of them were aware that avoiding crowded places is one of the effective measures to prevent the spread of the infection. But on the other hand, results show a low level of knowledge of other measures of control including the infected person being isolated, quarantine measures (if/when necessary), and vaccination more specifically as common strategies that can help control the spread the COVID-19 pandemic and protect more vulnerable groups. Although almost half of the participants reported that they have received information through various sources of information, it was evident that social media was the most preferred source of info that played an important role during the pandemic, and that was a common finding also presented by some other studies as well [27,39–42].

The evidence has shown that health-related knowledge plays a crucial role and is associated with attitudes and behaviours. In the case of this pandemic, adequate knowledge leads to positive attitudes that consequently can help to ensure more effective pandemic prevention practices [5,22,31,37]. Some findings from this study suggest that good or adequate knowledge was not always translated to the right attitudes and practices in terms of pandemic prevention. This is not consistent with previous studies where most

respondents had a more positive attitude [7,10,11,31,34,35,43]. This study found that the perceived risk of being infected was relatively low among this subgroup with more than a third of participants believing they were somehow safe and could not be infected by COVID-19. Almost half of the participants (46.5%) had a negative attitude towards receiving any covid vaccines. They believe that these vaccines had unknown risks / side effects, were produced in a very short time and were not safe, are not kept in the right storing conditions, and may also cause infertility. These negative beliefs may have been created by a media infodemic as emphasized in a number of WHO reports as well as the during previous SARS epidemic, which causes confusion, and risky behaviours that can harm health and can directly impact to undermine the public health response [44,45].

With regards to preventive practices, almost all respondents reported that washing their hands regularly with soap and clean water and covering their mouth when coughing or sneezing was an effective measure to prevent the spread of COVID-19, but only a third of them (30.5%) always used a mask in a closed and crowded environment. A significant percentage of students (82.5%) have been vaccinated and most of them with 2 doses (that's an important finding). Surprisingly, only 23.7% were vaccinated to protect their health, and the rest were vaccinated to travel, to use public spaces freely, or as a legal obligation to attend university.

The existing evidence and as also demonstrated by findings from our study suggest that there is a health belief model applied to COVID-19. These health beliefs have an important effect on levels of prevention behaviors, and there is a correlation between self-reported preventive behaviors and lack of risk perception [46,47]. This was also shown by our study results as the student's negative attitudes towards quarantine had negatively influenced their preventive behaviours towards COVID-19. The students did not isolate themselves if they got infected by the COVID-19 virus. The main reason they reported for not doing so was: I don't want to miss the lesson (for 2 weeks of quarantine) and I don't believe that I will infect others. Another reason reported by students was that isolation would negatively impact their mental health. The impact of quarantine on psychological well-being has been reported by numerous studies, conducted around the world and in Albania, which have highlighted the fact that university students present high levels of anxiety and depression, this being more common in female students than male students. The results of our study showed that knowledge, attitudes, and practices about COVID-19 significantly varied by gender. Despite taking into consideration that the gender ratio was skewed towards females, the study found that males had less knowledge about COVID-19, and applied fewer preventive practices, making them particularly vulnerable during the course of this pandemic.

There are some limitations to this study. The collected info was based on self-reported data, which can contribute to biases in reporting. Moreover, since all the data was collected online, this can lead to less reliable data due to the lack of further clarifying any specific question. Despite these limitations, our KAP survey results will be an important and valuable addition in terms of baseline information supporting the country's pandemic response for the future. Furthermore, as far as we know, there is currently only one Albanian study published, for this target group and of the same methodology.

Conclusions

Our study showed that, although Albanian university students had a good level of knowledge, positive attitudes, and good preventive practices towards the COVID-19 outbreak, some limited information and misconceptions exist about some of the ways of transmission and prevention of COVID-19 infection. The results revealed a negative relationship between knowledge and attitudes and practices, especially towards the use of covid vaccines. Above all, this evidence-based data can be useful to help manage the Infodemic that exists and reduce its negative impact on health behaviours during the COVID-19 pandemic as suggested by the WHO guidance. Our study may not reflect the knowledge, attitudes, and behaviours of all students in Albanian universities; however, we believe it provides valuable and useful information that can help relevant decision-making organizations in Albania and elsewhere to design and implement prevention programs that specifically target students, and also disseminate key information through reliable sources.

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